VILNIAUS UNIVERSITETO
MEDICINOS FAKULTETAS

Inflammatory Rheumatic Diseases in Lithuania: Evolving Approaches in Diagnosis and Management

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LIETUVOS REUMATOLOGŲ ASOCIACIJA
Lithuanian Rheumatologists Association

Inflammatory Rheumatic diseases (IRD)

- **Inflammatory Arthropathies:**
  - Rheumatoid Arthritis (RA)
  - Spondylarthropathies (SpA)
  - Juvenile Idiopatic Arthritis (JIA)
- **Connective Tissue Diseases:**
  - Systemic Lupus Erythematosus (SLE)
  - Systemic Sclerosis (SSc)
  - Polymyositis and Dermatomyositis
  - Sjögrens's Syndrome
- **Vasculitis:**
  - Small vessel vasculitis
    - ANCA-associated vasculitis (AAV)
  - Large vessel vasculitis

Prevalence of IRD

- Rheumatoid Arthritis – the global prevalence estimate was **0.46%** (95%CI 0.39-0.54)

> Rheumatol Int. 2021 May;41(5):863-877. doi: 10.1007/s00296-020-04731-0. Epub 2020 Nov 11.

The global prevalence of rheumatoid arthritis: a meta-analysis based on a systematic review

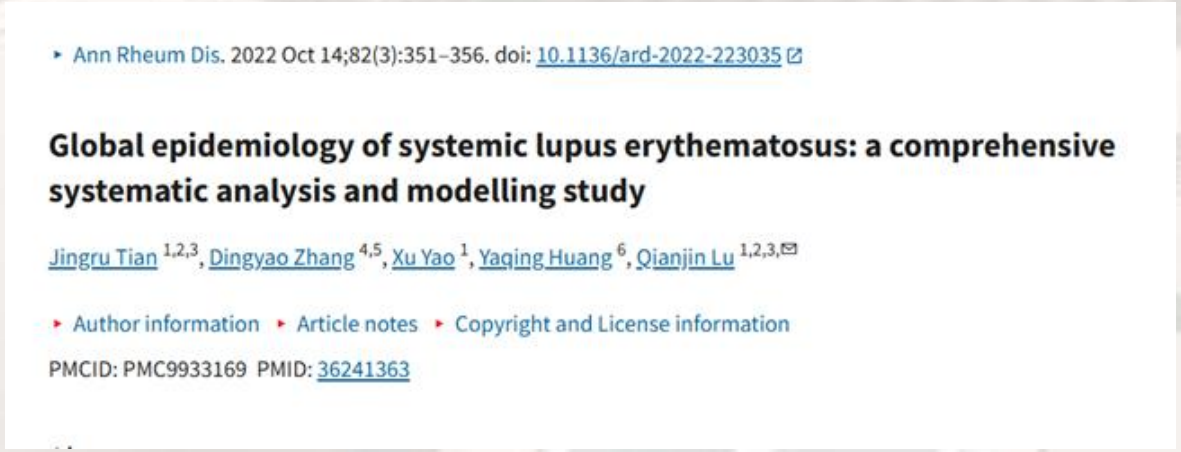
Khalid Almutairi [1 2], Johannes Nossent [3 4], David Preen [5], Helen Keen [3 6], Charles Inderjeeth [3 4]

Affiliations + expand

PMID: 33175207 DOI: 10.1007/s00296-020-04731-0

Prevalence of IRD

- The global Systemic Lupus Erythematosus prevalence – **43.7** (95%CI 15.87 to 108.92) **per 100 000**
- The overall prevalence of Primary Sjogren's Syndrome was **60.82** (95%CI 43.69 to 77.94) cases per **100 000**



Ann Rheum Dis. 2022 Oct 14;82(3):351–356. doi: 10.1136/ard-2022-223035

Global epidemiology of systemic lupus erythematosus: a comprehensive systematic analysis and modelling study

Jingru Tian [1,2,3], Dingyao Zhang [4,5], Xu Yao [1], Yaqing Huang [6], Qianjin Lu [1,2,3]

Author information · Article notes · Copyright and License information

PMCID: PMC9933169 PMID: 36241363

Meta-Analysis · Ann Rheum Dis. 2015 Nov;74(11):1983-9.

doi: 10.1136/annrheumdis-2014-205375. Epub 2014 Jun 17.

