

INTERNAL MEDICINE: DIFFERENT DISCIPLINES: INTERNATIONAL SCIENTIFIC CONFERENCE ON MEDICINE AND HEALTH SCIENCES OF THE UNIVERSITY OF LATVIA, 2026

On 26 April 2026, the University of Latvia, in Riga, hosted the International Scientific Conference on Medicine and Health Sciences.

The section “Internal Medicine: Different Disciplines” provides research results from different fields of Internal medicine. Scientific works in lung cancer explore the value of extracellular vesicle-associated miRNA profiles from bronchoalveolar lavage fluid for assessing the risk of malignancy in patients with peripheral pulmonary nodules, as well as the predictive value of PET/CT scans and clinical parameters for identifying unforeseen N1–2 lymph node metastases. Within the field of rheumatology, one study reports the detection of lung involvement in patients with rheumatoid arthritis using lung CT and its association with disease-modifying therapy. Another study examines 5-year treatment outcomes and their association with RF/anti-CCP serophenotype and treatment intensity. A third study evaluates the impact of secondary fibromyalgia on quality of life in patients with high primary disease activity. In asthma and allergology research, data on sensitisation to respiratory allergens in the Latvian population, assessed using molecular biology techniques, are presented. A second study analyses remission in severe asthma after one year of biologic therapy based on data from the SHARP Registry. In nephrology, colleagues analyse the distribution of peritoneal membrane transport types and their association with dialysis adequacy and overhydration in patients undergoing peritoneal dialysis. One study provides data on preanalytical indicators in blood cultures collected at a University hospital and evaluates compliance with established recommendations. A dermatology study analyses lifestyle habits and their correlation with disease severity in Latvian patients with psoriasis. Another study, focusing on respiratory rate monitoring during exercise using microphone recordings and spectrogram-based object detection, provides insight into the development of new technology.

Alvils Krams

RESPIRATORY RATE MONITORING DURING EXERCISE USING MICROPHONE RECORDINGS AND SPECTROGRAM-BASED OBJECT DETECTION

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Background. Respiratory rhythm provides essential information for evaluating an individual's health status and physical activity. However, reliable respiratory rate measurement outside laboratory environments remains challenging due to environmental noise and limitations of commonly available technical equipment.

Aim. The aim of this study was to evaluate an image-based object detection approach for estimating respiratory rate from microphone audio recordings and to develop an exercise breathing dataset for high-intensity respiratory monitoring scenarios.

Methods. The proposed respiratory rate estimation framework is based on adapting industry-standard object detection architectures for respiratory sound analysis. A YOLO-based model was trained on time–frequency spectrogram representations of breathing audio in order to detect and segment exhalation sound events. The performance of this machine learning approach was systematically compared with a mathematical sound intensity filtration method across multiple experimental conditions and varying background noise levels, simulating real-world out-of-laboratory usage. Respiratory rate estimates were additionally validated against standard medical reference devices, including spirometry masks and respiratory belt measurements. Furthermore, this work provides the basis for an ongoing study investigating automatic audio feature learning through trainable Mel-based spectrogram generation to enhance frequency pattern detection.

Results. The proposed approach demonstrates the effectiveness of applying image-based detection algorithms for re-

cognising and segmenting acoustic respiratory events. Respiratory rate estimation remained accurate under moderate noise conditions, achieving mean absolute error values as low as 0.57 BPM in base-line laboratory experiments. Even under challenging augmented noise levels approaching –5 dB signal-to-noise ratio, deviations remained below 1.79 BPM, indicating strong robustness for practical microphone-based monitoring. Performance degradation was primarily observed at higher respiratory rates, where limited availability of labelled high-intensity exercise recordings reduced detection accuracy. Ongoing data collection is aimed at improving model generalisation under these demanding conditions.

Conclusions. These findings indicate that object detection frameworks trained on spectral breathing data offer a promising and non-invasive solution for respiratory rate monitoring using only microphone recordings. The approach minimises the need for extensive manual preprocessing and remains reliable in realistic noisy environments. Current accuracy limitations at very high breathing rates highlight the need for larger labelled exercise datasets, motivating continued dataset development and future improvements in model generalisation for high-intensity monitoring applications.

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ASTHMA REMISSION AFTER ONE YEAR OF BIOLOGIC THERAPY IN SEVERE ASTHMA: ANALYSIS OF SHARP DATABASE DATA

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Background. The advent of biologic treatments in severe asthma has transformed disease management, enabling a paradigm shift from achieving symptom control toward the more ambitious and clinically meaningful goal of asthma remission.

