



David Plunkert
"5 Biggest Heart Risks for Men"

Psoriasi e rischio CV

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Projections of Global Mortality and Burden of Disease from 2002 to 2030

Colin D. Mathers*, Dejan Loncar

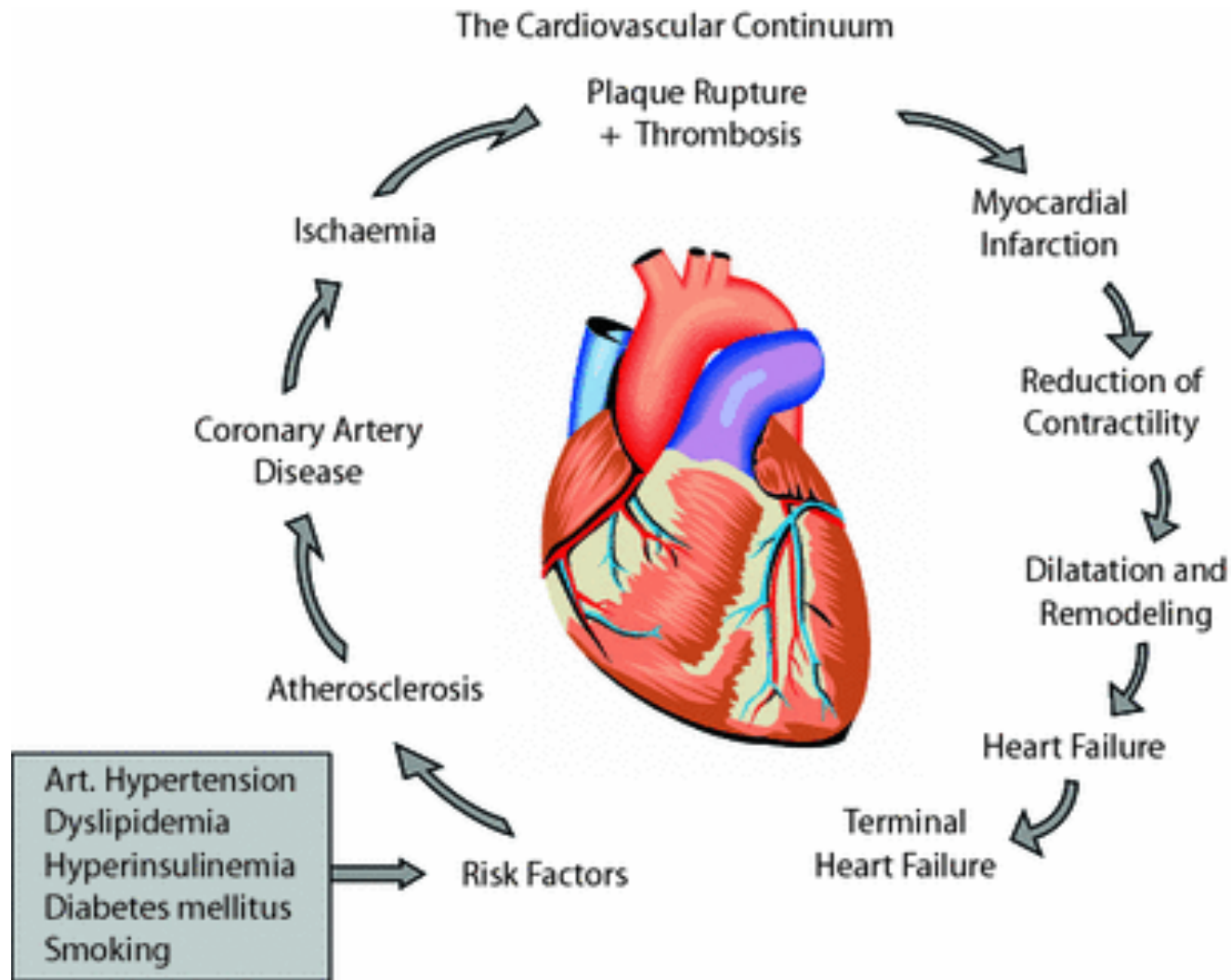
Evidence and Information for Policy Cluster, World Health Organization, Geneva, Switzerland

