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La Cardiologia Riabilitativa e Preventiva
come snodo fondamentale
della cura della persona con cardiopatia



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CARDIOVASCULAR PREVENTION IN PATIENTS WITH AUTOIMMUNE AND RHEUMATIC DISEASES

Giuseppe Biondi-Zoccai, MD, MStat

Sapienza University of Rome, Latina
Santa Maria Goretti Hospital, Latina
giuseppe.biondizoccai@uniroma1.it



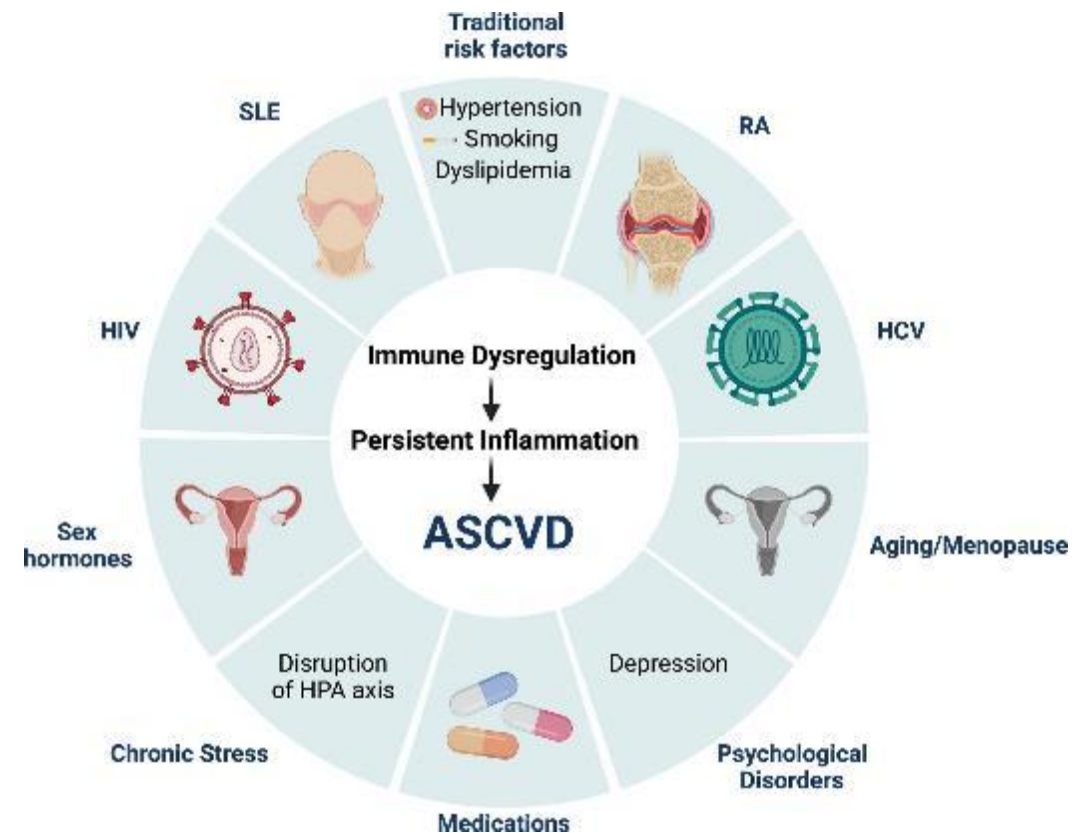
0/15 Disclosure/Acknowledgements

- I have consulted, lectured and/or served as advisory board member for Abiomed, Advanced Nanotherapies, Amarin, AstraZeneca, Balmed, Cardionovum, Cepton, Crannmedical, Endocore Lab, Eukon, Guidotti, Innovheart, Menarini, Microport, Opsens Medical, Servier, Synthesa, Terumo, and Translumina, outside the present work.
- This presentation was drafted and illustrated with the assistance of artificial intelligence tools, such as ChatGPT 5 (OpenAI, San Francisco, CA, USA), Mage (Mage, New York, NY, USA), and Napkin AI (Napkin AI, Palo Alto, CA, USA), in keeping with established best practices (**Biondi-Zoccai G, editor. ChatGPT for Medical Research. Torino: Edizioni Minerva Medica; 2024**). The final content, including all conclusions and opinions, has been thoroughly revised, edited, and approved by the authors. The author take full responsibility for the integrity and accuracy of the work and retain full credit for all intellectual contributions. Compliance with ethical standards and guidelines for the use of artificial intelligence in research has been ensured.



1/15 Why ARD in a CV Prevention Congress?

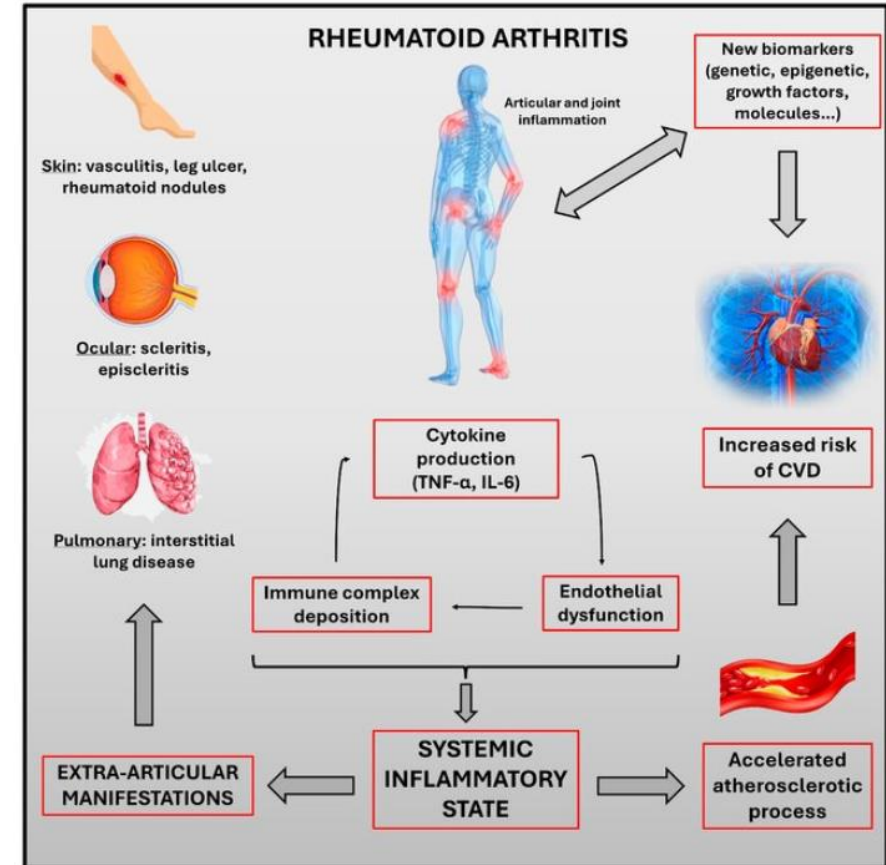
- Autoimmune and rheumatic diseases (ARD) are common in relatively young adults and confer a disproportionate excess of CV events, disability and premature mortality that is still under-recognized.
- **Chronic, smoldering inflammation accelerates vascular ageing and atherothrombosis**, meaning that patients who may “look too young for infarction” can in fact carry coronary risk comparable to DM or long-standing HTN .
- Because responsibility for CV prevention often falls awkwardly between cardiology and rheumatology, many opportunities for risk factor control, early rehabilitation and structured follow-up are systematically missed across healthcare systems.





