1

Early Sweet's Syndrome with Atypical Histopathology in a Patient with Axial Spondyloarthritis: A Case Report

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Background: Axial spondyloarthritis (SpA) is an inflammatory arthropathy of the spinal column that is often associated with other manifestations including, but not limited to, skin changes and inflammatory bowel disease. One uncommon manifestation is Sweet's syndrome, a neutrophilic dermatosis.

Case Report: A 32-year-old male with axial SpA, well-controlled on Etanercept for the previous 15 years, presented to hospital with a two-week history of bloody diarrhea, five days of fever (up to 40°C) and nodules on his face and neck. On initial evaluation, he was febrile, tachycardic, and exhibited pathergy. The nodules were tender, erythematous, raised, and pustular. Investigations revealed a neutrophil-predominant leukocytosis, increased acute phase reactants, negative autoimmune serologies, and no evidence of infection. The patient was treated for a presumptive diagnosis of Sweet's syndrome and new onset ulcerative colitis with prednisone at 1mg/kg. Within 48 hours, the patient rapidly improved in both symptoms and vital sign abnormalities. A biopsy of a skin nodule demonstrated perivascular mixed cellular infiltrate with leukocytoclastic changes. Prednisone was tapered over the next month, and long-term maintenance therapy was changed to adalimumab.

Conclusion: Sweet's syndrome is an uncommon neutrophilic dermatosis that can overlap with leukocytoclastic vasculitis (LCV). This patient met one of two major criteria and all four minor criteria from the proposed 1994 classification system. While his skin biopsy would exclude a diagnosis of Sweet's syndrome using this criteria due to changes suggestive of LCV, it is increasingly recognized that there are multiple histopathologic findings in Sweet's syndrome. Indeed, some studies report the presence of LCV in Sweet's lesions to be up to 7-29%. In a study of Sweet's-like lesions with LCV, the histopathology suggested that the vasculitis was a secondary reaction to the noxious products released from the neutrophils, rather than a primary driver. Infiltrates composed predominantly of histiocytes and lymphocytes, as in our case, have also been described; and other data suggests that immature neutrophils may be mistaken for histiocytes. Because of these findings, we suspect that with a classic phenotype and mixed histopathologic findings, our patient's findings were ultimately consistent with Sweet's syndrome. These findings illustrate the difficulty of developing reliable diagnostic criteria in rare conditions such as Sweet's syndrome and emphasize the importance of synthesizing clinical, laboratory, and histologic findings.

2

Long-term Safety of Ixekizumab in Adult Patients with Psoriasis, Psoriatic Arthritis, and Axial Spondyloarthritis

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Objectives: We report long-term, end-of-study-program, safety outcomes in adult patients with psoriasis (PsO), psoriatic arthritis (PsA) and axial spondyloarthritis (axSpA) who received at least one dose of ixekizumab (IXE) over 5 years (PsO) or 3 years (PsA and axSpA).
Methods: An integrated safety analysis consisting of data from 25 randomized clinical trials (RCTs; 17 PsO, 4 PsA, 4 axSpA) was used to examine long-term safety of IXE. Rates of treatment-emergent adverse events (TEAEs), serious AEs (SAEs) and AEs of special interest were analyzed for all pooled studies by years of therapy and overall through March 2022, and reported as exposure-adjusted incidence rates (IRs) per 100 patient-years (PY) at successive year intervals. Additional safety outcomes included selected safety topics of interest (among others).
Results: A total of 6892 patients with PsO, 1401 patients with PsA, and 932 patients with axSpA, with a cumulative IXE exposure of 18025.7 PY for PsO, 2247.7 PY for PsA, and 2097.7 PY for axSpA were included in this analysis (Table). The IRs per 100 PY for any TEAE were as follows; patients with PsO=32.5, PsA=50.3, axSpA=38.0. The most commonly reported TEAEs were nasopharyngitis (PsO, IR=8.8; PsA, IR=9.0; axSpA IR=8.4) and upper respiratory tract infection (PsO, IR=6.2; PsA, IR=8.3; axSpA IR=5.8). Serious AEs were reported by 969 patients with PsO (IR=5.4), 134 patients with PsA (IR=6), and 101 patients with axSpA (IR=4.8). Forty-five deaths were reported; (PsO=36 [IR=0.2]; PsA=6 [IR= 0.3]; axSpA=3 [IR=0.1]). The IRs per 100 PY of discontinuation from the study drug due to AE were as follows: PsO, 2.9; PsA, 5.1; axSpA, 3.1. IRs of injection site reactions were: PsO, 5.9; PsA, 11.6; axSpA, 7.4. IRs of allergic reactions were: PsO, 5.6; PsA, 4.5; axSpA, 4.2. IRs of serious infections were low (PsO, IR=1.3; PsA, IR=1.2; axSpA, IR=1.1). IRs of Candida were low across all indications (PsO, 1.9; PsA, 2.0; axSpA, 1.2), as were IRs of opportunistic infections (PsO, 1.8; PsA, 1.8; axSpA, 1.3). IRs were also low across all indications for depression, major adverse cerebro-cardiovascular events and malignancies (all IRs ≤1.6, Table). Cases of inflammatory bowel disease (IBD) were uncommon (IRs ≤0.8 across indications [Table]).
Conclusion: In this updated analysis with 18025.7 PY for PsO, 2247.7 PY for PsA, and 2097.7 PY for axSpA, IXE maintained a long-term safety profile up to 5 years, consistent with previous reports.

3

A Narrative Review Comparing Outcome in Medical Therapy vs. Primary Surgical Intervention in Patient with Libman-Sacks Endocarditis

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Objectives: Libman-Sacks Endocarditis (LSE) or non-bacterial verrucous vegetative endocarditis, is a cardiac manifestation that can be found in autoimmune diseases such as Lupus and antiphospholipid syndrome. [1.] Similar to infective endocarditis, LSE can lead to detrimental complications, including stroke, heart failure and ischemic limbs. [2,3.] However,

given the rarity of the disease, there is no specific guideline on whether medical management is more advantageous than the surgical approach. The goal of this study is to review the existing literature reported on the treatment of LSE in autoimmune diseases to determine if there is a difference in the adverse outcomes and mortality between medical and surgical treatment.
Methods: A systematic search of Medline, Embase, Scopus and Web of Science was performed from database inception to June 28th 2022. Any case reports describing the use of any treatment, including surgical procedures and medical therapy on LSE or non-infective endocarditis, were included. Malignancy-related causes of LSE, pediatric population, and articles in foreign languages other than English, French or Chinese were excluded from this study. Study and patient characteristics were extracted as well as outcomes (ischemic limb, stroke, bleeding, heart failure, mortality). Extracted data were summarized descriptively since meta-analysis was not possible due to heterogeneity of the study designs and outcome reporting.
Results: We identified 1255 articles in the initial search, of which 142 articles were included for analysis. A total of 171 patients were involved, with most cases reported in females (61%), and the average age at presentation was 39.6 +/- 2.31. Lupus and antiphospholipid syndrome made up the majority of cases. Mitral valve was the most common site for vegetation to develop (109 cases) with mitral regurgitation being the most reported valvular dysfunction. 67% of patients were treated medically (anticoagulation, immunosuppressants, or corticosteroid) while 57% were treated with surgical procedures (excision, valvular repair, replacement), with 17% of patients treated with both medical and subsequent surgical approach. The proportion of complications from LSE was low but included heart failure (2.5%), and stroke (1.9%). The mortality rate observed was 5.7% in all the patients, with 7.9% in medical patients in comparison to 1.8% in surgical patients.
Conclusion: This study revealed that medical therapy was the mainstay treatment approach for LSE. However, based on the studies reported thus far, medical management may have a higher risk of adverse outcomes. Therefore, further controlled studies is needed to elucidate the mortality and morbidity benefit between surgical and medical therapy in LSE.

4

A Clinical Audit on Diagnostic and Treatment Patterns of Polymyalgia Rheumatica in a Community Rheumatology Practice

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Objectives: Polymyalgia rheumatica (PMR) remains a clinical challenge given the absence of single diagnostic test. Clinical audits are an excellent tool to both measure and improve clinical care in a focused manner. After a period of change, the audit can be repeated to ensure improved patient care. Given how difficult PMR diagnosis and management can be, we conducted a clinical audit on a sample population from our community practice.
Methods: Firstly, a ‘snap shot’ of patients diagnosed with PMR seen between January – March 2021 was performed. The National Institute for Health and Care Excellence guideline for clinical audit of PMR was used. The following was extracted: demographics, nature and duration of symptoms, baseline investigations, and treatment (prednisone dosing and bone health protection). Assessment included: 1. how often patient met British Society of Rheumatology (BSR) inclusion criteria for diagnosis; 2. how thorough baseline investigations were; and 3. what steroid protocol was established, and how bone health was addressed. Secondly, an audit template was generated and applied at first visit for patients with new diagnosis of PMR. The

same parameters were extracted for analysis.
Results: 69 patients were identified. Only 10% of patients met the BSR core inclusion criteria for diagnosis. This was driven by short duration of morning stiffness (70% <45 minutes, 48% < 30 minutes, and 17% no morning stiffness). Treatment with glucocorticoids was ubiquitous; dose was wildly variable: 8.7% were started on <10 mg/day, 10% at 10 mg/day, 44% at 15 mg/day, and 35% at >15 mg/day. This was reflected by the variability in prescriber: 49% started by primary care team, 26% by emergency room doctor, and 25% by rheumatologist. Bone health was disappointing: only 35% of patients were on bisphosphonate, and only 46% on vitamin D. After application of the audit template, data on 11 patients was collected. 73% met core inclusion criteria. Treatment remained uniform; dose stayed variable: 9% started on <10 mg/day, 45% on 15 mg/day, and 45% at >15 mg/day. Again, prednisone prescribing varied: 70% by primary care team, 10% by ER, and 20% by rheumatologist. Bone health, however, improved markedly; ALL patients were on bone sparing therapy and vitamin D.
Conclusion: This audit highlighted that PMR management leaves significant room for unification of prednisone treatment and bone health management. Implementation of a simple EMR tool resulted in robust improvement in bone health; tackling initial prednisone treatment, however, will likely require improving education for initial prescribers.

5

Cannabis Use in Inflammatory Arthritis: Characteristics and Comparisons Between Users and Non-Users

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Objectives: Advances in inflammatory arthritis (IA) treatment in the last 20 years have made it possible to mitigate symptoms and disease progression. However, even when well-managed, some symptoms may remain, and occasional flares will occur. Anecdotal reports suggest that cannabis can help with symptoms, but the literature on this remains unclear.1 The objectives of this study were to describe rates of self-reported cannabis use in the past year, reasons for use, and compare disease and psychosocial metrics among cannabis users and non-users.
Methods: The present study was a secondary analysis of cross-sectional data from an online survey to identify help-seeking behaviors and strategies for improving sleep in people with IA. Participants were recruited through arthritis organizations (Arthritis Consumer Experts, Arthritis Research Canada, and Patients Intéressés par la Recherche en Arthrite) and social media ads on Facebook, Instagram, and Twitter. After informed consent was obtained, respondents self-reported on cannabis use frequency and reasons for use. Standardized measures were used to assess fatigue, sleep and psychosocial functioning.
Results: A total of 265 participants were included. About a third reported cannabis use in the past year (89/265; 34%). The majority (81%) of users reported using cannabis for medical (i.e., non-recreational) purposes only. Main reasons for use were chronic pain (71/89; 80%), sleep difficulty (50/89; 56%), and anxiety/nerves (17/89;19%). T-tests revealed that past-year cannabis

users reported higher disease activity levels, worse overall health and more pain, fatigue, depression, and stress. All effect sizes were small-to-moderate, with the strongest effect on pain. Refer to Table 1 for more details.
Conclusion: Past year cannabis use was somewhat more common among respondents with inflammatory arthritis than what has been reported in the general Canadian population (34% versus 27%),2 although most only used it for medicinal purposes (i.e., pain, sleep problems, anxiety). Cannabis use was associated with significantly worse disease characteristics (pain, fatigue, perceived health, disease status) and psychosocial wellbeing (stress, depression). More robust research is needed to determine whether findings are replicable and directionality.

6

Determinants of Depression Among Individuals with Inflammatory Arthritis

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Objectives: The risk of developing depression is two times higher among Canadian adults with than without arthritis. Little is known regarding the determinants of depression among individuals with arthritis. This knowledge is important to help identify persons at risk and address modifiable risk factors. The objective of our study was to identify the determinants of depression among individuals with inflammatory arthritis (IA).
Methods: We performed a cross-sectional study using baseline questionnaire data from a randomized controlled trial of an employment intervention; 'Making It Work', an online self-management program to improve work outcomes among adults with IA. Participants were recruited in British Columbia, Alberta and Ontario through rheumatologist practices, consumer organizations, arthritis programs, and a health benefit plan, between 07/2013 and 04/2017. Depression was assessed using the Patient Health Questionnaire (PHQ-9, range: 0-27). Potential determinants included sociodemographic, health and work-related variables (Table 1). Multivariable linear regression analyses were performed to identify independent determinants of depression (PHQ-9 continuous variable), with forward variable selection based on highest adjusted R-squared, selecting the smallest model in the selection list with adjusted R-squared within 0.01 of the highest (for additional parsimony).
Results: The sample included 564 adults (mean(SD) age: 45.7(9.9) years, 77.8% female, 81.5 % Caucasian, 19.7% had spondylitis, 17.0% psoriatic arthritis, 13.7% lupus or another connective tissue disease and 49.7% rheumatoid arthritis). Mean (SD) depression score was 7.20 (5.08), indicating mild depression. Determinants of depression selected in the final multivariable model included: insomnia, job strain, number of limiting comorbidities, fatigue and low job satisfaction. All determinants explained 55.50% (adjusted R-squared) of the variance in depression. Insomnia contributed most to depression (partial adjusted R-squared) and explained 17.66% of the variance after controlling for all variables in the model, and 39.81% of the overall variance in a univariable model. Limitations: The cross-sectional nature of this study prevents assessing temporality criteria for causation. Many determinants (insomnia, fatigue, job strain, low job satisfaction) could be consequences of depression. Insomnia is one diagnostic criteria for major depressive disorder. The study sample included workers with IA, predominantly Caucasian,

highly educated, with longstanding disease. Results may not be generalizable to individuals with differing characteristics.
Conclusion: Individuals with inflammatory arthritis are at increased risks of depression. We identified that insomnia, job strain, comorbidities, fatigue, and low job satisfaction were determinants of depression in our sample. Discussing these determinants during health-care encounters may benefit patients. Further research is needed to determine directionality of the associations identified.

7

Hypertrophic Pulmonary Osteoarthropathy Improves with Immune Checkpoint Inhibitor Therapy

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Background: Hypertrophic pulmonary osteoarthropathy (HPOA) is a paraneoplastic syndrome characterized by abnormal proliferation of the skin and osseous tissues at the distal extremities. HPOA is commonly associated with metastatic lung cancer. To our knowledge, there are no documented reports on the isolated effect of immune-checkpoint inhibitor therapy on HPOA.
Case Report: After obtaining patient consent, retrospective chart review was performed and pertinent medical history, clinical findings and investigations are reported. A 66 year-old caucasian man with NSCLC, a 25 pack year smoking history and no prior arthritis was referred to the clinic. He complained of new onset, worsening pain and swelling in his fingers, left wrist and knees of six months duration. A locally recurrent adenocarcinoma (Stage IIIA, cT4) had been resected from his right lateral tracheal wall three months after symptom onset. He also received two doses of adjuvant therapy with cisplatin and pemetrexed at that time. On presentation he was found to have enlargement of his PIP joints without synovitis, and clubbing in his fingers. On investigation, RF and anti-CCP antibodies were negative, and CRP was within normal range. Plain X-rays of the hands showed periosteal thickening along the ulnar aspect of the proximal phalanx of the second digit bilaterally and right third digit consistent with HPOA. After the first treatment with durvalumab therapy and without other interventions for symptom management the patient reported decrease in arthralgias, and resolution of arthralgias after five treatments of ICI therapy.
Conclusion: HPOA is an uncommon paraneoplastic syndrome that causes arthralgias and bone pain, on which the effect of ICI therapy is unknown. Our case illustrates that ICIs may have positive implications in the treatment of HPOA.

8

Accessing Telehealth and In-Person Healthcare during the COVID-19 Pandemic: Experiences of Individuals with Rheumatoid Arthritis

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Objectives: The COVID-19 pandemic has provided opportunity to increase integration of virtual healthcare with in-person practices. Individuals with rheumatoid arthritis (RA) continue to self-manage their illness while navigating the period of uncertainty in health service delivery systems. Telehealth options for arthritis management during the pandemic were uneven as systems were developed and providers trained to use them. Understanding individuals' experiences will inform the integration of telehealth into routine practice post-pandemic. One aim of our qualitative study was to explore the experiences of individuals with RA accessing telehealth and in-person care.
Methods: The study was jointly designed and conducted with patient partners living with RA. Between December 2020 and December 2021, we conducted one-to-one semi-structured interviews (30-70 minutes) with participants with RA. Participants were purposively sampled from an ongoing randomized controlled trial (RCT) testing a web-based self-management intervention. Eligible participants had: 1) a diagnosis of RA; 2) no joint surgery in the past six months; 3) no acute injury to any joints in the past six months; 4) an email address and daily access to an internet-accessible device. We aimed for maximum variation in age, sex, and education, within the limits of the RCT sample. A reflexive thematic analysis approach was used.
Results: Thirty-nine participants (aged 26-86; 36 females; 13 diagnosed with RA between 2019 - 2021) were interviewed. Three preliminary themes were identified: 1) Deciding between telehealth and in-person: Many individuals preferred telehealth under certain conditions (e.g., prescription renewal, minimize travelling for appointments). Others favoured in-person consultations for ease of explaining symptoms during a physical assessment; 2) Assessing risk of in-person visits: When in-person consultations were preferred, some feared contracting COVID-19 when travelling for the consult while others felt safe with the health measures in place; and 3) Adapting to systemic disruptions: Some participants struggled with accessing care as health service delivery changed during the pandemic; patients' in-person appointments were turned virtual or cancelled without notice. Others were forced to be flexible given the suspension of in-person clinical care (e.g., receive a consult outside in the rain).
Conclusion: Our interviews suggest people with RA appreciate having a choice between telehealth and in-person consults to meet their needs, are cautious about accessing health services in-person, and are forced to adjust to obstacles in accessing healthcare. Understanding these perspectives help inform the use of telehealth beyond the pandemic by addressing patient concerns, personalizing telehealth options, and integrating telehealth into clinical practice for routine check-ups.

9
Decision-Making around Vaccination and Other Public Health Measures during the

COVID-19 Pandemic: Experiences of Individuals with Rheumatoid Arthritis

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Objectives: Individual decisions about adopting public health measures (e.g., vaccination programs, physical distancing) to reduce COVID-19 transmission have implications for individuals with rheumatoid arthritis (RA) in their everyday self-care. One aim of our qualitative study was to explore how decision-making about adopting public health recommendations influenced self-care experiences of individuals with RA.

Methods: The study was jointly designed and conducted with patient partners with RA. Between December 2020 and December 2021, we conducted one-to-one semi-structured interviews (30-70 mins) with adults with RA. Participants were purposively sampled from a randomized controlled trial (RCT) testing a web-based self-care intervention. To be eligible, participants had: 1) a physician confirmed diagnosis of RA; 2) no joint surgery in the past six months; 3) no history of acute injury to any joints in the past six months; 4) an email address and daily access to a computer or mobile device. We aimed for maximum variation in age, sex, and education, within the limits of our RCT sample. A reflexive thematic analysis approach was used.

Results: Thirty-nine participants (aged 26-86; 36 females) were interviewed. Preliminary themes are: 1) Respecting freedom of choice: Many participants felt fortunate to be able to adopt public health measures to maintain involvement in meaningful activities, such as being physically active. Some, however, described how their choice to adopt these measures was challenged, explaining how they defended their freedom to choose to others (e.g., relatives). Many emphasized their respect for others' freedom to choose, even though others' choices complicated participants' self-care decisions; 2) Feeling a moral responsibility: Participants felt a responsibility to protect the welfare of their families and wider community as an important driver in their decision-making to adopt public health measures. Some described adapting their self-care to ensure this responsibility was upheld; 3) Differing trust in information sources: Participants described different forms and changing degrees of trust they placed in health professionals and other sources (e.g., public health officials, media, friends) when making decisions about public health measures.

Conclusion: Findings offer a glimpse into how decision-making around public health measures raised ethical tensions (around participants' expressed freedom of choice, social responsibility, and trust) in the self-care experiences of individuals living with RA. Our findings thus may serve to sensitize researchers, health professionals, and policymakers in supporting decision-making about public health measures in ways that value the experiences of individuals with RA and other autoimmune diseases during the pandemic and beyond.

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A closer look at the difficult-to-treat Rheumatoid Arthritis patients

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Objectives: With increasing numbers of advanced therapies, rheumatologists increasingly see Rheumatoid Arthritis (RA) patients who have failed multiple therapies. The management of difficult-to-treat (D2T)-RA patients is challenging, with no clear guidance on how to approach, and there is an unmet need to understand the factors leading to D2T-RA. In this analysis, we aimed to compare the disease characteristics and activity of our D2T-RA patients from the biologics clinic with the rest of the group.

Methods: Biologics clinic is a new initiative at the Ottawa Hospital aiming to improve the long-term outcomes of patients with inflammatory arthritis. Patients who are about to start or switch to another advanced therapy are evaluated at the biologics clinic. Extensive data regarding disease history, medication exposure and disease activity measures are collected in a standard fashion; the comorbidity burden is documented and managed. A protocoled ultrasound is conducted at baseline and three-month intervals, until reaching remission. Within these patients, D2T-RA patients were defined as failure of ³ 2 biologics therapy1. Here we present the results from a pilot exploratory comparative analysis to understand the differences between the D2T-RA patients with the rest of the cohort.

Results: Six (27.3%) of 22 RA patients fulfill the definition of D2T-RA. Strikingly, all D2T-RA patients were females despite the 62% in the other group (table). Seropositivity was similar across groups, although there is numerically more erosive disease in the D2T-RA patients (66.7% vs 56.3%). Two groups were similar in terms of the comorbidities, except urate levels which tend to be higher in D2T-RA patients. D2T patients have numerically higher tender joint counts as well as higher scores on US. Other disease activity scores, including DAS28-CRP and ESR, CDAI and HAQ, also tend to be higher in D2T-RA patients than the rest of the group.

Conclusion: Higher disease activity in the ultrasound suggests an uncontrolled inflammatory process rather than untreated on-inflammatory pain mechanisms. D2T-RA patients were only females, highlighting the importance of incorporating sex into research and understanding the factors leading to poor response in this group. Higher urate levels in D2T-RA may be due to increased disease duration, although the comorbidities were not more frequent. It would be noteworthy to look at the impact of MSU crystals on joints' resistance to therapies. With higher number of patients and longer follow-up, our group is aiming to find predictors of D2T-RA and investigate alternative therapies including stemcell transplant. 1.Nagy G.AnnRheumDis.2021

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Is virtual care here to stay? : Rheumatology patients' satisfaction in early vs late pandemic

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Objectives: The COVID-19 pandemic has dramatically changed the delivery of healthcare, with virtual care becoming the new standard. In the early stages of the pandemic, physicians were very creative to rapidly adapt to virtual care and studies reported high levels of patient satisfaction1. It is unclear whether this high level of satisfaction would be maintained long term, after patients experience multiple virtual visits. We aimed to compare patients' satisfaction with virtual visits in the early and late period of the Covid-19 pandemic and to determine the factors impacting patient' satisfaction.

Methods: Patients who had at least one phone visit during the early pandemic and enrolled in a previous survey study were invited to participate inthis follow up study1. Patients received a similar survey to reflect their satisfaction levels for their later visits between Aug 2021-May 2022. Chi-square tests was used for comparisons for early vs late pandemic satisfaction levels and factors impacting the satisfaction levels were investigated using multivariate logistic regression analysis.

Results: A total of 741 and 270 patients responded to surveys in the early and late Covid-19 pandemic periods respectively. Patient demographics for both periods were similar for age, sex and diagnosis. Overall satisfaction levels decreased in the later stages in comparison to the early stages (89% vs 81.2%, respectively, p=0.003) (table). Despite the reduced satisfaction levels in the late period, 55.5 % of the patients still declared their willingness to continue with virtual care even after the pandemic, a similar result to early pandemic (p=0.871). In multivariate analysis, speaking with a rheumatologist (p=0.035; OR (95%CI) 1.921 (1.047-3.526)), being called on-time (p< 0.001; 4.807(2.330-9.915)) and capability of using a telephone (p< 0.001, 4.361(2.503-7.597)) were found to be associated with overall satisfaction in the early period. In the late period, being called on time (p=0.038; 2.333(1.046-4.768)) and capability of using the telephone (p=0.001; 3.516 (1.729-7.150)) were found to be associated with overall satisfaction. However, there was no association between speaking with a rheumatologist vs a resident and overall satisfaction in the late Covid-19 pandemic period (p=0.263; 1.639(0.690-3.892)).

Conclusion: Our results suggest that while the patients' satisfaction with the virtual visit decreased slightly over time, approximately 80% of the patients remain satisfied with virtual care. In addition, more than half of the patients support ongoing virtual visits after the pandemic. This study has important implications for policy decision makers as they consider resource allocation for long term virtual care. 1- Goldhar et al.Clin Rheum2022

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Is virtual care here to stay? The impact of virtual care on healthcare resource utilization during the pandemic in comparison to the prepandemic period

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Objectives: The COVID-19 pandemic has accelerated the adoption ofvirtual care.. Our aim was to explore the impact of virtual rheumatology care during the pandemic on healthcare resource utilization, by comparing to the pre-pandemic period.

Methods: Patients who had at least one phone visit during the early pandemic and enrolled to a previous survey study were invited to attend to this follow up study1. Through patient surveys and review of medical charts, number of Emergency room (ER) and walk-in clinic visits and hospital admissions due to any cause and their rheumatological disease; and patients' need for additional palliative treatments for pain control were collected, for pre-COVID-19 (Jan 2019-Mar2020) and pandemic period (Mar2020- June2021). In addition, the rate of "failed virtual visit" was identified, by exploring patients that were brought to clinic for an in-person visit due to the virtual visit being insufficient as well as impact of the failed visits.

Results: During the study period, there were 759 phone, 41 zoom and 115 in-person visits for 276 patients. While the total number of rheumatology visits (median (IQR)2 (1) vs 3 (2), $p<0.001$), ER visits (19% vs 29.3%, $p=0.006$) and hospital admissions (12.9% vs 20.8%, $p=0.015$) due to any cause were increased during the pandemic, there was no increased ER visit or admissions due to their rheumatological disease. Around 1/3 of patients reported being on more pain medication during the COVID-19 period. Failed virtual visits were observed in 23 (3.1%) of 800 virtual visits which included 23 (8.3%) of the 276 patients, leading to an additional 25 in-person visits after a median (IQR) of 12 (25) days. Close to fifty percent of the patients with failed virtual visits were treated with additional steroid therapy during the pandemic. Patients with failed virtual visits needed a higher number of rheumatology visits in general and had more frequent modifications of their csDMARD therapies, compared to patients without failed virtual visits (table).

Conclusion: Overall the rate of failed virtual visits was very low (3.1% of all virtual visits). However, these patients were more frequently treated with steroids, which might have been implemented tomanage the patients until seen in the clinic. Although virtual care was generally found to be efficient in our context, patients with failed virtual visits may need an accommodation to be seen in person quickly to avoid bridging steroid therapy. 1- Goldhar et al.Clin Rheum2022

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Metabolic Syndrome and Knee Osteoarthritis Study

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Objectives: The objective of this study is to identify the frequency of Metabolic Syndrome (MetS) and its components in knee osteoarthritis (KOA) patients who have undergone knee replacement surgeries. KOA is a leading cause of morbidity and disability. It is often bilateral and estimated to affect one-fifth of individuals over the age of sixty-five. MetS is a cluster of conditions (obesity, hypertension, diabetes, and dyslipidemia) that increases risk for cardiovascular diseases. Obesity is a well-established risk factor for KOA, and increasing evidence has demonstrated systemic effects of obesity in OA outside of its mechanical impact on weight-bearing joints [1]. This led to studies showing the epidemiological relationship between MetS and OA [2-3]. Understanding the association between MetS, its components and KOA may provide insights on improved management for people with osteoarthritis.
Methods: A retrospective chart review is performed of patients who have undergone knee joint arthroplasty from January 2021 to December 2021 in the hospitals of Saskatoon. Demographics (age, sex, urban/rural residence, smoking status, employment) were recorded. MetS was defined as the presence of three or more of the following: obesity (BMI of ≥ 30), hypertension, diabetes, and dyslipidemia. Co-morbidities were calculated using the Charlson-Comorbidity Index. Inclusion criteria includes patients eighteen years and older who have received knee joint replacement surgery with primary osteoarthritis. Patients with secondary osteoarthritis were excluded. Descriptive statistics was utilized to characterize KOA population.
Results: Of those KOA individuals who underwent knee joint surgery (n=101), 39.6% (n=40) have MetS while 60.4% (n=61) do not have MetS. Moreover, 17.8% (n=18) are classified by BMI as overweight, 76.2% (n=77) are obese, 64.4% (n=65) have hypertension, 25.7% (n=26) have diabetes and 48.5% (n=49) have dyslipidemia. When KOA patients were categorized by age, 22.2% (n=4) of 50-59 years, 35.0% (n=14) of 60-69 years, 54.1% (n=20) of 70-79 years, and 40.0% (n=2) of ≥ 80 years have MetS. Overall, 40.5% (n=17) and 39.0% (n=23) of males and females, respectively, have MetS. By residence, 44.6% (n=25) of patients living in urban areas and 33.3% (n=15) of patient living in rural areas have MetS.
Conclusion: This study revealed 39.6% of KOA patients who have undergone knee joint surgery have MetS. Strikingly, 76.2% of KOA patients are obese and 64.4% have hypertension. The association of MetS and its components (such as obesity and hypertension) with KOA raises questions about the interplay between these conditions, and further research is needed to clarify this relationship.

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Inequities in Arthritis Care in Canada: The Black, Indigenous and Person of Colour (BIPOC) Experience

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Objectives: Research shows that inequities continue to pervade health care (HC) in systemic ways. The objective of this community-led, crowdsourced Survey was to identify observable disparities in access to and benefit from HC services between White and Black, Indigenous and

Person of Colour (BIPOC) respondents.
Methods: Arthritis Consumer Experts conducted a 33-question online Survey (Aug 2-19, 2022) in English and French. The Survey was conducted in partnership with Research Co., a public polling firm. Respondents answered questions regarding sociodemographic information, access to HC, interactions with HC providers and information seeking habits. Data were analyzed in subgroups (i.e., BIPOC vs White, women vs men, rural vs non-rural) and aggregate (including incomplete survey responses). Chi-square tests (exact tests where possible) were used to test for associations.
Results: A total of 1,249 responses were received from 317(25%) BIPOC and 932 (75%) White respondents with self-reported arthritis. 732 (59%) respondents identified as women, 484 (39%) men, 16 (1%) non-binary. 676 (54%) lived in urban areas; 462 (37%) in suburban or rural areas [Table 1]. Compared to White respondents, BIPOC reported greater barriers to accessing care including time (40%), travel (31%), previous unpleasant experiences (21%), language (20%), and competing priorities (19%). When Indigenous Peoples were asked if their healthcare provider included traditional medicines or practices, 51% responded "yes" and 49% "no" [Figure 1] . Overall, interactions with HC providers were rated less favourably by BIPOC respondents. When asked which characteristics they looked for in HC providers, significant differences were revealed [Figure 2]. BIPOC respondents were six times as likely to report having experienced ethnicity-based discrimination “often” (13%), when compared to White respondents (2%). Results were even more pronounced for Indigenous Peoples who face discrimination “often” based on ethnicity (25% vs 2%), gender (21% vs 5%), and sexual orientation (15% vs 2%). Black (55%), Indigenous (54%) and POC (43%) respondents were more likely to find online information to be “helpful” and all preferred resources recommended by family and close friends with culturally sensitive content. In contrast to White respondents (66%), less BIPOC (51%) viewed official public health websites as trustworthy. BIPOC respondents more often turn to family, friends, coworkers, traditional healers, and elders for health information.
Conclusion: Our findings suggest that BIPOC respondents face significantly greater barriers when accessing arthritis care, and when they do, benefit less from their interactions. The data further reinforce literature that calls for culturally safe spaces which meaningfully address patient concerns and action equitable care.

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A Case of Clinical Overlap between Eosinophilic Granulomatosis with Polyangiitis and Anti-Glomerular Basement Membrane Disease

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Overlap between anti-glomerular basement membrane (anti-GBM) disease and anti-neutrophil cytoplasmic antibody associated vasculitis is well documented.1 These patients are typically anti-PR3 antibody positive and follow a granulomatosis with polyangiitis phenotype. Overlap of eosinophilic granulomatosis with polyangiitis (EGPA) and anti-GBM has only rarely been described.2,3 We report a such case here.

A 59-year-old man presented with months of worsening nasal congestion, headache, and

constitutional symptoms. His medical history included allergic rhinitis, dyslipidemia, hypertension, and type II diabetes. His medications included atorvastatin, irbesartan, esomeprazole, and fluticasone nasal spray. On physical examination he was afebrile with normal vital signs. There was new bilateral pitting edema in the lower extremities. Respiratory, cardiac, and abdominal examinations were unremarkable.

Initial laboratory testing showed elevated creatinine (700 mmol/L), normocytic anemia (74 g/L), leukocytosis (11.6 x 109/L) with eosinophilia (3.1 x 109/L, with normal <0.5 x 109/L), and thrombocytosis (574 x 109/L). Inflammatory markers were elevated with CRP 157 mg/L (with normal <7.99 mg/L) and ESR 130 mm/Hr (with normal <26 mm/Hr). Urinalysis showed blood (200 ery/mL) and protein (1.0 g/L). Urine microscopy revealed red blood cells, leukocytes, and granular casts. CT scanning revealed focal interstitial lung changes in the right lower lobe, bilateral renal enlargement, and perinephric stranding.

The worsening nasal congestion, eosinophilia, and active urine sediment raised the question of EGPA with glomerulonephritis. Serology revealed positive anti-MPO (>8.0 AI, with normal <0.2 AI), negative anti-PR3, and positive anti-GBM (2.0 AI, with normal <0.2 AI). Empiric immunosuppression with pulse corticosteroids was initiated along with transfer to a tertiary care centre.

