

Cardiovascular disease in patients with systemic autoimmune diseases

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- Conflict of interest disclosure:
- Amgen shareholder

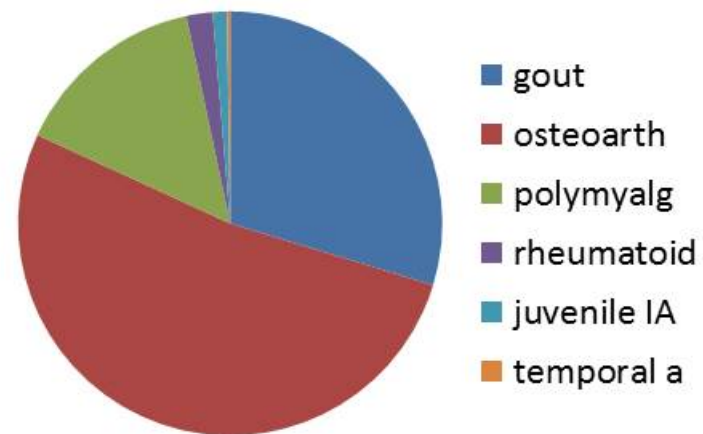
Accelerated CVD with rheumatic diseases

- Defining the problem
 - Heart disease in RA and SLE
- Strategies to reduce the risk
 - Patient education
 - Disease control
 - Risk factor modification

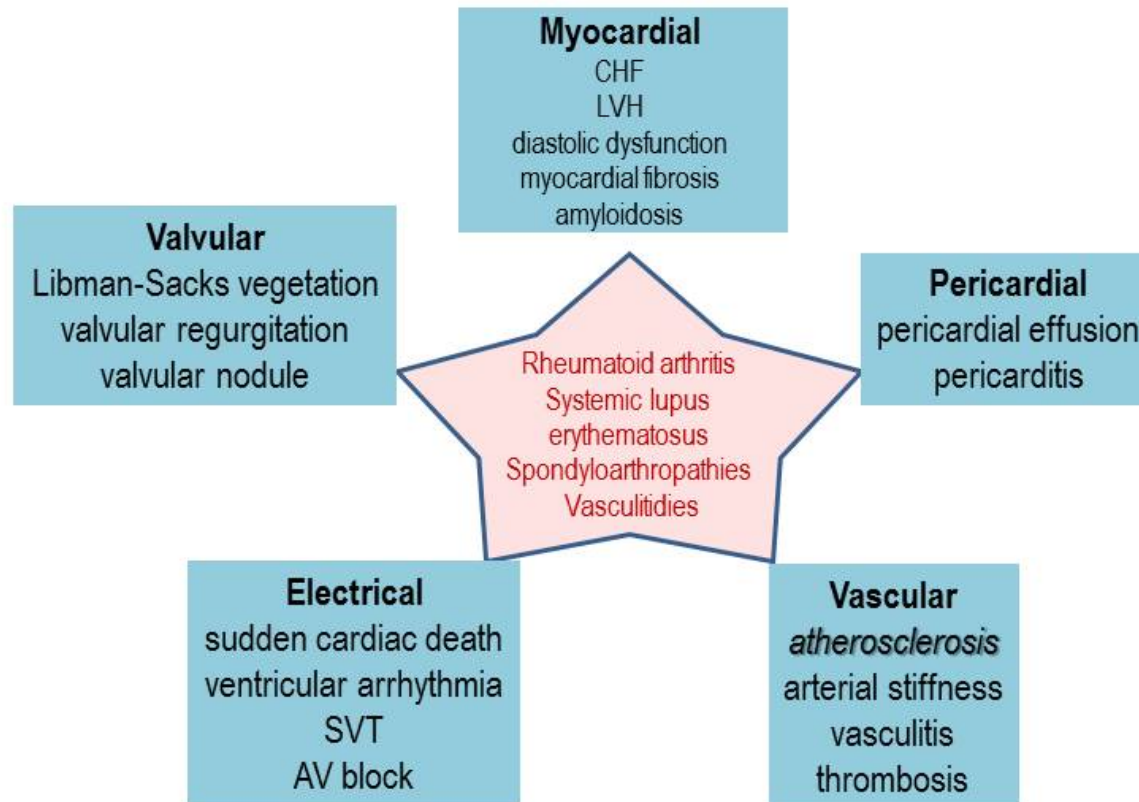
Annual incidence (X/100,000)

osteoarthritis	2600
gout	1480
PMR	739
rheumatoid	100
juvenile IA	54
temporal arteritis	12
ank spondy	7.3
psoriatic arth	6.6
SLE	5.5
Sjogren's	3.9