Epidemiology of primary Sjögren's syndrome: a systematic review and meta-analysis

Baodong Qin [1], Jiaqi Wang [2], Zaixing Yang [1], Min Yang [1], Ning Ma [3], Fenglou Huang [4], Renqian Zhong [1]

Affiliations + expand

PMID: 24938285 DOI: 10.1136/annrheumdis-2014-205375

Prevalence of IRD

- Global pooled prevalence (95%CI) of AAV was **198.0 per million** person (187.0-210.0):
  - Granulomatosis with polyangiitis (GPA) **– 96.8**
  - Microscopic polyangiitis (MPA) **– 39.2**
  - Eosinophilic granulomatosis with polyangiitis (EGPA) **– 15.6**

Systematic Review and Metaanalysis of Worldwide Incidence and Prevalence of Antineutrophil Cytoplasmic Antibody (ANCA) Associated Vasculitis

by Rocío Redondo-Rodriguez [1], Natalia Mena-Vázquez [1,*], Alba María Cabezas-Lucena [1], Sara Manrique-Arija [1,2], Arkaitz Mucientes [1] and Antonio Fernández-Nebro [1,2]

[1] Instituto de Investigación Biomédica de Málaga (IBIMA), UGC de Reumatología, Hospital Regional Universitario de Málaga, 29010 Malaga, Spain

[2] Departamento de Medicina, Universidad de Málaga, 29016 Malaga, Spain

[*] Author to whom correspondence should be addressed.

J. Clin. Med. **2022**, *11*(9), 2573; **https://doi.org/10.3390/jcm11092573**

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(This article belongs to the Section **Vascular Medicine**)

Prevalence of IRD in Lithuania

- Rheumatoid Arthritis – the global prevalence estimate was **0.46%** (95%CI 0.39-0.54)
- Standardized prevalence rate of **RA 0.55%** (95% CI 0.39-0.74) and **SpA 0.84%** (95% CI 0.53-1.21)

Scand J Rheumatol 2008;37:113–119

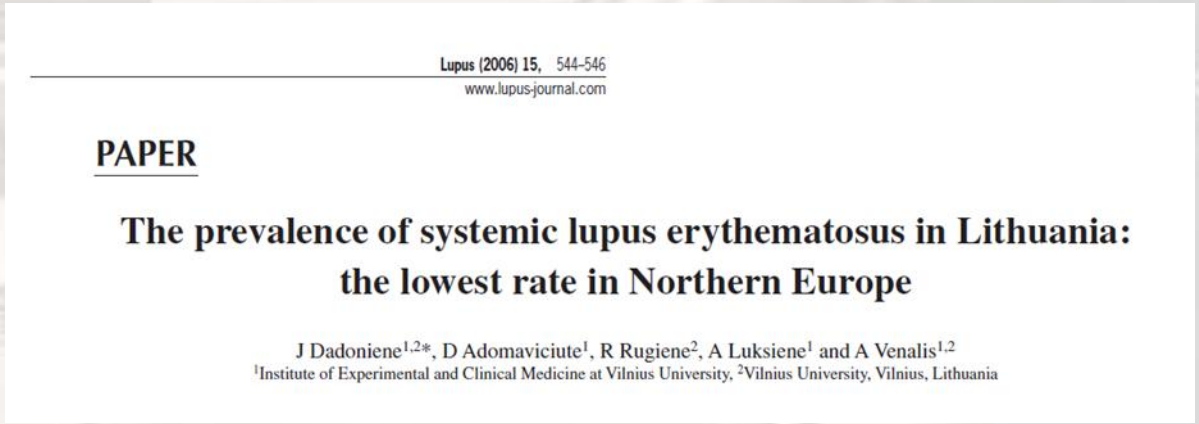
Prevalence survey of rheumatoid arthritis and spondyloarthropathy in Lithuania