Renal biopsy demonstrated segmental to global hypercellularity, necrosis, occasional sclerosis, and several cellular crescents in the glomeruli (panel 1); an artery with fibrinoid necrosis (panel 2); 1+ peripheral linear IgG kappa and lambda on immunofluorescence (panel 3); and no electron dense deposits on electron microscopy. Overlap between anti-GBM disease and EGPA with renal involvement was diagnosed.

The patient was treated with plasma exchange (PLEX), cyclophosphamide, and high dose corticosteroids. The anti-GBM titre was 0.5 AI after seven cycles of PLEX, therefore it was discontinued. His creatinine improved to 323 mmol/L and he was discharged home on cyclophosphamide and tapering prednisone with continued renal recovery post-discharge.

This case demonstrates overlap between EGPA and anti-GBM disease and is one of few reported in the literature thus far. Evidence for overlap with anti-GBM disease was based on both serology and immunofluorescence pattern on renal biopsy.

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Toll-like Receptor Stimulation of B Lymphocytes from Lupus-Prone Mice Induces Production of Anti-LG3 of Importance in the Development of Lupus Nephritis

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Objectives: Lupus Nephritis (LN) is a common and serious manifestation of systemic lupus erythematosus (SLE). Biomarkers of progressive renal dysfunction in LN are lacking. We have shown that vascular injury derived apoptotic exosomes can trigger SLE autoantibodies as well as

autoantibodies targeting perlecan/LG3 (anti-LG3). Our group have also unraveled biomarkers and effector roles of anti-LG3 in kidney vascular damage in both native and transplanted kidneys. We hypothesize that the pro-inflammatory conditions prevalent in SLE patients, such as increased TLR activation, stimulate the production of anti-LG3 of importance in the development of LN. Our first objective was to evaluate the level of circulating anti-LG3 antibodies during the development of LN in SLE prone mice. Our second objective was to characterize the importance of TLR in triggering LG3-specific B cells autoantibody production.
Methods: Longitudinal bleeds were performed on SLE prone NZB/NZWF1 mice and control mice (WT) and circulating anti-LG3 IgG as well as anti-LG3 IgM levels were measured by ELISA. B cells from NZB/NZWF1 or WT female mouse spleens and peritoneal cavity were isolated at different stages of disease (12, 24, 36 and 40 weeks) and characterized. Following in vitro stimulation with pro-inflammatory Toll-Like-Receptor (TLR) agonists, anti-LG3 IgG and IgM levels were assessed in the culture supernatants by ELISA.
Results: Elevated anti-LG3 levels are found in NZB/NZWF1 mice compared to WT mice. Exploring the functional importance of TLRs in triggering such a response, we show that exposure of B cells from 24 weeks old WT and NZB/NZWF1 mice to different TLR agonists triggered anti-LG3 IgM production (TLR1/2 p<0,0001, TLR4 p=0,003 , TLR7 and TLR9 p=0,008). B cells isolated from young 12 weeks old NZB/NZWF1 mice also secreted detectable levels of anti-LG3 IgG antibodies when stimulated with TLR9 (p=0.009), TLR4 (p=0.005) and TLR1/2 (p=0.0005) agonists, while B cells isolated from control mice did not. Interstingly while TLR agonists known to contribute to SLE pathogenesis triggered significantly higher IgM anti-LG3 production than in controls stimulation of TLR are not associated to SLE pathogenesis (TLR3 and TLR5) did not.
Conclusion: These observations suggest that LG3-specific B cells may be modulated under pro-inflammatory conditions such as those prevalent in lupus patients, leading to production of auto-antibodies. A better understanding of the impact of these mechanisms will lead to improved identification, prediction and management of NL.

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"New Canadian Data on Vitamin D status in ANCA-associated Vasculitis: Baseline Data from an Ongoing Pragmatic Study"

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Objectives: There is a paucity of data correlating Vitamin D status to ANCA-associated vasculitis (AAV). Whether optimization of Vitamin D status impacts AAV disease manifestations/activity is unknown. In an ongoing exploratory, pragmatic study, the 25-hydroxyvitamin D levels [25(OH)D] were measured in a cohort of patients with AAV and association of disease activity was investigated accordingly.
Methods: The study aimed to enroll >100 patients with AAV at the Mount Sinai Hospital Vasculitis Clinic, in Toronto, Ontario from January to July 2021 and over <6 months. 25(OH)D

was measured at the baseline visit and deficient/insufficient levels were defined as 25(OH)D<75 nmol/L. Participants with deficient 25(OH)D were asked to increase Vitamin D supplementation by 1000 (to a maximum of 2000 IU/day). The endpoint is relapse at 12 months. Clinical and serological disease characteristics at diagnosis and enrollment, in addition to medications, were collected and reported here.
Results: Due to the COVID-19 pandemic, enrollment lasted longer than planned (January to December 2021); with a total of 103 patients enrolled with consent. One patient was excluded due to a history of hyperparathyroidism. Mean age of the remaining 102 patients at time of AAV diagnosis vs. study enrollment was 47.6±20 years, and 54.7±20 years, respectively; 59 were female; and 50 had granulomatosis with polyangiitis, 52 had microscopic polyangiitis or eosinophilic granulomatosis with polyangiitis (Table 1). A history of positive ANCA status was seen in a majority of patients (n=87/102 [85.3%]); and disease manifestations included lung (n=79), renal (n=63), and gastrointestinal (n=17). At enrollment, 89 patients were in remission; 52 were on prednisone, and 45 on rituximab. Thirty-nine (38.2%) patients had insufficient/deficient 25(OH)D levels and were more likely to be younger in age at time of measurement (49.6±17 years, vs. 58.1±18 years with sufficient levels; p=0.019). No other outcome measure was found to have a significant difference between sufficient vs. insufficient/deficient 25(OH)D levels. There was also no difference in the mean 25(OH)D level based on period of enrollment (April to September vs. October to March).
Conclusion: Similar to a previous North American retrospective study from the VCRC, just over one-third of patients with AAV enrolled in this prospective pragmatic study had insufficient/deficient vitamin D levels. Younger age was the only association with insufficient/deficient vitamin D levels. Ongoing follow-up of these patients will provide additional data on the impact of vitamin D status and its optimization with supplementation on AAV disease activity/relapse.

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Responsiveness of the Patient Reported Outcomes Measurement Information System (PROMIS) Computerized Adaptive Test (CAT) Measures in a Single Canadian Lupus Cohort

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Objectives: Patient-Reported Outcome (PRO) measures should be included in the assessment of lupus patients as they are crucial in providing patient-centred care. The Patient Reported

Outcomes Measurement Information System (PROMIS) is a relatively new set of person-centered measures that describes and evaluates physical, mental, and social health. Our previous studies have demonstrated reliability and validity evidence for PROMIS CAT in systemic lupus erythematosus (SLE). This study extends this evidence by examining its responsiveness. We hypothesized that PROMIS CAT domains will show a change when the patient reports worsening or improvement.

Methods: In this longitudinal study, consecutive adult English-speaking SLE patients were invited to participate. Patients completed an assessment using PROMIS CAT's 13 domains (physical function, mobility, pain behaviour, pain interference, ability to participate in social roles, satisfaction with social roles and activities, fatigue, sleep disturbance, sleep-related impairment, applied cognition-general concerns, anger, anxiety, and depression) and corresponding legacy instruments at baseline and at 3 and 6 months. The generic anchor question "Compared to when you started the study, how have you been during the last 48 hours? (responses: same, worse, no change)" was asked to identify those with symptom severity change. Domain-specific anchor questions were asked at 6 months with responses graded from -7 (greatest worsening) to +7 (greatest improvement), and 0 representing no change. For domain-specific anchors, improvement was defined as >1, and worsening as < -1. We assessed responsiveness by examining effect size (ES) and standardized response means (SRM) in patients with improvement and worsening, with higher values reflecting greater sensitivity to change.

Results: 108 patients (90.7% female) were included with a mean age of 48.1 ± 13.5 years that had mean SLE duration of 18.9 ± 11.7 years at baseline. Table 1 demonstrates Spearman correlation coefficients, SRM and ES for both the general anchor and domain-specific anchors. The Spearman correlation of anchor measures with PROMIS CAT was weak-moderate. SRM and ES showed small-moderate effect for patients that reported better and worse health and showed small to no effect in those reporting no change, indicating PROMIS CAT is measuring the domains adequately as captured by the general anchor. 9 out of 13 domains had moderate SRMs and ES, particularly with domain-specific anchors.

Conclusion: PROMIS CAT detected improvement and worsening over time in most domains in patients with SLE in concordance with the external anchors, supporting its responsiveness in this population for most but not all types of change.

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Calciphylaxis Associated with Eosinophilic Fasciitis: A Case Report and Literature Review

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Background: Calciphylaxis is a rare form of panniculitis characterized by calcification of microvessels in the subcutaneous adipose tissue and dermis, leading to intensely painful ischemic skin lesions and a high mortality rate. Although typically diagnosed in patients with end-stage renal disease (ESRD), connective tissue diseases are a known cause of nonuremic calciphylaxis (NUC). We describe the first reported case of NUC in a patient with eosinophilic fasciitis and provide an updated review of the literature on NUC in rheumatologic conditions.

Case Description: A 61-year-old woman with no prior past medical history presented to care for

progressive pain, nodularity, and skin tightening of her forearms and shins bilaterally. There was no involvement of the fingers or toes, and no associated Raynaud's phenomenon. Initial laboratory investigations revealed an elevated peripheral eosinophil count at 2.0x10^9/L (N<0.5x10^9/L), with normal creatinine at 74umol/L (N<90umol/L) and calcium at 2.28mmol/L (N<2.52mmol/L). She also had a normal TSH, A1C, ANA, RF, and SPEP. She underwent a full thickness skin and muscle biopsy of the right medial calf which revealed features consistent with eosinophilic fasciitis along with mural calcification of subcutaneous capillaries and a few small non-necrotizing granulomas within the dermis. These findings were reviewed at combined Rheumatology-Pathology rounds, confirming eosinophilic fasciitis with calciphylaxis. No fungi or mycobacteria were identified on PASD and Ziehl-Neelsen stains. She also had a thorough infectious granulomatous workup including syphilis, HIV, viral hepatitis, bartonella, coxiella, lyme, TB skin test, coccidioides, and histoplasma which all returned negative. She had a negative CT chest, abdomen, and pelvis, normal age-appropriate malignancy screening, and a mildly elevated serum ACE level at 58 IU/L (N<52). Calciphylaxis workup revealed no other potential causes; serum creatinine, A1C, calcium, and PTH remained within normal limits. She was initiated on methotrexate 25mg qweekly and prednisone 50mg on a tapering course. Her skin symptoms have improved along with normalization of peripheral eosinophilia and no progression of her calciphylaxis thus far.

Conclusion: Nonuremic calciphylaxis (NUC) is a rare but highly morbid consequence of rheumatologic disease. Although several cases of NUC secondary to SLE, rheumatoid arthritis, and giant cell arteritis are documented in the literature, we describe the first reported case in a patient with eosinophilic fasciitis. Further work is needed to elucidate the mechanistic underpinnings linking NUC and connective tissue disease and establish efficacious therapies.

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Disease Characteristics, Disability, and Quality of Life in Adult HPP Patients With Muscular Symptoms and Pain Without Skeletal Manifestations – a Cross-sectional Analysis From the Global HPP Registry

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Objectives: Hypophosphatasia (HPP) is a rare, inherited metabolic disease caused by deficient activity of tissue-non-specific alkaline phosphatase (TNSALP). We aimed to compare disease burden in adults with HPP presenting with skeletal manifestations versus those presenting with only non-skeletal manifestations.

Methods: Baseline/pretreatment data from the Global HPP Registry were analyzed to compare adults (≥18 years of age) with skeletal manifestations (history of rickets, biopsy-proven

osteomalacia, recurrent or poorly healing fractures/pseudofractures [Skeletal group]) and those with only non-skeletal manifestations (history of muscle weakness, fatigue, and/or pain [Non-skeletal group]).
Results: Among 468 adults with HPP, 300 had skeletal manifestations and 73 had only non-skeletal manifestations (Table). The median number of body systems involved at baseline was higher in the Skeletal group than in the Non-skeletal group. Median 6-Minute Walk Test distance was similar between groups, although data were limited. Pain severity (Brief Pain Inventory-Short Form [BPI-SF]), disability (Health Assessment Questionnaire–Disability Index [HAQ-DI]), and quality of life (Medical Outcomes Study Short Form-36 Health Survey [SF-36] Mental Component Summary Score) were also similar between groups. Both groups had median SF-36 Mental and Physical Component Summary Scores less than 50.
Conclusion: The impairment associated with pain, disability, and general quality of life in patients with HPP who had muscular/pain manifestations without overt bone disease was generally similar to that in adults who had any skeletal manifestations. Further analyses are required to understand the disease characteristics of these patients.

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Immunogenicity and Efficacy of Mixed COVID19 Vaccine Regimens in Immune Mediated Inflammatory Diseases

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Objectives: Comparative data on immunogenicity of COVID-19 vaccination strategies are limited for people with immune-mediated inflammatory diseases (IMIDs). Among persons with IMIDs who received homologous or heterologous SARS-CoV-2 vaccines, we compared post-COVID-19 vaccine antibody responses.
Methods: From 02/2021-07/2022 persons with any of inflammatory arthritis (n=66; 77% rheumatoid arthritis), systemic autoimmune rheumatic diseases (n=82; 63% lupus), inflammatory bowel disease (n=89; 43% Crohn's), and multiple sclerosis (n=72; 77% relapsing remitting) self-reported COVID-19 illness and exposure risks, and had anti-spike, -receptor binding domain (RBD) and -nucleocapsid (NC) IgG antibodies tested by multiplex immunoassays following each vaccination (V1, V2, V3, V4). Anti-SARS-CoV-2 responses were compared across vaccine regimens and to responses in 370 age-sex matched vaccinated blood donor controls. Variables associated with seroconversion 1 month post V2 were tested using binary logistic regression models that included age, sex, diagnosis, vaccine interval (< or > 28 days), and IMID treatment.
Results: IMID participants were predominantly female (79%), white (95%), with a mean (standard deviation) age of 56.3 (14.2) years and a median (range) of 2 (0-9) comorbidities; 23% were taking immunosuppressants, 28% biologics, and 27% other immunomodulators. For their primary vaccination course (V1 and V2), most participants (66.2%) received homologous mRNA (BNT162b2 or mRNA1273) vaccines, 1.9% received homologous ChAdOx1, and 31.9% received heterologous vaccines (24.2% ChAdOx1/mRNA, 5.6% heterologous mRNA). Seroconversion rates increased post V2 (post-V1 anti-spike 52%, anti-RBD 59%; post-V2 anti-

spike 90%; anti-RBD 92%), but remained lower than controls (V2 anti-Spike 98.1% p< 0.0001). Antibody titers waned by 3 months, but increased post-V3 (95% seroconverted) and post-V4 (96% seroconverted)(Figure). If primed with a vector vaccine, providing a mRNA vaccine as the second vaccine increased antibody titers to those comparable to homologous mRNA vaccines. Participants over age 65 years, with MS, taking biologics, or having early vaccination (< 22 days between V1 and V2) were less likely to seroconvert (postV2) in multivariate models. Most IMIDs who did not seroconvert were taking immunosuppressives (mycophenolate n=8; methotrexate n= 2, azathioprine n=2) or biologics (B cell targeting current/past n=12, anti-TNF n=4, other n= 1) n=12, anti-TNF n=4, other n= 1). Prior to Jan 2022, 1.6% reported confirmed COVID-19 by community-based polymerase chain reaction testing. Rates of new anti-NC seroconversion (COVID19 infection) were stable over time [V1 n=10/301 (1%), V2 n=10/396(2.5%), V3 n=5/282 (1.8%) V4 n=0/86 (0%)].
Conclusion: Heterologous COVID-19 vaccination improves seroconversion rates following a viral vector vaccine. Vaccines are effective in reducing COVID-19 infections (before Omicron). IMIDs need at least 3 vaccines.

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Delivery of Rheumatology Education to Internal Medicine Residents in Rwanda: Evaluation of a New Virtual Rheumatology Course

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Objectives: There exists a critical lack of rheumatology resources in many parts of the world, including sub-Saharan Africa. As a result, rheumatology education and training, by experienced trainers is limited. In an effort to improve rheumatology capacity in Africa, our organization "Rheumatology For All" (RFA), developed a rheumatology program for Internal Medicine (IM) Residents that can be delivered in person or virtually. Here we describe the evolution, implementation and acceptance of the virtual educational program in Rwanda.
Methods: We delivered a virtual rheumatology course for approximately 30 second year IM residents in the University of Rwanda, Rwanda in 2021 and 2022. Weekly lectures and tutorials were delivered (in English) over 16 weeks by rheumatology faculty from Ghana, Ethiopia, South Africa, United States, United Kingdom and Canada. In 2021, prerecorded lectures were uploaded to a central website for students to review in preparation for weekly interactive online tutorials. In 2022, both lectures and interactive tutorials were "live". Additional teaching material, including customized videos demonstrating musculoskeletal exam techniques and reading material, was uploaded to a central website. We evaluated course experiences from 25 responding Rwandan students (13 in 2021; 12 in 2022).
Results: Feedback from 2021 was incorporated into the 2022 course when feasible. Only 8/25 (32%) were able to attend all lectures (2021 vs 2022 p=NS). All students found lectures and

tutorials beneficial, especially physical examination videos. Half (52%) wanted more interaction with faculty (2021 vs 2022 p=NS). Some students reported difficulty accessing online content, though this improved in 2022 after switching to a university-based platform. Case-based discussions were considered important, and more clinical cases and student led case presentations were requested. Culturally relevant images were appreciated. At the end of the course, students' confidence level with rheumatology cases was good with a median rating of 7/10 (range 5-9). While appreciative of the online course, many students requested bedside rheumatology training to allow more face-to face discussion, and hands-on demonstration of rheumatology skills. Student comment: "… we hope this will continue for the coming years and probably not only virtually but also [face-to-face] … It would be good if we share cases … (though we don't have all investigations) …"
Conclusion: The RFA virtual rheumatology course is a feasible means to provide rheumatology education to African medical students. However, it does not replace the need for in person or bedside teaching. This program will continue to evolve in response to regional needs.

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Biological disease-modifying antirheumatic drugs and Janus Kinase inhibitors treatment survival in Rheumatoid Arthritis patients in Canadian Clinic

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Objectives: Early treatment of rheumatoid arthritis (RA) include the use of biological disease-modifying antirheumatic drugs (bDMARDs) and Janus Kinase inhibitors (JAKi) to prevent progression or reverse damages caused by RA. However, these treatments are often switched for primary or secondary loss of effectiveness or side effects. Identifying risk factors of drug discontinuation can minimize delays in treatment and prevent permanent joint damage. The objective is then to compare bDMARDs and JAKi treatment duration, and identify risk factors associated with drug discontinuation.
Methods: This is a retrospective, single center study (Mississauga, Ontario, Canada) conducted from Jan 2010-June 2022. Patients with RA, a clinic visit post Jan-01-2020, and treated with ≥1 bDMARD/JAKi in study period were included. Clinical information was collected from medical records. Patients treated with JAKi or bDMARDs for the first time are classified as bdMARD/JAKi naive. Risk factors for drug discontinuation were assessed with Cox regression analysis. After eliminating multicollinearity, clinically and statistically significant variables were included in multivariable Cox regression analysis.
Results: 560 patients and 1170 bDMARDs/JAKi were included (100 [17.86%] male, median [IQR] age: 63.76 [17.12]). Etanercept and Upadacitinib had the longest (2705 [3815] days) and shortest duration (327 [307] days) respectively. Loss in efficacy was the primary reason for discontinuation for all bDMARDs/JAKi (78.63%). Treatment durations were compared between bDMARD/JAKi naive status. Amongst bDMARD/JAKi naive treatments, IL-6 inhibitors have the longest duration (median [IQR]: 3101 [2900] days). Overall, bDMARD/JAKi naive treatments had significantly longer duration (1398 [2860] vs. 581 [1064] days, p-value: <0.001).

After stratifying for drug types, IL-6 inhibitors and TNF-alpha inhibitors continued to have significantly longer treatment durations in bDMARD naive patients (p-value <0.001). Table 1 outlines the Cox regression results. Patients on JAKi, IL-6 or T-cell inhibitors when compared to TNF-alpha inhibitors were at greater risk of drug discontinuation. Patients who were < 75 years old, or biologic naive were at a lower risk of drug discontinuation. When controlled for other risk factors, patients who were bDMARD/JAKi naive (Hazard ratio [95% CI]: 0.66 [0.55-0.80]) remained at lower risk for drug discontinuation.
Conclusion: Patients on first-time bDMARD/JAKi treatment might be protected against drug discontinuation.

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Employment Trajectory of Canadian Young Adults with Systemic Lupus Erythematosus

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Objectives: Young adulthood, 18-30 years, is a time when many individuals start working. Failing to establish employment during young adulthood could predict lifetime financial hardships. Lack or limited employment could limit access to healthcare benefits, adversely affecting treatment access and health outcomes. Aim: To determine the average employment trajectory of childhood- and adult-onset systemic lupus erythematosus patients in young adulthood (YASLE).
Methods: Patients (with ≥ 2 visits) were from two longitudinal cohorts: the Canadian national lupus cohort (via the Canadian Network for Improved Outcomes in SLE, CaNIOS) and the University of Toronto (UT) lupus cohort from Toronto Western Hospital. The CaNIOS cohort (2002-2020) included participants from multiple provinces, the UT cohort only Ontario patients (1983-2020). Participants report employment states annually. The employment states were: employed, unemployed, homemaker, student, work disabled. This was reduced to: employed, unemployed or not in labour force (NLF, student, homemaker, work disabled) for modelling. The Markov multistate model (msm) was used to model employment trajectory. Transition probabilities at 1, 6, 12 years from age 18 years were calculated.
Results: 841 participants (85.4% females): 253 (CaNIOS) and 588 (UT). Mean age (standard deviation, SD) at baseline (cohort entry) was 23.1 (SD 3.7) years. Participants' age: 38.2% (18-20 years), 19.3% (21-23 years), 21.9% (24-26 years), 20.7% (27-30 years). 403 (47.9%) were cSLE. 89.5% completed high school. Median disease duration was 3.3 (0.7-6.6, 25th-75th percentile, P) years. Median follow-up was 2.8 (0.9- 6.5, 25th-75th P) years. At baseline, 16.6% were employed, 5.6% were unemployed and 77.8% were NLF (42 work disabled, 226 homemakers, 386 students). 374/6615 (6%) visits showed state changes. 58% occurred in the NLF group, 64% of changes were from students (Table 1). YASLE patients have the highest probabilities of remaining in the same employment state as baseline (Table 2). With increasing age, there was a reduced rate of staying employed (0.69 to 0.64). Those unemployed showed low probability to become employed (0.28 to 0.38). The NLF group has static rate of transition to

employment (0.65), without expected increase with age.
Conclusion: YASLE patients showed minimal or no increase in transitions into employment from non-employed states, and no increase in employment with age as expected in the general young adult population. This could suggest a lowered labour force attachment in YASLE patients, suggesting difficulties in establishing employment during young adulthood. Future work should focus on YASLE patients' perceived barriers and facilitators for employment, to target interventions for supporting patients' employment.

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An Advanced Physiotherapist Practitioner Model of Care as a Solution to Non-Urgent Referrals in Pediatric Rheumatology: Reflections from a Retrospective Chart Review

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Objectives: An Advanced Physiotherapist Practitioner (APP) working in pediatric rheumatology can assess musculoskeletal-focused referrals of any urgency, order and interpret investigations and provide management of these cases. In 2020, an APP role was created at McMaster Children's Hospital to support the growing caseload. In this study, we describe the characteristics and outcomes of patients assessed by the APP, and assess access to care for patients referred to pediatric rheumatology.
Methods: A retrospective chart review was performed on initial patient assessments performed by the APP in pediatric rheumatology between September 2020 and December 2021. Patients were initially triaged and deemed appropriate for the APP by a pediatric rheumatologist. Patients could be of any urgency where the primary objective was ruling out musculoskeletal inflammatory disease. Extracted data included demographic characteristics, triage category, diagnosis, wait times and interventions provided.
Results: Initial triage category (urgent, semi-urgent, non-urgent) was confirmed by a pediatric rheumatologist and 118 patients were assessed by the APP. Of these, 70% were female, 61% were 10–15 years old, and 50% were referred from primary care. The most common reason for referral was joint pain (87%). Of all referral symptoms, 9/19 were physiotherapy related (ie. joint clicking, hypermobility). The APP saw 17 (14%) urgent, 76 (65%) semi-urgent, 25 (21%) non-urgent cases. Almost all cases were seen within 180 days (98%), 71 (60%) were seen within 90 days and 29 (25%) were seen within 30 days. After assessment, 25 (21%) had a confirmed rheumatic disease and 93 (79%) were considered non-rheumatic and discharged. A physiotherapy diagnosis was provided in 76 (64%) cases and physiotherapy interventions were provided in 95 (80%) cases.
Conclusion: Most patients seen by the APP did not have a rheumatic disease and were managed with minimal involvement from a pediatric rheumatologist. More than half were seen within 90 days suggesting adequate access to care. The patient journey was shortened by providing immediate physiotherapy interventions. The base knowledge of a physiotherapist was an asset in this advanced practice role considering most non-rheumatic cases had a physiotherapy-related diagnosis. Future considerations should be given to establishing an APP dedicated clinic for non-urgent referrals to decrease pediatric rheumatologist input, optimize the skills of an APP, and improve access to care for patients.

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One Sixth of Canadian Newly Diagnosed RA Patients Treated in Routine Care Reported Sub-Optimal Adherence to Early DMARD Strategies Associated with Poorer Disease Control at 12-Months Follow-Up: Results from the Canadian Early Arthritis Cohort Study

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Objectives: To describe adherence to early DMARD strategies and associations with disease activity in "real-world" patients under routine care.

Methods: We analyzed baseline, 6- and 12-month data from the Canadian Early Arthritis Cohort (CATCH) study collected between 01-2017 and 03-2022 when a measure of medication adherence was added to the study protocol. CATCH is a prospective multi-center study of early RA patients (symptoms < 1 year; 81% fulfilling RA criteria at enrolment) diagnosed and treated in rheumatology clinics across Canada. Participants underwent detailed RA clinical assessments and completed sociodemographic and patient-reported outcome measures including the well-validated 4-item Morisky, Greene, Levine Medication Assessment Questionnaire (MGL-MAQ; range 0-low to 4-high adherence) referring to adherence to medications taken in the past month. The MGL-MAQ was also used to classify reasons for non-adherence as unintentional (i.e., forgetting or carelessness with taking medication) and intentional (i.e., stop taking medication when feeling good or when medication makes one feel bad). Level of adherence (High MGL-MAQ =4 vs. low/moderate <4) and reasons for non-adherence to RA treatment at 6-months were summarized using descriptive statistics. Associations between early medication adherence with CDAI disease activity and low disease activity/remission (LDA/RED) at 12-months were estimated with multivariable linear and logistic regression, respectively, adjusted for age, sex and SES.

Results: The study included 245 early RA (ERA) patients, 168 (69%) were female, mean(sd) age was 57 (14), symptom duration was 5 (3) months and CDAI disease activity was high 27 (13). At enrolment, 54% of patients were treatment naïve, most initiated csDMARDs (91%) and were commonly treated with MTX (81%) over the first 3-months of RA treatment. Overall, 82% of ERA patients reported high adherence to their RA treatment at 6-months (Table). Amongst those reporting low/moderate adherence, 82% reported unintentional non-adherence only, 9% intentional non-adherence only and 9% both. Results of multivariable regression suggested that intentional non-adherence was associated with higher CDAI scores and lower likelihood of LDA/REM at 12-months (OR: 0.1, 95% CI: 0.01, 0.6)).

Conclusion: In this real-world patient study, approximately 1/6 of RA patients reported low/moderate adherence to their RA treatment within 6 months. Unintentional reasons for non-adherence were more frequently reported then intentional, though regression analyses suggested that intentional non-adherence may be especially associated with a lower likelihood of reaching

early treatment targets. Patient adherence, particularly intentional non-adherence should be assessed early into DMARD treatment and targeted adherence strategies may be required to optimize RA outcomes.

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A Canadian Retrospective Chart Review Evaluating Concomitant Methotrexate De-escalation Patterns in RA Patients Treated with Biologic or Targeted Synthetic DMARDs

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Objectives: Rheumatoid arthritis (RA) guidelines recommend methotrexate (MTX) as anchor therapy in combination with biologic or targeted synthetic disease-modifying antirheumatic drugs (b/tsDMARDs). However, its tolerability is challenging for a significant proportion of patients. This multi-centre, retrospective chart-based cohort study assessed the frequency of MTX withdrawal or tapering following initiation of a b/tsDMARD in Canadian adults with RA.
Methods: Patients were eligible if they received MTX for ≥3 months before initiation of a b/tsDMARD that was then prescribed continuously for ≥18 months.
Results: Data from 889 patients were included in the analysis. Mean age was 50.6 years and 72.6% were female. Mean time since diagnosis was approximately 8 years. Baseline mean (SD) MTX dose was 18.9 (6.63) mg/week, administered orally (57.4%), subcutaneously (41.3%), or intramuscularly (1.2%). Overall, 270 (30.4%) patients either tapered (123, 13.8%) or discontinued (147, 16.5%) their MTX within 2 years of initiating the b/tsDMARD. Methotrexate dose was unchanged for 582 (65.5%) subjects and increased for 37 (4.2%) subjects. The prescribed b/tsDMARD was most often a tumor necrosis factor inhibitor (TNFi,52.1%), followed by a Janus kinase inhibitor (JAKi, 18.3%), other modes of action (OMA, 29.6%). The b/tsDMARD type with the highest frequency of MTX Taper or Discontinued was IL-6i (37 patients, 34.9%) followed by TNFi (144 patients, 31.1%) and JAKi (47 patients, 28.8%). The most common reasons for MTX discontinuation were patient decision (27.2%) and adverse events (24.5%). For The most common reasons for MTX tapering were planned tapering (36.6%) and adverse events (29.3%). Insufficient clinical response (73.0%) was the most common reason provided for MTX increases. Baseline factors associated with MTX dose discontinuation and tapering by multiple logistic regression were a shorter time since diagnosis (Odds ratio [OR]: 0.981; 95% confidence interval [CI]: 0.964 – 0.999. P=0.0401), use of non-DMARD medications excluding steroids (OR: 0.683; 95%CI: 0.503 – 0.929. P=0.0150) and a greater number of comorbidities (OR: 1.054; 95%CI: 1.001 – 1.110. P=0.0444). Interpretation of the effect of MTX dose on disease activity, fatigue, pain and functional status is challenging due to missing data, but most patients transitioned to low disease activity or remission during the study period.
Conclusion: Methotrexate withdrawal or tapering occurred in 30.4% of Canadians with RA within two years following b/tsDMARD initiation. Such proportion are generally consistent with those reported in other regions of the world. There was no evidence of worsening disease activity in these patients.

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Rheumatoid Arthritis Care Gap Time Between Prescription and Start Date: A Local Practice Audit

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Objectives: To examine the time gap between prescription and start date for RA patients taking biologic agents and disease-modifying antirheumatic drugs (DMARDs) in an outpatient clinical setting.

Methods: Using electronic medical records derived from a single center (Ontario), patients diagnosed with RA, had been prescribed ≥1 drug of interest, and had a clinic visit post Jan-01-2020 were included. Using medical charts, prescription and start dates were collected. Median, mean and range were calculated. The care gap is defined by the difference in days between prescription and start date of the drug. The drugs of interest include: JAK-1 inhibitors, anti-CD2 monoclonal antibodies, Interleukin-6 inhibitors, TNF-alpha inhibitors, T-cell agents, and DMARDs.

Results: A total of 560 patients (100 [17.86%] male, median [IQR] age: 63.76 [17.12]) across 16 different drugs were assessed. Care gaps are listed below in order of shortest to longest duration between prescription and start date.

Drug	n	Median	Mean	Range
Leflunomide	76	0	3.7	0, 97
Sulfasalazine	40	0	5.8	0, 73
Methotrexate	101	0	9.7	0, 73
Hydroxychloroquine	35	0	11.2	0, 188
Etanercept	79	8.0	92.7	0, 315
Upadacitinib	48	15.0	13.5	0, 155
Adalimumab	74	22.0	38.9	0, 183
Baricitinib	11	27.0	44.9	0, 231
Tofacitinib	94	34.0	83.3	0, 615
Abatacept	112	38.0	70.6	0, 292
Golimumab	123	40.0	79.9	1, 281
Tocilizumab	114	48.0	51.5	0, 160
Infliximab	42	51.5	17.5	0, 358
Certolizumab	68	60.0	106.4	0, 303
Rituximab	60	60.0	122.5	0, 798
Sarilumab	10	64.5	179.8	14, 161

Conclusion: Significant delays between prescription and start date exist. The sample size is small however, contributing to the large ranges. Drugs come in different methods of delivery, with oral medications tending to have a shorter gap in comparison to injectable (IV and subcutaneous) forms which require more time to be approved. Possible reasons for delay could include waiting for insurance approvals, financial issues, or non-adherent patients. The causes for this care gap should be further investigated in order to reduce delays in practice.

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Polypharmacy in Systemic Autoimmune Rheumatic Diseases

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Objectives: To determine the prevalence and characteristics of polypharmacy in patients with rheumatoid arthritis (RA), systemic lupus erythematosus (SLE), inflammatory myositis (IM) and systemic sclerosis (SS). To evaluate whether polypharmacy is associated with the level of disease control in patients with RA and SLE.

Methods: This is a retrospective observational study of data collected prospectively for participants enrolled in the Systemic Autoimmune Rheumatic Disease (SARD) biobank and database of the CHU de Québec – Université Laval. Eligible participants had to be newly diagnosed with RA, SLE, IM or SS and still be enrolled in the biobank after 24 months. Data was analyzed at baseline and at the one-year and two-year visits. Data collected included the number and type of medications, the Charlson Comorbidity Index, and the medication adherence (using the proportion of days covered for each medication during the first six months of follow-up). Polypharmacy was defined as having 5 medications or more concurrently. Logistic and linear regressions models were used to determine the impact of polypharmacy on disease control for participants with RA (DAS28CRP and CDAI scores) and SLE (SLEDAI-2K and SLAQ scores).