Aim. The aim of this study was to determine the proportion of patients with severe asthma who achieved asthma remission after one year of biologic therapy.

Methods. Asthma remission was defined by the following criteria: no exacerbations during previous year, no oral corticosteroid therapy, FEV1 $\geq$ 80% of predicted normal and good symptom control (ACT < 20 or ACQ6 1.50).

Results. 71 patients had complete baseline and first follow-up data. 32 patients were treated with mepolizumab, 28 with benralizumab, 5 with dupilumab, and 6 with tezepelumab. 17 or 23.9% of them achieved asthma remission at the first-year follow-up.

In reduced multivariable logistic regression model, only younger age (per year) OR 0.91 (95% CI 0.84–0.99; $p = 0.035$) and higher baseline FEV1 per 1%, OR 1.09 (95% CI 1.03–1.15; $p = 0.002$) emerged as independent predictors of remission.

Conclusion. In this real-world cohort of patients with severe asthma, approximately one quarter achieved asthma remission after one year of biologic therapy, with younger age and higher baseline lung function emerging as independent predictors of remission.

SENSITISATION TO RESPIRATORY ALLERGENS IN THE LATVIAN POPULATION ASSESSED BY AN ELISA-BASED *IN VITRO* MULTIPLEX ALLERGY TESTING SYSTEM ALLERGY XPLOER

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Background. Allergic diseases are among the most common chronic conditions worldwide, affecting hundreds of millions of people across all ages and regions, and their prevalence and societal impact continue to rise due to complex interactions between genetic susceptibility, environmental exposures, and lifestyle changes.

Aim. The aim of our study was to determine the prevalence of sensitisation to various respiratory allergens among residents of Latvia.

Methods. Data on sensitisation were collected using the Allergy Xplorer (ALEX) system (MAdX, Vienna, Austria), an ELISA-based *in vitro* multiplex allergy test, in patients investigated in the Central Laboratory.

Results. Of 2208 patients, 1293 (58.6%) had at least one positive test (≥ 0.35 kU/l) to any allergen. 706 (54.6%) patients were sensitised to at least one pollen allergen. 508 (39.3%) were sensitised to tree, 445 (34.4%) — to grass, and 147 (11.4%) — to weed pollens. 641 (49.6%) had sensitisation to at least one animal, 630 (48.7%) to house

dust mite, 111 (8.6%) to at least one mould allergen, and 52 (4.0%) to at least one cockroach allergen. 522 (40.4%) were sensitised to cat. Sensitisation to at least one dog allergen was observed in 418 (32.3%) patients. 156 (12.1%) patients were sensitised to horse. 167 (12.9%) were sensitised to other animals.

Among mould-sensitised individuals, *Alternaria* was the most prevalent allergen, detected in 78 patients (70.3%), followed by *Aspergillus* in 35 patients (31.5%) and *Cladosporium* in 8 patients (7.2%), while no sensitisation to *Penicillium* was observed. Ten most prevalent sensitisations to allergen components were Fel d 1 (38.1%), Bet v 1 (35.9%), Der f 2 (35.3%), and Der p 2 (34.8%), followed by Der p 1 (27.9%), Phl p 1 (27.2%), Fag s 1 (27.0%), Cor a 1.0103 (26.6%), Aln g 1 (26.5%), and Der p 23 (25.7%).

Conclusion. The most prevalent sensitisations were to pollens, animal allergens, and house dust mites. At the molecular level, Fel d 1, Bet v 1, and major house dust mite components were the dominant allergen targets.

THE ROLE OF PET/CT IN THE PREOPERATIVE STAGING OF PERIPHERAL LUNG CANCER

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Background. Lung cancer remains the leading cause of cancer-related mortality worldwide. Surgical resection is the mainstay of treatment for early-stage disease. Appropriate preoperative assessment of disease extent is crucial for selecting appropriate surgical candidates. One of the most challenging aspects of staging is the detection of regional lymph node involvement. Current clinical staging protocols include computed tomography (CT), positron emission tomography combined with CT (PET/CT), and endobronchial ultrasound (EBUS)-guided transbronchial needle aspiration (TBNA). However, these modalities have notable limitations, as reflected by the relatively high incidence of unforeseen lymph node metastases detected during pathological evaluation of resected specimens.

Aim. The aim of this study was to evaluate the predictive value of PET/CT, as well as selected radiological and clinical parameters, for identifying unforeseen mediastinal lymph node metastases.

