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This Week in Rheumatology

Ankylosing Spondylitis

Recent research on ankylosing spondylitis (AS) and axial spondyloarthritis (axSpA) highlights key clinical and pathophysiological insights. A Taiwanese real-world study (Liu et al., *Int J Rheum Dis*) evaluated adalimumab's effectiveness in radiographic axSpA, identifying determinants of clinical response—findings that could refine personalized treatment strategies in non-Western populations. Meanwhile, Liao et al. (*Rheumatology*) uncovered a mechanistic link between ankylosed posterior spinal structures and syndesmophyte growth, suggesting that structural rigidity may drive disease progression and impaired mobility, offering a potential target for early intervention. On the diagnostic front, Calixto et al. (*Clin Rheumatol*) conducted a meta-analysis of SpA classification criteria in Latin America, revealing variability in performance across regions, underscoring the need for context-specific diagnostic tools to address heterogeneity in disease presentation. Together, these studies advance understanding of AS therapeutics, pathophysiology, and diagnostics, with implications for tailored management globally.

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Autoinflammatory Diseases

Recent research highlights the role of interleukin-1 (IL-1) blockade in managing macrophage activation syndrome (MAS) in Still's disease. A study by Erkens et al. (2024) investigated the incidence and diagnostic validity of the EULAR/ACR/PRINTO 2016 MAS classification criteria in patients treated with IL-1

inhibitors. The findings suggest that IL-1 blockade may reduce the risk of MAS development, though further validation of the diagnostic criteria is needed to optimize early detection and intervention. This underscores the potential of targeted cytokine inhibition in mitigating severe complications in autoinflammatory diseases.

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Drugs and Pharmacology

Recent research highlights critical advances in pharmacology, particularly in optimizing drug efficacy and safety. A systematic review by Milella et al. (Journal of Neurology) underscores the risk of peripheral neuropathies linked to anti-TNF-alpha therapies, proposing actionable recommendations for monitoring and management. Meanwhile, van den Berg et al. (mAbs) challenge the 'one-size-fits-all' approach to monoclonal antibodies (mAbs), evaluating population pharmacokinetic models to better tailor dosing regimens. Precision dosing takes center stage in pediatric care as well: Han et al. (European Journal of Pharmaceutical Sciences) leverage machine learning to refine mycophenolate mofetil dosing in children with immune-mediated renal diseases, using exposure-response analysis to improve outcomes. On the immunomodulatory front, Sabeel et al. (PLoS One) present a meta-analysis revealing statins' anti-inflammatory effects in chronic diseases, with significant reductions in markers like CRP, suggesting broader therapeutic potential beyond lipid management. Together, these studies emphasize a shift toward personalized medicine—whether through risk mitigation (anti-TNF agents), model-informed dosing (mAbs, mycophenolate), or repurposing statins—to enhance patient care.

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Exercise and Rehabilitation

Recent research highlights the long-term effectiveness of non-surgical interventions for chronic low back pain (CLBP). A systematic review and meta-analysis by Jenkins et al. (The Lancet Rheumatology) underscores that conservative treatments—such as exercise therapy, manual therapy, and multidisciplinary rehabilitation—can provide sustained pain relief and functional improvement for CLBP patients. The study emphasizes the importance of tailored, patient-centered approaches, though heterogeneity in interventions and outcomes suggests further research is needed to refine optimal protocols. For busy rheumatologists, these findings reinforce the value of integrating evidence-based non-surgical options into clinical practice while considering individual patient needs.