Category	Disease or Injury	2002 Rank	2030 Ranks	Change in Rank
Within top 15	Ischaemic heart disease	1	1	0
	Cerebrovascular disease	2	2	0
	Lower respiratory infections	3	5	-2
	HIV/AIDS	4	3	+1
	COPD	5	4	+1
	Perinatal conditions	6	9	-3
	Diarrhoeal diseases	7	16	-9
	Tuberculosis	8	23	-15
	Trachea, bronchus, lung cancers	9	6	+3
	Road traffic accidents	10	8	+2
	Diabetes mellitus	11	7	+4
	Malaria	12	22	-10
	Hypertensive heart disease	13	11	+2
	Self-inflicted injuries	14	12	+2
	Stomach cancer	15	10	+5
Outside top 15	Nephritis and nephrosis	17	13	+4
	Colon and rectum cancers	18	15	+3
	Liver cancers	19	14	+5

DOI: 10.1371/journal.pmed.0030442.t002

Plos Med, 2006

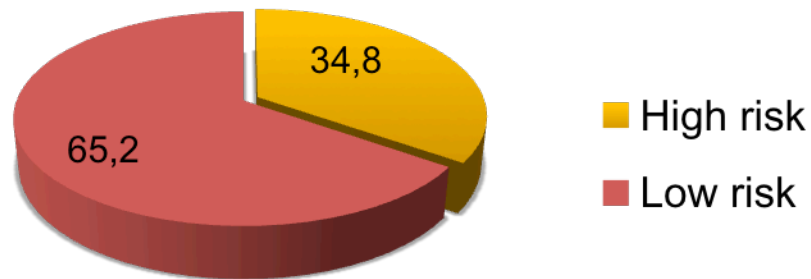
Sequenza di eventi che causano malattie CV



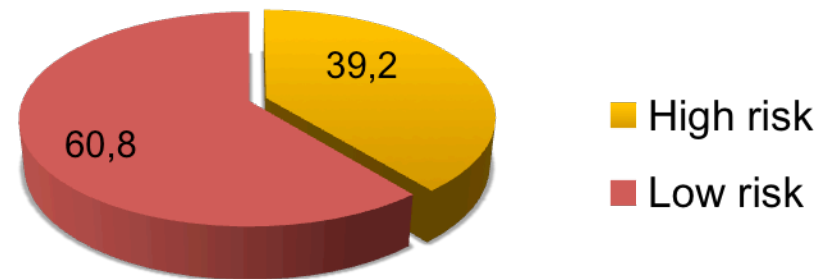
Patients remaining at high CV risk* after achieving treatment goals for selected RF's

*10-year risk of CVD death $\geq 5\%$ based on the Systematic Coronary Risk Evaluation (SCORE)

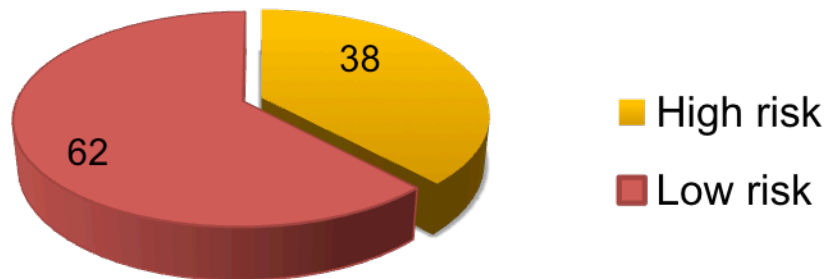
Hypertension (n=2032)



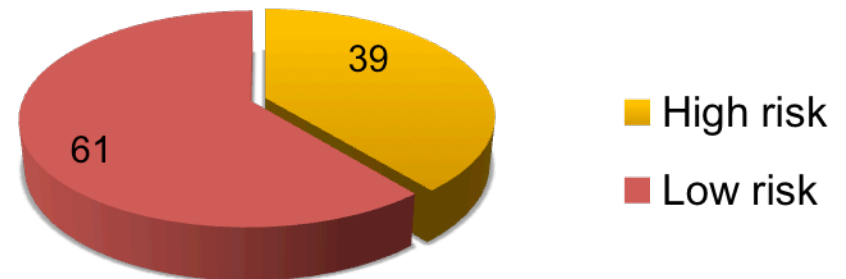
Dyslipidemia (n=2032)