Methods. Patients with lung cancer (preoperative stage T1–2 [≤5 cm], N0–1) undergoing surgical biopsy or resection were included. Preoperative staging was performed according to international guidelines. From an initial cohort of 129 patients, 121 patients with no evidence of lymph node involvement on preoperative staging (cN0) were selected to assess occult nodal spread. Postoperatively, 109 patients remained N0 (Group 1), however 12 patients (Group 2) were

upstaged to pathological N1–2 disease. PET/CT parameters, including maximum standardised uptake value (SUVmax) of the primary tumour, clinical factors (age, sex, smoking status), and radiological features (maximum tumour diameter, spiculation, pleural retraction, lobulated margins) were analysed and compared between groups to determine predictors of occult lymph node metastasis.

Results. The study population consisted of 67 males and 54 females, with a mean age of 65 years. The mean SUVmax was 6.72 ± 4.61 . None of the analysed factors except the age had significant predictive value for occult nodal involvement. Patients with occult metastases were younger 59.3 ± 10.6 years than without 66.4 ± 9.7 ($p = 0.013$). The analysis of extreme SUVmax values low plain < 2.5 or high > 13 did not yield a statistically significant result.

Conclusion. PET/CT SUVmax value as well as selected radiological and clinical parameters failed to predict occult lymph node metastasis with the exception of patient age. Younger patients have a higher risk of underestimating the spread of lung cancer.

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INFECTIVE ENDOCARDITIS CAUSED BY BARTONELLA SPP.: RETROSPECTIVE PATIENT ANALYSIS

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Background. *Bartonella spp.* are a leading cause of blood culture-negative infective endocarditis (IE), typically presenting subacutely with nonspecific features, predominantly as heart failure, requiring specific microbiological testing for diagnosis [1; 2].

Aim. The aim of this study was to describe the clinical characteristics, management, and outcomes of PCR-confirmed *Bartonella spp.* IE in a single-centre case series.

Methods. A retrospective single-centre observational case series of six patients with PCR-confirmed *Bartonella spp.* IE cases were done. Patient cases were analysed from the year 06.2022 to 03.2025. Clinical, microbial and echocardiographic data were obtained from medical records, and descriptively analysed. Variables include demographic, epidemiological factors, comorbidities, clinical presentation, heart valve involvement, echocardiographic findings; time of admission to PCR confirmation, length of hospitalisation, targeted intra-hospital antimicrobial therapy, surgical management, complications, and outcomes.

Results. Six patients were included; all were male. Mean age of patients were 58 ± 5.2 years (median 58.5; IQR 55.0–62.0). Alcohol use was reported 4/6; no intravenous drug use was recorded. A history of chronic heart failure was present 5/6; congenital cardiac pathology 2/6. Renal function impairment was observed 4/6; coronary disease, chronic lung disease, and cerebrovascular disease each in 2/6. Dyspnea was the predominant presentation 5/6, while fever was documented 4/6; cough and peripheral oedema occurred in 2/6 each, chest pain 1/6. Aortic valve involvement was present in 5/6, including one patient with combined aortic-mitral IE; isolated mitral involvement occurred in 1/6. Vegetation size ranged from 4.5 to 18 mm (mean 11.6 ± 5.3 mm; median 12.0 mm; IQR 7–16 mm); for multivalvular involvement, the largest vegetation was analysed. Time from admission to PCR confirmation ranged 2–25 days (mean 12.3 ± 7.9 ; median 12.0; IQR 7.0–16.0). Length of stay ranged 10–73 days (mean 34.8 ± 24.4 ; median 26.0; IQR 18.0–56.0). Combination antimicrobial therapy

was used: doxy-cycline+rifampicin (2/6), doxycycline+gentamicin (2/6), cefazolin+doxycycline (1/6) and ampicillin+cetrixone (1/6). Surgery was performed in 3/6. One intracardiac complication (mitral leaflet perforation) occurred 1/6. One death occurred 1/6; in this fatal case, PCR confirmation was obtained *post mortem*.

Conclusion. In this limited series of PCR-confirmed cases, *Bartonella spp.* IE predominantly affected the aortic valve and presented with dyspnea or heart failure, while classical features such as fever were not universal. Diagnostic confirmation frequently required 1 week and half of patients required surgery. Our findings are consistent with other studies in this field. Early suspicion and timely molecular testing may improve management in suspected blood culture-negative IE.