Results: The study included 120 participants (81 with RA, 30 with SLE, 5 with IM, and 4 with SS). The number of medications increased during follow-up in the four groups and was the lowest in the RA group. The prevalence of polypharmacy from baseline to two years increased in each group respectively for: 1) RA from 23.46% at baseline (mean (SD) = 2.1 (3.6) medications) to 51.85% at two years (5.3 (3.8)); 2) SLE from 23.33% (2.9 (5.2)) to 46.67% (6.8 (5.2)); 3) IM from 20% (2.6 (4.0)) to 100% (8.0 (3.7)); and 4) SS group from 50% (4.8 (5.5)) to 100% (9.3 (4.4)). Data on medication adherence are presented in table 1. For participants with RA, the odds of achieving a poor outcome defined as a moderate response or no response based on the DAS28CRP score at two years were higher in the polypharmacy group [odds ratio 3.72 (95% CI 0.92, 14.99)]. For SLE, a stable response or a deterioration based on the SLEDAI-2K score was not significantly influenced by polypharmacy [1.5 (0.344, 6.532)].

Conclusion: Polypharmacy is very prevalent amongst patients with SARD and could be associated with the level of disease control in patients with RA and SLE.

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Comparison of the Systemic Lupus International Collaborating Clinics Frailty Index (SLICC-FI) and the FRAIL Scale for Identifying Frailty Among Individuals Living With Systemic Lupus Erythematosus

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Objectives: Multiple definitions for frailty exist, and how best to measure frailty in systemic lupus erythematosus (SLE) remains unclear. We aimed to assess the agreement between two frailty measures, the SLICC Frailty Index (SLICC-FI) and the FRAIL scale, for identifying frailty among SLE patients. We also evaluated differences in clinical characteristics between frail and non-frail SLE patients according to each frailty definition.
Methods: This was a cross-sectional study of consecutive adult SLE patients assessed in the Lupus Clinic at a single academic medical centre from December 2020-November 2021. All participants met the 1997 revised ACR classification criteria for SLE. At a single visit, participants were assessed for disease activity, organ damage [SLICC/ACR Damage Index (SDI)], comorbidities, and health-related quality of life [Short-Form 36 (SF-36)]. Using data for 48 health deficits, a SLICC-FI score was calculated for each patient. SLICC-FI scores >0.21 defined frailty. The 5-item FRAIL scale was administered at the same visit. Patients with ≥3/5 items were classified as frail. Agreement between the SLICC-FI and the FRAIL scale was evaluated using Spearman rank correlation coefficients (rs) and kappa statistics (κ). As the SLICC-FI is a continuous variable, receiver operating characteristic (ROC) curve analysis was also performed to determine the optimal threshold SLICC-FI value based on agreement with frailty status as determined by the FRAIL scale.
Results: The 181 SLE patients were mostly female (90.1%) with mean (SD) age 54.6 (14.3) years. Mean (SD) baseline SLICC-FI score was 0.17 (0.08), with 57 patients (31.5%) classified as frail. Based on the FRAIL scale, 31 patients (17.1%) were classified as frail. There was moderate correlation between the FRAIL scale and the SLICC-FI for identifying frailty ($rs=0.639$; $p<0.0001$). Agreement occurred in 84.5% of cases ($\kappa=0.591$; $p<0.0001$). The ROC curve analysis yielded an AUC of 0.936, indicating excellent discriminative ability. Based on agreement with the FRAIL scale, the existing SLICC-FI cut-off value of >0.21 was the optimal threshold for identifying frailty (Sensitivity 96.8%, Specificity 82%). For both frailty definitions, there were significant differences between frail and non-frail SLE patients in terms of age, education, employment status, SDI scores, SF-36 physical component summary scores, CRP levels, and ESR values. [Table 1]
Conclusion: There is moderate agreement between the SLICC-FI and the FRAIL scale for identifying frailty among SLE patients. Each frailty metric has distinct advantages in different settings. The FRAIL scale may be useful as a point-of-care tool, while the SLICC-FI is more easily applied in existing SLE datasets.

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"Systemic lupus erythematosus Women with lupus nephritis In pregnancy Therapeutic CHallenge (SWITCH)": The Systemic Lupus International Collaborating Clinics experience

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Objectives: One-third of women with SLE develop lupus nephritis (LN), and most receive mycophenolate mofetil (MMF). However, MMF is teratogenic, and needs to be switched to a pregnancy-compatible drug preconception. Guidelines recommend azathioprine (AZA) in SLE pregnancy without providing guidance on pharmacogenetic testing [for thiopurine methyltransferase (TMPT) and nudix hydrolase 15 (NUDT15) genes] and therapeutic monitoring. Recent evidence suggests that 6-mercaptopurine (6-MP) metabolite monitoring in SLE women during preconception and/or gestation might provide opportunities to personalize therapy (e.g. identification of "shunting", non-adherence). We evaluated practice patterns pertaining to SLE women with LN in the preconception and gestational periods, focusing on pharmacogenetic testing and drug monitoring.
Methods: In 02/2022, we distributed an electronic survey to 39 Systemic Lupus International Collaborating Clinics (SLICC) members affiliated with SLE referral centres. Physicians were queried about number of LN patients seen for pregnancy planning in the preceding year, the wait time they recommend prior to conception after renal response, choice of pregnancy-compatible immunosuppressive when switching from MMF, pharmacogenetic testing prior to AZA initiation, and therapeutic monitoring.
Results: We received 29 responses (rate 74%) from SLICC members in North America (52%), Europe (34%), Asia/Oceania (10%), and South America (3%). Mean number of LN patients seen in the prior 12 months for preconception counselling was 7.2 (standard deviation 6.6). Most (93%) recommended waiting for a minimal time after achieving renal response on MMF prior to transitioning to a pregnancy-compatible immunosuppressive (19% suggested ≤6 months, 44% 6-11 months, and 30% 12-23 months). In patients with inactive LN for ≥2 years, most (86%) systematically switched MMF to a pregnancy-compatible drug preconception, while 14% discontinued MMF without substituting another drug. When transitioning MMF to a pregnancy-compatible drug, the first choice was AZA (90%). When AZA could not be used, tacrolimus (TAC) was preferred over cyclosporine, CsA, by 96%. When initiating AZA, 38% never assessed TPMT genotype and/or phenotype and 97% never tested for NUDT15 gene. When switching MMF to AZA prior to conception, only 14% measured 6-MP levels. Fifty-six percent faced barriers to 6-MP testing related to access, cost, and wait times. When caring for pregnant patients on TAC or CsA, 48% performed drug monitoring each trimester, while 44% never did.
Conclusion: Our findings showed low use of pharmacogenetic testing and therapeutic monitoring among physicians caring for SLE patients. Interestingly, the optimal waiting period

prior to conception after LN lacks consensus. We identified potential care gaps, which could be addressed by future pragmatic trials.

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Risk for Hospitalization, Intensive Care Unit Admission, and Mortality Among COVID-19 Patients Receiving Immunosuppressive Medications: A Population-Based SCOUT (underStanding COvid-19 in immUnosuppressed paTients) Study

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Objectives: Immunosuppressive or immunomodulatory agents (IIAs), like conventional disease-modifying antirheumatic drugs (DMARDs), anti-tumor necrosis factor (TNF) biologics, non-anti-TNF biologics, and glucocorticoids, are prescribed to patients with autoimmune rheumatic diseases, transplantations, or cancer. Patients taking IIAs were thought to be at greater risk for severe COVID-19-related health outcomes (hospitalization, intensive care unit (ICU) admission, and mortality). Objective: assess the risk for these outcomes in patients prescribed IIAs.

Methods: We conducted a retrospective cohort analysis using administrative health data from British Columbia (BC), Canada. Cohort eligibility: all BC adults testing positive on SARS-CoV-2 PCR tests from the provincial public-health agency, between February 6, 2020 to August 15, 2021. IIA use within the last 3 months was defined as “current use”. IIA exposure was divided into medication classes: 1) antimalarials; 2) methotrexate; 3) leflunomide; 4) immunosuppressants (azathioprine, mycophenolate mofetil (MMF), cyclosporine, cyclophosphamide); 5) anti-TNF biologics (adalimumab, certolizumab, etanercept, golimumab, infliximab); 6) non-anti-TNF biologics (abatacept, anakinra, secukinumab, tocilizumab); 7) rituximab; 8) glucocorticoids. Certain IIAs were assessed individually due to distinct mechanisms of action. Hospitalization and ICU admission data were obtained from hospital discharge abstracts. Vital statistics provided data on mortalities within 60 days of a positive SARS-CoV-2 test. We used overlap-weighted logistic regression models. Variables included age, socioeconomic status, Romano modification of the Charlson comorbidity index, hypertension, rurality, and number of previous SARS-CoV-2 tests.

Results: 147,301 adults tested COVID-19-positive. We included patients prescribed antimalarials (n=307, mean age 57.4, 27.4% male), methotrexate (n=373, mean age 55.2, 40.4% male), leflunomide (n=60, mean age 60.3, 36.5% male), immunosuppressants (n=409, mean age 54.3, 48.1% male), anti-TNF biologics (n=282, mean age 45.0, 15.9% male), non-anti-TNF biologics (n=110, mean age 50.3, 42.0% male), rituximab (n=43, mean age 57.1, 33.6% male),

and glucocorticoids (n=1237, mean age 58.5 years, 49.2% male, median cumulative dose 250mg), each with an equal number of comparators. Hospitalization and ICU admission risk increased in patients using immunosuppressants (any of azathioprine, MMF, cyclosporine, cyclophosphamide), MMF, or glucocorticoids, versus non-users. [Table 1] Risk for ICU admission or 60-day mortality, combined, also increased for these groups versus non-users. 60-day mortality risk, versus non-users, only increased in glucocorticoid users.
Conclusion: Real-world data from BC shows significant greater risk for severe COVID-19 outcomes in people exposed to immunosuppressants and glucocorticoids, unlike people exposed to other IIAs, like biologics. As COVID-19 precautions phase out, these findings inform patients, clinicians, and policymakers of personal risk levels, need for personal precautions, prescription alterations, or epidemiological programs like booster vaccinations.

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Trajectories of Depression in Adults with RA over the First 2 Years of the COVID-19 Pandemic: Results from the Canadian Early Arthritis Cohort (CATCH)

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Objectives: Growing evidence points to considerable mental health impacts of the prolonged COVID-19 pandemic though data from longitudinal studies in rheumatic diseases are sparse. We explored distinct trajectories of depressive symptoms in the year prior to and throughout the first 2-years of the COVID-19 pandemic in adults with RA.
Methods: The Canadian Early Arthritis Cohort (CATCH) is a prospective multi-center inception cohort of adults with RA who receive care from rheumatologists across Canada. Prior to the pandemic, participants completed patient-reported assessments of symptoms and function (i.e., PROMIS-29 and patient global) and rheumatologists conducted examinations during in-person study visits. After March 2020, ongoing collection of key outcomes continued at in-person and remote visits. We used group-based trajectory modeling to identify latent groups of participants with depression (PROMIS 4a depression score ≥55) in participants with ≥1 visits in the year prior to the pandemic (3/19-2/20) and ≥1 visits during pandemic (3/20-1/22) and identified pre-pandemic individual and clinical characteristics and PROs associated with each trajectory.
Results: The sample included 989 participants with a mean (SD) age of 60 (14) and disease duration of 6 (4) years. 73% were women, 84% white, 60% had some post-secondary education, and 77% were in CDAI REM/LDA at visit closest to the start of pandemic. The best model included 4 groups (posterior probabilities ≥0.80 for each group): 1) Resilient (none-minimal depression throughout: N=594; 60%); Worsening (none/minimal to mild: N=222;22%); Improving (mild-resilient: N=80;8%); and Persistent (moderate-severe throughout: N=93; 9%) (see figure). As compared with the Resilient group, those with Worsening Depression were significantly (p's<.02) more likely to be female, obese, have a higher pre-pandemic CDAI, MD

and patient global, and report worse pain, disability, anxiety, depression, fatigue, sleep, and participation.
Conclusion: Although 60% of CATCH RA patients had consistently good mental health during the first 2 years of the pandemic, >1 in 5 reported deteriorating mood suggesting a cumulative impact over time; 9% had persistent depression and 8% improving mood. The proportion of CATCH participants with at least mild symptoms of depression was more than double that reported for the Canadian population. As compared with those with good mental health throughout, participants with worsening depressive symptoms were more likely to be female, obese, have higher pre-pandemic disease activity, symptoms, disability, and higher impairments in participation. Given the impact of depression on QoL, inflammation, and disease management, vulnerable groups may benefit from more frequent evaluation and additional support from rheumatology providers.

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A National Vasculitis Patient Survey on Perspectives of Social Determinants of Health as Barriers to Accessing Care

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Objectives: To determine the level of unmet social needs in patients with vasculitis and the impact of those needs on their access to care.
Methods: Participants were recruited from the Vasculitis Foundation Canada and asked to participate in a primarily quantitative survey about individuals' social needs and potential barriers in accessing care. A 20-question social needs assessment was developed and included in the survey to ask about social determinants of health (SDOH) including, housing, food security, environmental factors, and social/emotional wellbeing. Data was collected using REDCap and descriptive analysis was performed.
Results: Preliminary data was collected from 52 respondents (mean age of 56, 83% were female, 92% were White (European Descent), 54% reside in urban areas). According to the social needs assessment, 56% of participants had at least one unmet need. Social and emotional health (31%), food security (22%), health literacy (19%) and financial security (17%) were noted as common unmet needs. When asked if any of these unmet social needs were barriers in accessing care for their vasculitis, 31% of all participants noted social and emotional wellbeing as a barrier. As shown in Figure 1, financial insecurity (30%), poor health knowledge (28%), lack of transportation (19%) and discrimination or unfair treatment in the healthcare setting (16%) were also noted as barriers. Discrimination was noted as a major barrier to accessing care by 50% of participants who reported having faced discrimination. Of the participants who lacked transportation, 75% reported the need to travel for appointments as a barrier to accessing care. When asked what changes participants would like to see to improve access to care, 52% felt rheumatology clinics should offer virtual visits for follow-up appointments, 52% would like access to patient support groups, and 48% voted for increased access to educational materials on vasculitis. 92% of participants also suggested that rheumatologists should be involved in the management of social needs whether by screening for/counseling on SDOH or giving referrals to other resources. However, only 63% noted ever discussing social determinants of health with their rheumatologist.

Conclusion: There has been growing evidence showing that SDOH impact health outcomes, however few studies have evaluated their role in access to care. Participants in this study noted that several SDOH represent barriers to accessing the care they require. The data presented here speaks to the need for increased awareness of and innovative solutions to unmet social needs by health care professionals at all levels of care.

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Patient Appropriateness for Total Knee Arthroplasty and Predicted Probability of a Good Outcome

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Objectives: Total knee arthroplasty (TKA) is considered an effective treatment for knee osteoarthritis (OA), but 15-30% of recipients report little symptom improvement or dissatisfaction with results, questioning their surgical appropriateness. In prior research, we interviewed people with OA and orthopaedic surgeons and identified four appropriateness domains as important: demonstrable TKA need, health status, psychological readiness/willingness for, and realistic expectations of, TKA. The current study asked: Do pre-operative measures of these domains predict patient's likelihood of achieving a good post-operative TKA outcome?

Methods: In knee OA patients undergoing primary TKA, we assessed TKA appropriateness domains: TKA need (WOMAC pain, KOOS PS-SF), readiness/willingness (PASS knee symptoms, PHQ-8 depression, willingness to consider TKA), health status (BMI, comorbidities, smoking), and TKA expectations (HSS TKA Expectations scale) and contextual factors (age, sex, social support, prior joint replacement) pre-operatively. A good outcome was defined as symptom improvement (OARSI-OMERACT responder criteria) AND satisfaction (very/somewhat) with results 1-year post-TKA. Log Poisson Regression was used to identify independent predictors of a good TKA outcome based on adjusted risk ratios. Logistic regression was used to assess model discrimination (optimism corrected area under the ROC curve, AUC). Final model predictors for each of TKA need, readiness/willingness and expectations, separately, were categorized into three levels of TKA appropriateness (low, moderate, high) and predicted probabilities were calculated for worst- and best-case scenarios.

Results: Of 1,053 TKA recipients (mean age 66.9 years [SD 8.8]; 58.6% female), 78.1% (95% CI 75.4-80.5%) achieved a good outcome. In multivariable Poisson regression, the probability of a good TKA outcome was higher with greater TKA need (adjusted RR per 10-unit increase: WOMAC pain 1.03, 95% CI 1.01-1.05, KOOS-PS 1.06, 95% CI 1.03-1.08), greater TKA readiness/willingness (adjusted RR: unacceptable knee symptoms 1.14, 95% CI 1.03-1.27; definitely willing 1.20, 95% CI 1.05-1.37; PHQ-8 per 10-unit increase 0.94, 95% CI 0.89-0.99), and for those who considered improved ability to go upstairs or perform recreational activities 'very important' (adjusted RR 1.15, 1.02-1.30 and 1.10, 1.01-1.20, respectively). The model that included TKA need, readiness/willingness and expectations had good discrimination (optimism

corrected AUC 0.70). The predicted probability of a good outcome ranged from 39.1% (95% CI 29.3-49.8%) to 93.4% (95% CI 90.1-95.6%) for those deemed least and most appropriate, respectively. [Figure 1]
Conclusion: While external validation is required, we encourage physicians to consider patients' readiness, willingness, and expectations for surgery in TKA decision-making as doing so may improve the proportion of TKA recipients who experience a good surgical outcome.

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Underdiagnosis and Undertreatment of Knee Osteoarthritis in Persons with Type 2 Diabetes: A Cross-sectional Study

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Objectives: Knee osteoarthritis (OA) commonly co-occurs in people with type 2 diabetes, and been associated with increased risk for diabetes complications. The extent to which OA is diagnosed and managed in individuals with type 2 diabetes, however, is unclear. We sought to assess: 1) the prevalence of symptomatic knee OA in persons with type 2 diabetes, including the proportion who had received a physician diagnosis; and 2) the extent to which OA therapies had been used.
Methods: This was a descriptive cross-sectional study of individuals with type 2 diabetes ≥45 years old recruited from endocrinology clinics at three academic hospitals in Toronto, Canada. Participants completed standardized online questionnaires. We defined knee OA as fulfilling NICE UK criteria: activity-exacerbated knee pain, morning joint stiffness ≤30 min, and no history of inflammatory rheumatic disease. Participants were asked to indicate if they had consulted a health professional, received a diagnosis, and any treatments used (yes/no, from list) for their joint symptoms. We calculated the prevalence of chronic lower extremity joint symptoms and symptomatic knee OA. Of those with symptomatic knee OA, we calculated the proportion who had sought care from a health professional, received a diagnosis, and had used OA therapies.
Results: Our study included 166 participants: mean age 66.9 (SD 9.4) years, 48.2% women, 83.1% had a post-secondary education, and mean BMI 29.4 (SD 6.7) kg/m2. Of 44 (26.5%) who fulfilled NICE criteria for knee OA, 29 (65.9%) had discussed their joint symptoms with a health professional (family physician most frequent) and 20 (45.5%) reported receiving any diagnosis for their joint symptoms. In those with knee OA, reported use of therapies was as follows, n (%): acetaminophen 30 (68.2), oral NSAIDs 20 (45.5); topical NSAIDs 26 (59.1); opioids 3 (6.8); joint injections 6 (13.6); physical therapy assessment 19 (43.2); physical activity and/or exercise program 15 (34.1); weight management 12 (27.3); brace 3 (0.7); gait aid 7 (15.9); and mind body activities 4 (9.1).
Conclusion: In this cross-sectional study of persons with type 2 diabetes, we confirmed a high prevalence of chronic musculoskeletal symptoms, with 43.4% reporting chronic knee symptoms and one in four fulfilling NICE criteria for knee OA. However, less than half meeting criteria for knee OA had received a diagnosis, and recommended OA treatments were underused. Further

research should assess the impact of strategies to increase recognition of and diagnosis of knee OA, and improve implementation of OA care, on diabetes outcomes.

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Association Between Knee Osteoarthritis and Health-Related Quality of Life in Persons with Type 2 Diabetes

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Objectives: Knee osteoarthritis (OA) and type 2 diabetes commonly co-occur and both negatively impact health-related quality of life (HRQoL). However, the extent to which knee OA symptoms further impact the HRQoL of individuals with type 2 diabetes is unknown. Our objective was to assess the relationship between symptomatic knee OA (yes/no) and HRQoL in persons with type 2 diabetes and, if a relationship was found, to determine if it is due to depressed mood, sleep disturbance, fatigue, and/or walking limitation, which we hypothesized could be explanatory factors.

Methods: This was a cross-sectional study of individuals with type 2 diabetes ≥45 years old recruited from endocrinology clinics at three academic hospitals in Toronto, Canada. Participants completed standardized online questionnaires that assessed sociodemographic factors, comorbidities to calculate the functional comorbidity index (FCI), depressed mood (PROMIS Depression 8b), sleep disturbance (PROMIS Sleep Disturbance 4a), fatigue (PROMIS Fatigue 4a), walking limitation (health assessment questionnaire walking difficulty item), HRQoL (EQ-VAS), and joint symptoms. Knee OA was defined as fulfilling NICE UK clinical criteria (activity-exacerbated knee pain, morning joint stiffness ≤ 30 minutes, no history of inflammatory rheumatic disease). We used linear regression to assess the association between knee OA (yes/no) and HRQoL, adjusting for potential confounders (age, gender, education level, BMI, and FCI). We then examined the effect of further adjustment for depressed mood, sleep disturbance, fatigue and walking limitation on the knee OA estimate of effect.

Results: Our study included 166 participants. Mean age was 66.9 (SD 9.4) years, 48.2% women, 83.1% had a post-secondary education, mean BMI 29.4 (SD 6.7) kg/m2, and 44 (26.5%) fulfilled NICE criteria for knee OA. Mean HRQoL was 62.3/100 (higher = better) (SD 20.5). Individuals with knee OA had worse HRQoL, sleep, fatigue, depressed mood, and walking limitation ($p<0.01$ for all) compared to those without. After adjustment, the presence of comorbid symptomatic knee OA was associated with worse perceived HRQoL (ß -7.33, 95%CI -14.67 – 0.004). Sleep, fatigue and depressed mood were moderately correlated (Spearman r=0.42 to r=0.64). Adding any of these variables, or walking limitation, into the model fully attenuated the association between knee OA and HRQoL.

Conclusion: Symptomatic knee OA has important adverse effects the HRQoL of persons living with type 2 diabetes. Our results suggest that this may be due to any of OA's downstream effects. Efforts to address quality of life in individuals with type 2 diabetes must include increased attention to diagnosis and treatment of OA.

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Pentosan-induce Thrombocytopenia and Thrombosis in a Patient with Osteoarthritis, a Case Report

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Pentosan polysulfate (PPS) is a semisynthetic heparinoid used most commonly for chronic interstitial cystitis, and like heparin, it can induce thrombocytopenia and thrombosis. In recent years, it has been used by some clinicians for the management of osteoarthritis (OA).

A previously healthy 48-year-old patient presented to hospital with chest pain and thrombocytopenia 6 days after starting intramuscular Pentosan polysulfate (PPS) for knee osteoarthritis. On imaging, he had extensive coronary, carotid, and descending aortic thrombosis, requiring urgent percutaneous coronary intervention and monitoring in a high acuity unit. A coagulopathy work-up was negative, and platelet count continued to decrease during initial treatment with IV unfractionated heparin; thus, it was suspected he had PPS-induced thrombocytopenia and thrombosis (PITT). Pathophysiologically, PITT is similar to that of heparin-induced thrombocytopenia (HIT). We applied a standard risk stratification tool and confirmed the diagnosis with HIT-antibodies and serotonin release assays. All heparin products were stopped, and the patient was anticoagulated with argatroban. There was no thrombosis progression on follow-up imaging.

OA is a prevalent chronic disease that affects the quality of life of approximately 3.9 million Canadians. Here we report a rare life-threatening case of thrombocytopenia and arterial thrombosis in a patient using PPS for OA. As the search for an effective OA drug continues, clinicians may encounter adverse events caused by off-label use of uncommonly seen medication. Early diagnosis of a drug-related adverse event requires a high index of suspicion, and a close review of unfamiliar medication is essential. This case may provide valuable insights for Rheumatologists who may encounter patients treated with PPS.

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Vascular Injury Derived Exosomes Stimulate Lymphocyte Infiltration in the Kidney of Lupus Prone Mice.

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Objectives: Lupus nephritis (LN) is a severe manifestation of systemic lupus erythematosus (SLE), affecting 50% of SLE patients and progressing to end-stage renal disease (ESRD) in 30% of cases [1]. Microvascular damage is an emerging contributing factor to LN renal dysfunction leading to ESRD [2]. We have demonstrated that apoptotic exosomes derived from vascular injury (ApoExo) trigger the production of SLE-associated antibodies and LG3-targeted autoantibodies (anti-LG3). ApoExo infusion induces anti-LG3 production in wild-type mice and

tertiary lymphoid structure (TLS) formation in a murine vascular allograft model [3]. The presence of the active 20S proteasome is a distinctive feature of these EVs. When proteasome activity is blocked with bortezomib, approved for medical use proteasome inhibitor, there is a significant reduction in anti-LG3 levels, TLS formation and vascular rejection [3]. We described anti-LG3 autoantibodies in humans and demonstrated that anti-LG3 triggers microvascular rarefaction and renal fibrosis in a mouse model of spontaneous SLE. We hypothesize that apoptotic exosomes derived from vascular injury induce an autoimmune response that accelerates the development of lupus nephritis.
Methods: 20 weeks old NZB/WF1 mice (SLE model) were infused with apoptotic exosomes (ApoExo) or vehicle every second day for 3 weeks. Every 2 weeks, blood samples were collected to quantify circulating anti-LG3 levels by ELISA and ApoExo levels by hs-FCM. At sacrifice, kidneys were collected for renal histology. Renal interstitial damage and leukocyte infiltration were assessed with H&E, CD3, CD20, AID and IL17 immunohistochemistry staining.
Results: NZB/WF1 mice infused with ApoExo show higher levels of anti-LG3 compared with the vehicle group. ApoExo infused NZB/WF1 mice demonstrate significant inflammatory infiltration compared to mice infused with vehicle. Immunohistochemistry analysis shows that ApoExo infusion triggers the recruitment to the renal interstitium of CD3+ and CD20+ lymphocytes (T and B cells respectively) into nodules reminiscent of TLS. Finally, heightened renal interstitial damage and decreased survival was observed in ApoExo infused NZB/WF1 mice compared to the one infused with vehicle.
Conclusion: This project is, to our knowledge, the first to evaluate the contribution of vascular injury derived extracellular vesicles to LN. ApoExo infusion increases renal nodular lymphocyte infiltration, autoantibody production increase renal damage in lupus prone mice. A better understanding of the impact of vascular injury derived immune mechanisms will improve the identification, prediction and management of LN. [1.] Rijnink EC. Clin J Am Soc Nephrol 2017;12:734-43. [2.] Anutrakulchai S. BMC Nephrol 2016;17:169. [3.] Dieude M. Am J Transplant 2020;20:726-38.

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Expanding diagnostics in antiphospholipid syndrome: A case report of young woman with possible non-criteria antibody-mediated antiphospholipid syndrome

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Objectives:
To describe a case of a patient with recurrent pregnancy losses suspected to have antiphospholipid syndrome mediated by non-criteria antibodies

Antiphospholipid syndrome (APS) is a pro-thrombotic autoimmune disorder characterized by recurrent thrombotic or obstetric complications. Diagnostic criteria include history of thrombosis or obstetric complications with positive antiphospholipid antibodies on two occasions measured 12 weeks apart(1).

We report the case of a 29 year old female G11T1P1A10L1 with a history of several

miscarriages and intrauterine fetal demise. She was referred to our service after 10th pregnancy at which time testing for antiphospholipid antibodies revealed a low-titre anti-cardiolipin IgM of 13.8 MPL which was below the standard reference cut-off considered positive by Sapporo Criteria(2). However, anti-cardiolipin IgG, lupus anticoagulant and anti-β2 glycoprotein-I were negative. Her dsDNA was found to be positive at 14 IU/mL with otherwise negative anti-nuclear antibodies and no other clinical symptoms of systemic lupus erythematosus (SLE) or an alternative connective tissue disease. Pathology analysis of prior products of conception revealed no anatomical or chromosomal abnormalities to explain the recurrent obstetric losses. The patient had a normal karyotype and negative screening bloodwork for Factor V Leiden and metabolic disease. After her 10th pregnancy she was started on hydroxychloroquine and aspirin daily. Two months later she became pregnant at which time daily low molecular weight heparin injections were started. Unfortunately, she experienced another miscarriage at approximately 14 weeks gestation. Pathology revealed no fetal or placental abnormalities. Given ongoing desire for pregnancy, monthly IVIG was initiated.

We suspect our patient may be an example of seronegative APS (SN-APS) possibly mediated by "non-criteria" antiphospholipid antibodies given that no other medical cause was identified for her obstetric history. SN-APS is an emerging diagnosis proposed in the case for patients with clinical history supportive of APS but negative serology(1). Analysis of such antibodies in this patient would provide more substantial support for anticoagulation in pregnancy as indicated for cases of definite APS and would thus impact clinical care. This case illustrates the challenge in providing guideline-directed therapy to patients with history but not laboratory features of APS and the need for expanded diagnostics in APS.

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Age and Severity of Lupus Nephritis, but not Ethnicity, Associated with Renal Biopsy in Patients with Systemic Lupus Erythematosus

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Objectives: We have previously demonstrated more frequent lupus nephritis (LN) and worse renal outcomes in non-white ethnic groups. In this analysis, we examined whether there were ethnic differences in frequency of SLE patients undergoing renal biopsy, or in the International Society of Nephrology/Renal Pathology Society (ISN/RSP) biopsy class.

Methods: In this single centre retrospective cohort study, demographic data and clinical variables for all SLE patients seen since 2002 were extracted from their medical records and an SLE research database. Renal biopsy data was acquired from medical records and a Renal Biopsy Registry Database, which includes all local renal biopsies since 2002. Ethnicity was by self-report. Chi square, t-tests, and one-way ANOVA were used for univariate comparisons.

Results: 543 patients were included in this analysis: 87% were female, 48% White, 31% Indigenous, 18% Asian, and 4% Other. Renal involvement (meeting 1997 revised ACR criteria)

was seen in 229 patients (42%) and was more common in all non-white ethnic groups (p <0.001): White 26%, Asian 64%, Indigenous 55%, and Other 45%. Patients with LN were younger at disease onset (LN=32±15yrs, no LN=41±16yrs; p=<0.001). Among LN patients, White patients were older at SLE onset (p<0.001): White=39±14yrs, Asian=29±14yrs, Indigenous=29±13yrs, and Other=36 ±21yrs. Among patients with renal involvement, 126 (47%) had a renal biopsy. Those who had a biopsy were younger at SLE onset: biopsy=29±14yrs, no biopsy=35±14yrs (p=0.001). There were no differences between ethnic groups in proportion of patients undergoing biopsy (p= 0.413): White 49% (n =33), Asian 63% (n=39), Indigenous 56% (n=50), and Other 44% (n=4). There was no difference in ISN/RSP biopsy class between ethnic groups (p= 0.9): % with Class IV/V: White 73% (n =24), Asian 80% (n=31), Indigenous 72% (n=36), and Other 100% (n=4). Although in most cases no reason was identifiable, the most common reason found for not having a renal biopsy was clinically mild LN..

Conclusion: A greater proportion of Indigenous and Asian SLE patients had LN compared to White patients. Patients with LN were overall younger than those without LN. Most patients undergoing renal biopsy had ISN/RSP LN class IV or V. In patients with LN, we did not see ethnic differences in the proportion undergoing a renal biopsy, or in biopsy results (LN class). Future studies should examine overall patterns of care and treatment, care gaps including adherence and loss to follow-up, and the impact of socioeconomic factors and distance from care on LN outcomes.

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Going Beyond Pain: Virtual Meetings and Survey to Expand the JIA Option Map with Other Symptoms and Functional Activities

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Objectives: In addition to commonly experiencing pain, young people with juvenile idiopathic arthritis (JIA) often experience swelling, stiffness, fatigue and psychological symptoms. These symptoms negatively impact a wide range of functional activities, yet young people with JIA and their families often require more information and decision support on a variety of ways to manage these symptoms and help them participate fully in functional activities. As such, the

current study aimed to expand the JIA Option Map, a web-based patient decision aid for JIA pain management, to include other relevant symptoms and functional activities. We sought to identify which symptoms and which aspects of daily function should be added to the JIA Option Map.
Methods: Our team is comprised of 35 members, including patient partners, health care providers (HCPs) and researchers, with expertise in JIA, shared decision making and research methods. HCPs include a wide range of professionals: pediatric rheumatologists, nurses, occupational therapists, physical therapists, psychologists, social workers and dietitians. First, we held a series of seven virtual research team meetings to identify and discuss the various symptoms and functional activities that were relevant to young people with JIA. Subsequently, we developed and distributed an online survey to members of our research group to agree on which elements to add to the JIA Option Map.
Results: A total of 17 individuals completed the survey, including four patient partners, 11 HCPs from four different professions and seven researchers. A total of 14 respondents felt that symptoms beyond pain, and ways to manage these additional symptoms, should be added to the app. Respondents rated fatigue, stress, anxiety, joint stiffness, poor sleep, feeling down and swelling as the most relevant to add to the app. A total of 13 respondents felt that functional activities should be added, as well as tips to help young people participate in daily activities. Respondents rated all categories of functional activities as relevant, with school and leisure being rated the highest, followed by activities of daily living and work activities.
Conclusion: Our team of patient partners, healthcare professionals and researchers identified physical and psychological symptoms, as well as a range of functional activities that should be added to the JIA Option Map. Next steps will include consensus on how to integrate this information into the app to help young people with JIA manage symptoms and function in their daily life. **Supported by a CIORA grant**

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Clinical Features of Patients with Connective Tissue Disease Related Interstitial Lung Disease

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Objectives: Objectives: Interstitial lung disease (ILD) is a well described complication of connective tissue diseases (CTD). We describe a Canadian cohort of patients with CTD-ILD with an emphasis on clinical, serologic, and imaging characteristics.
Methods: Methods: We conducted a retrospective cross-sectional study of all patients seen at the ILD clinic of a tertiary care centre since its inception in January 2013 to April 2022. Patients were included if they had a diagnosis of ILD as per current International Guidelines and clinical diagnosis of CTD by expert opinion of a rheumatologist. Patients were excluded if their ILD was found to be due to another cause, such as drug-related or hypersensitivity pneumonitis. Clinical symptoms and serologic markers were recorded.
Results: Results: 78 patients with CTD-ILD were recorded in total. 41 (52%) patients were female. Most patients were diagnosed with rheumatoid arthritis (n=46, 59%), followed by systemic sclerosis (n=13, 17%), inflammatory myositis (n=10, 13%) and Sjogren's syndrome (n=8, 10%). The most common clinical symptom was inflammatory arthritis (n=34, 44%), followed by Raynaud's phenomenon (n=18, 23%) and sclerodactyly (n=13, 17%). ANA was positive in 43 (55%) of patients. The most common ENA was anti-Ro52 (n=9, 12%), followed

by anti-RNP (n=7, 9%) and anti-Ro60 (n=6, 8%). Of the patients with rheumatoid arthritis, 27 (59%) were positive for RF, 29 (63%) were positive for anti-CCP and 12 (26%) were seronegative for both. 29 (37%) patients met criteria for UIP pattern. 21 (27%) patients died over the course of their follow-up.
Conclusion: Conclusion: All patients with ILD should receive workup for CTD. In this Canadian cohort of patients with CTD-ILD, the most common diagnosis was seropositive rheumatoid arthritis, and the most common symptom was inflammatory arthritis.