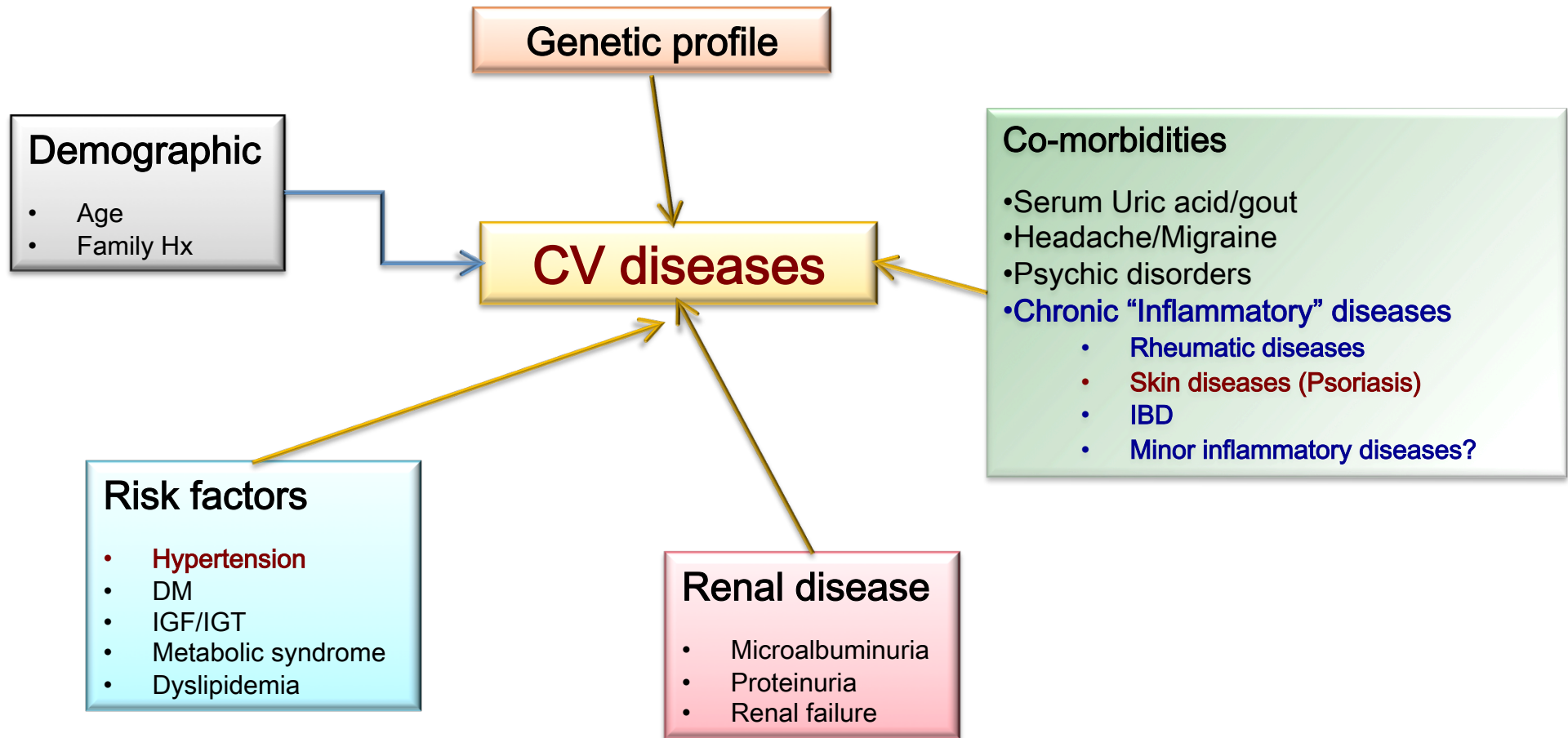
Type-2 DM (n=688)



Dyslipidemia (n=2032)



Factors contributing to CV disease

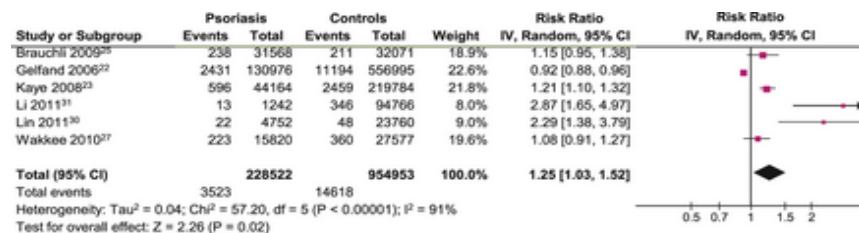


Cardiovascular morbidity and mortality in psoriasis and psoriatic arthritis: a systematic literature review