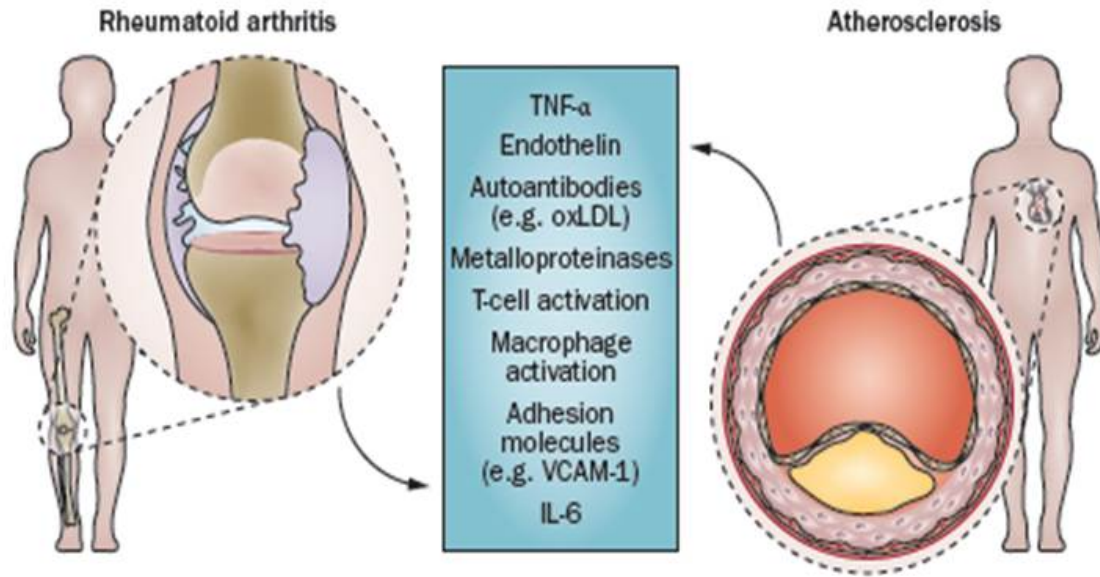
Annual incidence



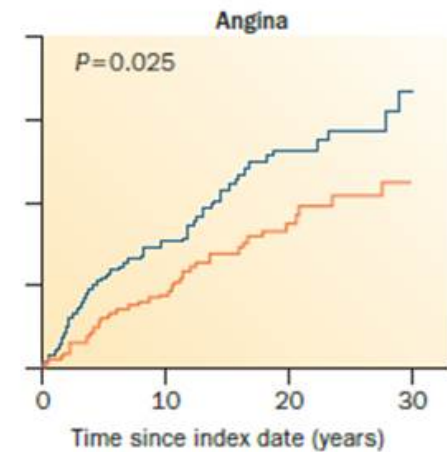
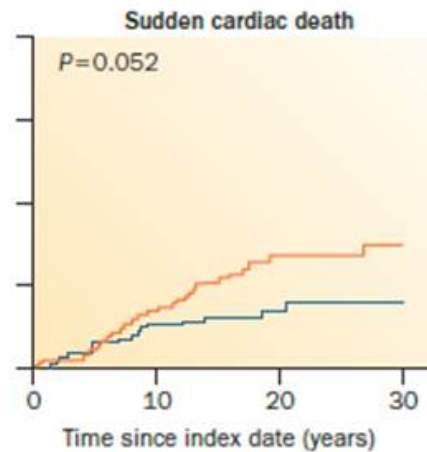
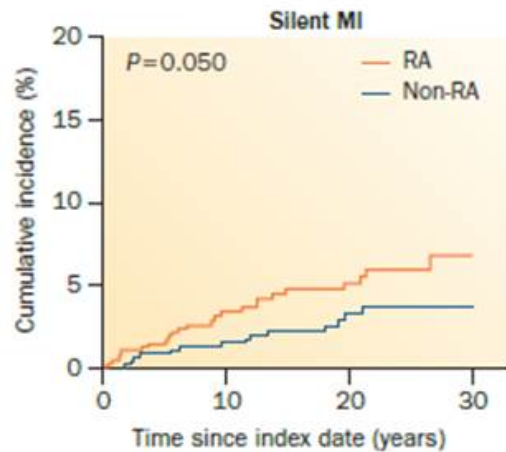
Cardiovascular manifestations of rheumatic (systemic autoimmune) diseases