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Unfavorable Outcomes Associated with Current Standard of Care in the Management of Patients with Systemic Lupus Erythematosus

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Objectives: The effectiveness of current standard of care treatment including corticosteroids (CS) in Systemic Lupus Erythematosus (SLE) is limited and has potential side-effects. This study examined the use of CS and the impact of CS use on irreversible organ damage in a longitudinal SLE cohort.
Methods: A retrospective observational study was conducted using data from a large SLE cohort in Canada. Adult patients (meeting ≥4 ACR SLE classification criteria, or 3 criteria and biopsy), without lupus nephritis or central nervous system lupus at entry into the cohort were included in the study. Patients were followed from index time of entry into cohort to last available clinic visit, with a minimum of 24 months of follow-up. Demographic and clinical characteristics including disease activity (SLEDAI-2K), treatment data and organ damage (SLICC/ACR Damage Index (SDI)) as the primary outcome stratified by CS use was assessed.
Results: A total of 1,255 patients were included (mean (standard deviation [SD]) follow-up duration of 10.5 (8.6) years, 1,111 (89%) female, and 815 (65%) White). Mean (SD) age at study entry was 35.4 (13.7) years. At index, there were 637 (51%) patients with moderate-to-severe disease activity (SLEDAI-2K ≥ 6). 182 (15%) patients had organ damage at index. Approximately 50% of the cohort were on antimalarials, CS, and immunosuppressants at any point during follow-up. Of those with moderate-to-severe disease activity at their last visit in the cohort, 57% were taking CS ≥ 10mg/day during their last year in the cohort. Biologic (belimumab and rituximab) use was <3% at any point during the follow-up. Almost all patients (n=1,011, 99%) had long-term (>6 months) CS exposure. Organ damage (SDI>0) was higher in patients with higher average CS dose and greater years of CS exposure (Table 1). The proportion of patients with any damage increased with average daily CS dose across multiple organ systems.
Conclusion: This study in a large cohort of SLE patients shows that despite current standard of care, many SLE patients are still receiving high CS doses, especially with moderate to severe disease. High CS use was associated with irreversible organ damage. Low use of biologics was largely driven by the lack of options and lack of public access to belimumab in Canada. These findings highlight the unmet need in the management of SLE patients, particularly in those with

moderate-to-high disease severity and the need for CS-sparing treatment options and better access.

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A Canadian Patient-driven Survey to Highlight Which Prednisone-related Side Effects Matter the Most to Patients with Vasculitis

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Objectives: Management of vasculitis has evolved for the last two decades; however, glucocorticoids (GC) remain the cornerstone of the treatment. Although the side effects (SE) of prednisone are well recognized by the clinicians, their importance for the patients with vasculitis has not been investigated as extensively as in other rheumatological conditions.

Methods: An online questionnaire was developed to survey vasculitis patients about their experience and SE of prednisone. The questionnaire consisted of questions about standard demographics and diagnosis, 5 questions about their prednisone dose and duration, 21 about specific SE (+ rating of some these pre-specified SE, and a free text box to report any other relevant SE), and 4 about knowledge and perception about possible alternatives to prednisone (namely, avacopan). Three rounds of invitation to complete the survey were sent by the Canada VF to their members. We compared answers between patients with GPA/MPA or other vasculitis.

Results: The survey was open from May 1st, 2022 to July 30th, 2022. A total of 97 patients (53 GPA/MPA, 43 other vasculitides) completed the survey. The mean age was 56.9, with a mean disease duration of 10.6 years. Their mean duration of GC use was 62.7±83.7 months, and 49.5% of patients were still on GC (daily dose, 8.4±6.2 mg). All the patients reported ≥1 GC-related SE, with 67.1 (%) of them reporting having had ≥11/19 pre-specified SE of interest. 51.5 percent of patients reported having had infections (14.4% severe); 36.1% of patients reported hypertension, and 18.5% diabetes (Table). Among ranked SEs, acne was ranked with the lowest score, whereas moon face/torso hump had the highest ranking, just above weight gain, insomnia and decreased quality of life. Around half of the GPA/MPA patients and one-third of the others have heard about avacopan, and 68% of patients (similarly in both groups) stated they would prefer being the first to take a very new medication, such as avacopan, instead of prednisone.

Conclusion: This patient-driven survey emphasizes the patient experience and perspectives on GC-related SE, with weights given to some SEs that may differ from those given by physicians. GC toxicity indexes should reflect this better, and alternative treatment options should be developed.

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Management of Giant Cell Arteritis in Canada: A Cross-Sectional Survey

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Toronto, Toronto)

Objectives: Giant cell arteritis (GCA) is the most common primary vasculitis in adults. In recent years, significant research efforts have allowed us to appreciate the complexity of numerous diagnostic modalities, clinical phenotypes, and therapeutic options. In available GCA guidelines, several recommendations leave uncertainties in disease investigation and management. Variability in clinical practice may therefore occur amongst physicians. The purpose of this study was to explore variations in clinical practice amongst physicians that manage GCA across Canada.

Methods: An online, web-based, English survey was sent to medical specialists who manage patients with GCA across Canada, mostly rheumatologists, internists, and ophthalmologists, through their respective provincial and national societies. To construct this survey, a literature review was done to identify areas of disease management uncertainties. PubMed, EMBASE, CENTRAL (Cochrane Central Register of Controlled Trials), and ClinicalTrials.org were consulted, from January 2000 until March 2021. The survey consisted of 4 main sections: demographics, investigations, new-onset disease therapy and relapsing disease therapy. The survey was open from December 2021 to April 2022.

Results: A total of 92 physicians responded (60 rheumatologists, 26 internists and 6 ophthalmologists) with 90% following GCA on a long-term basis. 43% of participants had been practicing for ≥10 years and 58% had an academic hospital-based practice. 40% of physicians managed ≥20 patients with suspected or confirmed GCA annually, while 34% had ≥5 patients with ocular involvement per year. As part of the initial work up for GCA, 91% of physicians used temporal artery biopsy, 58% used cranial doppler ultrasound, 31% used large vessel computed tomography angiography, 8% used cranial high-resolution positron emission tomography and 4% used cranial magnetic resonance angiography. Choice of glucocorticoids (GC) route for treatment initiation varied according to clinical presentation: 98% of respondents prescribed oral GC in the absence of ocular symptoms and 39% gave intravenous (IV) GC in the presence of non-specific ocular involvement. In patients with ischemic visual symptoms, 98% of physicians initiated IV GC. For new-onset GCA without ocular involvement, 52% of physicians used GC monotherapy. For patients with new transient ischemic ocular involvement, 61% of clinicians combined GC with another IS therapy. Concomitant IS therapy was used by 89% of physicians when patients presented with relapsing GCA with ischemic ocular symptoms.

Conclusion: This Canadian survey confirms the variability of practice amongst specialists who manage GCA. Multiple available guidelines, uncertainties in optimal investigations and treatments, and limited accessibility of certain diagnostic modalities may explain this variability in GCA management.

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VIVA QI: Vaccination In Vasculitis – Applying a Quality Improvement approach for immunosuppressed patients

Stephen Williams (Cumming School of Medicine, Calgary); Aurore Fifi-Mah (University of Calgary, Calgary)

Objectives: Vasculitis is an umbrella term comprising ~20 rare conditions that are characterized by the destructive inflammation of the blood vessels. Considered rare, vasculitides are serious conditions which in most cases require immunosuppression to prevent damage of organs or death. Although essential, immunosuppression increases the risk of infection and vaccine-preventable diseases. The CRA, EULAR, and ACR recommend immunization for patients

receiving immunosuppression but to date there are limited data available on the rates of immunization among patients living with vasculitis.[1,2] The objective of this research is to report the vaccination rates among vasculitis patients receiving immunosuppressive therapies in one clinic.
Methods: Current practice at the Calgary Vasculitis Centre is to have the nursing team record the vaccination status of patients at each appointment and recommend missing/incomplete vaccinations. To determine present vaccination rates, patient charts for the period of July 1, 2021 to July 1, 2022 were reviewed for vaccination by type (pneumonia [PPSV23, PCV13], shingles [RVZ], Influenza, COVID-19). Ethics approval was obtained for this project.
Results: 48 patient charts were reviewed in this analysis. 58% of patients were female; the mean and median patient ages were 55 and 58 respectively. For pneumonia vaccination, 52% of eligible patients received PPSV23 and 50% had received PCV13. For vaccination against shingles, 12.5% of eligible patients were fully vaccinated; 5% were partially vaccinated. Against influenza, 39.6% were vaccinated (18.8% receiving the high dose vaccine). Against COVID-19, 56.3% received at least 3 doses, 16.7% received 1-2 doses, and 27.1% were unvaccinated (Image 1).
Conclusion: These results provide novel data on vaccination rates in patients living with vasculitis and receiving immunosuppression. Compared to provincial rates, the influenza vaccination rates (39.6% vs 26.8%) and triple vaccinated against COVID-19 rates (56.3% vs 38.4%) were higher for patients at our centre.[3] This may be due to nursing follow-up at the time of patient appointments and rheumatologist recommendation. The rates of PCV13, PPSV23, and RVZ do not have general population comparisons in Alberta, but our findings represent valuable potential benchmark data for other vasculitis researchers. Additionally, our findings also highlight a potential opportunity for PCV 15 and PCV20 to improve pneumonia vaccination rates. This research will form the basis for future research into the rates of vaccine-preventable disease, rates flare post-vaccination, efficacy of a dedicated vaccination promotion program, and reasons for vaccine hesitancy in patients living with vasculitis.

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VEXAS Syndrome: Insights from a Canadian Case Series

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Objectives: VEXAS (vacuoles, E1 enzyme, X-linked, autoinflammatory, somatic) syndrome is a recently described condition in the literature caused by mutations at UBA1. Typical features of VEXAS syndrome include male gender, age over 50, vasculitis, hematologic features, and steroid responsiveness but resistance to steroid-sparing therapies. This case series contributes to the literature by describing the clinical features of our cohort and presenting a rare case of VEXAS syndrome in a female.
Methods: At two Western Canadian academic centres, we reviewed patients with genetically confirmed VEXAS syndrome or patients with clinical presentations suspicious for VEXAS syndrome who were subsequently confirmed to have the causative UBA1 mutation via genetic testing at the National Institutes of Health.
Results: Six patients with VEXAS syndrome were identified. Five were male and one was female (Turner Syndrome). Three somatic UBA1 variants were seen (4/6 patients with variant p.Met41Thr, 1/6 with p.Met41Leu, and 1/6 with p.Met41Val). Initial diagnoses for these patients

included relapsing polychondritis (3/6), vasculitis (2/6), and the others were diagnosed with erythema nodosum, malignancy NYD, and adult-onset Still's disease. Constitutional symptoms (any combination of fever, fatigue, weight loss, and/or night sweats) were experienced by all patients. All patients had elevated CRP and/or ESR; IL-6 and IL-18 were elevated in the one patient who underwent a cytokine panel. All patients developed macrocytic anemia; thrombocytopenia was seen in 3/6. A positive p-ANCA was noted in one patient, but MPO and PR3 were negative and there were no clinical features suggestive of ANCA-associated vasculitis. 5/6 had cutaneous findings: 4/6 had perivascular lymphocytic infiltration on biopsy, 1/6 presented with atypical tumid lupus. 4/6 had pulmonary findings ranging from capillaritis affecting the small to medium sized arteries and veins in an ANCA-negative patient to organizing pneumonia.
Conclusion: These findings constitute the second Canadian case series on VEXAS syndrome. Patients with VEXAS syndrome may represent a cohort of treatment-resistant cases within other established diseases. The characteristics of steroid responsiveness and dependence combined with the presence of constitutional symptoms, macrocytic anaemia, cutaneous findings such as perivascular lymphocytic infiltrates, and/or pulmonary findings should raise clinical suspicion for VEXAS syndrome. Notably, the X-linked nature of this condition does not mean it is male-exclusive. This case series describes a rarely reported instance of VEXAS syndrome in a woman (Turner syndrome). In future screening schema, we suggest the consideration of VEXAS syndrome in individuals with Turner Syndrome presenting with compatible symptoms.

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Use of Shared Model of Care in Community Rheumatology Practice to improve efficacy and reduce wait times. A Calgary Experience.

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Objectives: As a chronic inflammatory condition, rheumatoid arthritis incidence is on the rise in Canada requiring more integration of care with multiple health care providers. In addition, rheumatology patients require a variety of health-related needs due to the complexity of their disease and therapeutics. The objective of this study was to describe a shared model of care with both rheumatologist and nurse patient care in improving diagnosis and treatment of patients with early rheumatoid arthritis (RA).
Methods: In our study, we describe our experience with 50 patients diagnosed with new rheumatoid arthritis from January 2020 to January 2022 and through a retrospective analysis through data analysis of EMR records to review efficacy and assess reduce wait times. Review of charts for patient satisfaction and perception were reviewed.
Results: In our review of the 50 cases, patient satisfaction was observed in the majority of cases. Our chart review demontrated that overall wait times were reduced in the majority of cases, allowing for earlier detection of RA and earlier treatment. Patients perception, captured during initial interview by primary rheumatologist is reported. Patients' perception of the shared model of care was overall satisfaction. The model allowed patients to express their concerns with more than one care provider, reduce face-to-face appointments and improve overall efficacy.
Conclusion: A shared model of care in rheumatoid arthritis patients in our community rheumatology practice improved patient care, patient satisfaction and allowed for early detection of rheumatoid arrthritis. The patient's perception of this model of care allows for the development of longitudinal studies for quality improvement.

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Number of Fingers with Soft Tissue Edema Visualized on Musculoskeletal Ultrasound as a Diagnostic Test for Psoriatic Arthritis: A Pilot Cohort Study

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Objectives: Musculoskeletal ultrasound (MSKUS) is more sensitive than physical examination to detect inflammation in extra-articular structures in psoriatic arthritis (PsA). Peritendinous soft tissue edema on MSKUS has shown to be more frequent in PsA. Here we assess the degree of association between the presence of flexor compartment (FC) soft tissue edema and the diagnosis of PsA with the aim of developing a soft tissue score to differentiate PsA from rheumatoid arthritis (RA).

Methods: This pilot prospective cohort study included 9 PsA and 21 RA patients from the Biologics Clinic at a single centre site in Ottawa. Patients are referred to the biologics clinic if they require initiation of, or changes to their biologic disease modifying antirheumatic drug (bDMARD). In addition to demographic and clinical data, eight MSKUS images were collected from each patient including one Grayscale (GS) and one power Doppler (PD) image of the FC of the 2nd and 3rd bilateral digits using a GE LogicE9 and a linear 15 MHz probe. Images were scored on a 0-2 semiquantitative scale to assess the degree of soft tissue edema, where 0 indicates absent, 1 indicates mild, and 2 indicates severe GS or PD. Following data collection, scoring was completed by two investigators blinded to the patients' diagnosis and in random order. Consensus decision was taken as the final score.

Results: Disease characteristics are provided in the table. On MSKUS, PsA patients had a statistically significant higher mean total GS score compared to RA (8.0 vs 6.0, p=0.022). A significantly higher number of PsA patients had PD score of 2 in ≥3 fingers (44.4% PsA vs 4.8% RA, p=0.019) as well as numerically higher GS score of 2 in ≥3 fingers (66.7% PsA and 38.1% RA, p=0.236). [Table]

Conclusion: Our results suggest a possible role for FC soft tissue edema visualized on MSKUS in both GS and PD modes to differentiate PsA from RA. It is also important to understand the impact of soft tissue edema on disease pathogenesis and patient reported outcomes. While our sample size is small, reaching statistical significance using non-parametric testing encourages us to repeat this analysis again in the future as our cohort grows. When our sample size allows, we will assess for confounding effect of seropositivity, sex, age, BMI, previous therapy, and disease duration.

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Long-Term Treatment with Golimumab is a Safe Treatment Option Regardless of Risk Factors in Patients with Rheumatoid Arthritis, Psoriatic Arthritis, and Axial Spondyloarthritis: Results from a Real-World Canadian Setting

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Philip Baer (Baer Weinberg MPC, Scarborough); Derek Haaland (The Waterside Clinic, Barrie ON Canada, and McMaster University, Hamilton ON Canada, Hamilton); Dalton Sholter (University of Alberta, Edmonton); Odalis Asin-Milan (Janssen Inc, Toronto); Meagan Rachich (Janssen Inc, Toronto); Emmanouil Rampakakis (JSS Medical Research Inc, Montreal); Julie Vaillancourt (JSS Medical Research, Montreal); Marilise Marrache (Janssen Inc., Toronto); Allen Lehman (Janssen Inc, Toronto)
Objectives: Tumor necrosis factor inhibitor (TNFi), golimumab (GLM), has demonstrated efficacy and favorable safety profile in rheumatic diseases. Janus kinase inhibitors (JAKi) safety studies sparked new discussions in Rheumatology, while real-world evidence for GLM continues to support its long-term safety profile. This post-hoc analysis describes the risk of major adverse cardiovascular events (MACE), malignancy, and mortality in a large observational cohort of patients (pts) with RA, PsA, or axSpA treated with subcutaneous (SC) GLM. Serious adverse events (SAEs) and serious infections (SIs) were also assessed.
Methods: Multicenter, prospective, BioTRAC registry collected real-world clinical, laboratory, safety, and patient-reported data in RA, PsA, and axSpA patients treated with GLM, infliximab, or ustekinumab. Pts treated with SC GLM were included, excluding one pt with prior JAKi treatment. The incidence rates (IR) per 100 patient-years (PYs) of AEs of special interest (AEoSI): MACE [defined as cardiovascular death, non-fatal myocardial infarction, or non-fatal stroke], malignancies excluding non-melanoma skin cancer, all-cause death, SAEs and SIs, irrespective of causality to GLM, and time to onset were assessed in subgroups based on the following factors: <65 vs. ≥65 years of age; sex; TNFi experience; smoking status; baseline (BL) use of methotrexate (MTX) and oral steroids. All analyses were stratified by indication.
Results: 529 RA, 281 PsA, and 421 axSpA pts were included. Over 1064 (RA), 539 (PsA), and 675 (axSpA) PYs, the IR for MACE were 1.1 (n=12), 0.0, and 0.0 events/100 PYs, respectively, while IR for malignancies were 1.4, 0.4, and 1.0/100 PYs. SAE incidence ranged from 7.6/100 PYs in PsA pts to 11.4 in RA pts and that of SIs from 1.3/100 PYs in PsA pts to 2.3 in RA pts. IRs for all-cause mortality were 0.7/100 PYs (n=7), 0.2 (n=1), and 0.3 (n=2) /100 PYs in RA, PsA, and axSpA, respectively. Summaries of AEoSI incidence by presence/absence of risk factors are in [Table]; although numerical differences were observed, there were no new safety signal. Higher age was associated with shorter time to MACE in RA pts; no significant association was observed with sex, TNFi experience, smoking, and concomitant MTX or steroid use.
Conclusion: GLM treatment in a real-world diverse population are consistent with the current safety profile. This was irrespective of the examined risk factors for RA, PsA and axSpA. Higher age was associated with shorter time to MACE in RA pts. GLM remains a safe option for the treatment of rheumatic diseases.

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Joint Pain and Diarrhea Outside the Realm of IBD

Ali Shams (University of Calgary, Calgary)
Whipple's disease is an uncommon, multi-system, chronic disorder caused by the rod-shaped bacterium Tropherryma whipplei. It can present with polyarthritis, fever, and CNS manifestations. It is a masquerader of inflammatory diseases and thus there is often a significant delay in diagnosis and treatment, which can lead to poor clinical outcomes.
A 51-year-old male was referred to Rheumatology by Internal Medicine for 1 month history of watery diarrhea, 10 kg weight loss, progressive normocytic anemia, and migratory joint arthritis

involving his ankles and knees. CRP was 17.4. CT abdomen showed free fluid and retroperitoneal stranding. EGD showed duodenitis. Duodenal biopsies came back positive for Tropheryma whipplei. On review of systems, the patient endorsed headaches concerning for CNS involvement. Lumbar puncture was positive for Tropheryma whipplei in the CSF. MRI brain showed leptomeningeal enhancement consistent with an infectious or inflammatory process. A course of appropriate antibiotics was started for Whipple's disease with CNS involvement. Within three days all symptoms resolved.

Whipple's disease is an uncommon, multi-system, chronic disorder caused by the rod-shaped bacterium Tropherryma whipplei. It can present with polyarthritis, fever, and CNS manifestations. It is a masquerader of inflammatory diseases and thus there is often a significant delay in diagnosis and treatment, which can lead to poor clinical outcomes.

The following case presentation explores Whipple's disease: the diagnostic challenges, the spectrum of clinical presentation, and treatment options, which lack general consensus.

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Racial and Ethnic Disparities in Disease Related Outcomes among Patients with Systemic Lupus Erythematosus: A Systematic Review

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Objectives: Systemic lupus erythematosus (SLE) disproportionately impacts racial and ethnic minorities, with these patients generally experiencing worse disease-related outcomes. This is likely related to a complex interplay between genetic and non-genetic factors. Numerous studies have examined racial and ethnic disparities in SLE, with no comprehensive summary of disease-related outcomes and health care utilization among these patients. The objective of this systematic review is to describe racial and ethnic disparities in the following disease-related outcomes among adult patients with SLE: (1) mortality, (2) end-stage renal disease (ESRD), (3) disease-related damage, (4) cardiovascular disease, (5) malignancy, and (6) hospital utilization.

Methods: A systematic search of the scientific literature was performed to obtain articles published before October 2021. Search terms included the outcomes of interest (i.e., mortality, ESRD) and variations of terms used to describe racial and ethnic groups (e.g., White, Black, Asian, Hispanic, Indigenous). Longitudinal observational studies with at least two years of follow-up were included. Screening of titles, abstracts and full-text articles were performed in duplicate (TS, KP, KZ, RA). Data extraction was performed using Covidence. Data were synthesized using descriptive statistics and narrative descriptions.

Results: A total of 5528 titles and abstracts were yielded from the systematic literature search, of which 127 studies were selected for inclusion (Figure 1). Most studies were conducted in North America (n=99) and Europe (n=16), with few studies performed in Australia (n=7), Africa (n=6), Asia (n=6) and South America (n=3). Studies identified the following racial and ethnic groups: Whites (n=122), Blacks (n=133), Asians (n=51), Indigenous peoples (n=20), Hispanics (n=48) and others (n=6). Most studies (n=102, 80%) identified worse outcomes among racial and ethnic minority groups. Disparities were most commonly identified in studies describing outcomes among Black (n=93) and Hispanic (n=37) patients. A total of 60 studies reported outcomes related to mortality, with 52 (87%) reporting worse outcomes among racialized groups.

Among 30 studies reporting on the development of ESRD, 26 (87%) identified racial and ethnic disparities. Worse outcomes were also reported among studies examining disease-related damage (n=20, 67%), cardiovascular disease (n=8, 89%), hospitalization (n=7, 88%), and malignancy (n=4, 50%).
Conclusion: This systematic review highlights the higher reported rates of mortality, ESRD, disease-related damage, cardiovascular disease, malignancy and hospitalization, among racial and ethnic minority patients with SLE. In the absence of a biological explanation to entirely account for these difference, it is prudent to identify and address systemic causes for these outcomes. A meta-analysis of these outcomes is currently underway.

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Does Concurrent Inflammatory Bowel Disease Alter the Profile of Axial Spondylarthritis?

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Objectives: Axial Spondyloarthritis (AxSpA) and inflammatory bowel disease (IBD) are chronic inflammatory conditions which often coexist. Immunopathology studies have demonstrated that gut inflammation plays a fundamental role in AxSpA pathogenesis. We hypothesized that AxSpA patients with clinical gut inflammation would have an altered clinical phenotype.
Methods: This is a retrospective study to assess the differences in clinical features between patients who have AxSpA alone vs those with concurrent IBD (AxSpA/IBD). We extracted relevant data from the University Health Network (UHN) Spondylitis Program database, from March 2008 to December 2021. The characteristics of the patients in the two groups (Table 1) are compared by either chi square, independent sample t test, or the non-parametric Wilcoxon sign rank test for non-normal numeric variables. In (Table 2) we measured the outcomes for radiographic progression, disease activity and metrology between the two groups over 6 years using Fisher's exact test, t-test, or Exact Wilcoxon rank sum test where indicated. Area under the curve (AUC) measures were calculated using the trapezoidal method for annual BASDAI and ASDAS-CRP over 6-year follow-up period. We have also used Kaplan-Meier estimate for radiographic progression (Figure 1) between the two groups over the years. P-value shown within the plot indicates log-rank test between curves.
Results: The study includes 1526 patients, with 1331 patients diagnosed with AxSpA alone versus 195 patients diagnosed with AxSpA/IBD. Most of the patients are White/Caucasian in ethnicity (75%). HLA-B27 positive was more common in AxSpA alone patients. At baseline and over 6 years, there were no statistically significant differences in disease activity (BASDAI and ASDAS-CRP) or severity (as defined by the mSASSS or progression from nr-AxSpA to AS) between the two groups. However, the level of inflammation measured by CRP was higher in patients with AxSpA/IBD. In addition, juvenile onset AxSpA and skin psoriasis were more likely in patients with AxSpA/IBD than in patients with AxSpA alone. Moreover, we found that conventional synthetic and biological DMARDs were more commonly used in the AxSpA/IBD patients while the use of NSAIDs was less common.
Conclusion: We found that juvenile onset AxSpA was associated with AxSpA/IBD, indirectly implicating a gut-triggered process in disease onset. HLA-B27 was less common, and CRP was higher in AxSpA/IBD. Clinical metrics of disease activity, radiographic severity or metrology

did not differ between the groups at baseline and over 6 years. Thus, clinically evident gut inflammation does not confer a more severe phenotype on AxSpA.

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The Risk of Demyelinating Diseases in Spondyloarthritis: A Longitudinal Cohort Study

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Objectives: Ankylosing spondylitis and psoriatic arthritis were seen to coexist with demyelinating diseases (DD), but it is unknown whether this is due to a common underlying pathological mechanism, the use of TNF inhibitors (TNFi), or mere coincidence. We aimed to investigate the incidence of DD among spondyloarthritis (SpA) patients and identified risk factors for DD.

Methods: Axial spondyloarthritis (axSpA, n = 1547) and psoriatic arthritis (PsA, n = 1377) patients were identified from a longitudinal observational cohort study database. Cumulative incidence rates (CIR) of DD were obtained with competing risk analysis using a method suggested by Pepe and Mori. Hazard ratios and 95% CI comparing patients with DD and without DD were estimated from Cox regression analyses using Fine and Grey's method.

Results: There were 19 patients (0.65%) with SpA and DD in our cohort of 2924 patients. The most common DD type was multiple sclerosis (n= 10). Patients with DD were more often smokers (72.2% vs. 42.5%, p=0.0150) and more likely to have inflammatory bowel disease (IBD) (31.6% vs. 8%, p=0.0030). Over 70 years, 2260 patients contributed follow-up data. Of these, we identified 12 (11 axSpA, 1 PsA) DD events corresponding to a CIR of 0.5%. Respective CIRs of DD at 5, 10, 15, and 20 years were higher in axSpA (0.2%, 0.3%, 0.5%, and 0.8%) than in PsA (0.1% across all years) but was not significant (p = 0.069). [Figure A] According to TNFi exposure, CIRs were higher in the TNFi-unexposed (0.3%, 0.4%, 0.6%, 0.9%) versus the TNFi-exposed (0.1%, 0.1,%, 0.2%, 0.4%) but did not reach statistical significance (p = 0.2285). [Figure B] Median time in years from to onset of DD was 20.52 (3.60, 32.00) from the onset of SpA, and 2.72 (0.21-5.29) from the first TNFi treatment. The risk of developing DD was found to be significantly higher among SpA patients with IBD (HR 4.52, 95% CI 1.32-15.34, p=0.015). [Table 1] Neither TNFi exposure nor SpA subtype was a significant risk factor for DD with our dataset.

Conclusion: The overall incidence of DD in this SpA cohort is low at 0.5% over 70 years of follow-up. SpA patients with DD were predominantly smokers and had a higher frequency of IBD. Incident DD was higher in axSpA groups and in patients who were not exposed to TNFi, but these did not reach statistical significance (p-value=0.174). The presence of IBD was associated with a higher risk of DD in this patient population.

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Canadian Research Group of Rheumatology in Immuno-Oncology (CanRIO) – A Retrospective Chart Review Study of Adults with Inflammatory Arthritis Associated with Cancer Immunotherapies

Brooke Pollock (University of Toronto, Toronto); Alexandra Saltman (University of Toronto, Toronto); Megan Himmel (University of Toronto, Toronto)
Objectives: Cancer therapies that target immune checkpoints have a prominent role in the treatment of malignancy. Despite their effectiveness in generating anti-tumor responses, they can cause off-target immune-related adverse events (irAEs), sometimes resulting in de novo rheumatic diseases. While glucocorticoids are the mainstay of therapy for rheumatic irAEs, there is concern that their use may blunt the anti-tumour response and cause avoidable glucocorticoid-related side effects. However, there is little data on the differences in therapeutic approach and prescribing patterns to date. The purpose of this study was to describe glucocorticoid route and dosing, adverse event profile, and patient outcomes between patients initiated on glucocorticoids for rheumatic irAEs by oncologists versus rheumatologists.
Methods: This was a single center retrospective chart review. Adult patients who received an immune checkpoint inhibitor and were identified as having inflammatory arthritis as a rheumatic irAE or those with pre-existing inflammatory arthritis were included. Patients were divided into two groups according to whether they were initiated on glucocorticoid therapy by Oncology versus Rheumatology. Glucocorticoid route of administration, dose, and adverse event profile were recorded. Patient reported quality of life was captured via a standard Health Assessment Questionnaire (HAQ) that was completed at the time of initial assessment by Rheumatology and at 1 month follow up.
Results: 86 patient charts were reviewed. Mean age was 65 years old. 57 patients received glucocorticoid therapy for inflammatory arthritis. 22 (40%) patients were initiated on glucocorticoid therapy by Oncology, and 34 (60%) patients were initiated on glucocorticoid therapy by Rheumatology. Of the patients started on glucocorticoid therapy by Oncology, 22 (100%) were initiated on oral prednisone alone. Of those started on glucocorticoid therapy by Rheumatology, 24 (70%) patients were initiated on prednisone monotherapy, and 9 (26%) patients received intra-articular glucocorticoids without systemic glucocorticoids. Of those initiated on oral glucocorticoids, the average starting dose by Rheumatology was 15mg prednisone daily, while the average in Oncology was 47mg prednisone daily ($p < 0.001$). 18 patients experienced adverse events to glucocorticoids. 4 (17%) patients initiated on glucocorticoids by Rheumatology experienced adverse events, compared with 14 (64%) of patients started on glucocorticoids by Oncology ($p< 0.001$).
Conclusion: Use of systemic glucocorticoids in the treatment of rheumatic irAEs is associated with glucocorticoid related adverse events. When treated by Rheumatologists, patients receive lower doses of glucocorticoids with significantly fewer adverse events. This highlights the need for further education and collaboration between Rheumatology and Oncology to best manage this complex patient population.

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Development of Spondyloarthritis Following Treatment with an Immune Checkpoint Inhibitor in a Patient with Metastatic Melanoma: A Case Report

Eden Meisels (University of Toronto, Toronto); Justin Shapiro (University of Toronto, Toronto); Alexandra Saltman (University of Toronto, Toronto)
Immune checkpoint inhibitors (ICIs) are a family of therapeutic agents used in cancer immunotherapy. They are monoclonal antibodies that bind to immune checkpoint receptors. They cause a robust anti-tumour response, and many off-target immune-related adverse events (irAEs) that affect nearly every organ system1,2.

We report the case of a 72-year-old female with a past medical history of hypertension, hypothyroidism, and psoriasis, who was diagnosed with BRAF-positive metastatic melanoma. In January 2020, she was started on immunotherapy with Nivolumab, an anti-PD1 ICI. Treatment was complicated by hypothyroidism and a psoriasis flare.

In late 2020, she developed pain, stiffness, and restricted cervical and lumbar range of motion. Bone scan and CT scans of her brain, chest, abdomen, and pelvis showed no new metastatic disease. She was prescribed a course of dexamethasone 4 mg daily, which improved her range of motion and pain.

After a five-week taper, her symptoms recurred. MRI spine in March 2021 revealed a large focus of inflammation involving the left facet joints C2-C5 with extensive edema and no evidence of cord signal abnormalities. She was promptly referred to the Rheumatology Immuno-Oncology clinic. Her clinical and radiographic findings were most suggestive of inflammatory spondyloarthritis. Physical exam revealed reduced C-spine range of motion in flexion, extension, and lateral rotation. She had no peripheral synovitis or extra-articular features of disease. Laboratory investigations revealed the following values: hemoglobin: 107 g/L, Ca2+: 2.65 mmol/L, albumin: 42 g/L, ESR: 20 mm/hr, CRP: 36.8 mg/L, RF: 31 IU/mL. She was ANA and HLA-B27-negative.

Treatment was initiated with Naproxen 500 mg BID, along with pantoprazole 40 mg daily for GI protection. Upon follow-up in April 2021, her pain and range of motion had improved significantly. Repeat MRI spine in June 2021 was reassuring for the absence of focal metastatic deposits. However, she developed morning stiffness in her neck lasting up to 30 minutes, stress pain in her left sternocleidomastoid muscles with lateral rotation, and iritis. She was treated with infliximab in July 2021, with good response and no recurrence of malignancy on CT in September 2021.