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LIFESTYLE HABITS AND THEIR CORRELATION WITH DISEASE SEVERITY IN PSORIASIS PATIENTS IN LATVIA

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Background Psoriasis is a chronic, immune-mediated systemic inflammatory disease. While its genetic basis is well-established, lifestyle factors are increasingly recognised as significant modulators of clinical expression. Evidence suggests that smoking, lack of physical activity, and pro-inflammatory diets may exacerbate systemic inflammation and contribute to higher disease severity scores. However, the actual link between these habits and the physical symptoms in Latvian patients remains unclear. Understanding this relationship is important for creating better daily recommendations and improving the overall health of patients.

Aim To evaluate the lifestyle habits of psoriasis patients in Latvia and determine if these habits correlate with clinical disease severity and quality of life.

Methods A cross-sectional study was conducted at Rīga 1st Hospital. The study has Ethics Committee approval. Psoriasis severity was assessed using the Psoriasis Area and Severity Index (PASI), Body Surface Area (BSA), and Nail Psoriasis Severity Index (NAPSI). Physical parameters included Body Mass Index (BMI), waist circumference, and blood pressure. Patients completed a lifestyle questionnaire, a stress scale, and Dermatology Life Quality Index (DLQI) score. Spearman's correlation coefficient was used for statistical analysis, and informed consent was obtained from all participants.

Results Thirty-six patients (15 men, 21 women; aged 16–86) were enrolled. Dietary analysis showed that 75% ($n = 27$) of participants regularly consumed sweets and 53% ($n = 19$) snacked between meals. Physical activity levels

were low, with only 19% ($n = 7$) meeting the recommendation of > 150 minutes per week. Regarding sleep hygiene, 69% ($n = 25$) reported sleeping 7 hours or less per night. Furthermore, 47% ($n = 17$) experienced frequent tension or inability to relax, and 39% ($n = 14$) were smokers. Despite these findings, all patients re-reported an intention to follow healthy lifestyle recommendation. No statistically significant correlations were found between PASI, BSA, NAPS, or DLQI and lifestyle habits, BMI, waist circumference, or stress scores ($p > 0.05$).

Conclusions Lifestyle habits did not show a direct correlation with psoriasis severity in this study. This suggests that

genetic factors may exert a more dominant influence on the disease phenotype than environmental triggers alone, or that the high prevalence of certain habits across the group masked potential statistical differences. These findings also highlight a gap between patient knowledge and actual lifestyle practices. The research will be continued with an expanded group of patients to further investigate these multifactorial relationships.

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ANALYSIS OF PREANALYTICAL INDICATORS OF BLOOD CULTURES AT PAULS STRADIŅŠ CLINICAL UNIVERSITY HOSPITAL, 2022–2024

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Background. Bloodstream infections and sepsis are major public health concerns worldwide. Blood cultures are essential for diagnosis and identification of causative agents. Accurate microbiological results depend on proper blood culture collection, and blood culture contamination may lead to unnecessary antimicrobial use. Therefore, recommended target values have been established for key preanalytical indicators.

Aim. To calculate preanalytical indicators in blood cultures collected at Pauls Stradiņš Clinical University Hospital (PSCUH) and to evaluate compliance with established recommendations.

Methods. Blood culture data from adult inpatients at PSCUH collected between January 2022 and December 2024 were analysed. Blood culture sampling intensity was expressed as blood culture sets per 1000 bed-days (BC/1000 BD). Quarterly differences were assessed using the Kruskal–Wallis H test. Preanalytical indicators, including the single-set blood culture rate, contamination rate, and true positive rate, were calculated using standard formulas. The most frequently isolated microorganisms in both contaminated and clinically significant cultures were identified. Data analysis was performed using *Microsoft Excel*, *Microsoft Power BI*, and *IBM SPSS Statistics* version 27.

Results. A total of 8849, 8765, and 8934 blood culture collection events were recorded in 2022, 2023, and 2024, re-

spectively. The BC/1000 BD values were 62.20 in 2022, 57.66 in 2023, and 57.33 in 2024, with no statistically significant quarterly differences ($p = 0.443$). The proportion of single-set blood culture collections ranged from 46.0% to 52.3%. Contamination rates varied between 6.76% and 8.54%, while the proportion of clinically significant microorganisms ranged from 14.67% to 15.96%. Over the three-year period, the most frequently isolated clinically significant pathogens were *Staphylococcus aureus* (24.80%), *Escherichia coli* (21.03%), and *Klebsiella pneumoniae* (11.92%). Coagulase-negative staphylococci (81.79%) were the most common contaminants.