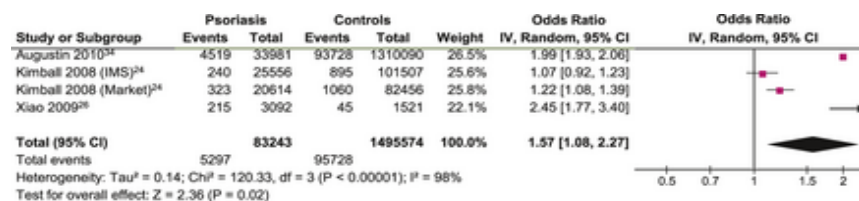
Acute MI

CS

CS=Cohort Studies
CSS=Cross-sectional studies
MA=Metanalysis

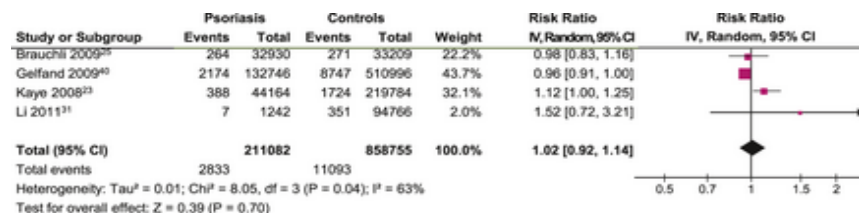


CSS

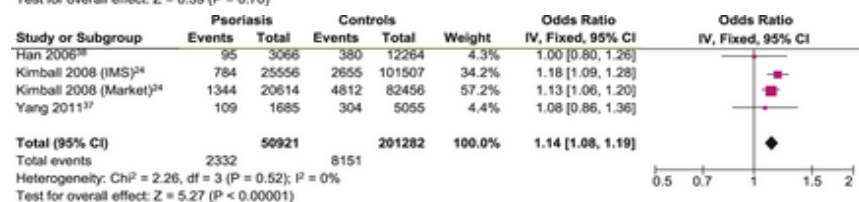


Stroke

CS



CSS

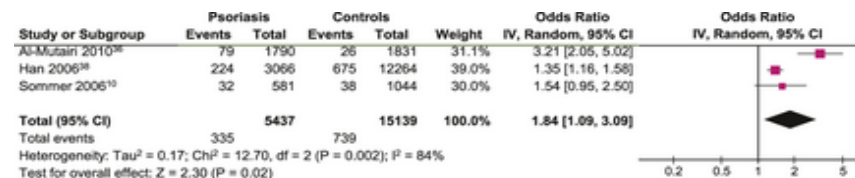


CHD

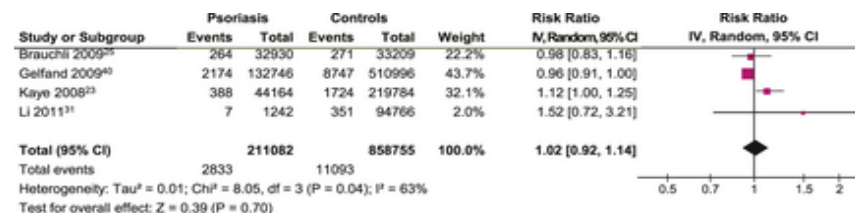
CS



CS



MA



Psoriasis and Major Adverse Cardiovascular Events: A Systematic Review and Meta-Analysis of Observational Studies

Ehrin J. Armstrong, MD, MAS, MSc; Caitlin T. Harskamp, BA; April W. Armstrong, MD, MPH

Background—Psoriasis is a chronic inflammatory disease that may be associated with increased risk of cardiovascular events, including cardiovascular mortality, myocardial infarction, and stroke.