D Adomaviciute[1], M Pileckyte[2], A Baranauskaite[2], J Morvan[3,4], J Dadoniene[1,5], F Guillemin[3]

[1]Institute of Experimental and Clinical Medicine at Vilnius University, Vilnius, Lithuania, [2]Rheumatology Clinic of Kaunas Medical University, Kaunas, Lithuania, [3]Nancy University, EA 4003, School of Public Health, Nancy, France, [4]Rheumatology, University Hospital, Brest, France, and [5]Vilnius University, Vilnius, Lithuania

Prevalence of IRD in Lithuania

- The global Systemic Lupus Erythematosus prevalence – **43.7** (15.87 to 108.92) **per 100 000**
- Prevalence of SLE in Lithuania is 0.02% (**16.2/100 000**)



Lupus (2006) 15, 544–546
www.lupus-journal.com

PAPER

The prevalence of systemic lupus erythematosus in Lithuania: the lowest rate in Northern Europe

J Dadoniene[1,2]*, D Adomaviciute[1], R Rugiene[2], A Luksiene[1] and A Venalis[1,2]
[1]Institute of Experimental and Clinical Medicine at Vilnius University, [2]Vilnius University, Vilnius, Lithuania

The burden of IRD

- Lifelong diseases

The burden of IRD

- Lifelong diseases
- Progressing damage

- RA – without effective treatment >80% of patients develop radiographic erosions within 2 years of disease onset.
- SLE – 50% of patients accrue permanent organ damage within 10 years of diagnosis, including renal, cardiovascular, neuropsychiatric damage.
- SSc – progressive fibrosis of skin, lungs, and vasculature. Despite therapy, 30-40% develop clinically significant pulmonary fibrosis within 5 years.
- Contributors: chronic inflammation, corticosteroid toxicity, comorbidities

- *Fuchs et al., 1989; Bruce et al., 2005;*

The burden of IRD

- Lifelong diseases
- Progressing damage
- Disability/Loss of work productivity

- Work disability rates:
  - RA: 30-50% within 10 years, even with modern treatment;
  - SLE: 25-50% depending on disease severity;
  - PsA/AS: 20-40%;
  - Overall MSK diseases: top 3 cause of global YLD.

- *Wolfe et al., 2010; Costenbader et al., 2018; Dougados et al., 2018; Tillet et al., 2012; Vos et al., 2020*

The burden of IRD

- Lifelong diseases
- Progressing damage
- Disability/Loss of work productivity
- Increased mortality

- Meta-analyses and registry studies show standardized mortality ratios (SMR) of 1.3-3.0, depending on disease type and cohort.
- RA, PsA, AS – SMR 1.3-1.8
- SLE, SSc, AAV – SMR 2.5-3.0.
- The main causes of death: cardiovascular disease, infection, malignancy, organ failure.

- *Avina-Zubieta 2008, Nossent 2019, Elhai 2017, Flossman 2011, Han 2018*

The burden of IRD

- Lifelong diseases
- Progressing damage
- Disability/Loss of work productivity
- Increased mortality

- Lithuanian data:
- SMR of total cohort: 1.32 (95% CI 1.23–1.40)
- SMR by disease subgroup:
  - Connective tissue disease (CTD)/vasculitis group: SMR ~ 1.55 (95% CI 1.38–1.73).
  - Rheumatoid Arthritis (RA): SMR ~ 1.25 (1.14–1.36).
  - Spondyloarthritis (SpA, including PsA & AS): SMR ~ 1.16 (0.98–1.37)
- Life expectancy differences for patients diagnosed at age 18-19:
  - RA patients live about 1.63 years less than general population.
  - SpA patients: ~ 2.7 years less
  - CTD patients: life expectancy shorter by almost 9 years compared to general population.
- *Dadoniene et al., 2021*

Recent achievements

- Improvement in survival

Recent achievements

- Improvement in survival:
  - SLE - Meta-analysis of 77 studies (18,998 SLE patients) found 5-year survival rose from ~74.8% in the 1950s to ~94.8% in the 2000s, and 10-year survival rose from ~63.2% to ~91.4%.