Common mechanisms underlying RA and atherosclerosis



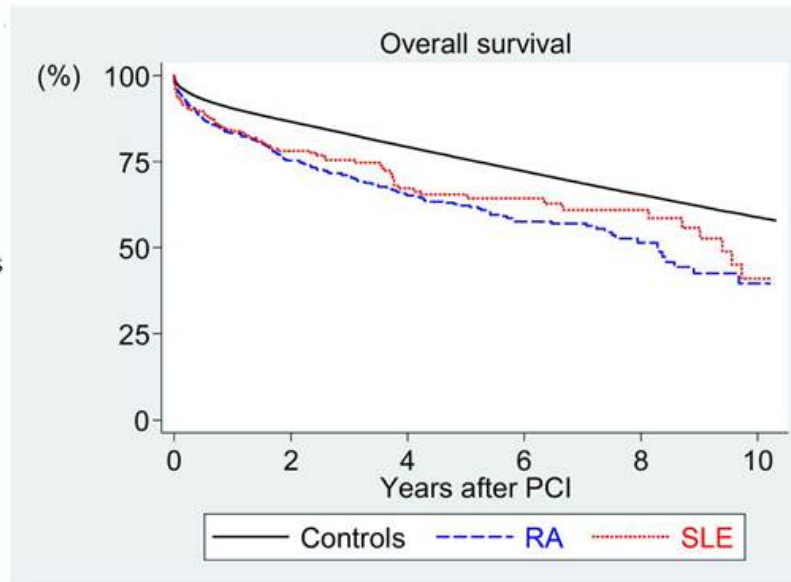
Cardiovascular manifestations in patients with RA



