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.

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Suitability of clinical workflows for automation

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There is increasing interest in using information technology to support healthcare workflows; however not all workflows are suitable for automation. We developed two metrics, enacted complexity (EC) and contextual dependence (CD), to identify and rank clinic workflows on their amenability for automation. EC is a function of the number of paths in a workflow; more paths indicate greater complexity. CD is a function of how much a workflow is influenced by contextual specifics. High CD indicates that a workflow greatly depends on when, where, and by whom it is performed. EC and CD are indicators that a workflow may be difficult to map, monitor, and control, suggesting that the workflow is a less feasible target for automation. In this study, we computed EC and CD using clinical documentation data from the electronic medical record (EMR) for 143,347 visits from 24 different outpatient clinics (Dermatology, Orthopedic Surgery, and Pediatric Oncology). Surgical Pathology data were included as a simple workflow comparator. We used EC and CD to rank order the clinics for automation suitability. EC and CD showed strong correlation (Spearman r = 0.55, $p<0.05$). Surgical Pathology workflow consisted of a handful of paths and is very nearly context dependent. In contrast, Dermatology clinics had over 167,000 paths and Orthopedic Surgery clinic had millions of paths. Both Dermatology and Orthopedic Surgery workflows were highly context dependent. Although Dermatology clinics were extremely complex, they appeared more amenable to automation than the other outpatient clinics. We conclude that the two metrics, EC and CD, can identify healthcare workflows that are suitable for and may benefit from automation. This research was supported by NSF (SES-1734237), University of Rochester CTSA (UL1 TR002001).

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Using artificial intelligence (AI) to compare patient perspective of PD-1 and BRAF inhibitors for melanoma treatment

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Due to side effects and adverse psychosocial factors, there can often be a disconnect between clinical impression and the patient perspective of treatment. Melanoma patients frequently use social media to discuss their disease sentiments and outcomes. We analyzed social media on melanoma treatments, PD-1 inhibitors (pembrolizumab/Keytruda, nivolumab) and BRAF inhibitors (dabrafenib, vemurafenib), associated with Patient Global Impression of Change (PGIC) terms to compare and identify patient burden. 12,599,313 publicly available online social media text data were extracted and run through Brandwatch Artificial Intelligence-powered database to categorize treatment-specific posts with PGIC terms associated with sentiment. Out of 52,962 posts related to a select list of melanoma treatments, we identified Keytruda (6,080), nivolumab (1,614), dabrafenib (529), and vemurafenib (329) posts. The top ten types of posts by volume for each treatment were predominantly positive for patient impression of change of treatment (improving, well) in contrast with associated negative emotions (fear and sadness). Patient-perceived better treatments were associated with decrease fear. Keytruda at a higher positive PGIC (92.3%) had markedly less fear (56.9%) compared to nivolumab positive PGIC (78.0%) and fear (81.6%). Similarly, dabrafenib positive PGIC (86.4%) had less fear (71.9%) compared to vemurafenib positive PGIC (78.0%) and fear (81.6%). Our initial results provide an indication for greater understanding of patient perspective and translation into more effective clinical and pharmaceutical response.

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Impact of pregnancy on hidradenitis suppurativa: A systematic review and meta-analysis

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Introduction: Data regarding changes in hidradenitis suppurativa (HS) disease course during pregnancy is mixed. We performed a systematic review and meta-analysis to examine whether HS improves, worsens, or remains unchanged during pregnancy. Methods: A systematic review was performed using the PubMed and Embase databases with the search terms: *hidradenitis suppurativa, hidradenitis, acne inversa, velpeau disease, verneuil disease and pregnant, pregnancy, gestation, conception, childbirth, delivery, woman, women, worsen, deterioration, exacerbation, flare, trigger, amelioration, improvement, remission, postpartum*. A total of 2253 articles were identified. Inclusion criteria were as follows: English language, human studies, original research, more than 5 study patients, and relevant to topic of HS and pregnancy. Two random effects meta-analyses were performed to assess (1) HS improvement and (2) HS worsening during pregnancy; heterogeneity was assessed using the I^2 index. Results: Eight articles (6 cross-sectional, 1 case-control, and 1 retrospective cohort study) met inclusion criteria. Of the 672 total cases, HS improved in 185 (28% overall); across studies, this varied from 0% to 83%. Meta-analysis pooling data showed HS improvement rate as 0.24 (95% CI, 0.13-0.40). HS worsened in 205 cases (31% overall); this varied from 0% to 62%. Meta-analysis pooling data showed HS disease worsening rate as 0.20 (95% CI, 0.11-0.34). A significant amount of heterogeneity between studies was noted in both meta-analyses (I^2=92% and I^2=91%, respectively). Discussion/Conclusion: While a quarter of women with HS may experience improvement during pregnancy, the majority of women have stable or worsened disease course. HS patients should maintain close dermatology follow-up during pregnancy, and strong collaboration between dermatologists and obstetricians is needed.