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Gout

Recent research highlights advances in gout treatment, focusing on novel urate-lowering therapies (ULTs) and their safety profiles. A phase 2b trial of epaminurad, a potent selective hURAT1 inhibitor, demonstrated dose-dependent efficacy in reducing serum urate (sUA) levels, with 88.9% of patients achieving sUA <0.36 mmol/L at the highest dose (9 mg) versus 0% with placebo, alongside a favorable safety profile over 12 weeks (Jun et al., Arthritis Research & Therapy 2025). Meanwhile, Van de Perre et al. (Urolithiasis 2025) explored the origin of monosodium urate Randall’s plaques, providing mechanistic insights into gout pathophysiology. Comparative studies, including a phase 3 trial of dotinurad versus febuxostat in China (Sun et al., Arthritis & Rheumatology 2025), and target trial emulations by Yokose et al. (Arthritis & Rheumatology 2025) evaluating cardiovascular risks of NSAIDs versus colchicine during ULT initiation, underscore the importance of balancing efficacy with safety. Epaminurad’s selective action and minimal hepatotoxicity risk position it as a promising alternative to traditional ULTs, while real-world data emphasize colchicine’s cardiovascular safety in flare prophylaxis. Together, these studies advocate for personalized ULT strategies, integrating novel agents and risk mitigation approaches.

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Health Policy

Recent research highlights critical reforms needed to enhance the biosimilars market, focusing on affordability and competition. Roberts and Yazdany (2024) argue that current policy barriers—such as rebates favoring originator biologics and restrictive formularies—limit biosimilar uptake. Their work, published in *Current Rheumatology Reports*, calls for streamlined regulatory pathways, improved provider education, and payment reforms to incentivize biosimilar use. These changes could significantly reduce costs for rheumatology patients while maintaining therapeutic efficacy. While the abstract details are sparse, the paper's emphasis on systemic reforms underscores the urgency of addressing market distortions to unlock biosimilars' potential in rheumatologic care.

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Osteoarthritis

Recent research highlights significant advancements in understanding and managing osteoarthritis (OA), with a focus on predictive modeling, post-traumatic OA, and innovative potency assays. A multimodal AI approach demonstrated promise in estimating time-to-total knee replacement surgery, offering a tool for personalized OA progression monitoring (Cigdem et al., 2024). Meanwhile, a retrospective study by Klaser et al. (2025) revealed that 50% of patients with tibial plateau fractures developed radiographic OA, with medial or bicondylar fractures carrying the highest risk (OR = 3.4). These patients also showed worse functional outcomes, underscoring the need for early intervention. In a breakthrough for cell therapy, Schneider et al. (2025) developed a 3D microfluidic potency assay that

outperformed traditional 2D cultures in predicting clinical outcomes for BMAC-treated OA patients, with secreted immunomodulatory proteins (e.g., PD-L1, IL-17E) correlating strongly with pain relief. Finally, a global burden study (Xie et al., 2025) projects rising OA prevalence, emphasizing the urgency for improved diagnostic and therapeutic strategies. Together, these studies underscore the growing role of AI in prognosis, the long-term impact of joint injuries, and the potential of 3D platforms to optimize cell therapies.

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Other Rheumatic Diseases

Recent research highlights diverse advancements in rheumatic diseases, with a focus on clinical outcomes, treatment efficacy, and comorbidities. A meta-analysis by Liu et al. (BMC Pulmonary Medicine, 2025) found that lung transplantation for connective tissue disease (CTD)-associated end-stage lung disease yields survival rates comparable to non-CTD patients, though CTD patients face higher risks of primary graft dysfunction (PGD) and prolonged hospitalization. Meanwhile, Ohkubo et al. demonstrated rituximab's efficacy in connective tissue disease-associated thrombotic thrombocytopenic purpura, offering a promising therapeutic avenue. In pediatric rheumatic diseases, Theodorakopoulou et al. identified vascular endothelial dysfunction as a critical comorbidity, underscoring the need for early cardiovascular monitoring. Juvenile idiopathic arthritis management saw progress with Makhlouf et al.'s systematic review confirming biologic treatments' safety for growth in children, while Mackie and Hill emphasized methotrexate's broader safety profile beyond hematologic monitoring. Psychiatric risks in polymyositis/dermatomyositis were highlighted by Lee et al., linking these conditions to elevated psychiatric disorder incidence in a Taiwanese cohort. Finally, Zhou et al. differentiated anti-JO-1 and non-JO-1 antisynthetase syndrome-associated interstitial lung disease, revealing distinct clinical-imaging patterns that may guide tailored management. These studies collectively advance precision in diagnostics, risk stratification, and therapeutic decision-making across rheumatic

diseases.