Meta-Analysis > Semin Arthritis Rheum. 2012 Jun;41(6):830-9.
doi: 10.1016/j.semarthrit.2011.11.002. Epub 2012 Jan 16.

Global trend of survival and damage of systemic lupus erythematosus: meta-analysis and meta-regression of observational studies from the 1950s to 2000s

Anselm Mak [1], Mike W-L Cheung, Hui Jin Chiew, Yang Liu, Roger Chun-man Ho

Affiliations + expand

PMID: 22257558 DOI: 10.1016/j.semarthrit.2011.11.002

Recent achievements

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  - AAV - Meta-analysis of observational AAV cohorts found AAV patients still have an elevated mortality risk (meta-SMR ≈2.7), but more recent studies report substantially better 5-year survival than older series.

Clinical and epidemiological research

Extended report

Mortality in ANCA-associated vasculitis: ameta-analysis of observational studies

Ju Ann Tan [1 2 3], Natasha Dehghan [2], Wenjia Chen [4], Hui Xie [1 5], John M Esdaile [1 2], J Antonio Avina-Zubieta [1 2]

> Nephrol Dial Transplant. 2021 Dec 31;37(1):63-71. doi: 10.1093/ndt/gfaa303.

Increasing incidence and improved survival in ANCA-associated vasculitis-a Danish nationwide study

Karl Emil Nelveg-Kristensen [1 2], Wladimir Szpirt [1], Nicholas Carlson [1], Mark McClure [2 3], David Jayne [2 3], Hans Dieperink [4], Jon Waarst Gregersen [5], Elizabeth Krarup [6], Per Ivarsen [7], Christian Torp-Pedersen [8 9], Martin Egfjord [1]

Affiliations + expand

PMID: 33313875 DOI: 10.1093/ndt/gfaa303

Recent achievements

- Improvement in survival:
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  - AAV - Meta-analysis of observational AAV cohorts found AAV patients still have an elevated mortality risk (meta-SMR ≈2.7), but more recent studies report substantially better 5-year survival than older series.
  - Lithuanian analysis of AAV reported life expectancy increased from ~99.4 to ~126.6 months over the past 15 years.

▸ Acta Med Litu. 2017;24(2):107–112. doi: 10.6001/actamedica.v24i2.3491

Show available content in: English | Lithuanian

Clinical characteristics and long-term survival differences of the ANCA-associated vasculitis group: a cross-sectional study of 27 patients

Jolanta Dadonienė [1], Gintarė Kumžaitė [1], Rimvydė Mačiulytė [1], Dalia Miltinienė [2]

Recent achievements

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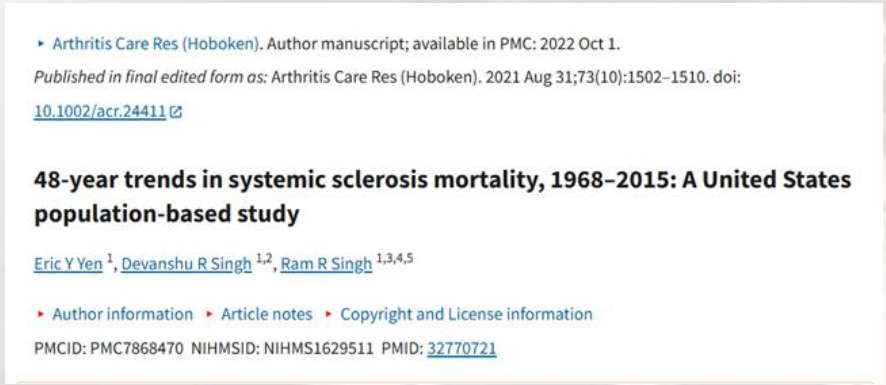
  - SLE - Meta-analysis of 77 studies (18,998 SLE patients) found 5-year survival rose from ~74.8% in the 1950s to ~94.8% in the 2000s, and 10-year survival rose from ~63.2% to ~91.4%.
  - AAV - Meta-analysis of observational AAV cohorts found AAV patients still have an elevated mortality risk (meta-SMR ≈2.7), but more recent studies report substantially better 5-year survival than older series.
  - SSc - Systematic reviews and cohort comparisons report better 5- and 10-year survival (75% and 50-65%, respectively) in recent cohorts vs older ones. ILD and SSc-PAH are the main causes for 5–10-year mortality.