2/15 Spectrum of ARD at High CV Risk

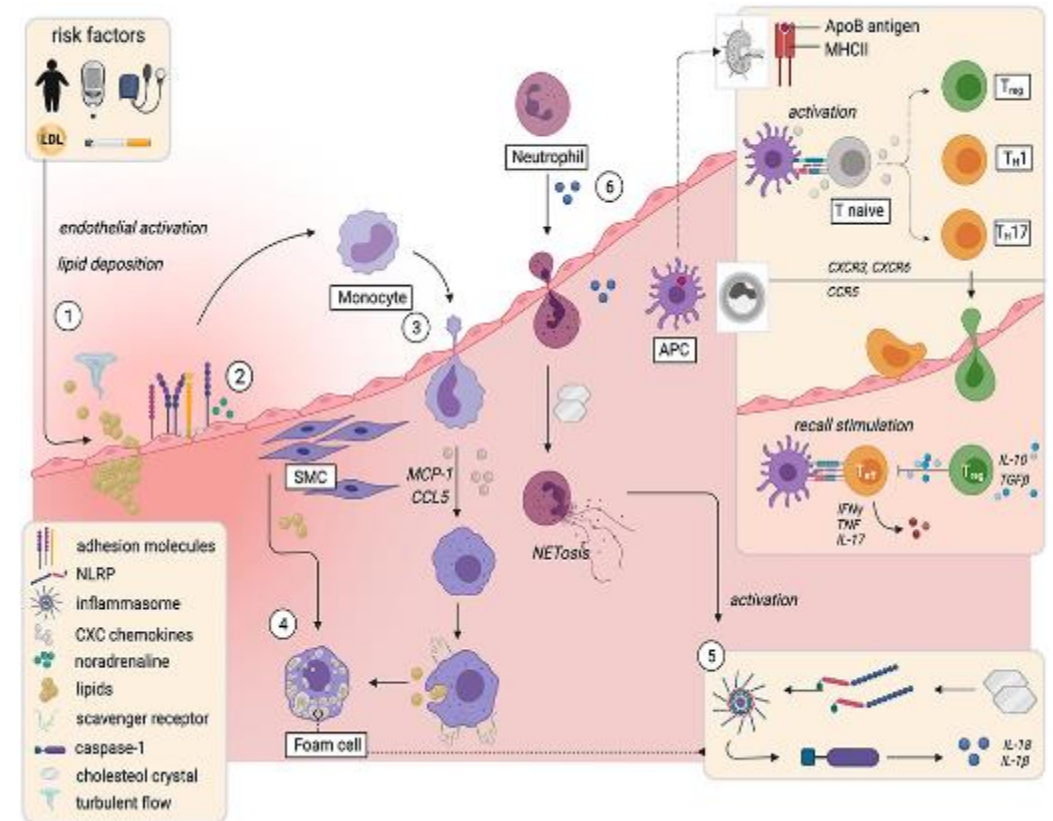
- Rheumatoid arthritis, SLE, vasculitides and spondyloarthritides all share an increased burden of MI, stroke and HF, despite very different clinical phenotypes and target-organ manifestations.
- Systemic sclerosis, APS and overlapping CTD contribute additional risk through microvascular dysfunction, pulmonary HTN and thromboembolic complications.
- **Disease heterogeneity demands nuanced prevention strategies**, with intensity of screening and treatment tailored to specific diagnoses, cumulative inflammation, coexisting metabolic risk and the presence of prothrombotic autoantibodies.





3/15 Immuno-Inflammation and Atherothrombosis

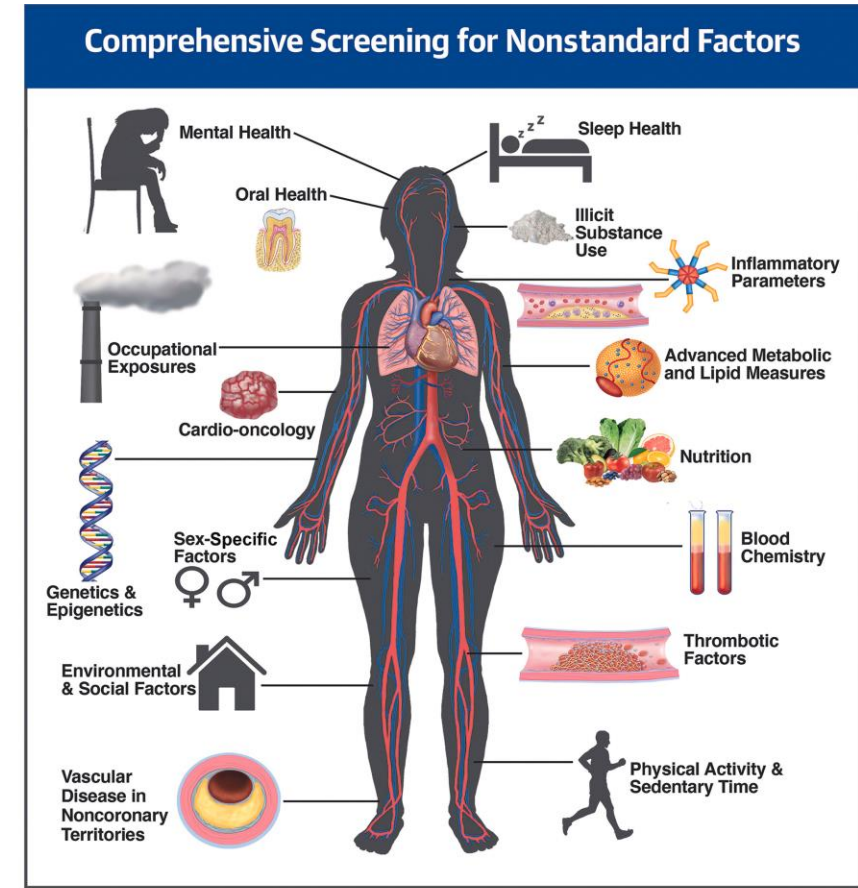
- Persistent immune activation drives endothelial dysfunction, promotes monocyte–macrophage recruitment into arterial wall and favors formation of unstable, rupture-prone plaques.
- T/B cells, autoantibodies, complement activation and neutrophil extracellular traps cooperate to amplify vascular injury, microvascular dysfunction and a systemically prothrombotic milieu, especially during disease flares.
- These **inflammatory pathways interact synergistically with smoking, obesity, dyslipidemia and insulin resistance**, producing an “inflammatory cardiometabolic risk” profile.