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Epidemiology and risk factors for the development of cutaneous toxicities in patients treated with immune checkpoint inhibitors: A United States population-level analysis

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A variety of dermatoses have been reported in patients treated with immune checkpoint inhibitors (ICIs), but current understanding of cutaneous immune related adverse events (cirAEs) is limited. The objective of this study was to determine the incidence, distribution, and risk factors of cirAEs using population-level data from the US. Using a national insurance claims database, cancer patients receiving ICI therapy were matched to non-ICI cancer patients on demographics, primary cancer type, and Charlson Comorbidity Index (CCI) via 1:1 exact matching. Multivariable logistic regressions were performed to analyze predictors of cirAEs, after adjusting for ICI target, cancer type, age, gender, CCI grade, and measures of socioeconomic status. All analyses were conducted in R version 3.6.3. 8,637 ICI patients and 8,637 matched controls were included in the study. The overall incidence of cirAEs was 25.1%, with the median onset time of 113 days (IQR 42.0-254.0). Only 10 (23.3%) of the diagnoses previously associated with ICIs had significantly higher incidence in the ICI group, with nonspecific rashes and pruritus most commonly diagnosed. Notably, ICI use was protective of cutaneous squamous cell carcinoma (OR 0.72, 95%CI 0.60-0.86, $p<0.01$) and actinic keratosis (OR 0.45, 95%CI 0.40-0.51, $p<0.001$). Increased incidence of cirAEs occurred in patients with melanoma (OR 2.47, 95%CI 2.11-2.89, $p<0.001$) and renal cell carcinoma (OR 1.65, 95%CI 1.36-2.00, $p<0.001$), and in patients treated with combination therapies (OR 1.53, 95%CI 1.25-1.88, $p<0.001$). The is the first population-level study to characterize the incidence and distribution of cirAEs. Only 10 of the 42 previously literature-reported dermatoses were significantly associated with ICI use.

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The role of illness perception in patients with cutaneous t-cell lymphoma

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Illness perception describes patient's internal beliefs about their illness and their resulting psychosocial impact. This concept is important because it can give healthcare providers a tool to identify issues that may need to be addressed with their patients. However, very few studies have looked into illness perception in cutaneous T-cell lymphomas (CTCLs). CTCL is a chronic, and at times debilitating group of malignancies that can have an indolent but remitting course. Treatment options can also be burdensome to the patient. It is therefore important to gain an understanding of not only what CTCL patients believe about their disease but also how those beliefs impact their quality of life (QOL). Moreover, the current COVID-19 pandemic offers a unique opportunity to investigate how significant disruptions in access to healthcare have impacted illness perception and QOL. The objectives of this study are to identify disease understanding in patients with CTCL, to investigate the impact additional education modalities has on disease understanding, and whether disparities exist between specific groups of patients. We also hope to determine how the COVID-19 pandemic impacted healthcare-related QOL. CTCL patients, above the age of 18, are recruited for this study. Patients are given an electronic survey containing the Illness Perception Questionnaire-Revised (IPQ-R), Skindex-29, FACT-G7, and selected questions based on the Household Pulse survey to assess COVID impact on QOL. Patients are then randomly selected to view an educational CTCL PowerPoint, in addition to verbal education routinely given during their visit. Follow-up responses to these questions will be collected at 2 and 6 months after the initial survey. In this ongoing study, we anticipate a sample size of 100 patients. The outcome of this study will provide insight into the use of additional educational modalities to better patient understanding of CTCL, with the goal of clearing common patient misconceptions about the disease, improve educational resources, and identify actionable paths to diminish obstacles to their access to care.

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Perspective of psoriatic disease patients on novel COVID-19 vaccines

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The National Psoriasis Foundation surveyed a stratified sample of 1,405 individuals with psoriatic disease in the United States. Participants were asked questions about the likelihood of receiving a vaccine for COVID-19, history of receiving vaccination for the flu in the last 12 months, current therapies used to treat their psoriasis and demographic questions. A total of 1,405 participants completed the survey. Of these, 642 (45.7%) had PsO only, 86 (6.1%) had PsA only and 677 (48.2%) had PsA and PsO, 690 (52.3%). Overall, 336 (23.9%) were somewhat to very unlikely to receive a COVID-19 vaccine when it becomes available, 167 (11.9%) were neither likely nor unlikely to receive a COVID-19 vaccine and 900 (64.2%) were somewhat to very likely to receive a vaccine. Results for receiving the flu vaccine in the last 12 month resembled likelihood of receiving a COVID-19 vaccine, 911 (65.0%) had received a flu vaccine in the last 12 months and 491 (35.0%) had not. Chi-square tests for independence were conducted to assess if likelihood of receiving COVID-19 vaccination was associated with race, income, gender, age, disease type, vaccination for flu in last 12 months and biologic therapy use. Results from these tests suggest that likelihood of receiving a COVID-19 vaccination was not associated with disease type (PsO only or has PsA) ($p=.108$) or using a biologic therapy ($p=.817$). Likelihood of receiving a COVID-19 vaccination was associated with race ($p<.05$), income ($p<.001$), gender ($p.001$), age ($p<.001$) and having received the flu vaccine in the last 12 months ($p<.001$).