▸ Arthritis Care Res (Hoboken). Author manuscript; available in PMC: 2022 Oct 1.

Published in final edited form as: Arthritis Care Res (Hoboken). 2021 Aug 31;73(10):1502–1510. doi: 10.1002/acr.24411

48-year trends in systemic sclerosis mortality, 1968–2015: A United States population-based study

Eric Y Yen [1], Devanshu R Singh [1,2], Ram R Singh [1,3,4,5]

▸ Author information ▸ Article notes ▸ Copyright and License information

PMCID: PMC7868470 NIHMSID: NIHMS1629511 PMID: 32770721

▸ J Scleroderma Relat Disord. 2020 May 22;6(1):11–20. doi: 10.1177/2397198320915042

Update on morbidity and mortality in systemic sclerosis–related interstitial lung disease

Elizabeth R Volkmann [1,✉], Aryeh Fischer [2]

Editors: Daniel Furst, John Varga

▸ Author information ▸ Article notes ▸ Copyright and License information

PMCID: PMC7943067 NIHMSID: NIHMS1672995 PMID: 33693057

Recent achievements

- Improvement in survival:
  - SLE - Meta-analysis of 77 studies (18,998 SLE patients) found 5-year survival rose from ~74.8% in the 1950s to ~94.8% in the 2000s, and 10-year survival rose from ~63.2% to ~91.4%.
  - AAV - Meta-analysis of observational AAV cohorts found AAV patients still have an elevated mortality risk (meta-SMR ≈2.7), but more recent studies report substantially better 5-year survival than older series.
  - SSc - Systematic reviews and cohort comparisons report better 5- and 10-year survival (75% and 50-65%, respectively) in recent cohorts vs older ones. ILD and SSc-PAH are the main causes for 5–10-year mortality.
  - RA - Systematic reviews/meta-analyses conclude mortality has decreased over the last 50 years but RA patients still have higher mortality (SMR often ~1.3–2.0 depending on cohort and follow-up) than matched general-population controls.

Recent achievements

- Improvement in survival
- Improved outcomes:

Recent achievements

- Improvement in survival
- Improved outcomes:
  - **RA**
    - Improved disease activity and remission rates:
      - Clinical remission rates increased from <10% (1980s) to 40–60% in contemporary "treat-to-target" settings. (Van der Linden MP et al., Arthritis Rheum 2010; Ann Rheum Dis 2017)
      - EULAR 2023 update confirms: >50% of patients in registries now achieve DAS28 remission or low disease activity within 6–12 months of starting therapy. (EULAR 2023 update on RA management outcomes)

Recent achievements

- Improvement in survival
- Improved outcomes:
  - **RA**
    - Improved disease activity and remission rates
    - Radiographic joint damage is much less common:
      - Early studies (1980s) reported erosions in >70% of patients within 5 years; modern early RA cohorts report <30%.
      - (van der Heijde D et al., Arthritis Rheum 2009. Vastesaeger N et al., Ann Rheum Dis 2011. Finckh A et al., RMD Open 2016)