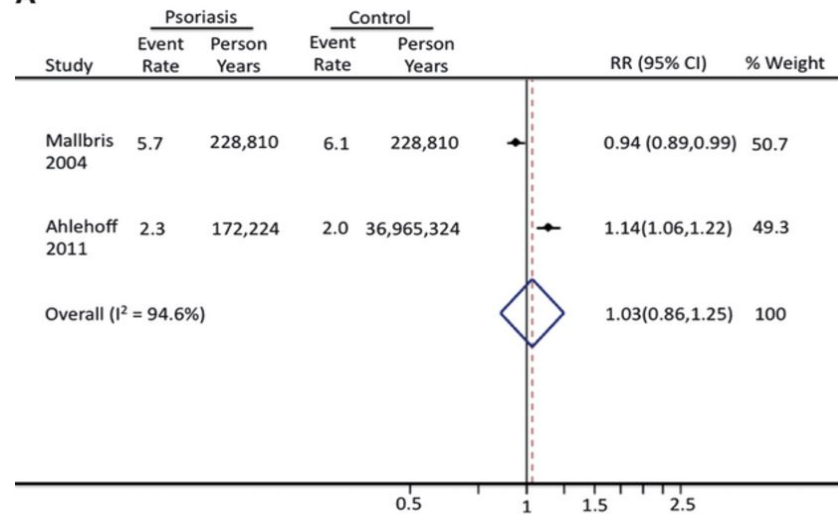
Methods and Results—We searched the MEDLINE, EMBASE, and Cochrane Central Register databases for relevant studies in English between January 1, 1980, and January 1, 2012. Extraction was by 3 independent reviewers. Summary incidence, risk ratios (RRs), and confidence intervals (CIs) were calculated using fixed-effects and random-effects modeling. Meta-regression was also performed to identify sources of between-study variation. Nine studies were included, representing a total of 201 239 patients with mild and 17 415 patients with severe psoriasis. The level of covariate adjustment varied among studies, leading to the possibility of residual confounding. Using the available adjusted effect sizes, mild psoriasis remained associated with a significantly increased risk of myocardial infarction (RR, 1.29; 95% CI, 1.02 to 1.63) and stroke (RR, 1.12; 95% CI, 1.08 to 1.16). Severe psoriasis was associated with a significantly increased risk of cardiovascular mortality (RR, 1.39; 95% CI, 1.11 to 1.74), myocardial infarction (RR, 1.70; 95% CI, 1.32 to 2.18), and stroke (RR, 1.56 95% CI, 1.32 to 1.84). Based on these risk ratios and the background population event rates, psoriasis is associated with an estimated excess of 11 500 (95% CI, 1169 to 24 407) major adverse cardiovascular events each year.

Conclusions—Mild and severe psoriasis are associated with an increased risk of myocardial infarction and stroke. Severe psoriasis is also associated with an increased risk of cardiovascular mortality. Future studies should include more complete covariate adjustment and characterization of psoriasis severity. (*J Am Heart Assoc* 2013;2:e000062 doi: 10.1161/JAHA.113.000062)

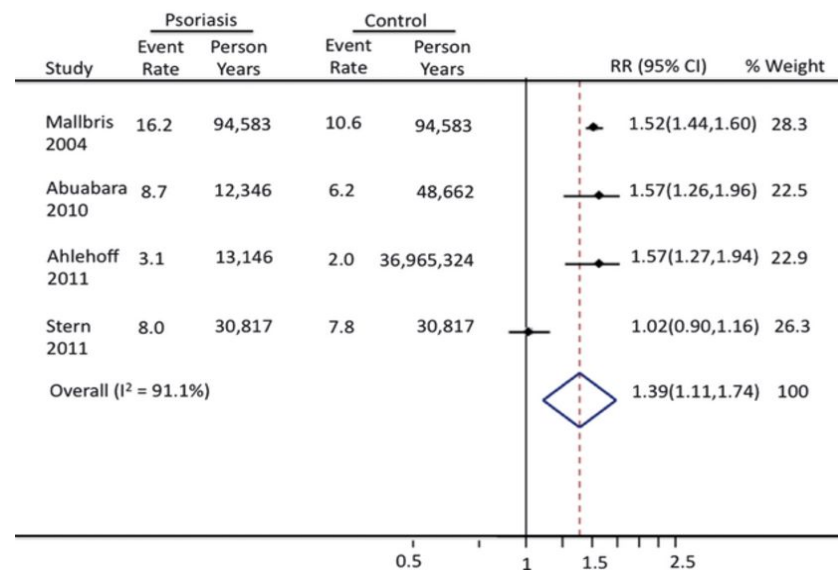
Key Words: cardiovascular diseases • epidemiology • meta-analysis • myocardial infarction • psoriasis

Cardiovascular death among patients with psoriasis.