4/15 Disease-Related and Treatment-Related Risk Factors

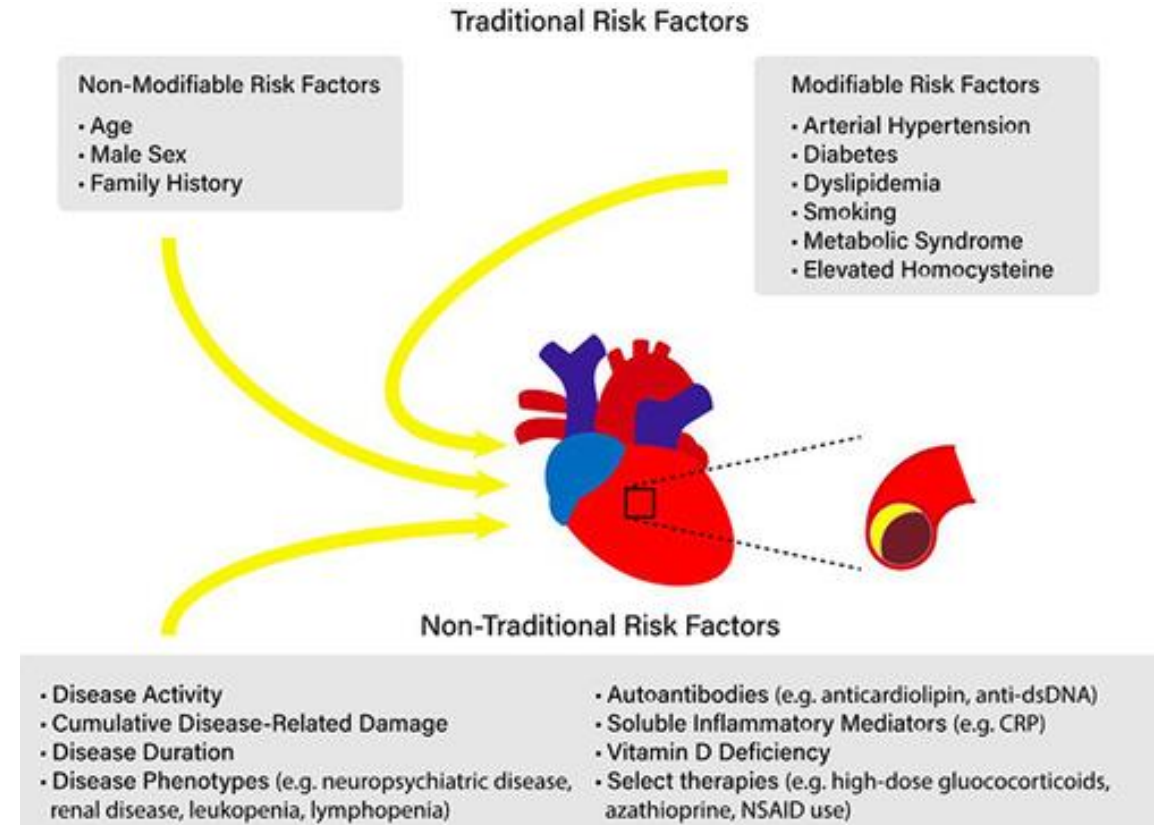
- Patients accumulate conventional CV risk factors such as HTN, dyslipidemia, DM and smoking, but their **absolute event risk is further magnified by disease duration, activity and long-term inflammatory burden.**
- Glucocorticoids, NSAIDs, COX-2 inhibitors and some targeted therapies can worsen BP, lipids, insulin sensitivity and thrombosis risk, demanding careful dose management and frequent re-evaluation of cardiovascular status.
- Fatigue, pain, reduced mobility, depression and polypharmacy undermine lifestyle modification, adherence to cardioprotective medications and participation in rehabilitation programs.





5/15 What Do Guidelines Say?

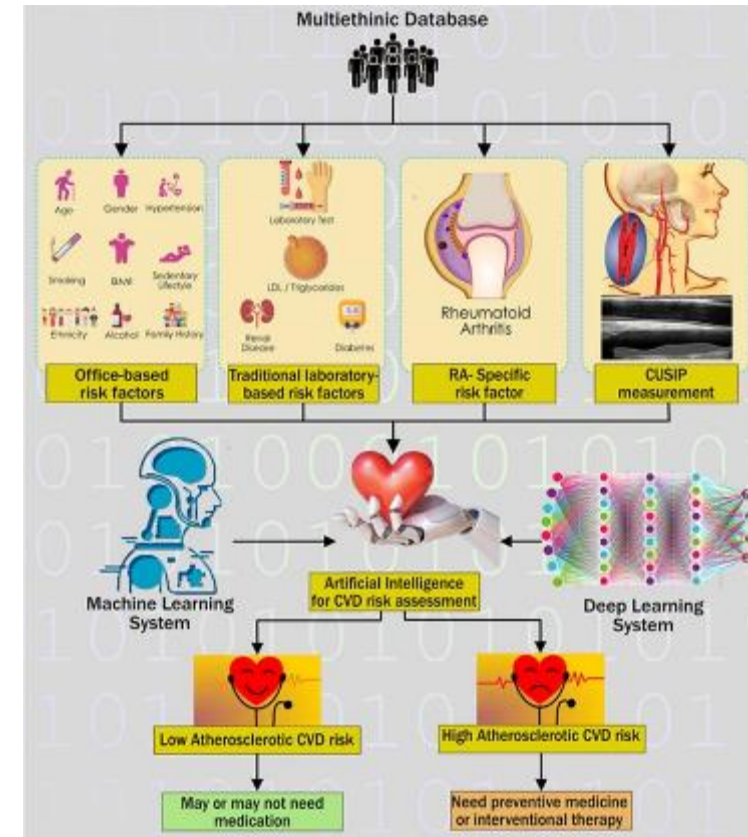
- Contemporary ESC Guidelines recognize chronic inflammatory rheumatic disease as a CV risk modifier, recommending more intensive risk assessment and management than would be suggested by traditional scores alone.
- **EULAR recommendations emphasize that cardiovascular risk assessment should be integrated into routine rheumatology care, with clear targets for lipids, blood pressure and glucose comparable to other high-risk populations.**
- Yet, responsibility for implementing preventive strategies remains fragmented, evidence is incomplete for several conditions, and many patients fail to achieve risk factor control.