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Psoriatic Arthritis

Recent research highlights the emergence of oral peptide therapeutics as a promising treatment modality for psoriatic arthritis (PsA) and other immune-mediated inflammatory diseases (IMIDs). A key focus is icotrokinra (JNJ-77242113), a first-in-class oral cyclic peptide that selectively inhibits IL-23 receptor signaling, combining the target specificity of monoclonal antibodies

(mAbs) with the convenience of oral administration. Preclinical studies demonstrate icotrokinra's high affinity (Kd = 7.1 pM) for IL-23R and dose-dependent inhibition of IL-23-induced inflammation in skin and colon models. Phase 2b trials in moderate-to-severe psoriasis (FRONTIER 1/2) showed robust efficacy, with 100 mg twice daily achieving PASI 75/90/100 responses in 76%/64%/40% of patients by Week 52, alongside a favorable safety profile and low gastrointestinal adverse event rates (6%). Notably, icotrokinra's sustained efficacy rivals IL-23-targeting mAbs, addressing a key unmet need for oral alternatives to injectables. Ongoing phase 3 trials (ICONIC-PsA 1/2) are evaluating its potential in PsA, while phase 2 studies explore ulcerative colitis. The development of icotrokinra underscores the broader shift toward oral peptides that overcome traditional limitations of small molecules (off-target effects) and mAbs (parenteral administration), offering a patient-centric approach to cytokine inhibition. Meanwhile, other oral peptide candidates targeting IL-17 (e.g., PN-881) are advancing, reflecting growing interest in this therapeutic class. Challenges remain in optimizing bioavailability, but structural innovations like cyclization and absorption enhancers are paving the way for clinically viable options.

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Rheumatoid Arthritis

Recent studies highlight advances in predicting and optimizing treatment responses in rheumatoid arthritis (RA), alongside insights into the mental health burden exacerbated by the COVID-19 pandemic. A study by Yap et al. (2024) used machine learning to analyze whole-blood transcriptomics in RA patients treated with adalimumab, identifying predictive biomarkers of response, which could refine personalized therapy. Meanwhile, Ammad et al. (2024) explored early therapeutic drug monitoring of adalimumab, suggesting its potential to predict efficacy and immunogenicity in rheumatic diseases, though further validation is needed. Wang et al. (2024) compared TNF-alpha and IL-6 inhibitors, finding differential impacts on bone health and mortality in RA, with TNF-alpha inhibitors showing superior outcomes in preserving bone density. Aydemir et al. (2024) linked changes in pain sensitization after DMARD therapy to disease activity, underscoring the role of central pain mechanisms in treatment response. The COVID-19 pandemic’s psychological toll on RA patients was starkly illustrated by Eslami et al. (2025), who reported elevated rates of anxiety (5.2–90.5%), depression (13.2–84.4%), and PTSD (20–41%) during lockdowns, driven by healthcare disruptions and social isolation. These findings emphasize the need for integrated mental health support in RA management, particularly during crises. Collectively, these studies underscore the dual priorities in RA care: advancing precision medicine through biomarkers and drug monitoring, while addressing the holistic needs of patients, including mental health.

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Scleroderma

Recent research on systemic sclerosis (scleroderma) highlights key insights into cardiovascular risks, interstitial lung disease (ILD) progression, and subclinical cardiac involvement. A large epidemiological study by Pauling et al. (Rheumatology) analyzed the Clinical Practice Research Datalink, revealing elevated risks of cardiovascular and venous thromboembolic events in scleroderma patients, underscoring the need for vigilant monitoring and preventive strategies. Meanwhile, Assassi et al. (Arthritis & Rheumatology) demonstrated that peripheral blood gene expression profiling can predict ILD progression, offering a potential tool for personalized risk stratification and earlier intervention. Complementing these findings, He et al. (Clinical Rheumatology) linked physician global assessments to subclinical cardiac involvement, suggesting that routine clinical evaluations may help identify patients at risk for silent cardiac complications. Together, these studies emphasize the importance of multidisciplinary approaches—integrating biomarkers, imaging, and clinical assessments—to improve outcomes in scleroderma.