Maradit-Kremers, et al Arth and Rheum, 2005

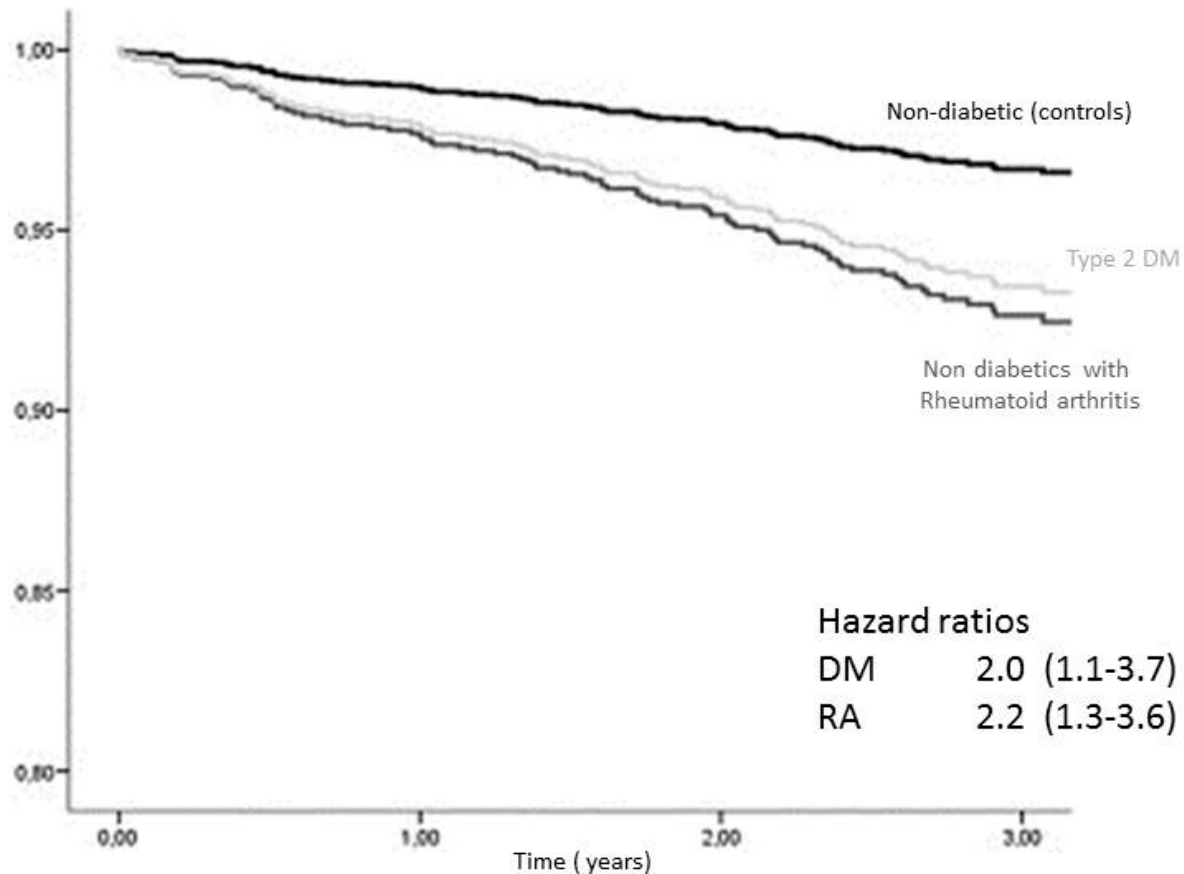
Survival following PCI (stenting) in Taiwan from 2000 to 2010

n = 171,762 controls
525 RA
211 SLE



HR
RA 1.55 $p < 0.0001$
SLE 2.20 $p < 0.0001$

Does rheumatoid arthritis equal diabetes mellitus as an independent risk factor for cardiovascular disease?



From: 2010 ACCF/AHA Guideline for Assessment of Cardiovascular Risk in Asymptomatic Adults

J Am Coll Cardiol. 2010

	Framingham	SCORE	PROCAM	Reynolds (W)	Reynolds (M)
Risk factors	Age sex T chol HDL smoking SBP BP med	Age sex Total- HDL ratio smoking SBP	Age LDL HDL smoking sbp family history diabetes, TG	Age Hgb A1c, smoking SBP T chol HDL hsCRP, Parental hx MI <60	Age sbp T chol HDL smoking hsCRP fam hx Parental hx MI <60

EULAR evidence based recommendations for CV risk management

- RA, PsA, ank spondy carry higher risk for CV disease
- Adequate control of disease activity is necessary to lower the cv risk
- Annual CV risk assessment according to local guidelines
- Risk score models should be modified by 1.5 if 2 of 3 present:
 - disease duration greater than 10 years
 - Positive RF or CCP antibody
 - Presence of extraarticular manifestations

EULAR evidence based recommendations continued

- Statins, ACE-i and or AT II blockers are preferred
- NSAIDS and COX-2s should be used with extreme caution
- Use lowest dose possible of corticosteroids
- Recommend smoking cessation

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Peters et al Ann Rheum Dis, 2010

Mortality HR for methotrexate use compared with no methotrexate use in RA cohort

		Hazard ratio	95% CI
All cause mortality	191	0.4	(0.2-0.8)
Cardiovascular mortality	390-449	0.3	(0.2- 0.7)
Non-cardiovascular mortality	<390 or >449	0.6	(0.2-1.2)