6/15 Limitations of Standard Risk Scores

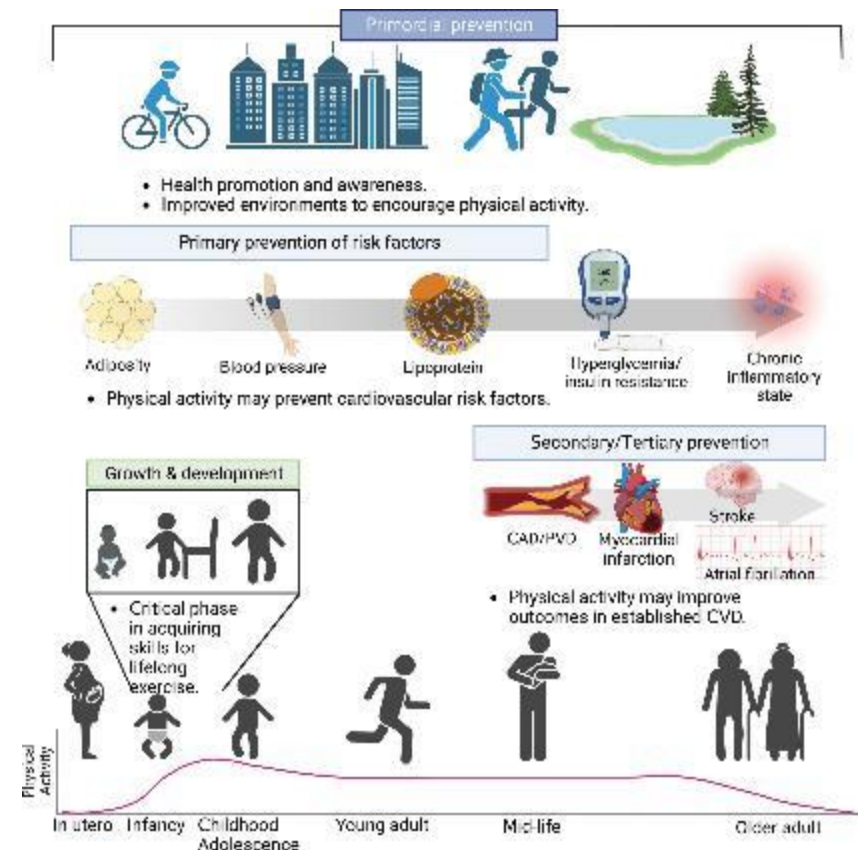
- **General-population risk calculators such as SCORE or SCORE2 typically underestimate CV risk** in rheumatoid arthritis, lupus and related disorders, particularly in younger patients and women with active disease.
- Proposed adjustments include applying multiplicative risk factors, considering disease duration and activity, and incorporating treatment exposure, yet none solves fully the problem of systematic underestimation.
- Imaging of subclinical atherosclerosis, high-sensitivity inflammatory biomarkers and ARD-specific prediction models may help refine risk in future.





7/15 Screening for Subclinical CVD

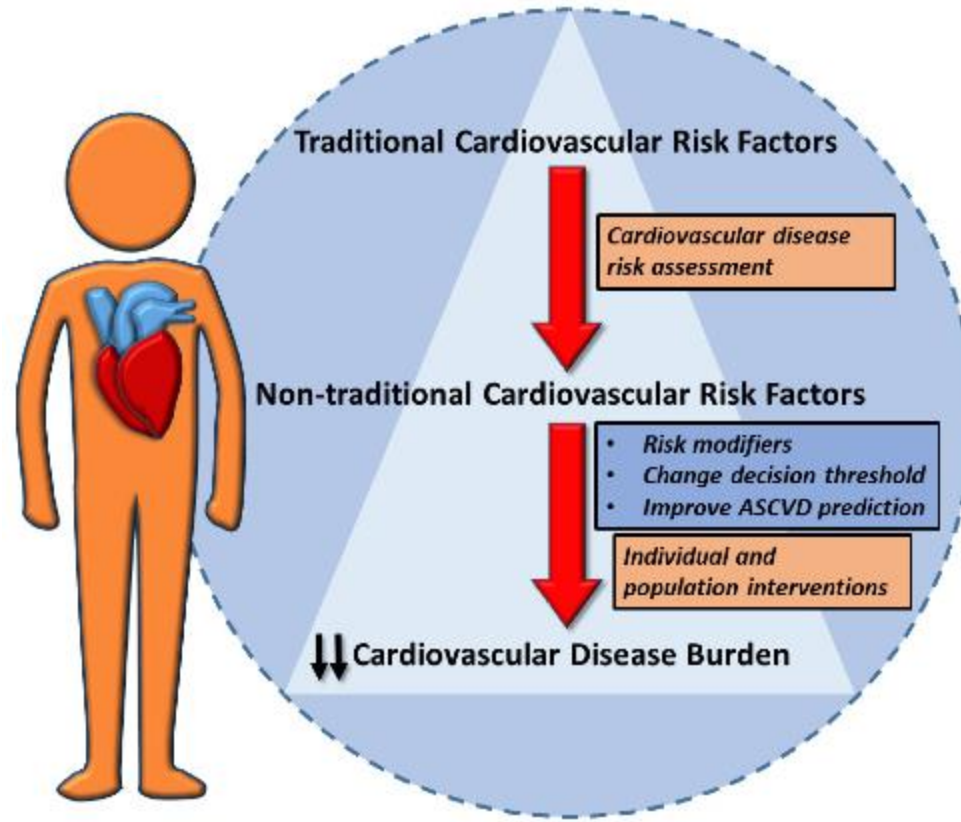
- Baseline evaluation including BP, lipid profile, glucose, body composition, renal function and smoking is essential to contextualize inflammatory risk and guide preventive decision-making.
- **Resting ECG, echocardiography and, in selected patients, carotid ultrasound or coronary calcium scoring can detect silent structural disease or atherosclerosis, facilitating timely escalation of cardioprotective therapy.**
- For high-risk phenotypes such as systemic sclerosis or longstanding lupus, additional targeted screening for pulmonary HTN, RV dysfunction or coronary microvascular disease may be justified within resource constraints.