This case contributes to growing evidence that irAEs can develop secondary to ICI treatment and highlights the potential role of immune checkpoints in the pathogenesis of spondyloarthritis. With increasing use of ICIs, more rheumatic irAEs will transpire. Prompt diagnosis, referral, treatment initiation, and interdisciplinary communication are critical to address the complications and toxicities of ICIs, and minimize their impact on patients.

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Efficacy of COVID19 Vaccinations in Patients with Rheumatoid Arthritis (RA) and Systemic Sclerosis (SSc)

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Toronto); Gilles Boire (Université de Sherbrooke, Sherbrooke); Diane Lacaille (Arthritis Research Canada, University of British Columbia, Vancouver); Ines Colmegna (The Research Institute of the MUHC, Montreal); Carol Hitchon (University of Manitoba, Winnipeg); Jennifer LF Lee (RI-MUHC, Montreal); Sasha Bernatsky (McGill University Health Centre, Department of Medicine, Division of Rheumatology, Montreal); SUCCEED Investigators Safety and immUnogenicity of Covid-19 vaCcines in systEmic immunE mediated inflammatory Diseases (Montreal)

Objectives: Patients with inflammatory-mediated diseases (IMID) present a unique challenge for COVID-19 vaccination campaigns as they are predisposed to increased infections and if under immunosuppression, decreased vaccine immunogenicity. While current data suggests that vaccines effectively protect against severe COVID infections in the general population, preliminary studies describe impaired immunogenicity in IMID. We evaluated the effectiveness of COVID19 vaccines in terms of inducing an immune response and preventing COVID infections (including those requiring hospitalization) in RA and SSc.

Methods: Participants with RA enrolled between April 2021 to Sept. 2022 at the McMaster site for the Safety and Immunogenicity of Covid- 19 vaccines in Systemic Immune-Mediated Inflammatory Diseases (SUCCEED) study site were assessed after their first and second vaccine dose. The same methodology was applied for patients with Systemic sclerosis (SSc). COVID-associated IgG antibodies were measured via kinetic ELISA on serum, and cut-offs for significant antibody titres were generated based on pre-pandemic seronegative samples. The anti-spike protein and anti-RBD IgG levels were used as markers of immunity while the anti-nucleocapsid antibodies were used with patient reports to indicate previous COVID infections. Data on hospitalizations was extracted from completed patient diaries and questionnaires on the SUCCEED REDCap database. Descriptive statistical analyses were applied.

Results: Of the 43 RA and 21 SSc participants included for analysis, 81.4% were female and 18.6% were male for RA while 95.2% were female and 4.8% were male for SSc. The average age was 59 (SD = 23) for RA and 57 (SD = 11) for SSc. Pfizer was the most common vaccine for both doses, and Pfizer-Pfizer was the most prevalent combination (65.1% of RA and 58.9% of SSc). At 2 - 4 weeks post-dose 2, 90.9% of RA patients and 40% of SSc patients met the threshold for sufficient anti-spike IgG antibody levels. By 3 months post-dose 2 however, 92.3% of SSc patients were above threshold. Of the Pfizer-Pfizer vaccine pairing, 78.6% of RA and 45.5% of SSc were above anti-spike antibody cut-offs at 3 months post-dose 2. Within the 3 months post dose 2, there were no hospitalizations of any cause and only 1 reported COVID infection in a RA patient who had Pfizer then Moderna.

Conclusion: SSc patients appear to be more delayed than RA patients in acquiring immunogenicity. Nevertheless, the rates of COVID infection and hospitalization were low for both groups. More data is needed on different vaccine pairings to determine if there are vaccine-specific patterns of immunogenicity.

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A Novel Qualitative Online Community Analysis: Thoughts and Experiences of Behcet's Disease from Participants on a Reddit Subforum

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Objectives: This study investigates the perspectives and experiences of people affected by Behcet’s disease by examining the content shared and discussed on a subforum of the website

Reddit, an online space for anonymous discussions.
Methods: All discussion threads posted between March 9th, 2021 to March 12th, 2022, including posts and comments, were examined from the subforum r/Behcets, an anonymous online community of 1100 members as of March 2022. A Grounded Theory analysis was completed to identify themes and subthemes, and notable quotes were extracted from the threads. Parameters extracted from each post include Date of Original Post, Number of Comments, Net Upvotes, Category, and Subcategories.
Results: A total of 196 discussion threads were examined, consisting of 46, 38, 36, 37, 34, and 5 threads under the categories of Symptoms, Patient Support, General Topics, Treatments, Diagnosis, and Miscellaneous, respectively. Six recurring themes and 16 subthemes were identified from the posts and comments in these discussions. Theme 1 is about finding connectedness through shared experiences, and subthemes include feeling understood by others, discussions regarding similarities, and seeking perspectives from others. Theme 2 illustrates the struggles of the diagnostic odyssey, captured through the subthemes of the lengthy diagnostic process, negative experiences with the healthcare system, and presenting symptoms to settings outside of rheumatology. Discussions around symptoms are described in Theme 3, which includes the subthemes of stress being a trigger, the severity of symptoms, and the symptomatic variety. Theme 4 characterizes some of the emotional experiences of having Behcet's disease through the subthemes of feeling lonely and misunderstood, as well as impact on mental health. Theme 5, illustrating the ways the disease affects quality of life, is further explored through the disease's impact on activities, education/work, and relationships. Finally, inquiries and shared experiences around COVID-19 and vaccinations are explored through Theme 6.
Conclusion: By examining the discussions in a popular and anonymous online forum, this novel study provides an exploration of the perspectives and experiences of people affected by Behcet's disease. Overarching themes that emerged include: the challenges in the diagnostic process, the severity and variety of symptoms, and the disease's impact on quality of life. This understanding also shines light on the needs of people affected by Behcet's disease, gaps and areas for improvement in the offline support received by people who are affected by the disease, as well as the need for adequate awareness of the disease from a wide spectrum of care providers.

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Macrophage Activation Syndrome in Juvenile Systemic Lupus Erythematosus: a Systematic Literature Review

Hannah Rosales (McMaster University, Hamilton); Daya Gill (McMaster University, Hamilton); Konstantinos Tselios (McMaster University, Hamilton)
Objectives: Macrophage activation syndrome (MAS) and may occur in the context of systemic autoimmune diseases, such as juvenile idiopathic arthritis and systemic lupus erythematosus (SLE). Although rare, MAS is potentially life-threatening and prompt recognition/diagnosis is of paramount importance for favorable outcomes. Our objective was to systematically review the published data on MAS in children with SLE with emphasis on the clinical, laboratory and therapeutic variables.
Methods: We conducted a systematic literature review according to the PRISMA 2019 guidelines. PubMed database was searched to identify studies on children (<18 years) with SLE who developed MAS. Medical Subject Headings (MeSH) terms included "lupus" AND "macrophage activation syndrome" OR "hemophagocytic lymphohistiocytosis". Studies on animals, pertaining solely to pathogenesis and published in a non-English language were

excluded. Data were collected in a pre-established collection form to assist analysis; descriptive statistics were used.
Results: Of 109 articles retrieved, 34 were eligible for further analysis. Collectively, there were 200 patients (165 females). Mean age at onset was 12±2.7 years (range 7-18). SLE predated MAS in 182 patients. Clinical and laboratory variables are shown in Table 1. Glucocorticoids were used in 167/180 (92.8%, methylprednisolone pulses 84/167, dexamethasone 13), intravenous immunoglobulins 74/180 (41.1%), cyclosporine 58/180 (32.2%), cyclophosphamide 28/180 (15.6%), etoposide 13/180 (7.2%), other immunosuppressives 27/180 (15%), plasma exchange 9/180 (5%). The mortality rate was 13.1% (22/168); main causes of death included sepsis in 13 patients, intracerebral hemorrhage in 2 and acute respiratory distress syndrome in one patient.
Conclusion: In the majority of juvenile SLE patients who develop MAS, their primary disease was severely active both clinically and serologically. Hemophagocytosis (the gold standard for diagnosis) was only present in 39% of the patients. Treatment consisted mainly of glucocorticoids and immunosuppressives or intravenous immunoglobulins. The mortality rate was 13%, underlining the need for prompt diagnosis and aggressive treatment.

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Recombinant Human Interleukin-2 For Systemic Lupus Erythematosus: A Systematic Literature Review

Daya Gill (McMaster University, Hamilton); Hannah Rosales (McMaster University, Hamilton); Konstantinos Tselios (McMaster University, Hamilton)

Objectives: The pathogenesis of systemic lupus erythematosus (SLE) involves multiple immunologic pathways leading to tissue damage. However, the breakdown of the peripheral immune tolerance seems to be the overarching event. In this context, quantitative and qualitative defects of the T regulatory cells (Tregs) have been described. Treatment with recombinant IL-2 aims to restore these defects and suppress virtually all the pathogenetic pathways in SLE. Our objective was to systematically review the published data on the safety and efficacy of IL-2 in SLE patients.
Methods: We conducted a systematic literature review according to the PRISMA 2019 guidelines. PubMed database was searched to identify studies on SLE patients who were treated with IL-2. Medical Subject Headings (MeSH) terms included “lupus” AND “IL-2” OR “interleukin-2”. Studies on animals, pertaining solely to pathogenesis and published in a non-English language were excluded. The Newcastle-Ottawa scale was applied for quality assessment. Data were collected in a pre-established collection form to assist analysis; descriptive statistics were used.
Results: Of 51 articles retrieved, 8 were deemed to be eligible for further analysis including one randomized controlled trial. There were 202 patients in total (171 females, 84.7%), mean age 34.6±3 years, mean SLEDAI-2K 11.3±2.7, mean disease duration 6.7±4 years. Main clinical manifestations included arthritis in 24/48 (50%), skin involvement 52/88 (59.1%), oronasal ulcerations 9/87 (10.3%), inflammatory alopecia 33/87 (37.9%), myositis 4/48 (8.3%), active lupus nephritis 13/202 (6.4%), vasculitis 8/47 (17%), leukopenia 19/40 (47.5%) and fever 3/30 (10%). Mean C3 levels were 0.71±0.17g/L, C4 0.14±0.06g/L and anti-dsDNA titers 129±143IU/ml. Therapeutic variables and outcomes are shown in Table 1. Adverse events included infections in 4/89 patients (4.5%, no serious infections), injection site reactions in 22/89 (24.7%) and fever with flu-like syndrome in 14/89 (15.7%).

Conclusion: IL-2 therapy restores the numbers of peripheral Tregs and exerts a beneficial effect in the majority of SLE patients with refractory musculoskeletal and mucocutaneous manifestations. Its safety profile is acceptable and should be further trialed in SLE.

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Does Early Complete Remission Preclude Adverse Outcomes in Lupus Nephritis?

Konstantinos Tselios (McMaster University, Hamilton); Dafna Gladman (Krembil Research Institute, Toronto Western Hospital, Toronto); Jiandong Su (Toronto Western Hospital, Toronto); Murray Urowitz (University of Toronto, Toronto)

Objectives: Early complete remission (within 12 months) is considered an important protective factor against development of advanced chronic kidney disease (CKD) in lupus nephritis (LN). However, a certain proportion of such patients still develop advanced CKD and, eventually, end-stage renal disease (ESRD). Objective of this study was to describe the factors associated with the development of advanced CKD (stage IV or worse) in patients with LN who achieved early complete remission.

Methods: Patients with LN based on biopsy or abnormal proteinuria (>0.5g/day) and/or hematuria or pyuria or casts for two consecutive visits in the absence of any other plausible explanation were retrieved from the Toronto Lupus Clinic longitudinal database. Individuals with advanced CKD at baseline (eGFR≦29ml/min/1.73m2) were excluded. All patients achieved complete remission (proteinuria<0.5g/24h, inactive urinary sediment and serum creatinine <120% of baseline) within 12 months. Flare was defined as any abnormal proteinuria (>0.5g/day) or increase in serum creatinine (SCR) from normal to abnormal or >120% of baseline after remission plus treatment escalation (glucocorticoids and/or immunosuppressives).

Results: Of 273 eligible patients achieving remission within the first year, 21 (7.7%) developed advanced CKD after a median of 5.8 years from the time of remission (range 0.7-31.7 years). The baseline characteristics are shown in Table 1. Multivariate survival analysis showed disease duration at LN onset, baseline SCR (HR=1.03, 95%CI=1.02-1.04, p<0.001), low complement C3 at baseline (HR=4.14, 95%CI=1.53-11.26, p=0.005) and one or more flares during the first 5 years of LN (HR=4.53, 95%CI=1.47-13.92, p=0.008) to independently predict advanced CKD. We further divided the 21 patients who developed advanced CKD according to the median time (5.8 years). Early progressors were older, had lower eGFR, lower SLEDAI-2K and were more often treated with antihypertensives compared to the late progressors. The major factors leading to early CKD were poor compliance or insufficient therapy due to concomitant infections in 7 and moderate-to-severe interstitial fibrosis and tubular atrophy (IFTA) in 4 patients. In late progressors, compliance was poor in 2 patients, moderate-to-severe IFTA was present in 3, poorly controlled hypertension in 2, thrombotic microangiopathy in one, refractory disease in one while one patient progressed over 32 years.

Conclusion: Patients with impaired kidney function and low complement C3 at baseline, as well as histopathologic features of chronic irreversible damage (interstitial fibrosis/tubular atrophy), are at risk for CKD despite early remission and should be followed closely. The importance of maintenance therapy should be communicated to the patients to prevent non-compliance and subsequent flares.

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Mesangial Lupus Nephritis: Long Term Outcomes

Konstantinos Tselios (McMaster University, Hamilton); Dafna Gladman (Krembil Research Institute, Toronto Western Hospital, Toronto); Jiandong Su (Toronto Western Hospital, Toronto); Murray Urowitz (University of Toronto, Toronto)

Objectives: Mesangial lupus nephritis (LN II) is considered benign with minimal potential for developing advanced chronic kidney disease (CKD). However, a certain proportion of such patients still develop advanced CKD and, eventually, end-stage renal disease (ESRD). Our objective was to describe the factors associated with the development of advanced CKD (stage IV or worse) in mesangial LN.

Methods: Patients with mesangial LN based on kidney biopsy that was performed at or after enrollment to the clinic and at least 1 year of follow-up were retrieved from the Toronto Lupus Clinic longitudinal database. Biopsy was performed because of proteinuria (n=55), rising serum creatinine without proteinuria or active urinary sediment (n=24), active urinary sediment (n=6) and generalized lupus activity (n=6). Patients with ESRD at baseline were excluded. Individuals were followed over time for the development of advanced CKD.

Results: Of 91 eligible patients, 10 developed advanced CKD during follow-up, 7 (7.7%) CKD stage IV and 3 (3.3%) ESRD. Statistically significant differences in baseline characteristics are shown in Table 1. In 81/91 patients (89%), there was no significant deterioration of renal function after 16.8±12.8 years. Proteinuria was mild (1.17±0.89g, range 0.5-5g/day). Fifteen patients had a repeat biopsy; histologic transformation was demonstrated in 10 (7 with proliferative nephritis, 2 with membranous and 1 with advanced glomerulosclerosis). Sixty-three patients (67.7%) had normal renal function while 18 (19.4%) had CKD stage III at last visit. Seven patients developed CKD IV of whom 4 already had impaired kidney function at baseline whereas their proteinuria was mild (< 1g/day). Four patients had a repeat biopsy; 2 developed membranous nephropathy while there were no changes in the other two. Despite their advanced disease, their renal function remained stable (eGFR=24.2±4.3ml/min/1.73m2) after a mean of 18.5±8.5 years. Three patients developed ESRD, all of whom had impaired kidney function at baseline (stage IV). Despite their advanced CKD, these patients developed ESRD after 8.6, 10.3 and 16.8 years respectively. Two of them had a repeat kidney biopsy showing histologic transformation (one proliferative nephritis and one advanced glomerulosclerosis).

Conclusion: Advanced CKD (stage IV or worse) developed in 11% of patients with mesangial LN but the progression was slow. In most cases, kidney function was already impaired at the time of the biopsy, while proteinuria was only mild. These findings imply that mesangial disease can occasionally lead to CKD and underlines the need for close monitoring of such patients with treatment that should not be based on proteinuria alone.

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Impact of Time to Remission, Flares and Exposure to Immunosuppressives on the Development of Advanced Chronic Kidney Disease (Stage IV or Worse) in Lupus Nephritis

Konstantinos Tselios (McMaster University, Hamilton); Dafna Gladman (Krembil Research Institute, Toronto Western Hospital, Toronto); Jiandong Su (Toronto Western Hospital, Toronto); Murray Urowitz (University of Toronto, Toronto)

Objectives: Lupus nephritis (LN) affects up to 40% of patients with SLE and leads to end stage

kidney disease (ESKD) in 17-33% after 10 years. The prevalence of chronic kidney disease stage IV is not known; however, approximately two thirds of such patients will progress to ESKD after 6 years on average.1 Our objective was to determine the impact of time to remission and flares on the development of advanced CKD (stage IV or worse) in LN.
Methods: Patients with LN based on biopsy or abnormal proteinuria (>0.5g/day) with or without hematuria/pyuria/casts for two consecutive visits in the absence of other plausible explanation were retrieved from the Toronto Lupus Clinic database. Individuals with advanced CKD at baseline were excluded. All patients were followed for at least 5 years. The primary outcome was the development of advanced CKD (eGFR≦29ml/min/1.73m2). Remission was defined as proteinuria< 0.5g/24h, no active urinary sediment and serum creatinine <120% of baseline. Flare was defined as any abnormal proteinuria (>0.5g/day) after remission. Death was treated as competing risk in survival analysis.
Results: Out of 418 eligible patients, 209 (50%) achieved remission within the first year, 102 (24.4%) within the 2nd and 3rd years, 70 (16.7%) after 3 years and 37 (8.9%) never achieved remission. Sixty-six patients (15.8%) developed advanced CKD after 9.5 years on average (37 with ESKD). At baseline, these patients had a higher SLICC/Damage Index (0.6±1.2 vs. 0.3±0.7, p=0.003), lower eGFR (73±38 vs. 94±33ml/min/1.73m2, p< 0.001), higher prevalence of hypertension (85% vs. 73%, p=0.046), proliferative nephritis (combined class III and IV, 66% vs. 47.8%, p=0.017) and more often treated with ACE inhibitors or angiotensin receptor blockers (35% vs. 22%, p=0.02). Remission rates, flares and exposure to immunosuppressives after remission are shown in Figure 1. Patients who achieved remission within one year demonstrated better outcomes compared to all other groups (p< 0.0001), Figure 1. Patients with complete remission between one and three years had similar outcomes for the first 10 years and deteriorated during the second decade of follow-up.
Conclusion: Complete remission within the 1st year from diagnosis strongly protects against advanced CKD. Flares significantly affect prognosis. One flare was associated with 2.7-fold increased risk for advanced CKD (3.6-fold for 2 or more flares). Longer time on immunosuppressives after remission decreases the risk for advanced CKD. Our findings emphasize the importance of early remission as well as flare prevention with prolonged immunosuppressive use to maximize renal survival in LN.

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Disparity in Healthcare in Systemic Lupus Erythematosus: a Single-Center Study.

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Objectives: Systemic lupus erythematosus (SLE) is an autoimmune condition with variable presentation and fluctuating disease severity. Health outcomes in SLE have been linked to both genetic and social factors related to differences in gender, ethnicity, education, income, and occupation. This cross-sectional study aims to evaluate the relationship between the access to primary care, social determinants of health (SDH), and disease outcomes in the Ottawa SLE Registry (OSLER)
Methods: Patients with a 2019 EULAR/ACR SLE diagnosis were recruited consecutively and informed consent was obtained. Information on patient demographics, SDH and quality of life

(Lupus QoL) was collected through a Patient Questionnaire. A chart review was conducted to document disease activity by SLE-Disease Activity Index (SLEDAi-2k) at the consenting visit, emergency department visits, ACR damage index and select adverse outcomes.
Results: 41 adult patients with SLE were recruited to date. The mean age was 54.51 +/- 13.07 years and female patients made up 87.6% of the participants. The majority are Caucasian (58%), and 17% Black, 10% First Nations, and 10% of Asian descent. Participants did not have differing gender identities as compared to their gender at birth. 95% of participants were heterosexuals. 44% were employed, 29% retired, 19.5% were on disability and 7.3% were unemployed. 39% were rural residents. 92.7% had access to primary care (PC group) and 7.3% did not currently have access to primary care (NPC group). The NPC group had a mean SLEDAi-2K score of 3.00 ± 1.73, which was numerically higher, but statistically insignificant as compared to the mean score of 2.71 ± 4.44 in the PC group. The ACR damage index score was 1.33 ± 1.89 in NPC group and 1.68 ± 2.40 in PC group. 15.8% of the PC group had lupus-related pregnancy complications, however 33.3% of the NPC group had pregnancy complications. NPC group had LupusQoL questionnaire score of 69.03 ± 19.15, whereas the PC group had a score of 69.39 ± 21.84. No statistically significant difference was found in the number of visits to emergency department in 2021-2022, between NPC group and PC group.
Conclusion: At this stage, we have described the social determinants of health within the OLSER cohort. Our preliminary results suggest SLE patients without access to primary care may have an increased risk of pregnancy complications, but the sample size is small, and the study is ongoing. Further multivariate analysis is planned.

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Occupation as a Gendered-Role and Outcome in Systemic Sclerosis.

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Objectives: Sex and gender differences in disease onset and course are of growing scientific interest. While sex differences have been shown to exist in systemic sclerosis (SSc), there is a paucity of data on gender-related factors. Our objective was to examine the association between occupation, a gender-related role, and various outcomes in SSc.
Methods: Data were extracted from the Canadian Scleroderma Research Group registry. An occupation score was constructed using the National Occupational Classification (NOC) 2016 and data collected by Statistics Canada. The proportion of women in the general population in each of the 47 specific occupations in the NOC was calculated (possible range from 0 to 100%); the lower the proportion, the more traditionally held by men and the higher the proportion, the more traditionally held by women the occupation was considered. Each patient was then assigned an occupation score ranging from 0 to 100 based on their self-reported occupation. We examined the associations between occupation score and various clinical outcomes. Multivariate models, adjusted for sex, age, smoking and education were used to estimate the independent effect of occupation score on SSc.
Results: We included 1104 subjects, of which 961 were females (87%) and 143 (13%) males. There were differences between females versus males: disease duration (9.9 vs 7.6 years,

p=0.002), diffuse disease (35% vs 54%, p<0.001), interstitial lung disease (ILD; 28% vs 37%, p=0.021), and pulmonary hypertension (PH; 10% vs 4%, p=0.033), but not pain, response to treatment and mortality. The median occupation scores differed between females and males (84.3 [IQR 56.8, 89.4] vs 24.9 [4.3, 54.1], p<0.001). Spearman correlation between sex and occupation score was 0.44, indicating a weak correlation. In adjusted analyses, occupation score was not an independent predictor of disease subset (diffuse vs limited), ILD, PH, pain, response to treatment or mortality (Table 1).
Conclusion: We did not find independent associations between an occupation score, a gender-related role, and various outcomes in SSc. These results should be interpreted with caution as occupation may be a poor measure of gender. Future research using a validated measure of gender will be needed to generate robust data on the effect of gender in SSc.

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MITOCHONDRIAL DYSREGULATION IN FATIGUED SYSTEMIC SCLEROSIS AND MPO-ANCA ASSOCIATED VASCULITIS PATIENTS

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Objectives: Systemic Sclerosis (SSc) and MPO-ANCA associated vasculitis (MPO-AAV) patients often suffer from fatigue reminiscent of myalgic encephalomyelitis/chronic fatigue syndrome (ME/CFS). Studies have suggested that ME/CFS patients have an altered metabolic profile. In the current study, we evaluated the expression of various mitochondrial and metabolic genes, and looked at markers of cellular death, as possible biomarkers for fatigue in these patients.
Methods: Mitochondrial (Dloop, ND4, CyB, Cox7C) and metabolic (PDK1, PDK2, VEGFA) gene expression was assessed through qPCR. Cell free mitochondrial DNA integrity, defined as the ratio of small to large 16S-RNA fragments, was determined by qPCR. Results were normalized to GAPDH. This small-scale study included 10 healthy controls, 10 fatigued SSc patients, 10 non-fatigued SSc patients and nine fatigued MPO-AAV patients. The Canadian consensus criteria were used for ME/CFS diagnosis. The level of fatigue was assessed using the Multi-Dimensional Fatigue Inventory (MFI) and the Functional Assessment of Chronic Illness Therapy – Fatigue (FACIT-F) questionnaires.
Results: Compared to healthy controls, expression of mitochondrial ND4 (0.442 [0.10]) and CyB (0.385 [0.08]) was reduced in both fatigued SSc (0.105 [0.21], p=<0.002; 0.110 [0.23], p=0.006) and fatigued MPO-AAV (0.265 [0.24], p=0.02; 0.233 [0.18], p=<0.001) patients. Analysis of metabolic genes found fatigued SSc patients (-1.52 [0.18]) had lower expression of PDK1 than healthy controls (-1.35 [0.0129]; p=0.01). A significant trend was also observed for the expression of both PDK1 and PDK2 in fatigued MPO-AAV patients (-1.54 [0.19]); -2.393 [0.379]), where expression was lower than in healthy controls (-1.35 [0.12]; p=0.05) and (-2.19 [0.26]; p=0.05). mtDNA integrity indicated that fatigued MPO-AAV patients have a more necrotic profile (1.08 [0.03]) than healthy controls (1.00 [0.04], p=0.002). There was no difference in mtDNA integrity between fatigued SSc patients and healthy controls. Pairwise correlations were carried out for the SSc group (n=20), where PDK1 expression was shown to be

correlated with the expression of both ND4 (p=0.009) and CyB (p=0.004). ND4 and CyB expression correlated with FACIT-F scores, p=0.004 and p=0.02, respectively.
Conclusion: A large proportion of rheumatology patients suffer from co-morbid ME/CFS. We have shown that there is evidence of both mitochondrial dysregulation in these patients. Further prospective and functional studies are needed to determine if this altered signature can be employed as a potential biomarker to better identify these patients. Our findings may help guide the design of future clinical interventions for various groups of rheumatology patients suffering from ME/CFS. Funding: Dutch Kidney Foundation (17PhD01) and Arthritis Society (19-0558)

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Mönckeberg medial calcific sclerosis: a rare mimic of giant cell arteritis

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Mönckeberg medial calcific sclerosis (MCS) is a type of arteriosclerosis that affects the tunica media of small and medium-sized arteries. It is the most common form of medial calcification and is associated with increasing age, osteoporosis, diabetes and chronic kidney disease. Rarely, it can involve the temporal artery and mimic giant cell arteritis (GCA). Only three cases have been reported in the literature of suspected GCA found to be MCS after temporal artery biopsy (TAB).

We present a 76-year old female with a history of diffuse large B-cell lymphoma treated with R-CHOP, colonic adenocarcinoma treated with hemicolectomy, type 2 diabetes, hypertension and long-standing rotator cuff pathology. She presented with headache, temporal artery tenderness, jaw claudication, 1 year of blurry vision, new visual “silver spots,” and worsening chronic shoulder pain. Investigations included an elevated ESR (64 mm/hr), elevated CRP (27.8 mg/L) and mild leukocytosis (10.2x109/L). She was empirically treated with 50mg of prednisone daily prior to admission and referred to rheumatology for diagnosis and management, after which prednisone was increased to 60mg daily (Weight = 83kg). Physical exam revealed normal radial pulses, but decreased carotid, brachial and dorsalis pedis pulses bilaterally. There was no temporal artery prominence, beading, pulselessness or tenderness. Shoulder exam was consistent with rotator cuff tendinopathy. TAB performed after 4 days of prednisone 60 mg/day reported no features of GCA but dystrophic calcification between the internal elastic lamina and the tunica media, compatible with MCS. Given her previous history of diffuse large B-cell lymphoma, she was referred to ENT; their assessment is pending. Prednisone was subsequently discontinued and after one month, her symptoms did not recur.

MCS is an important mimicker of GCA that rheumatologists should consider and quickly identify in order to minimize unnecessary exposure to glucocorticoid. Management of MCS is conservative and involves symptom control with analgesics.

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The Tongue-Tale Sign of Granulomatosis With Polyangiitis – A Clinical Pearl

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Background: Granulomatosis with polyangiitis (GPA) can be a diagnostic challenge that presents with a constellation of non-specific symptoms. Oral lesions are reported in 6-13% of GPA cases and, while often considered a non-specific finding in many diseases, the specific location of the ulcer can provide an important clue in diagnosing vasculitis. Here, we report a case of GPA presenting with a classic lateral mid-tongue ulcer.

Case Presentation: A 26-year-old female presented to hospital with fatigue, progressive dyspnea, fevers, and a worsening oral ulcer over the past week. Two weeks prior, she had recovered from COVID-19. She had recently started sulfasalazine for a possible diagnosis of peripheral spondyloarthropathy with features of inflammatory polyarthritis and iritis. Physical examination showed a lateral mid-tongue ulcerated lesion (Figure 1), nasal crusting, bi-basilar crackles, and violaceous papules affecting bilateral elbow extensor surfaces. There were no tender or swollen joints nor lymphadenopathy. Initial workup revealed a hemoglobin of 60 g/L, mild eosinophilia of 1.4×109/L, creatinine of 152 μmol/L (previously normal), urinalysis with microscopy positive for blood and protein, C-reactive protein of 166 mg/L and chest x-ray showed bilateral diffuse, patchy infiltrates. A differential diagnosis of infection, hypersensitivity drug reaction from sulfasalazine, and various autoimmune diseases was considered. The suspected pulmonary renal syndrome, nasal crusting, and location of her tongue ulcer raised concern for GPA.

Further investigations showed no evidence of bacterial or viral infections. Testing for proteinase 3-ANCA was strongly positive (>8.0 IU, upper limit of normal 1.0) and remaining serology including ANA was negative. Bronchoscopy revealed diffuse alveolar hemorrhage. On day 3 of admission, she developed new epistaxis. Skin biopsy demonstrated leukocytoclastic vasculitis. Based on these findings, the diagnosis of GPA was confirmed, and she was started on high dose glucocorticoids and rituximab. She was discharged after 17 days with minimal symptoms and stabilized creatinine. On follow up, there was no clinical or biochemical evidence of disease activity, including resolution of her tongue ulcer and rash.

Conclusion: This presentation of multisystem disease pointed towards an autoimmune etiology. However, the lateral mid-tongue ulcer is a finding characteristic of vasculitis, such as giant cell arteritis and GPA, and was an important diagnostic clue that informed an early diagnosis of GPA. These findings reinforce a careful history and physical examination remain the cornerstone of diagnosing multisystem autoimmune diseases.

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The Utility of 18F-FDG-PET/CT in Assessing Disease Activity in Giant Cell Arteritis

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Objectives: 18F-FDG positron emission tomography (PET/CT) is sensitive and specific for diagnosing giant cell arteritis (GCA), but its role in following patients on treatment is less clear. Our study evaluated PET/CT in assessing clinical disease activity in patients with GCA while on treatment.
Methods: A retrospective chart review of patients diagnosed with GCA at the University of Alberta Hospital, Edmonton, Alberta who had undergone at least 2 PET scans > 3 months apart was performed. Clinical data was recorded. PET/CT images were re-reviewed by a blinded Nuclear Medicine radiologist. Vascular uptake was scored 0 to 3 compared to the liver in 7 territories. Total vascular scores (TVS) were calculated (0-21). Scans with vessel > grade 2 uptake were considered active. CRP > 10 was considered active.
Results: We identified 10 patients diagnosed with GCA who underwent 27 PET/CTs over a median of 38.3 months (range 12-72) See Table 1 for baseline demographics. At time of 27 PET/CT scans, 18 patients were clinically active and 9 were in clinical remission. In 17/27 (63%) cases, PET/CT activity agreed with clinical disease activity (in 16/17 cases both deemed active, and 1/17 both quiet). In the 10 (37%) discordant cases, PET/CT was active despite clinical remission in 8 and was normal despite clinical activity in 2. Following TVS over time, clinical disease activity and PET/CT uptake trended together in 12 of the 17 (70.6%) follow up scans (5 cases both improved, 6 cases both worsened, 1 case both stable), while in 5 scans there was discordance (2 cases clinical activity improved/TVS worsened, and 3 cases clinical activity worsened/TVS improved). For comparison, CRP agreed with clinical disease activity in 16 of 27 cases (59.3%) and was discordant in 11 (10 cases CRP normal despite clinical activity, 1 case CRP elevated despite quiescent disease). Of 18 the patients with clinically active disease, 6 patients had both active CRP and PET/CT, but in 10 only PET was active, and in 2 only CRP was elevated. In no cases were neither CRP nor PET/CT positive. Of the 9 patients with clinically quiescent disease, CRP was negative in 8 cases and PET/CT was normal in one case. In no cases were neither CRP nor PET/CT normal.
Conclusion: FDG PET/CT total vascular scores trended with clinical disease activity in the majority (70%) of follow up cases and provided complimentary information to CRP. Additional scans in patients in remission are needed.

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Exercise And Physical Activity Interventions For Pediatric Rheumatic Diseases: A Scoping Review

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Objectives: Previous studies have reported impaired physical fitness in children with pediatric rheumatic diseases (PRDs). Exercise prescription and physical activity promotion may have an important role to play in disease management. Several systematic reviews of exercise therapy trials in children and adolescents with PRDs have been conducted. Conclusions on efficacy from

these reviews, however, have been challenging due to the substantial heterogeneity in exercise interventions and reported outcome measures. The objective of this scoping review is to summarize the variety of interventions and outcomes that have been done to date to facilitate the development of core exercise study outcome sets for PRDs. This scoping review focused on four PRDs: Juvenile idiopathic arthritis (JIA), Juvenile dermatomyositis (JDM), Juvenile systemic lupus erythematosus (JSLE), and Juvenile fibromyalgia (JFM).
Methods: A search of literature was conducted with a research librarian using the following electronic databases: MEDLINE, Embase, SPORTDiscus, CINAHL, Cochrane Library, and PsycINFO. Published peer-review journal articles were included if they had an exercise or physical activity intervention, if they studied the intervention in participants <18 years of age with a diagnosis of JIA, JDM, JSLE, or JFM, and if the article was written in English. Study screening and selection were performed independently by two reviewers (YKL and KMS). Data extraction was performed by one reviewer (YKL) and checked by a second reviewer (KMS). Disagreements were resolved by discussion or with a third reviewer (BMF).
Results: This scoping review yielded 67 published research papers, which reported 60 unique trials. Interventional study designs included randomized controlled trials, pre-post studies, crossover trials, and non-randomized trials. There was substantial heterogeneity in intervention purpose, intervention components, and outcome measures among the trials. Most studies were conducted on patients with JIA. Exercise training regimens varied across studies. Several studies examined the effects of specific forms of exercises such as Yoga, Pilates, Cardio-karate, Qigong, and water-based exercises. Outcome measures and measurement tools also varied but pain and physical function were the two most commonly measured outcomes. No study reported significant disease activity exacerbation or persistent discomfort resulting from exercise or physical activity intervention.
Conclusion: Future studies should focus on developing a core exercise study outcome set so that meta-analysis can be conducted to quantify the degree of benefit from physical activity. A coordinated effort by the research community to replicate interventional designs and improve the quality of reporting is needed to develop evidence-based exercise guidelines for this clinical population.