Conclusions. Blood culture sampling intensity at PSCUH exceeds both the Latvian average and the European median. The proportion of single-set blood culture collections and contamination rates are higher than recommended. The distribution of clinically significant microorganisms and contaminants is consistent with findings reported in other studies. These results highlight the need for targeted interventions to reduce blood culture contamination and the frequency of single-set collections. Improving preanalytical indicators may enhance the accuracy of bloodstream infection diagnosis and support more rational antimicrobial use.

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INSIGHTS INTO PRE-DIALYSIS TRAINING AND PERITONITIS OUTCOMES IN LATVIAN ADULT PERITONEAL DIALYSIS PATIENTS

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Background. Patients initiating peritoneal dialysis (PD) undergo structured, hands-on training to ensure safe self-management at home. Assessment of readiness for independent PD at discharge includes practical training and completion of a written questionnaire evaluating knowledge of hygiene practices and strategies to prevent serious complications, including peritonitis.

Aim. The aim of this study was to analyse pre-dialysis patient knowledge test scores among adult Latvian patients at Pauls Stradiņš Clinical University Hospital (PSCUH) and to examine their associations with demographic and clinical characteristics, as well as subsequent PD-associated peritonitis.

Methods. This cross-sectional study included 86 adult Latvian patients undergoing PD at PSCUH as of 1 January 2026. Data were obtained from a pre-dialysis patient knowledge assessment questionnaire completed by all participants at PD initiation, with a maximum possible score of 48 points. Demographic and clinical characteristics were recorded. Associations between knowledge test scores, PD-associated peritonitis episodes, age, and gender were analysed.

Results. A total of 86 patients (46 males and 40 females) completed the assessment, with mean ages of 57 years

(range 20–83) and 52 years (range 20–82), respectively. Glomerulonephritis was the most common underlying diagnosis, occurring in 16 men (34.8%) and 17 women (42.5%). The duration of PD ranged from 1 to 168 months, with a median of 19 months. Questionnaire scores ranged from 33 to 48 points, with a mean score of 42 points in both genders. No episodes of PD-associated peritonitis were observed in 61 patients (70.9%), whereas 25 patients experienced one or more episodes. Higher knowledge scores were significantly associated with fewer peritonitis episodes ($R = -0.279$, $p = 0.009$) and with younger age ($R = -0.255$, $p = 0.018$). No significant difference in scores was found between men and women ($U = 883.5$, $p = 0.755$). Peritonitis was not significantly associated with age ($R = -0.085$, $p = 0.438$) or underlying disease group ($p = 0.134$).

Conclusions. Higher pre-dialysis knowledge was associated with fewer PD-associated peritonitis episodes and with younger age, with no differences by sex. These findings highlight the importance of effective patient education, particularly in older patients, and suggest that factors other than age or underlying disease may contribute to peritonitis risk.

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ASSOCIATION OF EXTRACELLULAR VESICLE-ASSOCIATED MIRNAS FROM BRONCHOALVEOLAR LAVAGE FLUID WITH TUMOUR PARAMETERS IN PERIPHERAL LUNG CANCER

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Background. Lung cancer (LC) remains the leading cause of cancer-related mortality worldwide, and early detection is essential to improve survival outcomes, particularly for peripheral lung lesions that often present with non-specific

symptoms and are diagnosed at advanced stages. Extracellular vesicle (EV)-associated microRNAs (miRNAs) show promise as minimally invasive biomarkers that reflect the tumour microenvironment, particularly when sampled

from proximally located fluids. Bronchoalveolar lavage fluid (BALF) sampled from the target bronchus of peripheral lung tumour could provide a more specific EV-miRNA signal than peripheral blood.

Aim. To investigate whether specific EV-associated miRNAs in BALF correlate with histological tumour subtype and selected computed tomography (CT) parameters.

Methods. Patients with peripheral solitary pulmonary nodules (SPNs) undergoing surgical resection were included. A comprehensive clinical and radiological assessment was performed. BALF samples were obtained during routine flexible bronchoscopy from the corresponding segmental bronchus. EVs were isolated using differential ultracentrifugation, followed by total RNA extraction and reverse transcription. miRNA profiling was performed on a discovery cohort ($n = 19$; 10 LC, 9 controls) using TaqMan array cards and identified 6 candidate miRNAs. Targeted validation was performed using individual RT-qPCR assays in an extended cohort ($n = 69$; 44 LC, 25 controls). Correlations between the miRNA expression levels in LC ($n = 44$) and

histological subtype, as well as CT features — tumour size and the presence of spiculation, pleural retraction, and lobulation — were analysed.