8/15 Prevention Strategy Across the Disease Course

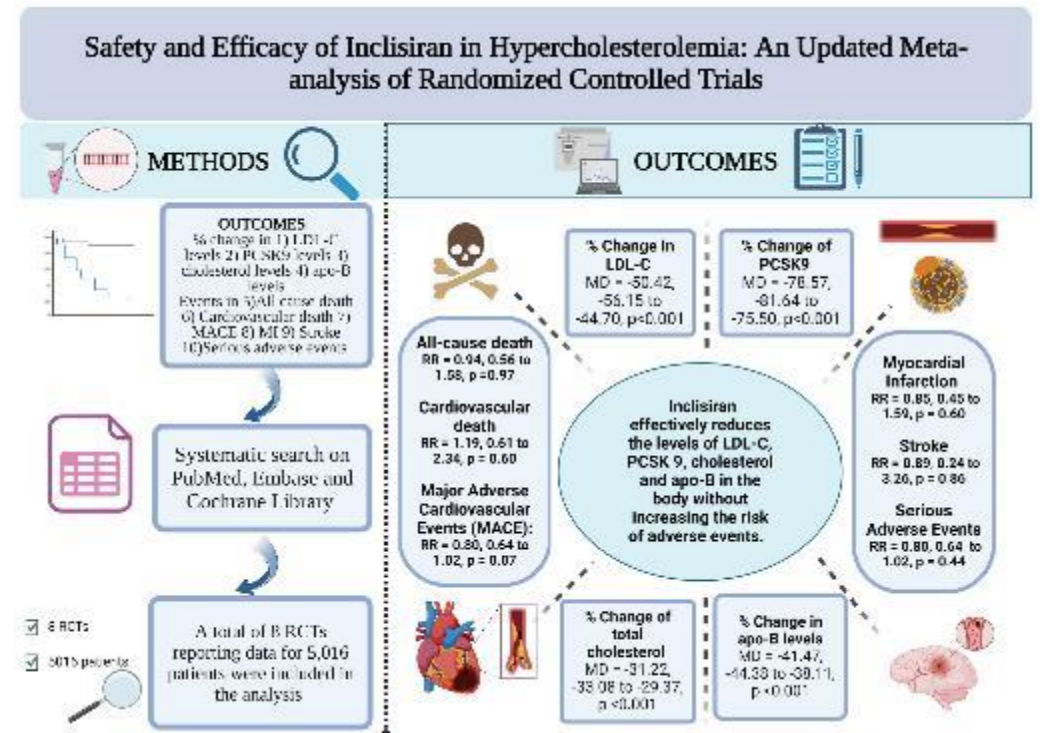
- Primary CV risk should be assessed early, ideally at or shortly after diagnosis of ARD, with subsequent reassessment during major treatment changes or periods of sustained high disease activity.
- **Thresholds for introducing statins, antihypertensives or antiplatelet therapy may need to be lowered** in these populations, recognizing their amplified baseline risk compared with apparently similar individuals without inflammatory disease.
- Vaccination, HF prevention, arrhythmia surveillance and coordination between rheumatology, cardiology and primary care are integral components of a longitudinal, life-course care approach.





9/15 Lipid Management and BP Control in ARD

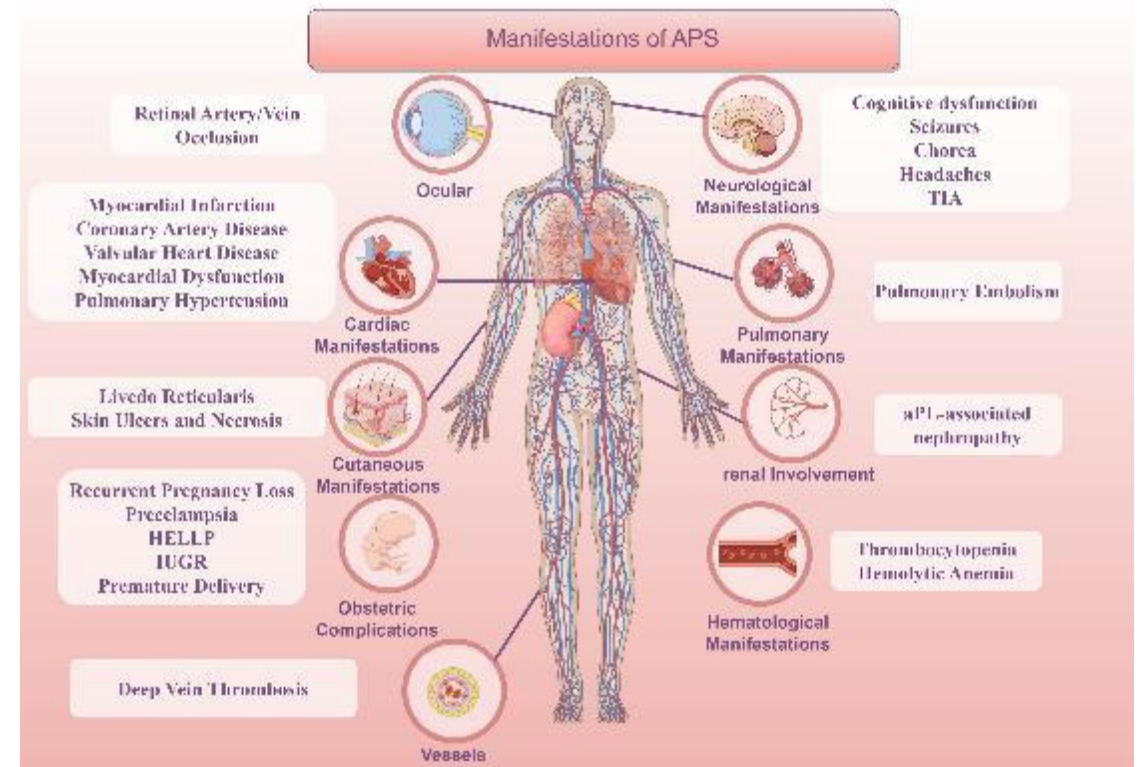
- Most patients with ARD meet criteria for high or very high cardiovascular risk, supporting ambitious LDL-cholesterol targets achieved through statins and, when necessary, ezetimibe or PCSK9 inhibitors.
- **Paradoxical lipid patterns in active inflammation and drug-induced lipid changes**, particularly with JAK inhibitors or IL-6 blockade, **require nuanced interpretation** and should not deter appropriate initiation of lipid-lowering therapy.
- BP control must account for glucocorticoid- or NSAID-related increases, kidney involvement and potential drug interactions, favoring agents with renal and vascular benefits wherever possible.