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Quality Assessment of Online Self-Management Resources for People with Osteoarthritis

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Objectives: The majority of osteoarthritis (OA) patients do not use self-management tools in their disease control plans, stating access to information about them as barriers. Self-management incorporates disease education, symptom control, and skill-building. While previous studies have analyzed online OA programs, their search protocols are not representative of actual internet search customs. We developed a wide-scale, multi-search engine inventory of online OA self-management resources and assessed each resource's quality, understandability, actionability, accessibility, and transparency, while maintaining the integrity of an internet user's typical behaviour.
Methods: Three search entries ("osteoarthritis self-management," "how to manage

osteoarthritis," and "treatment of osteoarthritis") were conducted on Google, Yahoo, Bing, and DuckDuckGo. Private browsing isolated searches from the researcher's browsing history, cookies, and cache. To recreate realistic search patterns, we indexed only the first page of results from each engine. Programs were assessed using the DISCERN, PEMAT, SMOG and FOG tools, and were deemed transparent if they provided references and disclaimers for third-party affiliations.
Results: The searches yielded 110 results, of which 12 remained after inclusion and exclusion criteria. The mean DISCERN score (M=4.22) equates to high quality, the PEMAT scores for understandability and actionability were 85% and 58%, and the SMOG (M=9.33) and FOG (M=12.5) scores indicate difficult reading levels. All programs met transparency criteria. Results are shown in Table 1. [1]
Conclusion: Online resources for OA self-management achieved good DISCERN and PEMAT scores. These results contrast with those found in previous studies, which may be due to their search methods. We believe the accuracy of our search protocol in reproducing internet users' behaviour is a significant strength of our study. Reading levels are higher than the current recommendations for health information and may pose barriers to patient accessibility. Overall, online resources may be valuable tools for patients and healthcare providers in the self-management of OA.

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Comparison of Disease Outcome in Psoriatic Arthritis Patients Initiating Early Versus Delayed Biologics Treatment: An Analysis from the University of Toronto Psoriatic Arthritis Program Database

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Objectives: Early consultation is associated with better outcome. We aimed to determine whether the short-term response to biologics in biologic-naïve psoriatic arthritis (PsA) is better in patients initiating biologic treatment early in the disease course.
Methods: PsA patients started on biologic therapy from the year 2000 to 2018 at the University of Toronto Psoriatic Arthritis Program were enrolled for analysis. Eligible patients were designated as being in an early treatment (ET) group, defined as starting biologics within 2 years of PsA diagnosis, or delayed treatment (DT) group otherwise. The primary outcome was a 50% reduction in the Disease Activity Index for Psoriatic Arthritis (DAPSA) score at 6-months. Mann–Whitney U-test and $\chi 2$ were used to compare continuous and categorical baseline demographic and disease characteristics, respectively. Logistic regression was used to examine the association between early treatment and DAPSA response at 6-months, adjusted for potential confounders (age at start of treatment, sex, and baseline psoriasis areas severity index (PASI) score).
Results: Of the 252 included patients, 77 patients were in the ET group and 175 patients in the DT group. The mean (SD) age of ET group was 41.4 (13.3) years versus 48.3 (12.6) years for DT group (p= <0.01). Significant difference was observed in the mean (SD) time from diagnosis to start of first biologic between two groups (ET: 0.90 (0.62) years, DT: 5.81 (3.61) years;

p=<0.01). While there was no statistically significant difference in the type of biologics that was prescribed, etanercept was the most frequently prescribed drug in both groups. Higher baseline disease activity was observed among ET group with statistically higher mean swollen joint count (p= 0.034), tender joint count (p= 0.037), DAPSA score (p=0.023) and NSAID use (p=0.017). Early treatment group also demonstrated higher Health Assessment Questionnaire (HAQ) score (p= <0.01), but lower Short Form-Physical Component Score (SF-PCS) (p=<0.01) compared to the delayed treatment group. There were no statistically significant differences in sex, ethnicity, baseline CRP, ESR, DMARD use, nail lesions, enthesitis, dactylitis, sacroiliitis, joint damage, PASI score and physician global assessment score. Logistic regression modelling demonstrated that early treatment was not associated with DAPSA response at 6-month (OR 0.85, 0.30-2.29, p=0.75), after adjusting for age at start of treatment, sex, and baseline PASI score.
Conclusion: We demonstrate that there is no difference in short-term disease outcome between PsA patients started on early versus delayed biologic treatment. Further analysis evaluating the difference in long-term outcome will be useful.

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A comparison of PsA and RA patient profiles requiring advanced therapies: PsA patients access to the advanced therapies earlier than RA

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Objectives: International guidelines recommend switching to advanced therapy (AT) in patients with Rheumatoid Arthritis (RA) and Psoriatic Arhtritis (PsA), when csDMARD therapies fail. There are several factors playing a role in that decision making, including patients' comorbidities and choices as well as the availability of the treatments. Here we present the results of a comparison of PsA and RA patient profiles requiring advanced therapies, from our pilot biologics clinic. Better patient outcomes in one disease may help us to recognize what can be improved in the other.
Methods: Biologics clinic is a new initiative at the Ottawa Hospital aiming to improve the long-term outcomes of patients with inflammatory arthritis. Patients who are about to start or switch to another AT are evaluated at the biologics clinic. Extensive data regarding disease history, medication exposure and disease activity measures are collected in a standard fashion; the comorbidity burden is documented and managed. A protocoled ultrasound is conducted at baseline and three-month intervals, until reaching remission. The data presented here represent a pilot exploratory comparative analysis.
Results: PsA (n=10) and RA(n=22) patients had similar demographic features, including sex and age (table). The majority of the comorbidities were similar in both groups, although PsA patients had more frequent liver disease numerically and less alcohol use. PsA patients had more tender joints, although the US scores of RA patients were higher. Disease duration at the first biologic therapy was significantly less in PsA (0.5 (4.6) years) compared to RA (7 (10), p=0.006) and

PsA patients were less treated with csDMARD therapies.
Conclusion: According to our preliminary data, PsA patients access to AT earlier than the RA patients. This may be due to the heterogeneity of PsA, such as manifestations other than the joint inflammation (such as enthesitis and axial disease) determining treatment decisions. PsA patients also had more frequent liver disease, which also prevented initiation of csDMARD therapies and led to expediated initiation of the AT- as early as at diagnosis. Whether earlier access leads to better patient outcomes in PsA compared to RA, will be investigated with long-term follow up. PsA patients having more tender joints despite less severe US scores is possibly due to the proximity of the enthesis to the joints and difficulties to differentiate entheseal pain from joint involvement by the physical exam. The use of US may improve the assessment of the domains in PsA leading to choosing the right treatments.

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An Audit of Patient Satisfaction During the First Six months of The Ottawa Hospital's Rheumatology Biologics Clinic: A Quality Assessment Initiative

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Objectives: Individuals with inflammatory arthritis (IA) such as Rheumatoid Arthritis (RA), Psoriatic Arthritis (PsA), and Axial Spondyloarthritis (AxSpA) have an elevated risk of cardiovascular disease, infections, malignancy, and osteoporosis. In February 2022, we initiated the biologics clinic in our hospital's division for patients starting biologic disease-modifying anti-rheumatic drugs (bDMARDs) or targeted synthetic DMARDs. We collected extensive data on comorbidity, disease-/medication- history, disease activity measures, and musculoskeletal ultrasound (MSUS) images of joints, entheses, and tendons. We also educated patients on biologic safety and ensured their vaccinations and infectious screening are completed. These are repeated at follow-up visits to facilitate treatment decisions and new comorbidities are investigated. With this audit, we aim to qualitatively evaluate patients' experiences with the biologics clinic.
Methods: We conducted a telephone-based audit of patients' experience. Our clinical coordinator, AZ, contacted a random sample of 26 biologics clinic patients and conducted a 15-20 minute-long structured, formal interview. Patient responses were anonymously reviewed by our clinical team, followed by thematic analysis to determine categories of patient experiences.
Results: Of the 26 patients, 58% were female, 46% had RA, 27% PsA, 27% AxSpA, and had mean age of 53±15 years. 46% were initiating their first biologic. The mean time from referral to biologic assessment was 10±7 days and average time to start a biologic was variable, 40±40 days. 100% of respondents had a generally positive experience with the clinic. 73% felt that the biologics clinic provided additional value beyond their typical rheumatology appointments. 96% felt that the pre-biologic consultation was a positive experience, however one patient felt that the team did not explain the reason behind the extensive questioning. 92% found the MSUS appointment to be useful; most found it interesting, informative, and validating condition

specifics. 54% of patients felt that they learned novel information about their disease/biologic. One patient suggested adapting this clinic model to other settings. Suggested improvements included shortening wait-time to our/associated departments and biologic initiation, making our clinic schedule more flexible, and resolving transportation/parking issues.
Conclusion: Feedback regarding the patient-oriented success of the biologics clinic is reassuring. From suggestions, we have expanded our clinic hours to facilitate more timely appointments. We have been providing further reasoning for running this specialized clinic to patients. Our next steps will be to quantify arising comorbidities and measure improved pre-biologic vaccination rates. We will also use the BioSafe questionnaire to quantify the educational success of the clinic regarding safety measures while on bDMARDs.

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Real-World Effectiveness, Safety Profile, and Persistence of Upadacitinib. A Prototype for Collaboration Among Rheumatology Registries in Canada. The RHUMADATA-OBRI Partnership.

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Objectives: Health Canada approved Upadacitinib (UPA) in January 2020 to treat moderate-to-severe rheumatoid arthritis (RA). It was launched just before the COVID-19 pandemic, making its early monitoring challenging. Virtual visits resulted in a shortage of rheumatologist-reported measures and clinical and safety outcomes. We first outline the steps to establish a collaboration between RHUMADATA and the Ontario Biologics Research Initiative (OBRI) required to monitor early UPA use. Next, we describe the characteristics and treatment retention of RA patients treated with a TNF inhibitor (TNFi) or UPA during COVID-19.
Methods: 1. Collaboration: We reviewed past collaborations and written communications (emails, phone calls, virtual meetings) between OBRI and RHUMADATA to describe the steps leading to abstract submission. 2. Treatments: Study participants were adults when diagnosed. Participants provided informed consent (IC) and were enrolled in RHUMADATA or OBRI. Data sharing was consented to by all patients. Retention curves for UPA and TNFi were analyzed but not compared.
Results: 1. Collaboration: -A research question emerged from the lack of data reported for UPA. -We identified the study population to determine feasibility. -Comparison of data collection methods. -Uniform definitions of data variables and discrepancy-handling solutions. -Data collection time window and sample size were established. -Data sharing was not included in the original OBRI IC. As a result, OBRI patients were asked to re-consent. -Formal protocol jointly developed. -Data-sharing agreement and a contract were drafted and submitted to the UHN for review and approval of ethics (REB). -Data was pooled securely. -The registry's baseline characteristics were analyzed, and discrepancies addressed. -Analysis. -Abstract. 2. Treatments: This analysis included 260 patients (118 UPA and 142 TNFi), with average age of 61.1 (11.8), 81.5% female and 9.0% smokers. Disease duration was 13.8 (10.5) years at treatment initiation, and 64.6% and 64.3% were RF and ACPA positive. Retention was high as 96.9% of patients remained on their medications at EOS. HAQ-DI and CDAI scores are shown in Table 1.

Conclusion: 1. Collaboration: RA registries collect standard variables but pooling them requires many steps. The harmonization process must be clearly described to evaluate the analysis's quality. 2. Treatments: TNFi and UPA patients had similar treatment retention. In addition, few patients discontinued treatment over a mean (SD) follow-up of 445.7 (236.1) days. In the future, larger sample sizes will allow us to address our objectives better and account for the impact of non-randomized treatment assignments in observational studies.

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Analysis of The RHUMADATA™ Clinical Database and Registry Using A Data Science Approach

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Objectives: For this study, we used RHUMADATA patient records that allowed geolocation. The impact of socio-economic and geographical factors on treatment success is studied with data science models. Data science combines domain expertise with computer capability, math, and statistics skills to deliver meaningful insights. Data science uses algorithms to construct regression and classification models.

Methods: We developed a model to predict initial treatment success using RHUMADATA data. By proxy, weight and postal codes reflect socio-economic and regional factors. We constructed six models, one unaffected by treatment, while the others depend on initial treatment (ETANERCEPT, ADALIMUMAB, INFLIXIMAB, GOLIMUMAB, and ABATACEPT). By comparing results, we can determine which processing sequence performs best. This model uses a penalized logistic approach (in which minor relevant predictors are discounted by a penalty). The models were trained and adjusted to find the best fit. Random forest models were then built. To evaluate and compare them, ROC curves were used. This study used variables with fewer than fifty percent of values missing. These included socio-demographic factors, concurrent use of csDMARDs and other drugs, comorbidities, laboratory tests, patient-reported outcomes (PROs), joint counts, and rheumatologist global assessments. In addition, we built six smaller datasets, one for each model. Twenty-five percent of each dataset will be used for testing and seventy-five percent for training. Validation will be performed on twenty percent of

Results: The model presented is independent of the therapy administered to the patient and uses data from 1,269 advanced treatment episodes. We ran penalized logistic regression and random forest models. For that dataset, the random forest model is uniformly better across event probability thresholds. Training and tuning produced a model, with an area under the curve (AUC) of 0.655 and validation produced an AUC of 0.679. In that model, socio-economic and geographical features play a substantial role. We also ran our models on the different treatments to find factors that would predict the success of therapy. The results are presented in Table 1.

Conclusion: We obtain promising results, allowing us to understand better which variables are essential to the success of treatment. The socio-economic and geographic features play an influential role as they can help design better public health policies.

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Practice Gaps and Educational Needs of Canadian Rheumatologists Treating RA Patients with Treat to Target Approach: Evidence from a Canadian Survey

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Objectives: To assess current knowledge, skills and practice behaviours of Canadian rheumatologists as it relates to the treat-to-target (T2T) approach management of rheumatoid arthritis (RA) patients and identify perceived barriers to real-world implementation of T2T in Canadian practice.

Methods: A 10 minutes non-remunerated quantitative survey was deployed to rheumatologists in 35 countries. Data presented here was collected in Canada between June 6 to July 31, 2022. Eligibility criteria included: active practice in rheumatology for ≥2 years and having ≥10 unique RA patients/year. The survey included frequency questions asked on a 5-point rating scale (never/rarely/sometimes/often/always). Barriers were assessed on a 4-point scale (not at all a barrier/minor/moderate/serious barrier). Knowledge, skill, and confidence questions were asked on a 5-point scale and recoded as dichotomous variables for analysis: sub-optimal (no; basic; intermediate knowledge/skill; slightly/somewhat confident), and optimal (advanced or expert knowledge/skill; confident/very confident).

Results: Among surveyed Canadian rheumatologists (n=54) 52% had practiced rheumatology for over 21 years, 15% between 11-21 years, and 34% between 2-10 years. Over three-quarters (78%) reported applying T2T approach consistently or frequently. Despite awareness of T2T principles, participants reported sub-optimal knowledge of standardized methods to assess patients' health literacy levels (65%), how to explain T2T approach to patients (41%), and patient-reported outcomes (PROs) to assess disease activity (35%). Sub-optimal skills were reported in determining health literacy of patients (50%), using PROs to assess disease activity (33%), and adapting T2T principles to clinical context when treating patients with RA (26%). Survey participants reported never or rarely using apps or tools to monitor disease activity (59%), using a disease activity calculator (59%) or using telehealth to monitor patients (43%) (Figure 1). The factors most frequently reported to be barriers to the measurement of disease activity included: medical records not adapted to document measures (19%); patient not adhering to treatment (18%); and differences in assessments reported by patients and composite measures (16%). Surveyed rheumatologists reported never using treatment considerations checklists (42%); self-reflection questionnaires (39%); and shared decision-making tools (31%) in their practice with RA patients. Common reasons for not using tools included tools not being available or lacking awareness of their existence or tools being time-consuming.

Conclusion: Results from this survey sheds light on potential practice gaps and educational needs of Canadian rheumatologists. These insights can inform the development of educational programs and interventions to support a better implementation of T2T to improve care delivered to patients with RA in Canada.

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Use of Internet Based COVID-19 Information Amongst a Rheumatology Interested Population

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Objectives: Throughout the COVID-19 pandemic, different rheumatology organizations have provided web-based information to patients and the public on COVID-19 which may be unique to those with rheumatic disease. The uptake of this information has not been widely reported. This study reviews user interaction with the COVID-19 resources available on the AlbertaRheumatology.com website and how that compares to overall website interaction.

Methods: The AlbertaRheumatology.com website was originally established in 2010 with an intended varied audience of those interested in rheumatic disease in the province of Alberta. In March 2020, information on COVID-19 was first posted with regular ongoing updates, with a second page focused on COVID-19 vaccines posted December 2020. Data analytic software is embedded in these resources, which allows the administrator to determine the number of webpage views, visit length, and geographical location. This data was collected and compared to non-COVID resources available through the website.

Results: Between January 2020 and August 31, 2022, COVID-19 resources on the AlbertaRheumatology website had 16,360 webpage visits, representing 3.34% of website page views during the time. Peak visits occurred in March 2020, January to March 2021, and September 2021. Just over half (55%) of the visits were to the COVID-19 vaccine page, 40% to the COVID-19 overview page, with the remainder visiting the 'Ask the Rheumatologist' area. Visit length averaged 4:12 minutes for COVID-19 vaccines and 2:12 minutes for the COVID-19 overview, compared to an average of 2:05 minutes for other areas of the website. 71% of visitors were from the province of Alberta, 17% from other regions of Canada, and the remainder international, compared to the overall website where only one-third of users are from Alberta and 50% from Canada.

Conclusion: Conclusion: The COVID-19 resources developed for the AlbertaRheumatology website appear to have had good user engagement. Users spent more time visiting the web based resources compared to other areas of the website, with better engagement in the geographic target audience of Alberta.

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Patient and Rheumatologist Interest in the Development of a new Methotrexate Delivery System

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Objectives: Methotrexate remains the gold standard medication for rheumatoid arthritis. It is considered first line therapy for most patients and is often used in combination with advanced therapies to support maximum therapeutic benefit. Further, data suggest that subcutaneous methotrexate may be more efficacious than oral methotrexate with similar if not less risk of adverse events. Despite this, it is also known that methotrexate adherence is poor (with many studies suggesting patients are only approximately 50% adherent), which clearly impacts its potential benefit, and thus overall healthcare costs. Medication delivery systems that are more

user friendly have demonstrated improved patient adherence. Our objective was to determine rheumatologist and patient acceptance of a theoretical new reusable autoinjector system for methotrexate.
Methods: A survey was distributed to rheumatologists in Edmonton, Alberta as well as throughout Canada. The survey focused on preference for methotrexate formulation and delivery system and willingness to pay. Responses were stratified based on the current methotrexate delivery systems (oral, injectable methotrexate, preloaded methotrexate syringe). A similar survey was shared with consecutive patients at a community based rheumatology clinic in Edmonton.
Results: 30 rheumatologists and 102 patients participated in the survey. A majority of rheumatologists indicated they preferred the new delivery device, sharing they would switch 2/3 of patients on traditional injection methotrexate, 56% on oral methotrexate, and 58% on prefilled syringes. Patients also preferred this proposed device. Of those using injectable methotrexate (N=56), 81% were likely to switch, while of those using oral methotrexate, 42% stated they were likely to switch. Fifteen of twenty two (69%) patients no longer on methotrexate would prefer this product if they were still on methotrexate. Most respondents felt this new product should be the same price as current offerings, with a strong minority suggesting they would be willing to pay $10-25 more per month if it was available.
Conclusion: There appears to be interest from both rheumatologists and patients in a new methotrexate delivery device that would simplify delivery and reduce environmental impact. Based on similar literature, there is a suggestion this device may also improve medication adherence, which could then also improve patient outcomes. Further exploration of device development should occur.

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Impact of Patient Characteristics, Including Sex, on the Efficacy of Upadacitinib Compared With Adalimumab in Patients With Psoriatic Arthritis

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Objectives: This post hoc analysis of the Phase 3 SELECT-PsA 1 trial (NCT03104400) evaluated responses to the Janus kinase inhibitor upadacitinib (UPA) vs the TNF inhibitor adalimumab (ADA) at weeks 24 and 56 in selected patient subgroups.
Methods: Patients in SELECT-PsA 1 were randomized 1:1:1:1 to UPA 15/30 mg once daily, ADA 40 mg every other wk, or placebo (PBO) followed by UPA 15/30 mg starting at Week 24; treatment was double blinded until Week 56. This subgroup analysis evaluated the efficacy of UPA 15 mg vs ADA based on patients’ ages (<65 vs ≥65 years), sex (male [M] vs female [F]), BMI (<30 vs ≥30 kg/m2), time since diagnosis (<2 vs ≥2 years), and symptom duration (<9 vs

≥9 years) at baseline (BL). Outcomes assessed included ACR20/50/70, PASI75/90, and resolution of enthesitis, all at Weeks 24 and 56; and change from BL in tender/swollen joint count in 68/66 joints (TJC68/SJC66), Physicians' and Patients' Global Assessment of disease activity (PhGA and PtGA), patients' assessment of pain, high-sensitivity CRP (hsCRP), and Health Assessment Questionnaire Disability Index (HAQ-DI) through Week 56.
Results: ACR20/50/70 response rates at Week 24 were significantly greater with UPA vs PBO across all subgroups evaluated, but not across all subgroups with ADA vs PBO. For ACR20/50, treatment effect sizes differed by sex and BMI, with greater differences seen in M vs F and in patients with lower (<30 kg/m2) vs higher BMI. ACR20/50/70 response rates at Week 56 were either comparable or higher with UPA vs ADA in both sexes. Changes from baseline in TJC68/SJC66 were generally comparable between sexes in both treatment groups (Figure). Generally greater mean changes were also observed in HAQ-DI from BL to Week 56 for M vs F within treatment groups. The same was true of PhGA and PtGA, albeit to a lesser extent. Patients' assessment of pain at BL was lower for M (UPA, 5.8; ADA, 5.4) vs F (UPA, 6.5; ADA, 6.5). Significantly greater improvements from BL were seen at Week 56 with UPA vs ADA in PhGA, PtGA, and HAQ-DI in F, and in PtGA, patients' assessment of pain, and hsCRP in M.
Conclusion: We observed sex-based differences in response to UPA vs ADA in patients with PsA. Significantly greater improvements in ACR70, PtGA, patients' assessment of pain, and hsCRP in M, and in ACR50/70, PASI75, PhGA, PtGA, and HAQ-DI in F, were seen with UPA vs ADA at Week 56.

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Efficacy of Guselkumab in Three Cohorts of Biologic-Naïve PsA Patients with Axial Involvement Defined Based on Imaging and Machine-Learning Criteria: Pooled Analysis of Two Phase 3 Studies

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Objectives: Guselkumab (GUS), showed early and sustained improvements in Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) and Ankylosing Spondylitis Disease Activity Score (ASDAS) among patients (pts) from the DISCOVER-1/2 studies (D1+D2) with imaging-confirmed sacroiliitis consistent with axial involvement. Using unsupervised machine learning (ML), a cluster of D1+D2 pts with axial involvement was identified. We sought to contrast pt profiles across axPsA cohorts defined by imaging and ML criteria and to evaluate the efficacy of GUS in improving disease activity across cohorts.
Methods: Adult pts enrolled in D1+D2 had active PsA despite standard therapies. Pts were randomized 1:1:1 to GUS 100 mg every 4 weeks (Q4W); GUS 100 mg at W0, W4, then Q8W;

or placebo. This post-hoc analysis included bio-naïve GUS-treated pts (pooled GUS Q4W and Q8W) who met one of the following axPsA definitions: (1) Presence of spondylitis based on imaging confirmation (Imaging axPsA); (2) ML-identified axial cluster2 (ML axPsA); (3) fulfilment of both Imaging & ML axPsA definitions. Efficacy assessments included least squares mean changes in BASDAI, modified BASDAI (mBASDAI; excluding peripheral joint pain), spinal pain (BASDAI Q2), morning stiffness (BASDAI Q5/6) scores and ASDAS, as well as achievement (employing non-responder imputation for missing data) of ≥50% (BASDAI50) or ≥70% (BASDAI70) improvement in BASDAI, and ASDAS response of low disease activity (LDA; <2.1), inactive disease (ID; <1.3), clinically important improvement (CII; change of ≥1.1), and major improvement (MI; change of ≥2.0).
Results: 185/669 (28%) bio-naïve GUS-treated pts in D1+D2 were included (181 Imaging axPsA, 81 ML axPsA, 77 both definitions). Baseline characteristics were comparable across cohorts. Irrespective of axPsA definition, GUS treatment was associated with significant (nominal $p<0.001$) improvements in BASDAI, mBASDAI, spinal pain, morning stiffness, and ASDAS at W8 that continued being enhanced through W24. The proportion of pts achieving categorical BASDAI & ASDAS endpoints also increased through W24, with W24 response rates of 36-38% for BASDAI50, 17-22% for BASDAI70, 49-53% for ASDAS CII, 28-31% for ASDAS MI, 38-44% for ASDAS LDA, and 14-22% for ASDAS ID across the 3 cohorts [Figure 1].
Conclusion: Irrespective of different definitions, pts with active axPsA treated with GUS had significant and clinically meaningful improvements in BASDAI score, mBASDAI score, and ASDAS as early as W8, including in axial-specific domain of spinal pain, that continued to improve through W24. These results further support the efficacy of GUS in treating PsA pts with axial involvement.

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Long-term Efficacy of Guselkumab in Fatigue and Identification of Early Treatment Targets: Post hoc Analysis through 2 Years of a Phase 3, Randomized, Double-blind, Placebo-controlled Study Conducted in Biologic-naïve Patients with Active Psoriatic Arthritis

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Objectives: Guselkumab (GUS) demonstrated clinically meaningful improvements in fatigue through one year1. In this post-hoc analysis, the Functional Assessment of Chronic Illness Therapy – Fatigue (FACIT-F) scale was used to: evaluate the long-term effect of GUS in maintaining improvements or improving fatigue between week (W) 52 and W100, and to identify early (W8) predictors for improved long-term fatigue outcomes.
Methods: DISCOVER-2 enrolled active PsA adult patients (pts) naïve to biologics/JAK

inhibitors2. Pts were randomized (1:1:1) to GUS 100 mg every 4W (Q4W); GUS 100mg at W0, W4, then Q8W; or placebo (PBO→GUS Q4W; crossing over to GUS Q4W at W24). Pts with baseline (BL) fatigue lower than a normative FACIT-F score ≤433 were included (N=681). The proportions of pts with clinically meaningful improvement (≥4 points) from BL in FACIT-F and with normative FACIT-F levels between W52 and W100 were calculated using non-responder imputation and compared over time within each treatment group. Changes in FACIT-F over time were assessed with mixed models adjusting for time, treatment group, their interaction, and BL FACIT-F score. Receiver operating characteristics (ROC) analyses used Youden's index to determine optimal cutoffs at W8 for predicting achievement of normative scores and clinically meaningful FACIT-F responses at W100.
Results: The BL mean (SD) FACIT-F score [28.3 (8.7)] was similar across treatment groups. At W52, 66.1%, 69.6%, 68.0%, and 67.8% of pts in the PBO→GUS Q4W, GUS Q4W, GUS Q8W, and pooled GUS groups, respectively, achieved clinically meaningful improvements from BL in FACIT-F score; response rates were maintained through W100. Normative FACIT-F levels were achieved by 24.9%, 28.1% 29.4% and 27.5% of pts in each treatment group, respectively, at W52, and by increasingly greater proportions of pts through W100. Significant improvements from BL in FACIT-F scores were observed at W52, with further improvements seen from W52 to W100 across all GUS groups [Figure 1]. ROC optimal cutoff in FACIT-F improvement from BL to W8 associated with a clinically meaningful improvement in FACIT-F at W100 was ≥2.0; while for achieving normative FACIT-F levels at W100, the optimal cutoff in actual FACIT-F score at W8 was ≥39.5.
Conclusion: Clinically meaningful improvements in fatigue seen after 1 year of GUS treatment were further enhanced through 2 years, at which time nearly a third of GUS-treated pts reported normative FACIT-F levels. Early targets in FACIT-F levels achieved with GUS were identified to aid in guiding treatment decisions in routine clinical practice.

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Residual Burden and Disease Activity of Canadian PsA Patients Treated with Advanced Therapies: Preliminary Results from a Multi-Registry Analysis (UNISON-PsA)

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Objectives: To describe residual disease activity in Canadians with PsA treated with advanced therapies.
Methods: Multi-region, observational, retrospective analysis of data from Rhumadata (Quebec) and International Psoriasis and Arthritis Research Team (IPART) Canadian registries was performed separately. Patients included in the registries were eligible if they were adults at the time of PsA diagnosis and were treated with an advanced therapy for ≥6 months initiated between January 2010 and December 2019. Residual disease activity was defined as failing to achieve Minimal Disease Activity (MDA, defined as achieving ≥5 of: TJC ≤1; SJC ≤1; PASI ≤1 or BSA ≤3%; patient pain VAS score of ≤15 mm; patient global disease activity VAS score of ≤20 mm; HAQ score ≤0.5; and tender entheseal points ≤1) (primary endpoint), or Disease

Activity in Psoriatic Arthritis (DAPSA) score ≥14 (secondary endpoint) within 6 months of initiation of an advanced therapy (TNFi, IL-12/23i, IL-17i, PDE4i, CTLA4i or JAKi).
Results: A total of 1,866 subjects (Atlantic [IPART; Newfoundland]: N=83; Quebec [Rhumadata]: N=687; Ontario [IPART]: N=966; West [IPART; British Columbia, Manitoba]: N=130) were included in this preliminary analysis. Baseline characteristics are presented in the Table. Overall, 899 were receiving their 1st advanced therapy, 464 were receiving their 2nd, and 264 had received ≥3. The most common therapy class was TNFi, followed by IL-17i. Eighteen of 21 (85.7%) subjects in the Atlantic region with an assessment, 184/246 (74.8%) in Quebec, 391/571 (68.1%) in Ontario, and 30/43 (69.8%) in Western Canada failed to achieve MDA within 6 months following advanced therapy initiation (Table). Failure to achieve MDA within the allotted period was higher amongst patients receiving an IL-17i compared with a TNFi. There was no appreciable effect of lines of therapy. Also, 74 of 110 (67.3%) Quebec patients with an assessment, 201/365 (55.1%) in Ontario and 3/3 (100%) in the West failed to achieve at least low disease activity (LDA; DAPSA ≤14) within 6 months following initiation of an advanced therapy. Data were not available for the Atlantic region. The proportion of patients not achieving LDA by advanced therapy was similar for those receiving a TNFi and IL-17i but increased with line of therapy.
Conclusion: Preliminary data show that approximately three quarters of Canadians with PsA failed to achieve MDA or LDA within 6 months of initiating an advanced therapy. Disease duration is a possible explanation for not achieving MDA or LDA; better therapeutic approaches are needed to achieve these outcomes in patients with PsA.

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Sustained Response to Guselkumab Regardless of Baseline Demographic, Disease, and Medication Characteristics in Patients With Active Psoriatic Arthritis and an Inadequate Response to TNF Inhibitors: Results From a Phase 3b Trial

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Objectives: In the COSMOS trial, guselkumab (GUS) significantly improved signs/symptoms of psoriatic arthritis (PsA) vs placebo (PBO) in patients (pts) with an inadequate response (IR) to TNF inhibitor (TNFi) therapy. The primary endpoint ACR20 response at Week (W)24 was achieved, with the benefit of GUS vs PBO. This post-hoc analysis evaluated if response to GUS across disease domains was maintained through 1 year across various subgroups.
Methods: Adults with active PsA who are inadequate responders to 1–2 TNFi therapies were randomized (2:1) to GUS 100 mg or PBO. GUS group were treated at W0, W4, then every 8 weeks (Q8W) to W44; PBO group were treated at W0, W4, then Q8W with crossover to GUS at W24 followed by GUS Q8W at W28to W44. Pts with <5% improvement from baseline (BL) in SJC and TJC qualified for W16 early escape (EE); EE pts receiving GUS continued treatment,

while pts receiving PBO crossed over to GUS. Efficacy of GUS in subgroups was evaluated at W24 and W48 via joints (ACR20/50), skin (Psoriasis Area and Severity Index [PASI]100), and multi-domain (minimal disease activity [MDA]). Subgroups were defined by sex, body mass index (BMI), SJC, TJC, PsA duration, % psoriatic body surface area (BSA), and conventional synthetic DMARD use. Odd ratios (ORs) and 95% confidence intervals (CIs) for GUS vs PBO are shown for each subgroup at W24. No treatment comparison was performed after W24. Pts who discontinued and/or met EE criteria were imputed as nonresponders. Missing data were also imputed with no response through W48.
Results: 285 pts were randomized to GUS (n = 189) or PBO (n = 96). BL characteristics were generally similar between treatment groups. At W16, 39 (21%) pts in the GUS group and 45 (47%) pts in the PBO group were assigned to EE. Joints, skin, and multi-domain response rates at W24 were numerically greater in GUS vs PBO pts, with the benefit of GUS consistent across all subgroups of adequate sample size (Figure 1 [ACR20/ACR50]). Response rates with GUS were maintained, or numerically increased, from W24 to W48, regardless of BL subgroup.
Conclusion: GUS 100 mg Q8W led to improvements vs PBO in joints, skin, and multi-domain outcomes at W24 across subgroups of TNFi-IR PsA pts defined by selected demographics, disease characteristics, and ongoing medications at BL. Response to GUS was maintained or further improved through 1 year regardless of BL subgroup.