Results. Two miRNAs (hsa-miR-455-3p, hsa-miR-181c-5p) showed promising validation. hsa-miR-455-3p had no clinicopathological correlations, while hsa-miR-181c-5p was correlated with some of the histological subtypes of tumour. In the case of adenocarcinoma ($n = 27$), the mean value of hsa-miR-181c-5p was significantly lower than in the others ($n = 17$) — 0.25 ± 0.11 vs 0.44 ± 0.34 ($p = 0.008$). In the case of neuroendocrine tumours, despite the heterogeneity of the groups (6 vs 36), we found a tendency to a higher value — 0.58 ± 0.51 vs 0.28 ± 0.14 ($p = 0.058$).

Conclusion. BALF-derived EV-associated miRNA hsa-miR-181c-5p demonstrated promising value as a possible tool in discrimination of different histological subtypes of LC.

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TREATMENT INTENSITY, ESCALATION, AND REMISSION ACROSS RF/ANTI-CCP SEROPHENOTYPES IN RHEUMATOID ARTHRITIS: A 5-YEAR RETROSPECTIVE COHORT STUDY

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Background. Rheumatoid arthritis (RA) is a chronic autoimmune inflammatory disease leading to progressive joint damage and disability. Seropositivity is often associated with more severe disease; however, the relationship between RF/anti-CCP serophenotype, treatment intensity and outcomes remains insufficiently characterised.

Aim. To evaluate the association between RF/anti-CCP serophenotype and 5-year treatment intensity, therapeutic escalation, and remission outcomes in RA.

Methods. This retrospective cohort study included 90 RA patients treated at a tertiary care centre (2010–2025). Patients were enrolled within 1 year of diagnosis and followed for 5 years from baseline using routinely collected clinical data. Patients were stratified into four serophenotypes: RF+/anti-CCP+, RF+/anti-CCP-, RF-/anti-CCP+, and RF-/anti-CCP-. Outcomes were DAS28-CRP remission (DAS28-CRP < 2.6) at years 1 and 5 and at any time within 5 years; treatment intensity (number of distinct DMARD regimen combinations over 5 years); and time to first bDMARD and first tsDMARD initiation. Group comparisons used Wilcoxon or Kruskal–Wallis tests for continuous variables and χ^2 or Fisher's exact tests for categorical variables. Time-to-event outcomes were analysed using Kaplan–Meier methods and compared with the log-rank test.

Results. The cohort included 90 patients; 84% were female. Median age at diagnosis was 44 years (IQR 41–49). Serophenotypes were RF+/anti-CCP+ ($n = 53$), RF+/anti-CCP- ($n = 6$), RF-/anti-CCP+ ($n = 6$), and RF-/anti-CCP- ($n = 25$). Within 5 years, 46.0% initiated a bDMARD and 17.0% initiated a tsDMARD; median time to initiation was 28.3 months (IQR 13.9–46.0) and 52.4 months (IQR 39.5–63.8), respectively. Time to bDMARD/tsDMARD initiation did not differ by serophenotype (log-rank $p = 0.60$ and $p = 0.80$). Treatment intensity did not differ by serophenotype. Cumulative remission within 5 years was achieved by 46.7%; median time to first remission was 8.7 months (IQR 0.0–42.4). At 1 year, 22.2% were in remission. Remission proportions did not differ significantly across serophenotypes. Point-prevalence remission at year 1 was 26.4% (RF+/anti-CCP+), 0% (RF+/anti-CCP-), 16.7% (RF-/anti-CCP+), and 20.0% (RF-/anti-CCP-) ($p = 0.621$). At year 5, remission was 30.0% overall ($p = 0.137$); 60% remained in remission from year 1.

Conclusions. RF/anti-CCP serophenotype was not linked to DMARD treatment intensity, time to bDMARD/tsDMARD escalation, or DAS28-CRP remission. Serostatus alone may not guide escalation or predict durable remission; treat-to-target monitoring remains essential overall.

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SECONDARY FIBROMYALGIA IMPACT ON THE QUALITY OF LIFE IN PATIENTS WITH HIGH PRIMARY DISEASE ACTIVITY

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Background. Secondary fibromyalgia (FM) significantly complicates the clinical course in rheumatology patients, often leading to poorer treatment outcomes despite optimal therapy. Current research lacks sufficient data on the role of FM specifically within the context of high primary disease activity.