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Sjogren's Disease

Recent research on Sjögren's disease highlights novel diagnostic approaches and systemic implications. A multidimensional assessment of juvenile Sjögren's disease (jSjD) by Turkmen et al. (Clin Rheumatol 2025) integrated parotid gland ultrasound (US), nailfold videocapillaroscopy (NVC), and biopsy in 21 patients, revealing significant correlations between glandular and microvascular abnormalities. Key findings showed diagnostic delay was associated with worse US and NVC scores ($p=0.025$), while ENA-positive patients had higher parotitis scores ($p=0.022$) and more cross capillaries ($p=0.024$). NVC distinguished jSjD from healthy controls with lower capillary density ($p=0.021$) and more microhemorrhages ($p<0.001$), underscoring its utility in early detection. Meanwhile, Zhou et al. (Rheumatology 2024) explored neonatal outcomes in primary Sjögren's syndrome, though details were limited by abstract-only data. Together, these studies emphasize the value of multimodal imaging in jSjD and the need for further investigation into systemic effects across age groups.

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Systemic Lupus Erythematosus

Recent studies highlight key advances in Systemic Lupus Erythematosus (SLE) management, focusing on treatment optimization, novel biomarkers, and long-term outcomes. Kojima et al. (2025) demonstrated that early initiation of belimumab (within 5 years of diagnosis) significantly improves SELENA-SLEDAI scores compared to later initiation, with greater reductions in disease activity and glucocorticoid use, underscoring the importance of timely biologic intervention (*Arthritis Research & Therapy*). Complementing this, Ruiz-Irastorza et al. (2025) validated the Lupus-Cruces Nephritis (LCN) protocol—combining cyclophosphamide with repeated methylprednisolone pulses—as highly effective for lupus nephritis, achieving 85% complete renal response at 12 months and reduced glucocorticoid toxicity (*Lupus Science & Medicine*). Meanwhile, Baba et al. (2025) found that early glucocorticoid tapering in juvenile SLE is feasible and associated with lupus low disease activity state (LLDAS), though serological

activity (e.g., anti-dsDNA positivity) increased flare risk (*Lupus Science & Medicine*). Galarza-Delgado et al. (2024) identified subclinical sensorineural hearing loss as an underrecognized SLE manifestation, advocating for routine audiological screening (*Clinical Rheumatology*). Renaudineau et al. (2025) explored interferon-gamma release assays as promising biomarkers for SLE activity, while Morishita et al. (2025) linked physicians' personality traits to shared decision-making quality in SLE care (*Rheumatology*). Together, these studies emphasize precision in treatment timing, protocol efficacy, and holistic monitoring to improve SLE outcomes.

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Vasculitis

Recent research on vasculitis highlights promising therapeutic advances and distinct clinical patterns in neuro-Behçet’s disease (NBD). A multicenter study in Indian patients with refractory Takayasu arteritis demonstrated the efficacy of tofacitinib, a JAK inhibitor, as a viable option for those unresponsive to biologic DMARDs, offering a new avenue for treatment-resistant cases (Vasanth et al., 2024). Meanwhile, a systematic review of neuro-Behçet’s disease (Al-Omoush et al., 2025) revealed distinct clinical and imaging phenotypes: parenchymal NBD

predominantly presents with ocular manifestations (80.9%), pyramidal signs (57.5%), and cranial nerve palsies (50.4%), while non-parenchymal NBD is characterized by headache (86.4%), papilledema (47.4%), and nausea (31.6%). Mixed-type NBD shares features of both, with headache (64.3%) and pyramidal signs (50%) being common. MRI findings further differentiate these subtypes, with brainstem involvement (midbrain/pons) and contrast enhancement more prevalent in acute parenchymal NBD, while chronic cases often show atrophy. These insights underscore the importance of tailored diagnostic and therapeutic strategies based on disease subtype. Additionally, a meta-analysis (Lee et al., 2024) suggested a potential link between occupational dust exposure and autoimmune diseases, though further research is needed to clarify its relevance to vasculitis. Together, these studies advance both treatment options and phenotypic understanding in vasculitis, particularly in complex subtypes like NBD.

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