10/15 Antithrombotic Rx: From APS to AF and VTE

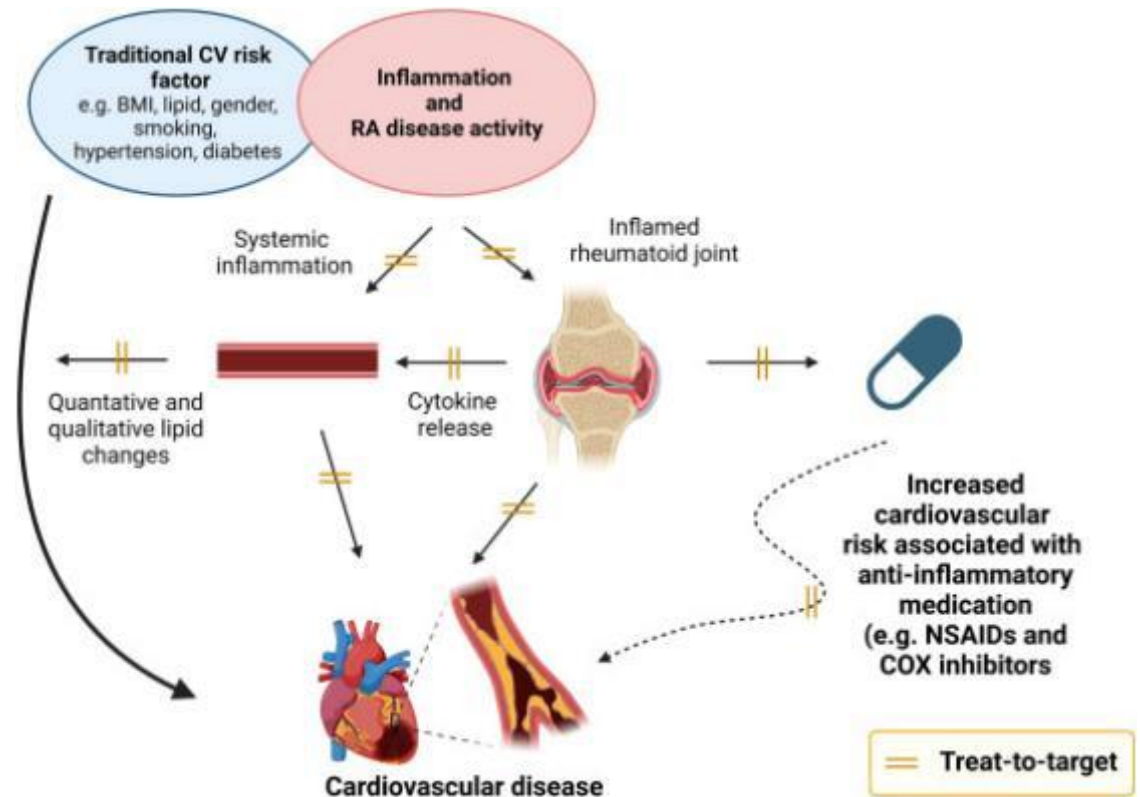
- APS exemplifies severe immune-mediated thrombophilia, often necessitating long-term vitamin K antagonists with carefully chosen intensity to prevent recurrent arterial and venous events.
- **Use of direct oral anticoagulants in high-risk APS remains controversial**, whereas their role for atrial fibrillation or venous thromboembolism in other rheumatic diseases is generally similar to the broader population.
- Aspirin in primary prevention, dual antithrombotic therapy and management of JAK inhibitor–associated thrombotic risk all demand meticulous balancing of bleeding and thrombosis.





11/15 Impact of DMARDs, Biologics and Targeted Therapies

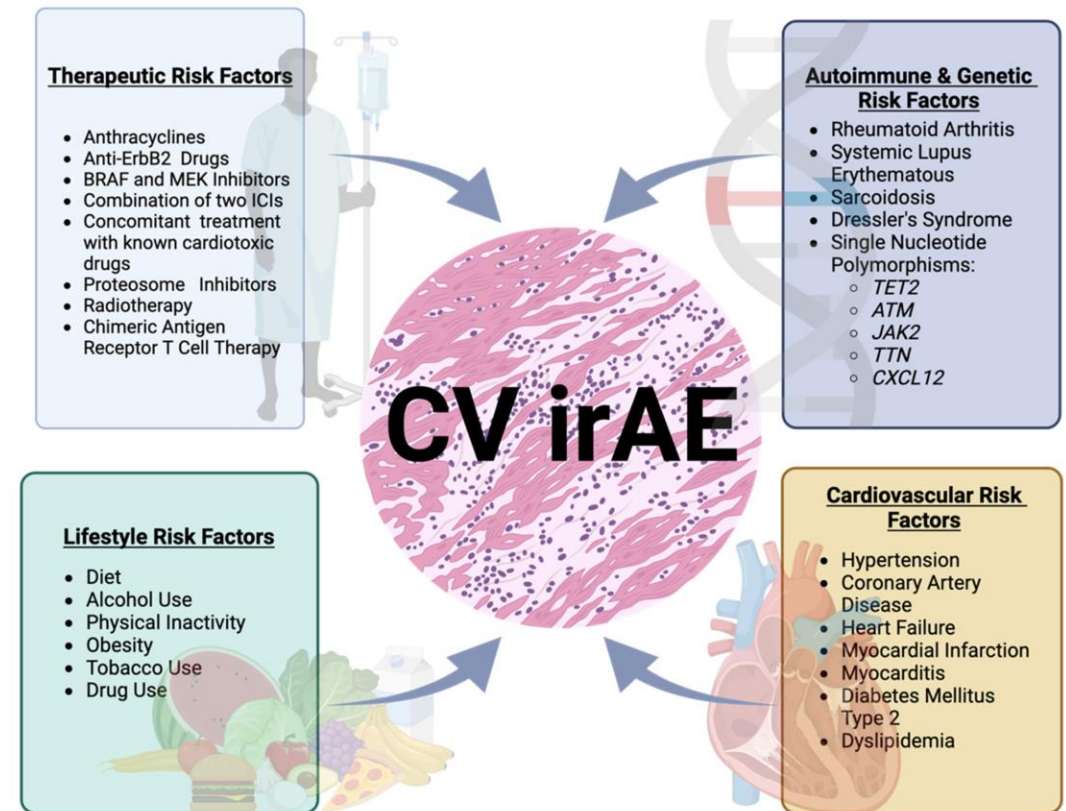
- Effective suppression of inflammation with conventional DMARDs and biologics, particularly methotrexate and TNF or IL-6 inhibitors, appears to confer cardiovascular benefits that extend beyond symptom control.
- JAK inhibitors have raised concern MACE and VTE in selected high-risk populations, necessitating careful patient selection, baseline risk assessment and ongoing surveillance.
- **Lipid alterations induced by specific immunomodulators should trigger proactive lipid management** rather than reflex discontinuation, integrating rheumatologic Rx and CV care.