Choi et al, Lancet 2002

adjusted for:

age, sex, rheumatoid factor, duration of disease, smoking, education, HAQ score, patient global assessment, joint counts, ESR, prednisone use, # of other RA meds

Meta-analysis of current treatment on CV events in patients with RA

Tumor necrosis factor inhibitors	RR	p
All CVE	0.70	0.005
MI	0.59	0.04
CHF	0.75	0.19
Stroke	0.57	0.02
MACE	0.30	0.003

methotrexate	RR	p
All CVE	0.72	0.007
MI	0.81	0.01
CHF	0.8	insig
Stroke	0.78	insig
MACE	0.38	0.35

Meta-analysis of anti-inflammatory agents on CV events in RA and PsA

corticosteroids	RR	p
All CVE	1.47	0.04
MI	1.41	0.21
CHF	1.42	
Stroke	1.57	
MACE	1.62	

All NSAID	RR	p
All CVE	1.18	0.04
MI	1.13	0.28
CHF	0.86	0.11
stroke	2.15	0.01
MACE	1.56	0.18

COX-2	RR	p
All CVE	1.36	0.004

Psoriatic arthritis treatment with MTX or TNF-i

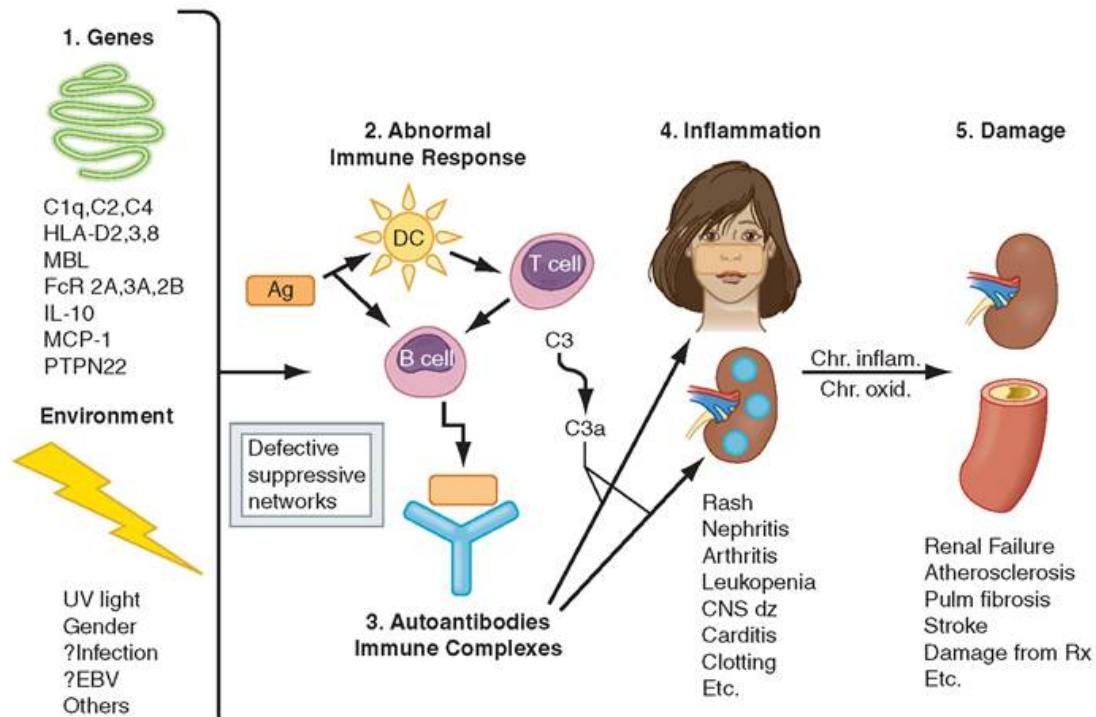
significant decrease in risk of all
CV events

RR 0.75 95% CI(0.63 to 0.91)