Recent achievements

- Improvement in survival
- Improved outcomes:
  - **RA**
    - Improved disease activity and remission rates.
    - Radiographic joint damage is much less common.
    - Improved quality of life and less functional disability:
      - HAQ (Health Assessment Questionnaire) scores are substantially lower in modern cohorts at both baseline and follow-up.
      - Fewer patients experience long-term work disability; employment retention improved markedly after introduction of biologics and treat-to-target strategies.
      - (Gwinnutt JM et al., Ann Rheum Dis 2020. Verstappen SMM et al., Arthritis Care Res 2013. Radner H et al., Arthritis Care Res 2017)

Recent achievements

- Improvement in survival
- Improved outcomes:
  - **RA**
    - Improved disease activity and remission rates.
    - Radiographic joint damage is much less common.
    - Improved quality of life have and less functional
    - Improvement of other long-term outcomes:
      - Joint replacement risk decreased 50–70% (UK & Swedish registry data).
      - Hospitalization rates fell significantly since 2000s.
      - Cardiovascular event rates decreased by ~30–50% with modern therapy and risk factor management.
      - (Cross M et al., Lancet 2014. Listing J et al., Ann Rheum Dis 2015. Holmqvist M et al., Arthritis Rheum).

Recent achievements - Reasons

- Earlier recognition/diagnosis of milder disease;
- Effective treatments introduced over time (corticosteroids, immunosuppressants, biologics)/proactive management strategies – better disease control;
  - **"Window of opportunity"** (early treatment benefits; delayed treatment = irreversible damage);
  - **Treat-to-target** (frequent monitoring and therapy adjustment aiming for remission/low disease activity)
- Improved management of complications/comorbidities (treatment of infections, vaccinations, renal replacement therapy (dialysis/transplant), critical care, and cardiovascular risk reduction and management);
- Multidisciplinary care and patient education/shared decision-making.

Recent achievements - How we did it?

- Early detection

Early detection – Red flags for primary care

- Persistent joint swelling >6 weeks;
- Morning stiffness >30-60min;
- Asymmetric back pain improving with exercise;
- Psoriasis + join pain;
- Systemic features (fever, weight loss)

B. Combe, R. Landewe, C. I Daien, Ch. Hua, D. Aletaha, J. M. Álvaro-Gracia, M. Bakkers, N. Brodin, G R Burmester, C Codreanu, R Conway, M Dougados, P Emery, G. Ferraccioli, J. Fonseca, K. Raza, L. Silva-Fernández, J. S Smolen, D. Skingle, Z. Szekanecz, T K Kvien, A van der Helm-van Mil, R van Vollenhoven

2016 update of the EULAR recommendations for management of early arthritis

Annals of the Rheumatic Diseases 2017;76:948-959

First published December 15, 2016

See slide deck

Read recommendation

Early detection – Access to rheumatologist

- Early Inflammatory Arthritis (EIA) Clinics / Rapid Access Pathways
  - Dedicated early arthritis clinics (EACs) exist in many countries (e.g., UK, Netherlands, Canada).
  - Provide fast-track assessment (within 2–3 weeks) of new-onset polyarthritis → proven to improve remission and reduce disability.
  - Referral criteria:
    - ≥3 swollen joints;
    - MCP/MTP involvement;
    - Morning stiffness >30 minutes;
    - Positive rheumatoid factor or anti-CCP;
    - Symptoms <12 months
  - Emery P et al., Ann Rheum Dis 2002

Early detection – Access to rheumatologist

- Situation in Lithuania:
  - No early arthritis clinic/rapid access pathways;
  - Former Early Arthritis Clinic in Vilnius University Hospital Santaros Clinics since 2007, admission criterion - recent onset arthritis;
  - Current waiting line to see rheumatologist – at least 3-4 weeks.