A



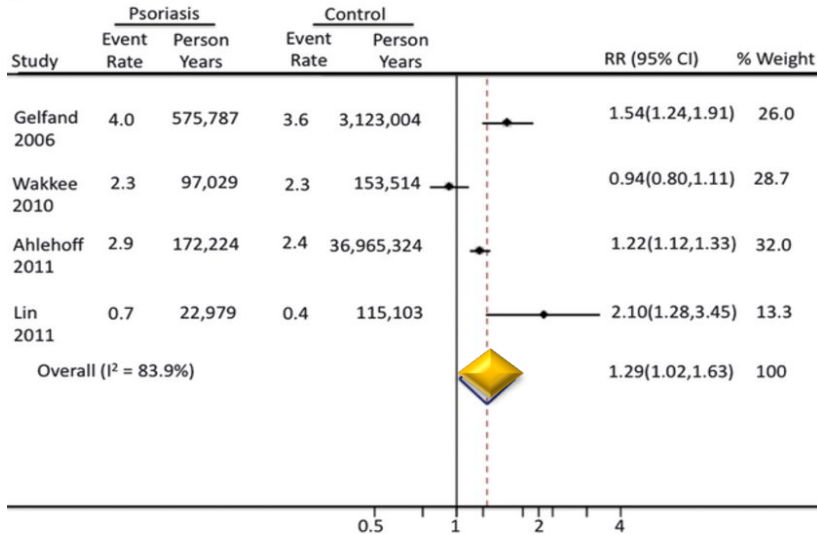
B



Armstrong E J et al. J Am Heart Assoc
2013;2:e000062

Myocardial infarction among patients with psoriasis.