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Clinical Outcomes and Physician-Patient Alignment in Patients with Psoriatic Arthritis Receiving Ixekizumab

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Objectives: Study objectives were to assess the clinical status of patients with psoriatic arthritis (PsA) at the point of initiating ixekizumab treatment and at data collection; as well as evaluate the alignment between patients and their physicians regarding their clinical status at these timepoints.
Methods: Data were derived from the Adelphi Real World PsA Plus Disease Specific Programme™, a point-in-time, real-world study of rheumatologists and their consulting patients with PsA prescribed ixekizumab in the United States in 2022. Rheumatologists provided patient demographic information, treatment history, clinical status, and rheumatologist-perceived disease severity. Adult patients with active PsA receiving ixekizumab at data collection provided information on disease severity and pain. Analyses were conducted with both patient and physician-reported outcomes at ixekizumab initiation (baseline) and data collection. Clinical status at baseline and data collection were compared using paired t-tests for continuous variables, chi-squared tests for categorical variables, and Wilcoxon signed-rank tests for directional categorical variables. Physician-patient alignment was analysed by weighted Kappa analyses, interpreted using Cohen’s Kappa Statistic interpretation scale.
Results: In total, 23 rheumatologists provided data for 90 patients with PsA who were receiving

ixekizumab at time of data collection. Mean duration of ixekizumab exposure was 12.51 (SD 11.16) months. Patients experienced a mean of 5.61 (SD 3.34) symptoms at baseline, decreasing to 3.12 (SD 3.10) at data collection ($p<0.0001$) [Table 1]. Furthermore, none of the patients were asymptomatic at baseline, which increased to 25.00% at data collection ($p<0.0001$). Disease severity, reported by both patients and their physicians, significantly decreased between baseline and data collection ($p<0.0001$), with the proportion of patients experiencing mild disease increasing from 1.18% to 81.18% and 2.25% to 79.78% according to physicians and patients, respectively. Fair physician-patient alignment was observed on disease severity at baseline (kappa=0.2527); with moderate alignment observed at data collection (kappa=0.4554). Patients' mean physician-recorded pain also significantly decreased from 5.60 (SD 1.46) at baseline to 1.94 (SD 1.83) at data collection ($p<0.0001$). Physician-records and patients showed fair alignment on perceived pain at baseline (kappa=0.3328); and substantial alignment at data collection (kappa=0.6432). Mean physician-recorded fatigue scores also significantly decreased from 4.74 (SD 2.38) at baseline to 1.92 (SD 1.87) at data collection ($p<0.0001$).
Conclusion: Rheumatologists and their patients with PsA reported significantly improved outcomes after ixekizumab use relative to baseline. Additionally, both patients and physicians were well-aligned on patients' pain and disease severity, with alignment improving from baseline to data collection.

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A qualitative analysis of the barriers and facilitators of a behavioural weight management program for patients with Psoriatic Arthritis (PsA) and comorbid obesity: Part I of the Small Changes for Psoriatic Arthritis Study.

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Objectives: Background: Psoriatic Arthritis (PsA) is an inflammatory auto-immune disorder that affects roughly 90,000 Canadians. Patients with PsA are at a high risk of comorbid obesity (i.e., BMI ≥30 kg/m2), present in 44% of cases. While weight-loss is known to help alleviate symptom burden and improve medication response and quality of life in patients with PsA and comorbid obesity, few studies have investigated behavioural weight-loss treatment (BWLT) in patients with PsA to support sustained weight-loss over time. Aims: The present study represents part one of a series of early-phase studies. The primary aim is to explore barriers, facilitators, and preferences of patients with PsA and obesity regarding participating in a BWLT, using a qualitative- descriptive approach.
Methods: Participants: Adults (18+) with diagnosed, symptomatic, PsA and obesity (BMI ≥ 30 kg/m2) were recruited from an outpatient rheumatology clinic in Penticton, British Columbia and invited to participate in a one-on-one interview with a researcher to provide their perspectives on a BWLT designed to meet the needs of PsA patients. Interview Procedures: A semi-structured interview guide was used to ask open-ended questions designed to elicit patients' barriers, enablers, and perspectives regarding participating in a BWLT. Interviews were audio-recorded and transcribed verbatim. Analysis: Interviews were analyzed using conventional content analysis to derive meaning units, categories, and themes from the data.
Results: Twenty participants (11 women; 79% white; mean age 57 years ±2.80; mean BMI =

34.13 ± 5.27 kg/m2) completed interviews. Overall, four themes and eleven subthemes emerged from the data: (1) Negative Past Experiences with a BWLT (subthemes: concerns surrounding restrictive diets, troubles maintaining weight-loss), (2) PsA Symptoms as Barriers to BWLT (subthemes: PsA interfering with health behaviours, fatigue and pain interfering with activity levels), (3) Acceptability of Proposed BWLT (subthemes: acceptability surrounding the program content, virtual delivery, group-based format), (4) Program Preferences and Needs (subthemes: flexibility with scheduling, informational support about PsA, and cost barriers).
Conclusion: Impact/Future Directions: Results are being used to develop a BWLT tailored to meet the needs of patients with PsA, and inform a subsequent, feasibility trial comparing weight-loss among patients who receive the BWLT, relative to wait-list controls. Future directions include situating collected data within the Theoretical Domains Framework. References: (1.) Radner, H., et al. Arthritis care & research, 2017; 69, 1510-1518. (2.) Singh, J., et al. Arthritis & Rheumatol 2019; 71, 5-32. (3.) Lutes, L., et al. Ann Behav Med. 2008; 35: 351-357. **Supported by a CIORA grant**

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Early Clinical Improvement as Predictor of Long-Term Health-Related Quality of Life in Psoriatic Arthritis Patients Treated with Guselkumab: Post-hoc Analysis Through 2 Years of a Phase-3 Study

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Objectives: Patients (pts) with PsA experience lower quality of life than the general population. PsA treatment recommendations highlight the importance of maximizing long-term (LT) health-related quality of life (HRQoL) and social participation as primary goals of therapy. We aimed to determine whether early clinical improvement with guselkumab (GUS) predicts future attainment of enhanced HRQoL.
Methods: DISCOVER-2 enrolled adults naïve to biologics/JAK inhibitors with active PsA3. 739 pts were randomized (1:1:1) to GUS 100 mg at W0, W4 and then every 4 weeks (Q4W; n=245) or Q8W (n=248); or placebo (PBO) (n=246). This post-hoc analysis, pts treated with GUS were pooled. Early (W8) clinical improvement was defined as any of: (i) ≥20% improvement in SJC, TJC, pt pain, pt skin visual analog scale (VAS), and HAQ-DI; (ii) ≥4-point improvement in the Functional Assessment of Chronic Illness Therapy (FACIT)-Fatigue score; (iii) minimally clinically important improvement in clinical disease activity in PsA (cDAPSA; ≥5.7 points); (iv) change from BL in Leeds enthesitis index and dactylitis severity score (DSS). Time-averaged changes in HRQoL estimates from BL to W52-100 were determined for Dermatology Life Quality Index (DLQI), EQ-5D Index & VAS, and SF-36 mental (MCS) and physical (PCS) component summary scores. The association between early clinical improvement at W8 and LT HRQoL among GUS-treated pts was assessed with mixed models.
Results: Clinical improvement by W8 was significantly greater among GUS-treated patients compared with PBO. W8 improvement with GUS was associated with greater increase in HRQoL (EQ-5D) at W52 through W100, except for SJC on EQ-5D VAS (Figure). Similarly, pts

achieving early clinical improvement in any domain except DSS and SJC experienced significantly greater benefits in physical function (SF-36 PCS) at W52-W100. Early improvements in skin disease and fatigue were associated with greater improvement in mental health (SF-36 MCS) at W52-W100, while for skin-specific HRQoL (DLQI), early pt skin VAS response was the only predictor of HRQoL at W52-W100. Although significantly lower than in pts with early clinical improvement, benefits in HRQoL were also observed in pts without clinical improvement at W8.
Conclusion: Clinical response at W8 with GUS was associated with significantly greater improvements in HRQoL from W52- W100. Although pts without early clinical improvement demonstrated benefits in LT HRQoL, early response in distinct PsA domains differentially impacted more specific aspects of HRQoL over 2 years. In contrast, significantly greater improvements in overall and physical HRQoL were observed among responders across several PsA domains.

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Effect of Upadacitinib and Adalimumab on Residual Pain Among Patients With Psoriatic Arthritis Whose Inflammation Was Attenuated After Three and Six Months of Treatment

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Objectives: To evaluate the efficacy of upadacitinib (UPA), adalimumab (ADA), and placebo (PBO) on residual pain in patients with psoriatic arthritis (PsA) who had attenuation of inflammation.
Methods: The SELECT-PsA 1 study enrolled adults with active PsA with prior inadequate response or intolerance to ≥1 non-biologic DMARD. Randomization arms included UPA 15 mg once daily (QD), ADA 40 mg every other week, and PBO. Subgroup assessment was conducted between patients with attenuation of inflammation vs remaining inflammation at week 12 and week 24. Attenuation of inflammation was defined as swollen joint count based on 66 joints (SJC66) of 0 and CRP levels <6 mg/L. Mean change from baseline in Patient's Global Assessment (PGA) of pain at week 12 and week 24 as well as ≥30%, ≥50%, or ≥70% reduction from baseline to week 12 and week 24 in PGA of pain were assessed. Patients who received rescue therapy after week 16 were excluded from the week 24 analysis.
Results: Attenuation of inflammation at week 24 was reached by 169 (48.1%), 144 (42.0%), and 66 (24.5%) patients receiving UPA, ADA, and PBO, respectively. Some differences in baseline characteristics were observed between treatment groups in the attenuation of inflammation group, especially in CRP levels (Table). Among these patients, mean (95% CI) PGA of pain improved more for UPA (–3.8 [–4.2, –3.5]) and ADA (–3.6 [–3.9, –3.2]) vs PBO (–2.8 [–3.3, –2.3]) at week 24. Absolute mean values for PGA dropped from 6.2 at baseline to 2.2 at week 24 with UPA. For ≥30%, ≥50%, or ≥70% reduction in PGA of pain from baseline, response rates

with UPA and ADA were higher than PBO at weeks 12 and 24. Among patients with remaining inflammation, a similar trend was observed across endpoints at weeks 12 and 24.
Conclusion: After 24 weeks, nearly half of the patients treated with UPA had attenuation of inflammation. In these patients, mean PGA of pain dropped from 6.2 at baseline to 2.2 at week 24, close to the ≤2.0 threshold representing when satisfaction with health is not negatively affected by pain. Both UPA and ADA showed a higher response rate vs PBO. These results suggest that both UPA and ADA are effective in reducing residual pain in PsA patients over 6 months.

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Effectiveness of Upadacitinib in Patients with Rheumatoid Arthritis in Canadian Real-World Practice: Interim Results from the CLOSE-UP Post-Marketing Observational Study

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Objectives: Upadacitinib (UPA) is an oral, selective Janus kinase (JAK)- inhibitor that has been shown to be effective and well-tolerated in patients with rheumatoid arthritis (RA) in the Phase 3 SELECT clinical trials and was approved in Canada as a treatment option for RA in December 2019. The Canadian Real-Life post-marketing Observational Study assessing the Effectiveness of UPadacitinib for treating rheumatoid arthritis (CLOSE-UP) study initiated in 2020 aims to investigate the effectiveness of UPA across 390 Canadians including csDMARD, bDMARD and tsDMARD experienced real-world RA patients.
Methods: CLOSE-UP is an ongoing, prospective, multicenter, observational post-marketing study in adults with moderate-to-severe RA who are treated with UPA 15 mg once daily, with the decision to initiate UPA made prior to study participation. Participants are followed for 24 months following UPA initiation with data collected at routine visits. The primary endpoint is the proportion of participants achieving a Disease Activity Score – 28 Joint Count, C-reactive protein (DAS28-CRP) <2.6 at 6 months. Secondary endpoints include, pain score using a visual analog scale, fatigue (FACIT-F), physical function as measured by the Health Assessment Questionnaire (HAQ) and other assessments of disease activity including Clinical Disease Activity Index (CDAI) score. Per protocol, eligible subjects are grouped by prior/most recent exposure to: no b/tsDMARDs (bio-naïve); ≤2 bDMARDs but no tsDMARD (bio-experienced), and ≤1 bDMARD followed by a tsDMARD (tsDMARD-experienced). This descriptive interim analysis reports data for participants who had completed their 6-month visit by March 18, 2022. Data are presented as observed and summarized descriptively, with no statistical analyses conducted.
Results: Of the 183 participants included in this interim analysis, 89 (49%) were bio-naïve, 69 (38%) were bio-experienced and 25 (14%) were tsDMARD-experienced. Overall, 63% of patients achieved a DAS28-CRP <2.6 (primary endpoint; Figure 1) The proportion of participants achieving DAS28-CRP <2.6 at the 6-month visit was similar between those

receiving UPA monotherapy (62.2%, n=69/111) and those receiving UPA in combination with a csDMARD (63.9%, n=36/45). Physical function and patient reported outcomes including pain and fatigue improved over the first 6 months following UPA initiation. The safety profile of UPA was consistent with that seen in Phase 3 trials with no new safety signals.
Conclusion: Consistent with clinical trial data, interim analysis of this real-world Canadian study showed that disease activity was reduced, and patient reported outcomes improved with an overall favourable benefit:risk profile for Canadian patients receiving UPA in the real-world setting.

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Characteristics of a Tele-Rheumatology Shared Care Model: Leveraging the Expertise of an Advanced Clinician Practitioner in Arthritis Care (ACPAC)-trained Extended Role Practitioner (ERP) in rural-remote Ontario

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Objectives: A dearth of Rheumatologists has resulted in significant gaps in inflammatory arthritis (IA) care nationally. Lack of rheumatologic access in rural-remote communities further exacerbates these systemic deficiencies, and portends a poor prognosis. As there are no viable strategies to meaningfully increase the number of Rheumatologists practicing rurally, alternate effective and sustainable strategies must be harnessed. The value of, and myriad potential roles for, an ACPAC-ERP are well-established. In this retrospective chart review, the impact of a shared-care model utilizing an ACPAC-ERP, on site, in collaboration with a Rheumatologist working remotely is described.
Methods: A single Rheumatologist (Hub-St. Michael's Hospital) and an ACPAC-ERP (Spoke-Espanola Family Health Team) established a monthly tele-Rheumatology clinic to care for suspected-IA patients between January 2013 and January 2022. A comprehensive initial assessment (including history, joint exam, and patient-reported outcomes) was conducted and documented by the ACPAC-ERP. Relevant investigations were completed prior to the tele-Rheumatology visit. Subsequent collaborative visits were conducted with the Rheumatologist attending virtually. Demographics, time-to-visits, patient-reported outcomes and objective clinical data were analyzed retrospectively.
Results: Data from 124 patients were collected. 98.4% (n=496) of the 504 visits studied were exclusively virtual. Average patient age at first visit was 55.6 years and 75.8% were female. Of 124 patients triaged, 80 (64.5%) were confirmed as having IA. during their first Rheumatologist visit (36 rheumatoid arthritis, 10 psoriatic/reactive arthritis, 16 connective tissue disease (CTD), 7 ankylosing spondylitis, 7 gout, 4 polymyalgia rheumatica/vasculitis. At last visit, 75% had the same diagnosis as at the first visit. Mean time from primary care referral to ACPAC-ERP assessment was 52.5 days (80.5% less than 90 days), and mean time from ACPAC-ERP assessment to virtual rheumatology visit was 64.5 days (76.1% less than 90 days).
Conclusion: There is only one ERP working with multiple adult Rheumatologists, servicing an ethnically diverse population of 565,000 people, spanning 400,000 square kilometres in the North East Local Health Integration Network. This is the first description of a shared care ACPAC-ERP/Rheumatologist virtual clinic assessing patients with suspected IA/CTD in

rural/remote Ontario. A high proportion among those with suspected IA saw a Rheumatologist in less than 90 days after triage and preliminary work-up by the ACPAC-ERP. This tele-Rheumatology shared-care model utilizing an ACPAC-trained ERP, demonstrates a viable strategy to address gaps in care for patients with suspected IA in rural-remote Ontario.

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"How are you?" A Thematic Analysis of Patient Experiences and Perspectives using Text-Messaging Based Care.

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Objectives: Delays in rheumatoid arthritis care can be attributed to mismatches between patient needs and care, in addition to a limited rheumatology workforce. Virtual care modalities are increasingly used to support timely patient care. WelTel is a short message service (SMS)-text based platform, connecting patients with their healthcare providers via asynchronous text messaging. This platform has proven to improve treatment experiences in chronic health conditions (e.g., HIV and asthma). To better meet patient needs between clinic visits, a pilot study was conducted using WelTel. The objective of the present study was to understand perspectives and experiences of patients after the WelTel pilot.

Methods: The WelTel pilot launched in September 2021 with 70 patients enrolled in the pilot which involved monthly, "How are you?" check-ins with their rheumatology team over a 6-month period. Patients were also able to begin conversations using the platform. After the pilot, 39 patients were invited to participate in semi-structured interviews. Sex at birth, gender, age, race, and location were collected and used to conduct purposive sampling to ensure variety of perspectives. Qualitative descriptive methodology was used to explore patient perspectives and experiences. An interview guide was developed using the Six Domains of Health Care Quality (safety, efficacy, patient-oriented, timely, efficient, equitable) proposed by the Institute of Medicine, aiming to capture whether this model of care met the standards outlined. Additional participants were interviewed until no new themes emerged. A primary qualitative researcher coded interviews using NVivo, with weekly meetings to review transcripts and confirm themes and subthemes. Data analysis was guided by Braun & Clarke's technique for thematic analysis, using a semi-deductive approach with pre-determined themes being drawn from the six domains of quality care and allowing for additional new themes to emerge.

Results: Thirteen patients (61.5% female) were interviewed, with a median age of 62 (7). Most interviewees identified as white (n=10), and all but one was from a large urban center. The most prominent theme, determined by counting codes, was that text-based messaging contributed to better patient centered care. Data also revealed themes of timely and equitable communication with rheumatology team, reliability of information, and efficient use of resources. Descriptions and supporting quotes for each theme are displayed in Table 1.

Conclusion: Patients perceived that this platform facilitated timely communication leading to better patient-centered care. Ongoing work is being done to examine provider perspectives and experiences regarding WelTel and to review early implementation outcomes.

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The Presence of Non-Inflammatory Articular Pain is associated with Work Impairment, Worse Function and Health-related Quality of Life Outcomes in patients with Early RA participating in a Prospective Observational Real-world Canadian Early Inflammatory Arthritis Cohort

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Objectives: Disproportionate articular pain without palpable synovitis likely represents hyperalgesia due to articular and/or centralized pain, which may be mediated by RA-linked cytokines. It is often, described as 'non-inflammatory pain (NIP)' and can be identified using elevations in tender-swollen joint-count differences (TSJD). NIP can overestimate composite disease activity scores, and limit remission designation. Our objectives were to describe the prevalence of NIP using TSJD as a proxy in real-world early RA patients across Canada, identify associations with patient-reported outcomes, and explore differences between large vs. small-joint TSJDs.

Methods: We analyzed baseline, 3-,6- and 12-month data from patients with active, rheumatologist-diagnosed, early RA (symptoms<1 year, CDAI>2.8) enrolled in the Canadian Early Arthritis Cohort (CATCH) study [Jan/2016-August/2022]. Patients were divided as NIP present/absent (TSJD scores > or ≤ 0) on 28 joints. Pain distribution was assessed for large and small-joints separately. Outcome measures included function (MDHAQ (0-10), Neuro-QoL T-scores), % work productivity activity impairment (WPAI-RA), and HRQoL (PROMIS-29 Domain T-scores). Mean(95%CI) changes in outcomes were calculated for pain-distribution subgroups. Adjusted associations between repeat measures of TSJD and function, work and HRQoL, respectively, were estimated using linear-mixed models adjusting for age, sex, education, smoking, comorbidities, osteoarthritis/back pain, CDAI and treatment.

Results: The sample included 547 early RA patients (70% female, mean (SD) age 56(15) years, symptom duration 5(3) months). About half, [287(52%)] of patients' baseline TSJD was >0. Compared to patients without NIP, those with NIP at enrolment were more likely to report higher % work impairment (49.4 vs 40.1), higher % activity impairment (57.2 vs 47.3), and worse PROMIS domain and Neuro-Qol T-scores: worse anxiety (54.7 vs 51.7), depression (53.5 vs 50.4), and sleep problems (55.4 vs 51.6); higher pain interference (61.8 vs. 59.1), and worse Neuro-QoL upper extremity function (35.9 vs 40.1). NIP prevalence decreased from baseline to

12 months (Total NIP: 52% to 32%; large-joint NIP 43% to 25%; small-joint NIP: 34% to 15%), [Figure-1]. NIP was significantly associated with worse mean-change scores for function, work, fatigue and sleep, [Figure-1]; mean-change scores were numerically larger for large-joint NIP.
Conclusion: Over half of early RA patients have NIP at baseline, that can persist in up to 30%. Having NIP is associated with worse function, work and activity impairment, and HRQoL over 1-year of follow-up. NIP assessment, especially in large-joints may help identify patients likely to experience worse outcomes. The impact from and persistence of NIP supports a need to identify early interventions.

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Assessing the Diversity of Rheumatoid Arthritis Participants in the Rheum4U Precision Health Registry Cohort

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Objectives: To assess the diversity of the Rheumatoid Arthritis (RA) participant population enrolled in Rheum4U Precision Health Registry (Rheum4U) and compare to the general and RA population of Alberta.
Methods: Rheum4U is a longitudinal study that uses a web-based platform to enrol patients with suspected/confirmed inflammatory arthritis and collect prospective data at two adult rheumatology clinics in Calgary, Alberta served by a centralized referral and intake program for Southern Alberta [1]. All consenting RA participants who completed a demographics form upon entry into the cohort between August 2016 and June 2022 were included. Participants reported date of birth, biological sex, postal code, ethnicity, total yearly household income, highest level of education completed and marital status. Percent of participants with each demographic descriptor is presented. RA data for Alberta was extracted from a previous published study [2]. Alberta population data was extracted from Statistics Canada Census 2016 [3].
Results: 776 Rheum4U participants were included in the analysis. The mean age upon entry into the cohort was 56 years old (SD 14 years) and the mean age at diagnosis was 47 years old (SD 15 years). Of the 74% of participants who reported their income, 37% had a total yearly household income of <$67,000. 37% had an income of >=$67,000 and <$128,000. 26% had an income of >=$128,000. The median income of Albertans is $93,835. Table 1: Demographics of Rheum4U participants with RA and comparison to Alberta RA population or general Alberta population
Conclusion: Rheum4U captures a diverse cohort of participants with RA, reflecting the characteristics of the population of Alberta. The percent of patients from rural communities is low which needs further evaluation to determine if this reflects patients not being seen by rheumatology or our cohort. This identifies a potential issue of equity based on geography.

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Women with Early Rheumatoid Arthritis Less Likely to Achieve Rapid and Sustainable

Remission: Results from The Canadian Early Arthritis Cohort Study

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Objectives: To compare early, and sustained remission in men and women with early rheumatoid arthritis (ERA) receiving guideline-based care in rheumatology clinics across Canada.

Methods: Data were from patients with ERA (symptoms < 1 year) enrolled in the Canadian Early Arthritis Cohort (CATCH) study between 2007 and 2019. Participants completed standardized study visits including detailed RA clinical assessments, patient-reported outcomes, and laboratory investigations every 3 months in the first year, every 6-months in the second year and annually thereafter mirroring real-world care practices in Canada. Treatment decisions were at the discretion of the treating rheumatologist in line with treat-to-target guidelines. Descriptive statistics were used to summarize and compare prevalence of SDAI remission (< 3.3.), median time to SDAI remission and sustained SDAI remission 12- and 24- months after first remission across men and women. Multivariable multinomial regression was used to identify predictors of minor flares (SDAI REM→LDA) and major flares (SDAI REM→MDA/HDA) over 24-months follow up from first remission

Results: The sample included 2,743 ERA patients (1933 women; 789 men). At enrolment, mean(sd) SDAI was high at 27.4 (14.6); most patients were treated with csDMARDs (92%), predominantly with MTX (77%) and 29% with oral steroids. Disease activity and treatment strategies did not differ between men and women at enrolment. Overall prevalence of SDAI remission over the study follow up was similar across men (64%) and women (61%), however median time to remission was longer for women vs men (19.2 months vs 16.1 months, p =0.0358), and a lower proportion of women vs men reached early remission targets by 12-months (37% vs 43%, p=0.0054). Sustained remission 12- and 24 months after first remission was also higher in men vs. women (Figure). Predictors of minor and major flares after remission differed by sex. Smoking, seropositivity and residual disability at first SDAI remission predicted flares in men, while obesity, comorbidities and higher SDAI at first remission predicted flares in women. Treatment with advanced therapy at first remission was associated with lower likelihood of flares after remission in women.

Conclusion: This large longitudinal study of ERA patients receiving contemporary guideline-based care showed high overall rates of SDAI remission for men and women over the study period, however there were notable sex differences favoring men in the rapidity and sustainability of remission. Results point to smoking and residual disability at remission in men, and obesity and chronic comorbidity management in women as potentially modifiable targets for sustaining remission.

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Consideration of patient perspective is key when planning RA trials: A focus group study

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Objectives: Effective treatment of rheumatoid arthritis (RA) involves early, aggressive use of disease-modifying anti-rheumatic drugs (DMARDs) and advanced therapies (biologics, small molecules). Unfortunately, biomarkers to guide personalized treatment for individual patients are lacking. We are planning a randomized clinical trials (RCT) to explore novel biomarkers to personalize therapy. We undertook this qualitative study to investigate patient perspectives regarding randomized and personalized RA care.

Methods: We conducted virtual focus groups with RA patients to discuss the idea of a pragmatic trial of advanced RA therapies. Seventeen RA patients were recruited from in-person rheumatology clinics from two major university hospitals. Three moderator-led focus groups (2 in English, 1 in French) of 60-90 minutes each were conducted by video conferencing. They were video recorded and transcribed verbatim. Each focus group began with a general introduction to the topics. Then, participants were asked how they felt about treatment randomization in an RCT, drug preferences (injection versus pill, etc.), biomarker-driven treatment decisions (including synovial biopsy), challenges in managing RA, and ways those challenges could be overcome. Two members of the research team read the transcripts and independently coded (labeled and organized) participant statements to identify distinct themes and relationships between these. The two coders then discussed and integrated their work, and identified potential themes corresponding to different aspects of the research questions. Once preliminary themes were agreed on, they were used to refine and organize the coding. At different stages of the analyses, the remaining research team members provided feedback. This process continued until consensus of the two coders was achieved.

Results: Five main themes and 14 sub-themes were identified, [Table 1]. Trust facilitates treatment discussions between patients and physicians, and could increase acceptance of treatments and novel tests in order to personalize care. Poor communication between physicians was identified as a barrier to optimal personalized care.

Conclusion: Consideration of patients' perspectives is key when planning a trial. Our findings, in conjunction with physician focus group data which remains to be analyzed, will be used to design a pragmatic trial of advanced therapies in RA.

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Patient Mobilization for Vaccine Access and Improved Care during the COVID Pandemic

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Objectives: The COVID pandemic was particularly difficult for persons like me (MCB) living

with rheumatoid arthritis and immunosuppressed. I had to impose myself months of isolation and restrictions, live with anxiety, and have a good control of my disease. With the development of new anti-SARS-CoV-2 vaccines came the hope of a way out. However, in December 2020, I learned that immunosuppressed patients would not have access to these vaccines because of the lack of research data. The rationale for this was that the initial vaccine studies had not included patients with autoimmune diseases and there was a theoretical risk of disease exacerbation after vaccination. This seemed like a paradox: refusing to give what might protect vulnerable immunosuppressed persons like me from severe COVID. I felt like I had a right to be part of the discussion!
Methods: With another patient of the Patients Interested in Research in Arthritis (PIRA) group, we decided to mobilize ourselves to help find a solution. The rheumatologist affiliated with PIRA and an infectious disease specialist offered to support us in our call to make vaccines accessible to immunosuppressed patients.
Results: A research project that granted immunosuppressed patients access to vaccination and documented their response to the vaccine was put in place. The team worked fast and hard to establish the protocol, met with officials at the Quebec Ministry of Health where the proposal was submitted and accepted. By May 2021 more than 200 subjects had received two doses of vaccine. The preliminary results showed a lower response to SARS-CoV-2 antibodies in arthritis patients compared to healthy controls after the 1st dose and a better response after the 2nd dose. This encouraged public health authorities to prioritize our population of patients to receive a 3rd dose more rapidly than in the general public. Patients with autoimmune inflammatory diseases had the chance to demonstrate that the vaccine was safe and acceptable in immunosuppressed patients. In addition, a booster dose 3 months after the 3rd dose was available and helpful as the Omicron wave hit hard.
Conclusion: PIRA patients have been supportive, informed, and have shared their fears, difficulties, and hope. We feel that we were listened to and that we made a difference. We thank the rheumatology team who made this project happen in a timely manner. Through this collaborative work, we have helped the autoimmune inflammatory disease patient community. Advocacy is important!

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Time to First Remission and Prevalence of Sustained Remission after Etanercept Biosimilar (ETA-B) or Originator (ETA-O) Initiation in Rheumatoid Arthritis (RA)

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Objectives: The first biosimilar etanercept (ETA-B) was approved in Canada in 2016, but real-world data comparing the effectiveness of ETA-B versus their equivalent originator (ETA-O) remains scarce. We compared time to remission throughout follow-up and sustained RA remission in the first 12 months.

Methods: We studied etanercept-naïve RA patients starting ETA-B or ETA-O between January 2015 and May 2022 from three prospective research cohorts related to the RA Pharmacovigilance Program and Outcomes Research in Therapeutics (Edmonton), Early Undifferentiated Polyarthritis (Sherbrooke) and RHUMADATA® (Montreal) registries. We restricted analyses to RA patients with at least one follow-up visit after treatment initiation and with enough data to calculate remission. Remission was defined as Disease Activity Score 28-CRP or -ESR ≤2.6, Simplified Disease Activity Index ≤ 3.3, or Clinical Disease Activity Index ≤ 2.8. We used Cox regression to compare ETA-B versus ETA-O regarding time to first remission during follow-up (among those without remission at baseline) and logistic regression to assess sustained remission (remission in two consecutive visits) in the first 12 months of follow-up. Models were adjusted for sex, age, body mass index (BMI), RA duration, and smoking status at cohort entry. We also adjusted for high/moderate disease activity and the use of corticosteroids, methotrexate (MTX), or hydroxychloroquine (HCQ), all at etanercept initiation.
Results: We studied 150 RA patients initiating etanercept (65% on the biosimilar) between 2015-2022. Sex distribution was similar among ETA-B and ETA-O, but the biosimilar group has a longer disease duration and moderate/higher disease activity at baseline. Among 125 participants without remission at baseline, the median time to first remission was 8.7 months with ETA-B versus 14.5 with ETA-O. In the multivariate analysis (Table 1A), we were unable to detect a clear difference in time to achieve first remission when comparing ETA-B to ETA-O (hazard ratio, HR = 1.43, 95% confidence interval, CI 0.65-3.13). Obesity (BMI>30) was negatively associated with the outcome. Sustained remission in the first 12 months of follow-up was observed in 16.3% of ETA-B initiators versus 17.3% with ETA-O. After multivariate analysis (Table 1B), we were unable to establish any clear difference between ETA-B versus ETA-O (OR 1.16, 95% CI 0.31-4.74). HCQ was positively associated with sustained remission within the first 12 months.
Conclusion: In this pooled analysis of three Canadian RA cohorts, we were unable to detect clear differences in achievement or sustained remission when comparing ETA-B and ETA-O.

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Fine Particulate Matter Components and Rheumatoid Arthritis Onset

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Objectives: Ambient fine particulate matter (PM2.5) air pollution has been associated with multiple diseases, potentially including rheumatoid arthritis (RA). It remains unclear which PM2.5 chemical components are more harmful. We assessed potential associations between PM2.5 components and RA onset, and the magnitude of individual PM2.5 components' effects.
Methods: An open cohort of 12,026,786 adults (free of RA at baseline) were assembled using Ontario administrative health data over 2007-2020. These adults were followed until RA onset, death, emigration from Ontario, or end of study. An incident RA case was identified by >2 relevant physician billing claims at least 8 weeks apart but within 2 years; or ≥1 relevant hospitalization diagnosis code. Annual average concentrations of ambient PM2.5 chemical

components (i.e. sulfate, nitrate, ammonium, organic matter, black carbon, mineral dust, and sea salt) were estimated by combining satellite data with chemical transport modelling and refined by geographically weighted regression. Exposures from 2002 to one year before RA onset or end of study were assigned to subjects based on their residential postal codes. A quantile g-computation model for time to RA onset was developed for the mixture of PM2.5 components, adjusting for sex, age, income, rurality index, chronic obstructive pulmonary disease, COPD (as a proxy for smoking), and year of cohort entry (to account for potential calendar-year effects). The relative contribution of an individual component to the overall health effect of the exposure mixture is quantified by its index weight. We conducted sensitivity analyses across subgroups of age, sex, and rurality.
Results: We identified 68,759 new RA diagnoses across 141,753,040 person-years (incidence 1 in 2000 person-years). In our primary analysis with overall subjects, the adjusted hazard ratio for RA onset was 1.516 (95% confidence interval 1.507-1.524) per every decile increase in all seven exposures. Ammonium contributed noticeably more to RA onset than the other PM2.5 components. Similar positive associations between the mixture of PM2.5 components and RA, and index weights were observed in sensitivity analyses (Table 1).
Conclusion: Exposure to mixed PM2.5 elements was associated with RA incidence. Improving nitrogen use efficiency and reducing ammonium emissions may be a more efficient way to curb the burden of many chronic diseases, potentially including RA, than lessening emissions of other PM2.5 precursors.