Aim. To evaluate and compare the quality of life (QoL) in patients with and without secondary FM who exhibit high primary disease activity.

Methods. In this prospective study, 43 patients (aged 18–65) were surveyed at the PSKUS Rheumatology Centre. QoL was assessed using the SF-36 questionnaire, and FM status was determined by ACR 2010 criteria. For analysis, patients with high disease activity were stratified into two groups: FM+ (n = 8) and FM- (n = 8). Due to non-normal data distribution (Sharpo-Wilk test), the Mann-Whitney U test was employed for group comparison.

Results. Patients with confirmed FM showed significantly lower scores in the mental health domain (exact $p = 0.038$)

compared to those without FM. Furthermore, the presence of FM significantly restricted emotional role functioning (exact $p = 0.038$). Visual analysis revealed a sharp decline in psycho-emotional domains for FM+ patients despite similar physical activity levels of the primary disease in both groups.

Conclusions. Secondary FM is a critical factor that substantially impairs the psycho-emotional QoL in patients with high primary disease activity. These findings highlight the need for early FM screening and multidisciplinary care to reduce the mental and emotional burden on this working-age patient population. Addressing these challenges is of paramount importance, as the effective management of FM directly impacts the socioeconomic stability and the overall economic state of the country by preserving the productivity of the workforce.

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DIAGNOSTIC BRONCHOALVEOLAR LAVAGE EXTRACELLULAR VESICLE MIRNA SIGNATURES FOR PERIPHERAL LUNG CANCER

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Background. Lung cancer remains the leading cause of cancer-related mortality worldwide, and early detection is essential to improve survival outcomes, particularly for peripheral lung lesions that often present with non-specific symptoms and are diagnosed at advanced stages. Extracellular vesicle (EV)-associated microRNAs (miRNAs) have emerged as promising minimally invasive biomarkers, as they reflect the molecular landscape of the tumour microenvironment and can be sampled from proximally located fluids. Bronchoalveolar lavage fluid (BALF) is in direct contact with peripheral lung tumours and may therefore provide a more specific EV-miRNA signal than peripheral blood.

Aim. To investigate whether EV-associated miRNA profiles from BALF can discriminate lung cancer patients from individuals with non-malignant pulmonary lesions and to identify a candidate miRNA panel with diagnostic potential.

Methods. EVs were isolated from BALF by differential ultracentrifugation. Total RNA isolation and reverse transcription was performed using commercial kits. An initial screening of 754 miRNAs was performed in BALF EVs from 19 subjects (10 lung cancer patients and 9 controls with non-malignant lesions) using TaqMan™ Advanced miRNA Human A and B Cards. Differential expression and diagnostic performance analyses were used to identify can-

didate miRNAs. Six miRNAs with the most promising discriminative potential were selected for targeted validation by individual RT-qPCR assays in an extended cohort comprising the original 19 subjects plus 50 additional patients (34 lung cancer and 16 controls).

Results. In the screening phase, several miRNAs showed substantial fold-changes between groups, and six candidates were prioritised based on fold-changes (2.0 to 2.4-fold or 0.31 to 0.51-fold in cancer patients) and diagnostic performance (AUCs 0.68–0.81). Two of these showed promising validation by targeted RT-qPCR in the expanded cohort of 69 BALF samples (44 lung cancer, 25 controls), with a full diagnostic performance integrating clinical characteristics.

Conclusion. BALF-derived EV-associated miRNAs hold promise as minimally invasive biomarkers for distinguishing lung cancer from non-malignant pulmonary lesions, though validation results differ from screening findings. Of the six candidates, only two miRNAs demonstrated complementary diagnostic value when integrated with clinical characteristics in multivariate models. This two-stage approach highlights the challenges of miRNA biomarker translation and underscores the need for further optimisation and clinical evaluation of EV-miRNA signatures in BALF for peripheral lung cancer diagnostics.

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DETECTION OF LUNG INVOLVEMENT IN RHEUMATOID ARTHRITIS PATIENTS USING COMPUTED TOMOGRAPHY AND ITS ASSOCIATION WITH DISEASE-MODIFYING THERAPY

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Background. Pulmonary involvement is a common extra-articular manifestation of rheumatoid arthritis (RA) and represents a major contributor to morbidity and mortality. Interstitial lung disease associated with RA may remain clinically silent and is frequently underdiagnosed when conventional radiography is used. Data on the relationship between RA-associated and non-RA-associated lung damage and disease-modifying antirheumatic drug (DMARD) therapy in Baltic populations are limited.