Early detection – Laboratory markers

Decade (Approx.)	Biomarker	Main Disease(s)	Clinical Introduction / Impact
1940s–1950s	Lupus erythematosus (LE) cell test	Systemic lupus erythematosus (SLE)	First laboratory test for lupus; demonstrated autoimmune nature of disease (1948–1954). Superseded by ANA testing in 1960s.
1957	Rheumatoid factor (RF)	Rheumatoid arthritis (RA)	First serologic marker for RA; included in ACR 1958 and 1987 criteria. Diagnostic and prognostic value.
1959–1960	Antinuclear antibodies (ANA)	SLE, systemic sclerosis, Sjögren's	Broad diagnostic marker for connective tissue diseases; introduced via immunofluorescence. Became standard test by 1970s.
1965–1970	Anti–double-stranded DNA (anti-dsDNA)	SLE	Highly specific for SLE; correlates with disease activity and lupus nephritis. Widely adopted in 1970s.
1975–1979	Extractable nuclear antigens (ENA): anti-Sm, anti-RNP, anti-Ro, anti-La	SLE, Sjögren's, MCTD	Allowed finer disease differentiation.
1976–1985	Antineutrophil cytoplasmic antibodies (ANCA)	ANCA-associated vasculitis (GPA, MPA, EGPA)	Revolutionized vasculitis diagnosis. PR3-ANCA and MPO-ANCA became clinical standards by late 1980s.
1980–1983	Anti-Scl-70 (topoisomerase I) and Anti-centromere	Systemic sclerosis	Defined diffuse vs limited disease; predictive of pulmonary fibrosis or CREST phenotype.
1987–1990	HLA-B27 typing	Ankylosing spondylitis, spondyloarthritis	PCR-based genetic typing became routine; improved early recognition of axial SpA.
1990–1995	Antiphospholipid antibodies (aCL, β2GPI, lupus anticoagulant)	Antiphospholipid syndrome, SLE	Defined APS; became formalized in Sapporo/Sydney criteria.
1998–2000	Anti-cyclic citrullinated peptide (anti-CCP/ACPA)	RA	Most specific RA biomarker; predicts erosive disease and precedes onset. Routine worldwide by mid-2000s.
2003–2006	Myositis-specific antibodies (e.g., anti-Mi-2, anti-TIF1γ, anti-MDA5)	Dermatomyositis, IIM	Enabled phenotype-based classification (e.g., malignancy, ILD risk). Panels entered clinical use in 2010s.
2010–2015	Antisynthetase antibodies (Jo-1, PL-7, PL-12)	Antisynthetase syndrome / myositis	Routine testing via commercial line immunoassays.
2015–2020	Calprotectin (S100A8/A9), type I IFN gene signature, BAFF	SLE, RA, Sjögren's	Biomarkers of disease activity and response prediction; emerging clinical implementation.
2020–2025	Multi-omic and composite biomarkers (gene expression panels, cfDNA, proteomics)	SLE, RA, vasculitis	Used in clinical trials and precision medicine; early adoption in specialized centers.

Early detection – Imaging

- Musculoskeletal Ultrasound (MSK-US):
  - Sensitive for subclinical synovitis in early RA, PsA, and SpA.
  - Can detect power Doppler signal (active inflammation) before clinical swelling.
  - Helpful in undifferentiated arthralgia.
  - Widely used in early arthritis clinics for triage and monitoring.
  - *van der Ven M et al., Arthritis Rheumatol 2017*
- MRI (Magnetic Resonance Imaging):
  - Extremely sensitive for early joint and entheseal inflammation.
  - MRI detects bone marrow edema (osteitis) and synovitis before radiographic erosions.
  - Crucial in early axial spondyloarthritis (axSpA) where X-rays may still be normal.
  - ASAS MRI criteria (Assessment of SpondyloArthritis international Society) standardize early axSpA detection.
  - *Rudwaleit M et al., Arthritis Rheum 2009*
- Nailfold Capillaroscopy
  - Non-invasive method for detecting microvascular changes in systemic sclerosis and other CTDs.
  - Abnormal "scleroderma pattern" (giant capillaries, hemorrhages, dropout) can precede clinical disease by years.
  - *Cutolo M et al., Nat Rev Rheumatol 2018.*

Recent achievements - How we did it?