12/15 Checkpoint Inhibitors and Other Immunotherapies

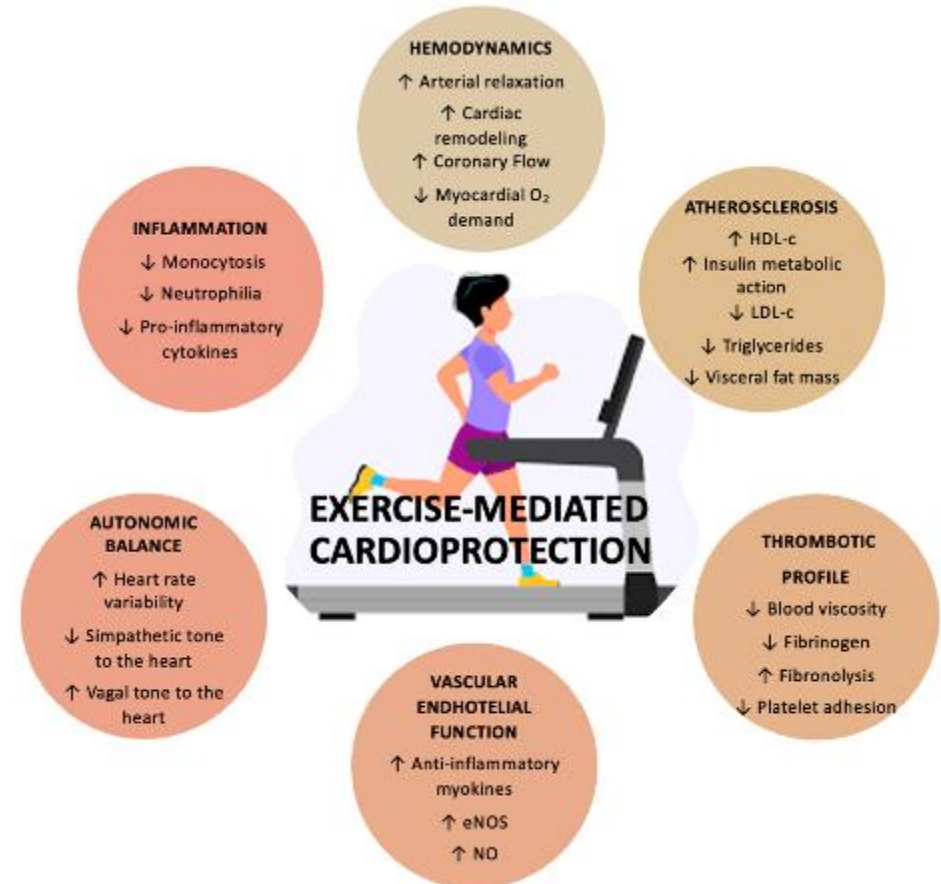
- Immune checkpoint inhibitors can precipitate fulminant myocarditis, pericarditis, arrhythmias, vasculitis and HF, risks that may be heightened in patients with pre-existing autoimmune disease.
- **Baseline cardiovascular evaluation, regular symptom surveillance and serial biomarkers or imaging in high-risk individuals support earlier detection and treatment of immune-mediated cardiotoxicity.**
- Multidisciplinary cardio-oncology–rheumatology collaboration is essential to balance anticancer efficacy against CV and autoimmune complications, and to design rational prevention and monitoring.