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SARS-CoV-2 Vaccine Side Effects in SLE

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Objectives: SLE patients are a potentially vulnerable population in the face of the COVID pandemic, but concerns persist regarding adverse events related to SARS-CoV-2 vaccines, since the vaccine RCTs largely excluded autoimmune disease(1, 2). We evaluated self-reported effects of SARS-CoV-2 vaccines in an SLE clinic sample.
Methods: We studied SLE cohort patients who were followed with standardized annual assessments at a Canadian tertiary care centre. From January 2021 to May 2022, 345 SLE patients undergoing their annual research visit reported information on SARS-CoV-2 vaccinations. We performed descriptive analysis of type of vaccine and reported side effects, including ER visits and hospitalizations.
Results: Participants were mostly female (n=306, 88.7%) and Caucasian (n=209, 60.6 %) and the average SLE duration was 19.7 years (SD 11.9). 298 (86.4%) had received at least one

SARS-CoV-2 vaccination and 251 (72.8)%) has received at least 2 doses. Specifically, 47 (13.6%) had received one dose, 153 (44.3%) had received 2 doses and 98 (28.4%) had received at least 3. Most (n=181, 60.7%) of initial doses were Pfizer-BioNTech mRNA Comirnaty, followed by Moderna mRNA Spikevax (n=54, 18.1%), AstraZeneca Vaxzevria (n=12, 4.0%) and Johnson & Johnson Janssen Jcovden (n=1, 0.3%). The remaining (n=50, 16.8%) were unknown. Most (159, 63.3%) of the second doses were Pfizer- BioNTech, with 49 (19.5%) being Moderna mRNA-Spikevax, 2 (0.8%) being AstraZeneca Vaxzevria and the remainder(n=41, 16.3) was unreported. Among those with at least 1 vaccination dose, 34 of 128 patients who responded to the question reported symptoms post-vaccine (26.6%). The most common symptoms were fever and injection-related arm pain; both were reported at equal frequency(n=9, 7.0%). This was followed by fatigue and headache(n=6, 4.6% for both). There were 3 cases of myalgia and 2 cases of arthralgia. One patient reported hypertension after the first dose of vaccine, which required an ER visit. There were no other ER visits or hospitalizations for patient-reported adverse events. No patients reported disease flare in the post-vaccination period.

Conclusion: SARS-CoV-2 mRNA vaccine side effects were noted by about a quarter of these SLE patients, but were mild, similar to the general population. In this sample, SARS-CoV-2 vaccination was not associated with reported side effects requiring hospitalization. References 1. Polack FP et al., C4591001 Clinical Trial Group. Safety and Efficacy of the BNT162b2 mRNA Covid-19 Vaccine. N Engl J Med. 2020 Dec31;383(27):2603-2615. 2. Baden LR et al; COVE Study Group. Efficacy and Safety of the mRNA-1273 SARS-CoV-2 Vaccine. N Engl J Med. 2021 Feb4;384(5):403-416.

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Multisystem Inflammatory Syndrome in Children: A rare case requiring venovenous extracorporeal membrane oxygenation

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Background:

Multisystem Inflammatory Syndrome in Children (MIS-C) associated with SARS-CoV-2 can be a severe illness requiring life support in the form of extracorporeal membrane oxygenation (ECMO). There have been multiple case reports and reviews describing children with MIS-C needing venoarterial ECMO (VA-ECMO) due to depressed cardiac function. Here we present a case of a child with MIS-C without myocardial dysfunction who required venovenous ECMO (VV-ECMO) for respiratory failure.

Case discussion:

Our patient, a previously healthy eight-year-old Caucasian female presented to the emergency department one month after a symptomatic COVID-19 infection in December,2021. She presented with abdominal pain, then developed headache, fever, lethargy, maculopapular , rash, and periorbital edema. At the onset she had lymphopenia, thrombocytopenia, with significant inflammation: CRP 164, ferritin 341 and BNP at 2500 but normal troponin levels.

As her clinical status worsened concern grew for MIS-C and she was admitted for intravenous immunoglobulin (IVIg), methylprednisolone, aspirin, and empiric antimicrobial therapy. She became hypotensive and was transferred to a tertiary centre pediatric intensive care unit (PICU)

for vasoactive support. Her steroids were escalated to pulse dosing for three doses, and she gradually improved over three days and weaned off vasoactive support. On the fourth day of PICU admission she unexpectedly deteriorated, with new respiratory distress and hemoptysis. The BNP level increased to 3000. Chest x-ray showed new bilateral infiltrates throughout with no pleural effusion. Significant pulmonary edema fluid was noted during intubation, and she required extremely high pressures to oxygenate and ventilate. She was emergently cannulated onto VV-ECMO. The pulse steroids were continued and high dose anakinra was started. Her lungs recovered and she was decannulated after two days. Cardiac MRI done the day after decannulation was normal, and BNP and troponin normalized quickly. She was discharged after two weeks in hospital, and gradually weaned off steroids and anakinra. She had multiple normal cardiac ultrasounds. Genetic work-up thus far has not identified any mutations associated with severe MIS-C (XIAP and CYBB). Our patient had a second COVID-19 infection six months later in the summer of 2021 with no associated MIS-C or hyperinflammation.
Conclusion:
The etiology of the acute deterioration remains unclear, but in the context of a quick response to high dose anakinra and normal cardiac MRI and echocardiogram, the deterioration is thought to be secondary to flash pulmonary edema secondary to significant hyperinflammation associated with MIS-C.

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The Effect of Sex on Patients with Pre-existing Rheumatoid Arthritis and Immune Checkpoint Inhibitor-induced Inflammatory Arthritis: Data from the Canadian Research Group of Rheumatology in Immuno-Oncology (CanRIO) Prospective Cohort.

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Objectives: Immune checkpoint inhibitors (ICI) are the new pillar of cancer treatment. ICI upregulate the immune system. This can result in off-target immune-related adverse events (irAEs). One of the most disabling irAE is immune-related inflammatory arthritis (ir-IA) resembling rheumatoid arthritis (RA). We aimed to explore sex-related differences in patients with pre-existing RA exposed to ICI and patients with ir-IA with a RA-like presentation.

Methods: Adults with rheumatic irAEs from ICI (CTLA-4, PD-1 or PD-L1 inhibitors) or those with pre-existing rheumatic autoimmune disease exposed to ICI are prospectively followed at 9 sites in Canada. Clinical characteristics, severity of irAEs according to Common Terminology Criteria for Adverse Events (CTCAE) and management are recorded. Data at cohort entry on 126 patients recruited between January 2020 and May 2022 were available for analysis, [Table 1].
Results: Eleven patients had pre-existing RA, of which 6 (55%) were women and 5 (45%) were men. Four (67%) women and 2 (40%) men were rheumatoid factor (RF) and/or anti-cyclic citrullinated (CCP) positive. Three (50%) women and 2 (40%) men had RA flares, of which 2 women and no men had grade ≥3 CTCAE flares. Both men and 1/3 women with flares were treated with prednisone, with mean maximum dose higher in men (36 mg/d) than women (15 mg/d). All 3 women and 1/2 men who flared were treated with DMARDs. Twenty patients developed ir-IA with a RA-like presentation, of which 12 (60%) were men and 8 (40%) were women. Two (25%) women and 1 (8%) man were RF and/or anti-CCP positive. Four (33%) men and 1 (13%) woman had ≥3 CTCAE arthritis. Eight (67%) men and 4 (50%) women were treated with prednisone, with mean maximum dose higher in men (31 mg/d) than women (25 mg/d). Two (25%) women and 2 (17%) men were treated with DMARDs. ICI were discontinued in 6 (50%) men and 3 (38%) women.
Conclusion: Our results suggest sex-related differences in irAE: 1. Unlike RA, the distribution of ir-IA with RA-like presentation does not preferentially affect women, 2. In both pre-existing RA and ir-IA, more women than men were RF and/or anti-CCP positive, 3. Severe flares were more common in women than men with pre-existing RA, while severe ir-IA was more common in men, and 4. Discontinuation of ICI was more common in men than women with ir-IA. Careful clinical phenotyping may provide clues to sex differences in irAE. Larger studies are needed to confirm these findings.

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A Wolf in Sheep's Skin: Sarcoidosis Myopathy Masquerading as Idiopathic Inflammatory Myositis

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Here we present a case report illustrating the recognition and management of musculoskeletal complications of sarcoidosis.

The patient is a 65-year-old male who presented with progressive proximal muscle weakness over 2 to 3 months as well as transient myalgias. His past medical history included coronary artery disease with a myocardial infarction 2 years prior to presentation and stable pulmonary nodules of unclear etiology for which he was followed by respirology. His medications included a beta-blocker and aspirin. Prior to symptom onset, he had been on a statin which was subsequently stopped.

After being referred to rheumatology for assessment of possible myositis, he underwent an exhaustive workup. Blood work showed elevated CK of 700U/L, elevated ALT and AST while ANA, myositis antibody panel, and anti-HMG CoA reductase antibody were negative. MRI thighs showed extensive bilateral myositis and subsequent muscle biopsy demonstrated

granulomatous myositis. EMG revealed myopathic changes and CT chest showed paraspinal lesions, repeated biopsies from which were consistent with necrotic tissue and insufficient for further analysis. ACE level and calcium were normal; 25(OH)-Vitamin D was low at 58 nmol/L. His peak CK was 1915 U/L. After extensive multidisciplinary discussion of the case including review of imaging with radiology, the case was deemed to be consistent with sarcoidosis with a nodular and myopathic pattern of involvement.

He was initiated on high dose steroids for sarcoid myopathy followed by methotrexate to facilitate tapering of steroids. However, despite a maximal dose of methotrexate, there was an increase in his CK levels with steroid tapering. He was then switched from methotrexate to azathioprine with minimal effect. Subsequently, he was started on anti-TNF therapy in combination with azathioprine, which resulted in normalization of his CK level and allowed for tapering of steroids. There was only a minor improvement in muscle strength, likely due to a component of atrophy noted on his imaging and chronic steroid use.

Sarcoidosis is often considered a great mimicker of various rheumatologic diseases and presents a diagnostic challenge. This case demonstrates an uncommon cause of myositis which should be considered in the differential diagnosis of idiopathic inflammatory myopathies.

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Organizational Interventions to Prevent and Reduce Burnout Among Physicians: a Systematic Review of Systematic Reviews

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Objectives: Physician burnout is a significant problem in modern medicine. It affects nearly half of medical students, residents, and practicing physicians. The consequences of burnout are not limited to the personal well-being of physicians; It also affects the quality of patient care and the overall efficiency of the healthcare system. Considering that organizational factors are one of the primary drivers of physician burnout, addressing the problem of burnout should be a shared responsibility of individual physicians and the organizations in which they work. The objective of this study is to review systematic reviews of current organizational-directed interventions that improve burnout and promote physician engagement.

Methods: A systematic literature review was conducted using search terms to identify published systematic reviews addressing physician burnout from the Cochrane Register of Controlled Trials, MEDLINE, Embase, and PsychINFO, published between January 1, 2011, to December 31, 2021. Two independent reviewers assessed the studies for eligibility. Literature reporting organizational-level interventions that showed improvement in physician burnout as their primary outcome were included. Non-English literature and research on medical trainees and other health care providers were excluded. We followed the Cochrane group’s guide on

conducting an overview of reviews. Interventions were evaluated for their applicability to the rheumatology community at an organizational-level.
Results: The search strategy identified 2389 citations, of which 17 systematic reviews fully met the inclusion criteria. These 17 systematic reviews included 87 eligible primary studies, of which 37 reported organizational-directed or organizational/physician-directed interventions. The types of organizational-level interventions studied included workflow and time management, off-loading non-medical tasks, leadership development, communication, team building, and stress management. These interventions were subcategorized into "Advocacy opportunities," "Opportunities to support physicians directly," and "Potential opportunities" (opportunities that may have utility in different specialties with adaptation and organizational support for implementation) (Table 1).
Conclusion: Evidence from this review of systematic reviews shows that organizational-directed strategies could help reduce physician burnout. Most interventions that were effective involved targeting workflow and flexible schedules, as well as individual-level strategies that organizations could implement to better support staff, including group mindfulness programs. This work is currently being evaluated by the Canadian Rheumatology Association (CRA) human resources committee to develop recommendations to support the current rheumatology workforce.

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Comparison of patients who have received two Covid19 vaccinations and patients who have not received any Covid19 vaccinations in a community rheumatology practice (October 2021-August 2022)

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Objectives: The objective of this study was to investigate the differences in characteristics between Rheumatology patients that received two Covid-19 vaccines and patients that were unvaccinated to better understand individual treatment needs.
Methods: A single centre chart abstraction study was performed. Data were collected on vaccination status, patient age, sex, ethnicity, diagnosis, advanced therapy usage, number of visits to a Rheumatologist in the previous year, disease activity status, number of Covid-19 PCR tests taken since March 15th 2020, and number of comorbidities. Charateristics of 105 fully vaccinated patients adn 47 unvaccinated patients were compared using chi-square for categorical variables and independent t-tests for continuous variables.
Results: Among 152 patients, 70% were fenmal and 49% were Caucasian, 27% were South Asian, 16% were black and 5% were Asian. Patients who remained unvaccinated were more likely to be younger (p value=0.03) and be of a black racial/ethnic background. No significant differences were found in other demographic characteristics, number of Covid-19 PCR tests, the use of advanced therapy, or number of comorbidities between vaccinated and unvaccinated patients.
Conclusion: Vaccination status may be associated with ethnicity and age, though no other sinificant demographic differences were found between vaccinated and unvaccinated

patients. Better understanding and efforts to reduce racial/ethnic disparities in Covid-19 vaccinations is warranted.

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Incidental Findings on FDG-PET/CT in Large Vessel Vasculitis

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Objectives: This study aims to determine the number and type of incidental findings detected on positron emission tomography (PET)/CT in a cohort of patients with large vessel vasculitis (LVV).

Methods: Reports from PET/CT studies along with the medical charts of a cohort of patients with LVV from a Rheumatology clinic in Edmonton, Alberta, Canada were retrospectively reviewed. Incidental findings from PET/CT, along with follow-up studies and their diagnosis were documented. The data was analyzed with descriptive statistics.

Results: The disease activity of 40 patients, with an average age of 65.8 years, was investigated using PET/CT. A statistically significant increase in incidental findings with age was observed. A total of 61 incidental findings were found in 26 (65%) patients (Table 1). Of these findings, 25 were in the abdomen and pelvis. The most common incidental finding was lymphadenopathy. Follow up investigations of incidental findings lead to 5 clinically significant findings including metastatic adenocarcinoma, mycobacterium avium infection, papillary thyroid carcinoma, pheochromocytoma, and stroke.

Conclusion: PET/CT is a reliable tool for determining disease activity in LVV patients and the implications of incidental findings need to be discussed with patients by the ordering care provider. This study demonstrates that incidental findings on PET/CT scan are common and increase with age in patients with LVV. A significant number of patients required further investigation for incidental findings.

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Improvement in Key PsA Core Domains with Guselkumab Treatment in an Enriched Population of ACR20 Non-Responders at Week 24: Post hoc Analysis of Two Phase 3 Studies

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Objectives: A portion of PsA patients (pts) does not achieve improvements in signs and symptoms according to ACR response criteria. Using data from DISCOVER-1 and DISCOVER-2 (D1/D2) studies in pts with active PsA, the objective was to describe the benefit of guselkumab

(GUS) across key PsA domains, including those not comprising the core ACR measures, in pts not meeting ACR response criteria.
Methods: Pts enrolled in D1 and D2 were adults with active PsA despite standard therapies. Pts were randomized 1:1:1 to GUS 100 mg every 4 weeks (Q4W); GUS 100 mg at W0, W4, then Q8W; or PBO; PBO pts crossed over to GUS 100 mg Q4W at W24. In this post-hoc analysis, patients not meeting ≥20% improvement in ACR response criteria (ACR20) at W24 were included. Changes from baseline (BL) over 24 W in continuous outcomes of interest (SJC; TJC; enthesitis/dactylitis scores; psoriasis area and severity index [PASI] score; Functional-Assessment of Chronic Illness Therapy [FACIT]-fatigue score; and SF-36 physical [PCS] & mental [MCS] component summary scores) were assessed with repeated measures mixed models adjusting for treatment group, BL non-biologic DMARD use, and prior TNFi use. Descriptive statistics were produced for categorical outcomes at W24 using non-responder imputation for missing data.
Results: Of the 1120 pooled D1/D2 pts, 538 did not achieve an ACR20 response at W24, including 137 (36.7%) GUS Q4W, 147 (39.2%) GUS Q8W, and 254 (68.3%) PBO pts. A greater proportion of GUS- than PBO-treated pts achieved W24 categorical outcomes, including those relating to skin, tender joints, and dactylitis, with similar findings for GUS Q4W and Q8W. For continuous endpoints, the benefit of GUS was seen as early as W2 for SJC (W4 for Q8W), TJC, dactylitis (W4 for Q8W), and enthesitis (W4 for Q8W); W8 for FACIT-fatigue, SF-36 PCS, and SF-36 MCS (W16 for Q8W); and W16 for PASI; most endpoints continued to improve through W24 [Figure 1]. Across both GUS treatment groups, 43.5%-48.9% of W24 ACR20 non-responders achieved an ACR20 response by W52.
Conclusion: In W24 ACR20 non-responders, GUS-treated pts experienced greater benefits than pts receiving PBO in improving joint disease and other important PsA domains outside the ACR response criteria, which translated to significant improvements in health-related quality of life. These benefits occurred as early as W2 of GUS treatment and showed continued improvement over 24 W, such that considerable proportions of W24 ACR non-responders achieved an ACR20 response by W52.

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Usability testing of JIActiv, a Social Media-Based Program Promoting Engagement in Physical Activity among Young People Living with Juvenile Idiopathic Arthritis

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Objectives: This study evaluated the usability (user performance and satisfaction) of a social media-based program promoting physical activity among young people with juvenile idiopathic arthritis (JIA).

Methods: We conducted two cycles of usability testing of JIActiv, an educational and interactive Instagram-based program promoting physical activity among French and English-speaking young people with JIA. Both cycles (Total n=28) involved a qualitative study with semi-structured interviews. Here, we report the results of the second cycle, which led to the second and final prototype after minor modifications. A purposive sample of 13 adolescents and young adults with JIA was recruited from patient organizations, as well as a rehabilitation and a hospital center to participate in this cycle. There were 6 adolescents (mean age=16, SD=0.84) and 7 young adults (mean age=19, SD=0.58). The interview questions were grouped into 7 main categories including safety, design aesthetics, functionalities, content of the page, language display, organization of the program and suggestions for improvement to the JIActiv program. The interviews were completed individually online over Zoom. Audiotaped recordings were transcribed verbatim, sorted, organized, and coded using MAXQDA11 software.
Results: Participants used a computer, a smartphone or a tablet to access and navigate the JIActiv program. Overall, the participants did not report any significant concerns about privacy and safety. Most of them also found the program easy to navigate. All participants were satisfied with the program's visual appeal. The interactive features supporting group-based activities were highly appreciated as it offered opportunities to communicate and share information and experiences with peers. Most participants reported that the featured information was relevant and of good quality. The bilingual nature of the posts was not seen as a barrier to the use of the program. Generally, the organization of the program (overall length of the program, frequency of posts and weekly time requirements) was seen as adequate by the majority of participants. Participants suggested some minor modifications to the program. Based on these, modifications were implemented including edits to the informational videos to facilitate navigation.
Conclusion: Findings report on the usability testing of JIActiv, an interactive and educational Instagram-based program aimed at promoting physical activity among French and English-speaking young people living with JIA. This testing has allowed us to optimize end users' (young people with JIA) ability to access, to navigate, to understand and to implement the informational content and practical strategies featured through this program in a culturally competent, efficient and satisfying manner. **Supported by a CIORA grant**

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HyperCKemia from ICI-associated Adrenal Insufficiency

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Immune checkpoint inhibitors (ICIs) promote an anti-tumour immune response via T-cell activation. (1) ICIs have been reported to cause numerous immune related adverse events (irAEs), including inflammatory myositis and adrenal insufficiency which are rare, but potentially life-threatening. (1,2) We report a case of ICI-associated adrenal insufficiency related myopathy that was mistaken for ICI-associated inflammatory myositis.

After obtaining patient consent, retrospective chart review was performed and pertinent findings are reported.

We report a 78 year old male with a history of sigmoid adenocarcinoma, treated with sigmoid resection in 2013, dyslipidemia and hypertension. He was diagnosed with acral lentiginous melanoma in August 2017 and underwent surgical resection. His cancer recurred in April 2021

and was subsequently started on ipilimumab and nivolumab July 2021. After two cycles of immunotherapy, he was found to have an asymptomatic rise in his CK (1727 U/L) with a normal CRP 0.4 mg/L. ECG and troponin-I were normal. He had a slight transaminitis (ALT 97, AST 145, ALP 54, bilirubin 10). TSH was 0.02, with normal free T4 (9.6pmol/L), low free T3 (2.6pmol/L).

His oncologist then started prednisone 0.5mg/kg/day for possible inflammatory myositis and ICI therapy was held. He was referred to rheumatology and when assessed 6 days later, at which time his CK had normalized. Strength was 5/5 centrally and in all extremities in proximal and distal muscle groups. No rashes consistent with dermatomyositis were present. His pravastatin was discontinued by rheumatology. An MRI of his hip girdles performed 10 days after starting prednisone showed no evidence of myositis. Acetylcholine receptor antibody test was negative (<0.20 nmol/L) and myositis antibody panel was negative. Prednisone was then tapered off.

Five days after discontinuing prednisone, he presented to the Emergency Department with significant generalized weakness, fatigue and confusion and was found to be relatively hypotensive compared to his baseline (109/69 mm Hg). AM cortisol was 27 nmol/L. Endocrinology was consulted and ACTH stimulation test confirmed a diagnosis of central adrenal insufficiency likely related to ICI therapy. He was treated with replacement dose hydrocortisone and his symptoms resolved. His CK remained normal off of prednisone. His TSH also normalized with prednisone treatment and remained normal on hydrocortisone.

Elevated CK has been reported with central adrenal insufficiency, although it is not a common presentation (3). This case illustrates the importance of considering a wide differential when assessing hyperCKemia in the setting of ICI use.

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A Rare Presentation of Central Nervous System Vasculitis caused by Herpes Simplex Virus Type 2

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Primary angiitis of the central nervous system (PACNS) has a wide differential diagnosis, including infectious etiologies which can worsen with systemic immunosuppression. This case report illustrates the importance of considering rare infectious etiologies of CNS vasculitis prior to initiating treatment with immunosuppressive agents.

A 59 year old female was admitted with transient right-sided weakness and paresthesias. MRI angiography showed multifocal acute infarcts within the left MCA territory with abnormal concentric wall thickening and enhancement of the left cervical ICA extending to the M1/M2 segment with a severely stenotic mid left M1, suggesting underlying vasculitis. The rheumatology service was consulted, and a full review revealed a history of recurrent miscarriages and IgG deficiency, but no other features of connective tissue disease or systemic vasculitis. Her autoimmune serologies were negative except for a mildly elevated rheumatoid factor and a low titre anticardiolipin IgG antibody. She did not have traditional stroke risk

factors. Echocardiogram, Holter monitor, and a CT angiogram of the chest, abdomen, and pelvis were normal. CSF analysis showed a leukocytosis, elevated protein, oligoclonal bands, and an elevated IGG index. Infectious workup revealed Herpes Simplex Virus Type 2 (HSV-2) in the CSF by PCR.

The patient was treated with intravenous acyclovir for 14 days, followed by a course of oral valacyclovir with taper to a prophylactic dose. She also received traditional secondary stroke prevention therapies with low dose aspirin and a statin. A repeat MRA showed mild interval progression but a repeat CSF analysis showed resolution of the leukocytosis and elevated protein. Her neurologic examination at discharge was normal.

This case report of a large-vessel vasculitis of the CNS caused by HSV-2 provides an example of the importance of considering infectious causes of vasculitis, particularly in patients presenting with stroke in the absence of traditional risk factors. HSV-2 is a well-documented cause of encephalitis, but it can also cause ischemic strokes due to large-vessel vasculitis, and should be investigated for in the workup of PACNS.

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New-Onset Immune-Mediated Disease following SARS-CoV-2 Vaccination: A Case Series

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Objectives: The COVID-19 vaccine campaign is the largest and fastest in history, and the first use of mRNA vaccines outside a research setting. Limited evidence exists regarding the risk of developing immune-mediated disease (IMD) other than myocarditis and vaccine-induced thrombotic thrombocytopenia following SARS-CoV-2 vaccination. The objective of this study is to report the baseline characteristics and outcomes of adult patients with new-onset of IMD following SARS-CoV-2 vaccination referred to rheumatology practices in British Columbia.
Methods: Adult patients who developed new-onset IMD within 30 days of receiving a dose of a Health Canada approved SARS-CoV-2 vaccine between December 2020 and March 2022 were identified by survey of the British Columbia Society of Rheumatology. Relevant data was extracted by retrospective chart review.
Results: Thirty-seven patients with IMD following SARS-CoV-2 vaccination were identified. Seventy percent of cases were female and the mean age was 59 years (range: 26-82). Mean time from vaccine administration to symptom onset was 7.69 days (range: 0-30, median: 3 days). New onset IMD arose following Pfizer-BioNTech vaccination in 15/37 cases (40.5%), Moderna in 4/37 cases (10.8%), and Oxford-AstraZeneca in 6/37 (16.2%). IMD developed following the first dose in 17/37 cases (45.9%), second dose in 13/37 (35.1%), and third doses in 4/37 (10.8%). Inflammatory arthritis was the most common diagnosis (n =18, 48.6%), of which with the majority were seronegative. Three patients had connective tissue disease (SLE, anti-synthetase syndrome, rapidly progressive interstitial lung disease and skin thickening without Raynaud's,

nailfold capillary abnormalities, or ANA positivity), four had vasculitis (giant cell arteritis, large vessel vasculitis, cryoglobulinemic vasculitis, and isolated aortitis), four had polymyalgia rheumatica, two had adult-onset Still's disease, and one had eosinophilic fasciitis. Three patients had life-threatening disease, seven had severe disease requiring hospitalization that was not life-threatening, 22 had moderate disease, and five had mild disease. Data regarding treatment and response are in Table 1. The majority (62%) had a chronic course requiring continued DMARD administration at last follow-up.
Conclusion: Individuals without pre-existing rheumatologic disease may develop IMD following SARS-CoV-2 vaccination. IMD may be chronic and require initiation of long-term immunosuppression. Given the uncontrolled nature of this study, no conclusions can be drawn as to the relative risk of developing IMD following SARS-CoV-2 vaccination relative to the risk following other vaccines or the baseline population rate.

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Evaluation of Oral Health Interventions in Patients with Rheumatoid Arthritis: A Systematic Review

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Objectives: There is a bidirectional association between periodontitis and rheumatoid arthritis (RA). In previous work, we found that oral hygiene practices of patients with RA are impacted by disease related functional limitations and xerostomia, and that patients are seeking recommendations to optimize their oral care. We conducted a systematic literature review to determine whether professional dental treatment or any specific oral health self-care practice is more beneficial than the current standard of care for adults with RA.
Methods: Following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, and using a comprehensive search strategy, we searched OVID/Medline, PubMed, Cochrane, OVID Embase, and Web of Science databases to identify studies evaluating oral health management in RA patients. We included studies of adults with diagnosed RA according to ACR/EULAR criteria without restrictions on study type, study duration, or language of publication. We excluded studies evaluating pediatric populations, animals, and patients on immunosuppressant therapy for cancer. Title, abstract and full text screening were performed in duplicate after a calibration exercise. Discrepancies were resolved by a third review and consensus. Study quality was evaluated using the McGill Mixed Methods Assessment Tool (MMAT). Data on standard arthritis and oral health outcomes were extracted and summarized.
Results: The search identified 13,853 articles of which 31 studies from over 20 countries were included; 20 (65%) evaluated non-surgical periodontal treatment (NSPT), 7 (23%) evaluated RA immunomodulatory therapies, and 4 (13%) evaluated oral hygiene interventions. There were also 2 systematic reviews (1 on NSPT; 1 on RA therapy). Only short-term outcomes (<6 months) were assessed. Five of seven (71%) randomized control trials on NSPT found improvement in RA and oral health outcomes. Results varied in other study types investigating NSPT [8 non-randomized experimental studies (NRES), 2 case series, 1 case report]. Five of seven (71%) studies evaluating RA immunomodulatory therapies (biologics/targeted small molecules) (4

cross-sectional, 1 NRES, 2 case series) found improvements in oral health parameters in addition to improved RA outcomes. Studies evaluating the effect of oral hygiene interventions (electric versus manual toothbrushes, oral rinses and oral gels) showed improvements in oral symptoms and periodontal parameters but limited and variable improvements in RA parameters. Studies were of low to moderate quality (median MMAT score 4.)
Conclusion: While high quality studies of longer duration are needed, these findings highlight the importance interdisciplinary management, including professional oral care, to optimize both arthritis and oral health outcomes for people with RA.

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Healthcare use depends on gender and race for ocular inflammatory and infectious diseases. Results from the Medicare data

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Objectives: Outcome and disease progression in rheumatology patients depends on the use of health care. Health care use is impacted by patient's gender, race, education and income. Ocular inflammatory diseases are an important cause of morbidity and affect quality of life for rheumatology patients. We have used Medicare data to identify how gender and race affect health care use for ocular inflammatory and infectious diseases
Methods: We have used Medicare data available through the National Vision and Eye Health Surveillance System (VEHSS). Medicare is a national insurance program administered by government of the United States. For this study Medicare data were collected for the year 2018.VEHSS uses international classification of diseases (ICD-10) codes to identify ocular disorders and organizes them into two level categorizations: category and subgroup. Each code is categorized in one subgroup and multiple subgroups are combined to form a category. The inflammatory and infectious eye disease category includes subgroups of ocular inflammatory conditions, lacrimal system and orbital inflammation, keratitis, conjunctivitis, eyelid inflammation and infection and endophthalmitis. Medicare beneficiaries are classified as either male or female. Race includes: Asian, Black (non-Hispanic), White (non-Hispanic), Hispanic (any race), American Indian and Alaska Native (AIAN), other (including multiple or missing race). Use for the inflammatory and infectious eye disease category is stratified by gender and race. Effect of stratification on use is determined by race and gender alone and combining race and gender.
Results: There were 29,909,000 million Medicare beneficiaries; 16,514,000 females and 13,395,000 males for the year 2018. Females had higher utilization (13.3%, 95% CI: 13.3 - 13.3) as compared to males (9.4%, 95% CI: (9.3 - 9.4). People of Asian descent had higher utilization 15.50% (95% CI: 15.4 - 15.6) and Blacks had lower utilization (9%, 95% CI: 9-9) as compared to whites (11.7, 95% CI: 11.7-11.7). Table 1 shows Medicare Utilization for Inflammatory and Infectious eye disease category and subgroups when stratified by race. When stratified by gender and race females have higher utilization than males for all the races.
Conclusion: Use of heath care for ocular inflammatory and infectious disease depends on gender and race. Future studies are required to explain these disparities in health care utilization.

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Exploring Canadian Patient Experiences of Living with Lupus Nephritis

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Objectives: To investigate lupus nephritis (LN) patient experiences and perspectives of 1) LN diagnosis; 2) living with LN; and 3) LN healthcare and treatment using semi-structured interviews.

Methods: Patients aged ≥18 years with biopsy-proven pure or mixed International Society of Nephrology/Renal Pathology Society Class III, IV, or V LN and fulfilling the American College of Rheumatology 1997 or Systemic Lupus International Collaborating Clinics 2012 Classification Criteria for systemic lupus erythematosus (SLE) were recruited from a Canadian lupus cohort to participate in virtual, semi-structured in-depth interviews. Thematic analysis of responses was performed using NVivo Qualitative Data Analysis Software.

Results: Nineteen patients were interviewed; 89.5% female, mean (SD) age 43.0 (15.7) years, mean (SD) age at SLE diagnosis 29.8 (13.2) years. Patients had LN classifications III (31.6%), IV (21.1%), V (15.8%), or mixed (31.6%). Patients reported challenges seeking, receiving, and adjusting to LN diagnosis, and all described emotional impacts of diagnosis ('The future is really uncertain for me… it's like a monster hiding around every corner'). Most patients had not heard of LN prior to diagnosis making it difficult to contextualize their illness. [Figure] While most continued in paid employment, patients identified altered career aspirations, role changes, and the need for workplace accommodations. Patients also described modified leisure and social activities ('I stay home instead of being the kill joy… It's frustrating for me'). While many described supportive friends/family, lack of nuanced understanding by others was reported ('I have a sister who has a humongous amount of energy and she thinks I'm just being lazy'). Those diagnosed at/before childbearing age described LN as a factor in their family planning due to fears of reproductive side effects when changing LN medications, experiencing a flare while pregnant/when parenting, and passing on LN/other autoimmune conditions to their children. [Figure] Many aspects of LN management present challenges including visiting numerous healthcare providers, taking medication, monitoring diet, managing stress, and ensuring adequate rest. While many reported successful management with medication, others expressed concern with cost and side effects ('It's like doing a dance... sometimes I take two steps back'). Challenges associated with a lack of LN-specific information and resources were also identified. [Figure]

Conclusion: Lack of understanding of LN coupled with uncertainties of living with LN create a substantial psychosocial burden as patients negotiate acceptable risk. Results emphasize the need for wider LN awareness and will inform development of LN-specific patient resources to increase understanding and support decision-making.

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Late onset rheumatoid arthritis has a similar remission rate as younger onset rheumatoid arthritis: Results from the Ontario Best Practices Research Initiative

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Objectives: We compared the clinical characteristics, time to remission and treatment regimen at remission between late onset rheumatoid arthritis (LORA) and younger onset rheumatoid arthritis (YORA) patients.
Methods: The Ontario Best Practices Research Initiative (OBRI) is a clinical registry of RA patients followed in routine care. This analysis used the OBRI database from 2008 to 2020. Patients were included if they had active RA disease (≥1 swollen joint) and were enrolled in the study within 1 year of diagnosis. LORA was defined as diagnosis of RA after age of 60, YORA as under age of 60. Remission was defined by Disease Activity Score 28 (DAS28) ≤2.6. A multivariable Cox proportional hazards model was used to estimate time to remission.
Results: The study included 354 LORA patients and 518 YORA patients. Compared to YORA patients, LORA patients were less likely to be female (66% vs. 80% p<0.0001), and less likely to have positive either rheumatoid factor or anti-cyclic citrulinated peptide antibody (63% vs. 75% p=0.0003). The mean (standard deviation) baseline DAS28 score was 5.0 (1.3) and 4.8 (1.2) in LORA and YORA patients, respectively (p=0.0946). During the study follow-up, 254 (72%) LORA and 405 (78%) YORA patients reached remission. Compared to YORA patients, the hazard ratio (HR) for remission in LORA patients was 1.10 (95% confidence interval 0.90 to 1.34 p=0.35) after adjusting for other prognostic factors (Table). For patients who reached remission, LORA patients were less likely to be on a biologic or JAK inhibitor (16% vs. 27%) and more likely to be on a single conventional synthetic disease-modifying anti-rheumatic drugs (csDMARD) (34% vs. 27%) compared to YORA patients (chi-square test for all drug groups p=0.0039).
Conclusion: LORA and YORA patients had similar prognosis in terms of time to remission. At remission, LORA patients were more likely to be on a single csDMARD without a biologic or JAK inhibitor. This suggests that LORA patients likely do not require combination DMARD or biologic on initiation. Future studies should evaluate if a standardized treatment protocol tailored to LORA patients improves the safety of RA treatment and remission rate.