- Early detection
- Effective treatment

Era / Decade	Drug or Class (Examples)	Main Indications
1890s–1950s	NSAIDs (Aspirin, Indomethacin, Naproxen)	RA, AS, PsA, gout
1930s–1950s	Gold salts, Penicillamine	RA
1950s–1960s	Corticosteroids (Prednisone), Antimalarials (HCQ)	RA, SLE, vasculitis, JIA
1960s–1980s	Cytotoxic agents (Cyclophosphamide, Azathioprine, Cyclosporine)	SLE, vasculitis, severe RA
1970s–1990s	csDMARDs (Sulfasalazine, Methotrexate, Leflunomide)	RA, PsA, JIA
Late 1990s–2000s	TNF inhibitors (Infliximab, Etanercept, Adalimumab)	RA, PsA, AS
2000s	IL-1 inhibitor (Anakinra), CTLA-4-Ig (Abatacept)	RA, systemic JIA
2006–2010s	IL-6 inhibitors (Tocilizumab, Sarilumab)	RA, GCA, sJIA
2010s	IL-12/23 (Ustekinumab), IL-17 (Secukinumab, Ixekizumab), IL-23 (Guselkumab)	PsA, AS, psoriasis
2010s	PDE4 inhibitor (Apremilast)	PsA, psoriasis
2012–2020s	JAK inhibitors (Tofacitinib, Baricitinib, Upadacitinib)	RA, PsA, SpA, JIA
2010s–2020s	B-cell / complement agents (Rituximab, Belimumab)	RA, SLE, vasculitis
2020s	TYK2 inhibitors (Deucravacitinib, etc.)	PsA, psoriasis, SLE (trials)
2010s–2020s	Biosimilars (Infliximab, Adalimumab, etc.)	RA, PsA, AS

Effective treatment - Role of laboratory specialists

- Monitoring therapy and disease activity:
  - CRP, ESR for disease activity
  - Anti-DNA, C3, C4
  - DMARD safety labs

Effective treatment - Role of laboratory specialists

- Monitoring therapy and disease activity
- Biologics and JAK inhibitors:
  - Infection screening (tuberculosis, hepatitis B and C, HIV)
  - Drug concentration
  - Anti-drug antibodies

Charlotte LM Krieckaert, Astrid van Tubergen, Johanna Elin Gehin, Borja Hernández-Breijo, Guillaume Le Mélédo, Alejandro Balsa, Peter Böhm, Sasa Cucnik, Ori Elkayam, Guro L Goll, Femke Hooijberg, Meghna Jani, Patrick DW Kiely, Neil McCarthy, Denis Mulleman, Victoria Navarro-Compán, Katherine Payne, Martin E Perry, Chamaida Plasencia-Rodriguez, Simon R Stones, Silje Watterdal Syversen, Annick de Vries, Katherine M Ward, Gertjan Wolbink , John D Isaacs

EULAR points to consider for therapeutic drug monitoring of biopharmaceuticals in inflammatory rheumatic and musculoskeletal diseases

Annals of the Rheumatic Diseases Published, Online First: 12 May 2022. doi: 10.1136/annrheumdis-2022-222155

Read Recommendation

New and evolving approaches in laboratory diagnostics

- Multiplex immunoassays, automated immunofluorescence;
- Biomarkers beyond autoantibodies: calprotectin, cytokine signatures, genetic testing;
- Synovial fluid biomarkers;
- Precision medicine – identifying responders/non-responders (e.g. JAK inhibitor pharmacogenomics, drug-level monitoring);
- Imaging + lab multimodal diagnostics, with AI fusion

Lithuania - specific challenges and opportunities

- Access to advanced therapies
- Refferal delays:
  - Education of primary care
  - Early arthritis clinics
  - Fast track refferals
- Availability of ultrasound and MRI
- Rehabilitation services
- National registries
- Tele-rheumatology
- Rheumatology nurse

information
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WORLD ARTHRITIS DAY
12 OCTOBER