Aim. To assess the prevalence of RA-associated and non-RA-associated lung damage in RA patients and to evaluate their association with methotrexate (MTX) and tumour necrosis factor alpha inhibitors (TNFi) therapy, as well as to compare the diagnostic yield of computed tomography (CT) and chest X-ray (CXR).

Methods. A retrospective observational study was conducted at the Rheumatology Centre of Pauls Stradiņš Clinical University Hospital. Medical records of 97 adult RA patients with chest X-ray and/or CT were analysed. Lung findings were classified as RA-associated or non-RA-associated. Medications' exposure was recorded. Descriptive statistics were used; categorical variables were compared using Fisher's exact test, and paired imaging results were analysed using McNemar's exact test. Results are presented as absolute numbers, percentages, medians and standard deviations.

Results. Among 97 RA patients, RA-associated lung damage was identified in 13 (13.4%). CT detected RA-associated lung damage in 92.3% of cases compared with 7.7% detected by X-ray (CT:CXR ratio 12:1; McNemar's exact test $p = 0.006$).

RA-associated lung damage was present in 14.3% of MTX users (6/42) and 12.7% 7/55 of non-MTX users, with no statistically significant association between MTX therapy and RA-associated lung involvement (Fisher's exact test $p = 0.767$).

Among TNFi users ($n = 34$), RA-associated lung damage was observed in 8.8% (3/34), while non-RA-associated lung damage was identified in 29.4% (10/34).

Conclusions. Computed tomography is significantly more sensitive than chest X-ray in detecting RA-associated lung damage. In this cohort, neither MTX nor TNF-alpha inhibitor therapy was significantly associated with lung damage. These findings support the role of CT in the evaluation of pulmonary involvement for RA patients and highlight the importance of careful interpretation of lung findings in patients receiving RA therapy.

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TYPES OF PERITONEAL DIALYSIS MEMBRANE TRANSPORT: PREVALENCE AND ASSOCIATION WITH DIALYSIS ADEQUACY AND OVERHYDRATION

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Background. Peritoneal membrane transport characteristics are essential for optimising peritoneal dialysis (PD) therapy and improving patient outcomes. Evaluation of peritoneal transport status using the peritoneal equilibration test (PET) provides key information for individualising PD prescriptions, optimising solute clearance and fluid management.

Aim. To determine the distribution of peritoneal membrane transport types and their association with dialysis adequacy and overhydration in patients undergoing PD.

Methods. This retrospective study included all patients undergoing PD at Pauls Stradiņš Clinical University Hospital over a one-year period (January 2025 to January 2026), who had undergone a PET test. Patients were classified as low (L), low-average (LA), high-average (HA) or high (H) transporter group based on the 4-hour dialysate-to-plasma creatinine ratio from the PET test. The prevalence of peritoneal membrane transport types and their associations with dialysis adequacy (measured by Kt/V) and overhydration (assessed by bioimpedance) were analysed. Statistical analysis was performed using IBM SPSS version 31.0, with descriptive statistics and nonparametric tests (Kruskal–Wallis test).

Results. A total of 78 patients (45 males, 57.7%) were included in this study, with a median age of 57.5 years (IQR 49–71). The median time on PD was 20 months (IQR 8–34). Low-average PD membrane was observed in 39 (50%) patients, high-average in 28 (35.9%) and low in 11 (14.1%) patients. No patients with high PD membrane were identified. Optimal Kt/V ≥ 1.7 was achieved in 50 (73.5%) patients, however, no significant association was found between PD membrane type and Kt/V ($p = 0.074$). In the HA group median overhydration was 2.8 L (IQR 1.1–5.3), 2.4 L (IQR 1.4–3.2) in the LA group, and 1.1 L (IQR 0.6–1.3) in the L group. A significant difference was observed between the L and HA groups, indicating lower overhydration in L group ($p = 0.022$). No statistically significant differences were observed between L and LA groups or between LA and HA groups ($p = 0.059$ and $p = 1.000$, respectively). In addition, PD membrane type was not significantly associated with body mass index or primary disease: autosomal-dominant polycystic kidney disease or diabetes mellitus.

Conclusions. Low-average peritoneal membrane was the most prevalent among patients undergoing peritoneal dialysis. Patients with low transport membranes exhibited significantly lower overhydration compared with those with high-average membranes. Dialysis adequacy did not differ significantly across membrane types.

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