13/15 Lifestyle, Exercise Prescription and Rehabilitation

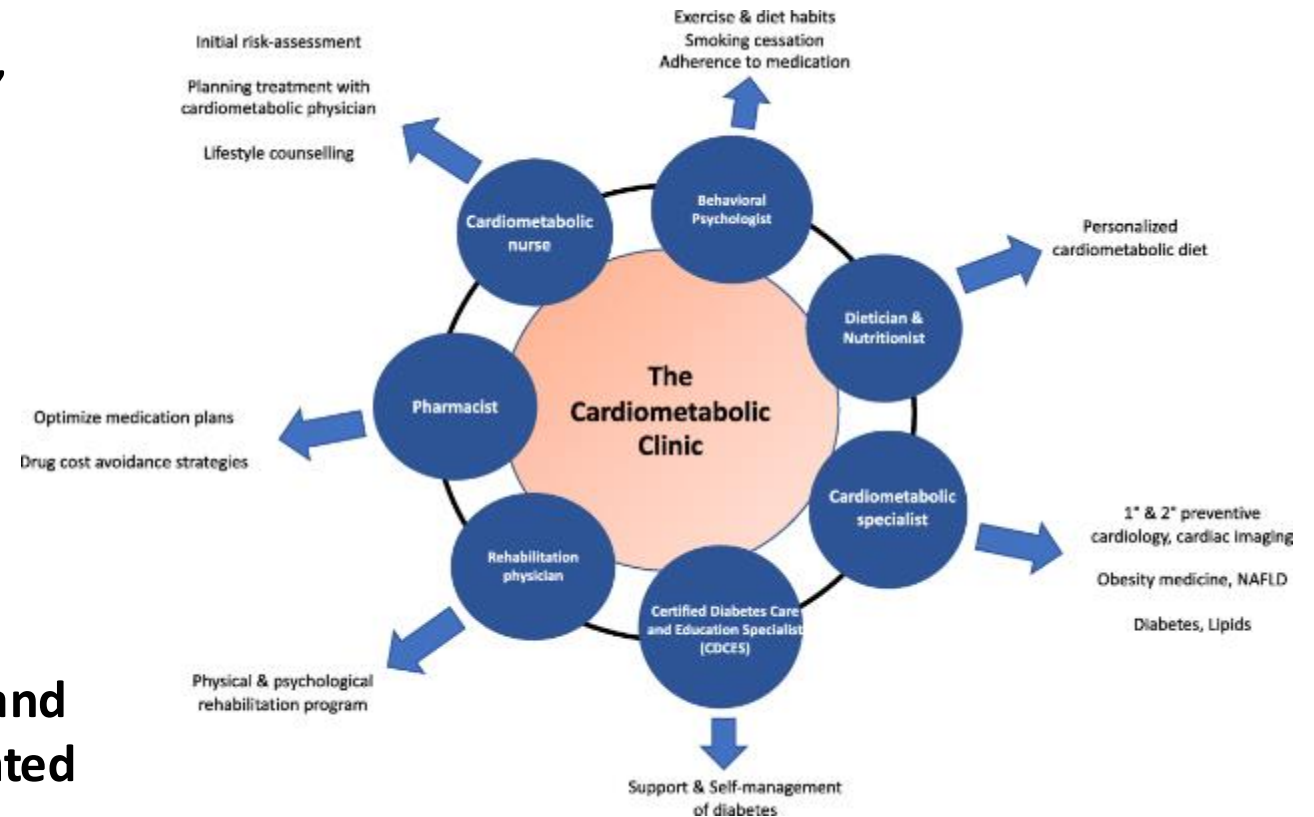
- **Regular physical activity has potent anti-inflammatory and cardiometabolic benefits**, yet patients with ARD frequently remain sedentary for obvious reasons.
- Tailored exercise prescriptions and supervised cardiac rehabilitation can address deconditioning while respecting joint limitations, integrating physiotherapy, pacing strategies and gradual intensity progression.
- Comprehensive lifestyle programs should encompass smoking cessation, weight management, Mediterranean-style nutrition, psychological support and digital tools.





14/15 Building Cardio–Rheumatology Pathways

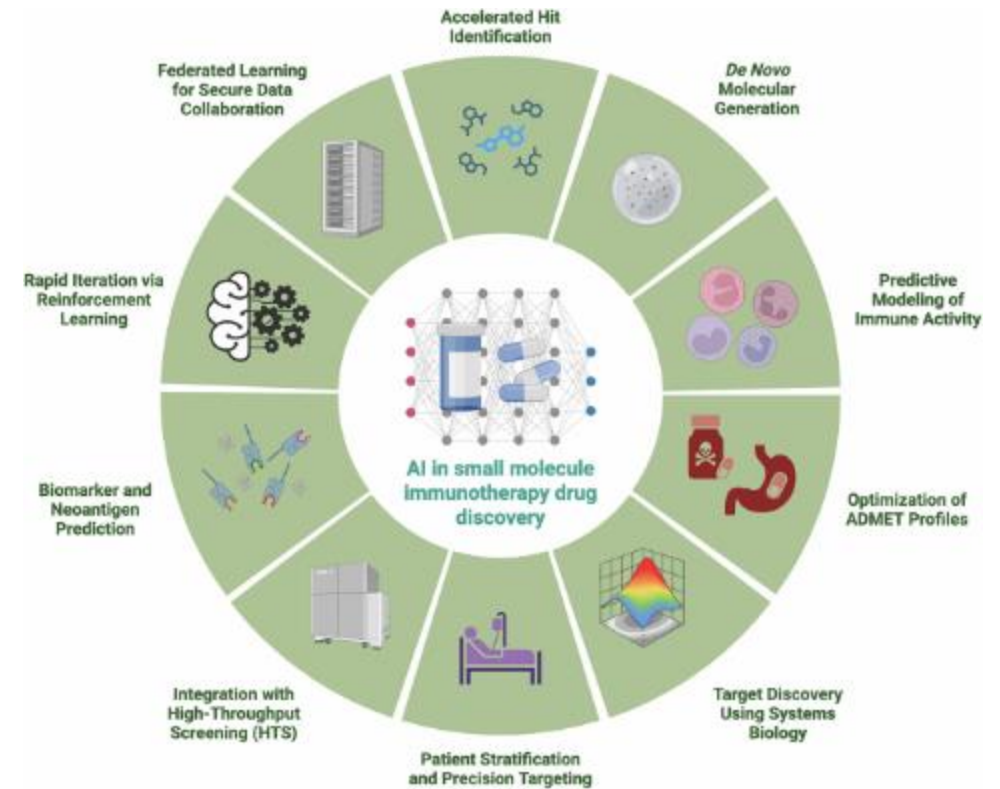
- Dedicated cardio–rheumatology pathways, whether through joint clinics or virtual models, can systematize risk assessment and integrate care.
- Clear allocation of roles, shared protocols, standardized templates and patient education materials help ensure that risk factor control is consistently addressed at both cardiology and rheumatology encounters.
- **Training, registries and quality-improvement initiatives are needed to overcome organizational barriers, document outcomes and convincingly demonstrate the value of integrated cardio–rheumatology services.**





15/15 Future Directions in Preventive Immuno-Cardiology

- Development of autoimmune disease–specific risk scores, inflammatory biomarkers and imaging signatures may allow more precise identification of patients benefiting from intensive CV prevention.
- **Multi-omics approaches and AI promise increasingly personalized strategies, linking genetic, immunologic and clinical data to targeted therapies and tailored rehabilitation programs.**
- Pragmatic trials, real-world registries and digital health platforms will be crucial to test innovative prevention models and embed comprehensive cardio–rheumatology care into everyday clinical practice.





**MANY THANKS FOR
YOUR ATTENTION!**

**For any query:
giuseppe.biondizoccai@uniroma1.it**