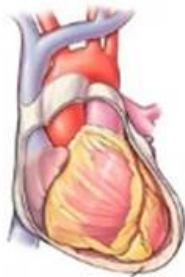
Roubille et al Ann Rheum Dis, 2015



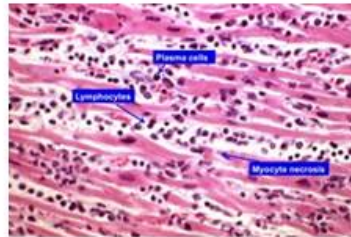
Systemic Lupus Erythematosus



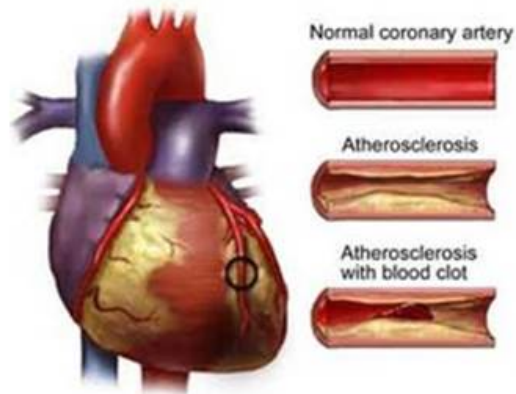
SLE manifestations in the heart



pericarditis



myocarditis



endocarditis

Mortality in SLE

the first 5 years from diagnosis

Cause of death	No	%
Active SLE	13	29%
Multisystem sle	4	9
Renal	4	9
Cardiopulmonary	3	7
hematologic	1	2
neurologic	1	2
CVA	5	11
PE	3	7
MI	3	7
GI bleed	2	5
Infections	13	29
malignancies	3	7

Pericardial disease in SLE

- Pericarditis w or w/o effusion present in 20 to 50 % of studies
- Pericardial effusions
 - Usually seen with disease flares
 - Usually small
 - May be asymptomatic
- Not usually associated with ecg changes
- Complications (tamponade, constriction) not seen (absent renal failure)



Cardiovascular Disease a leading cause of morbidity and mortality in patients with SLE

Age (years)	Myocardial infarction*		Angina pectoris		Person-years of observation	
	SLE†	Framingham	SLE	Framingham	SLE	Framingham
15-24	1	0	0	0	158	312
25-34	3	0	1	2	820	3,207
35-44	11	1	2	4	1,311	6,143
45-54	3	10	1	8	623	5,125
55-64	3	5	2	6	358	2,516
65-74	2	0	4	0	252	216
Total	23	16	10	20	3,522	17,519

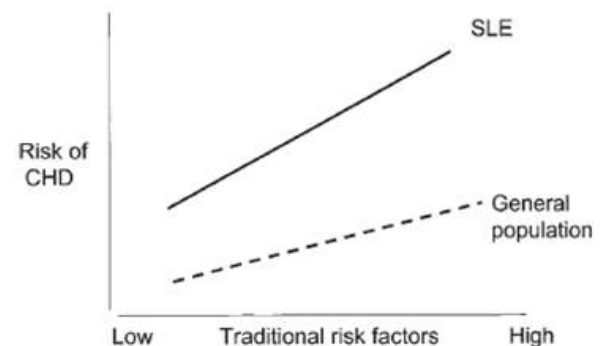
Manzi Am J Epidemiol 1997

- Nurses health study
 - 2.26 (1.45-3.52) RR risk of a cardiovascular event in SLE

Hak et al, Arthr and Rheumatism, 2009

SLE cardiovascular

- Like inflammatory arthritis pathogenesis for increased risk not well understood
- Traditional cardiac risk factors are common in patients with SLE
- The disease itself and *duration of disease*
- Glucocorticoid use
- Use of immunosuppression



Treatment and prevention

- Lifestyle modification:
 - Target BMI $<25_{\text{kg/m}^2}$
 - Avoid smoking
 - Regular exercise
 - Diet
- Treatment:
 - Statins
 - Anti-hypertensives
 - Reduce corticosteroid dose
 - (hydroxychloroquine)

Take home

- Systemic autoimmune/rheumatic diseases should be considered as risk factors for CVD
- 1.5 X traditional CAD scoring system for risk assessment
- 'Treating to Target' reduces this risk in RA, likely psoriatic arthritis and possibly SLE