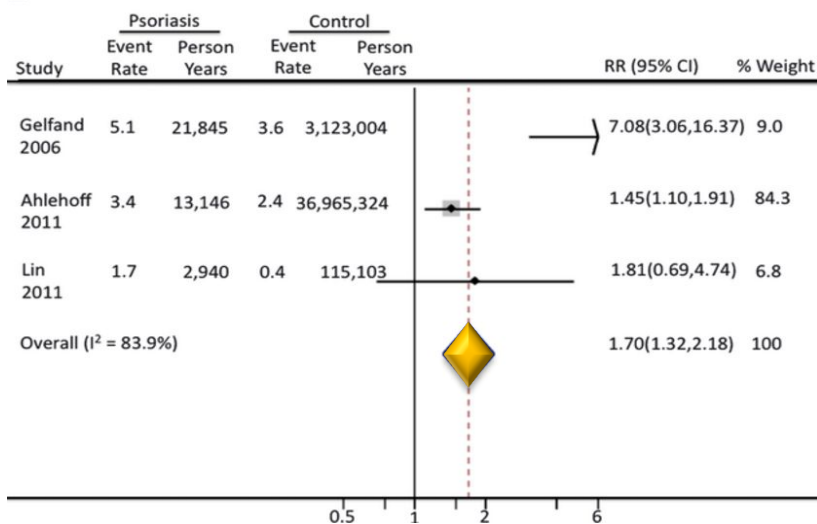
A



Mild



B

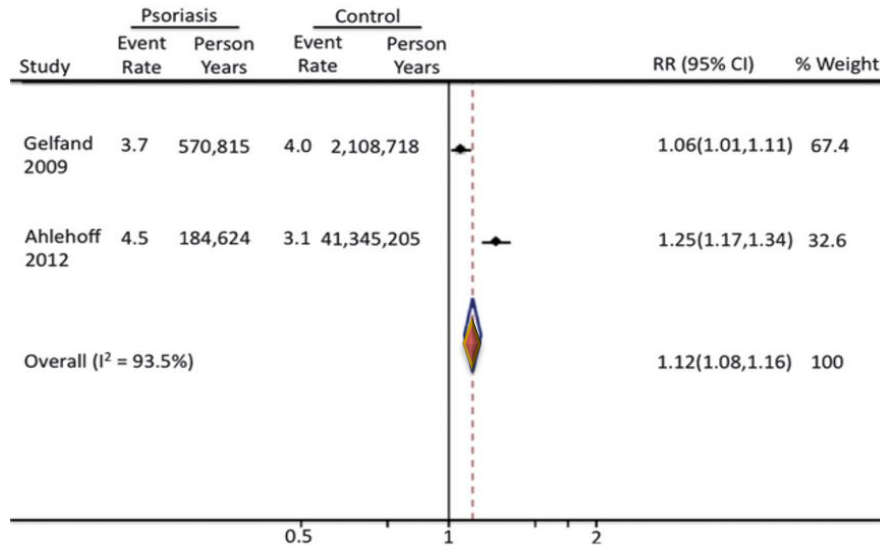


Severe

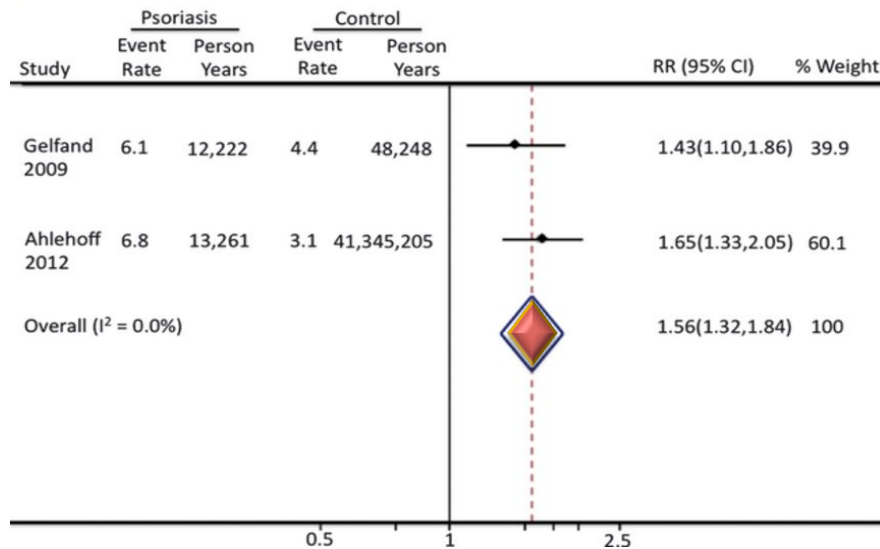
Armstrong E J et al. J Am Heart Assoc
2013;2:e000062

Stroke among patients with psoriasis.

A



B



Armstrong E J et al. J Am Heart Assoc
2013;2:e000062

Mild psoriasis and rate of major CV events

Reference	Study Country	Number of Patients	Mean Age, Years	Events	Event Rate, Control	Event Rate, Psoriasis	Mean Follow-Up Time, Years	Effect Measure	Definition of Outcomes	Adjusted Effect Size	Adjustment Variables
Cardiovascular mortality											
Mallbris et al ¹⁸	Sweden	19 757	NR	1302	6.1	5.7	11.6	SMR	Death registry; ICD-7, ICD-8, and ICD-9 codes	0.94 (0.89 to 0.99)	A, G
Ahlehoff et al ²⁰	Denmark	34 371	47.2	393	2.0	2.3	5.0	RR	Cardiovascular death using ICD-10 code	1.14 (1.06 to 1.22)	A, G, M
Myocardial infarction											
Gelfand et al ¹¹	United Kingdom	127 129	46.4	2319	3.6	4.0	3.8	HR	Diagnostic code using READ or OXMIS	1.54 (1.24 to 1.91)	H, D, C, A, G, S, MI, BMI
Wakkee et al ^{34*}	Netherlands	15 820	48.9	223	2.3	2.3	6.0	HR	Hospitalization for MI	0.94 (0.8 to 1.11)	H, D, C, A, G, U
Ahlehoff et al ²⁰	Denmark	34 371	47.2	494	2.4	2.9	5.0	RR	MI using ICD-10 code	1.22 (1.12 to 1.33)	A, G, M
Lin et al ³⁵	Taiwan	4162	NR	17	0.4	0.7	5.0	HR	New MI, using insurance database	2.10 (1.27 to 3.43)	H, D, C, A, G, SD
Stroke											
Gelfand et al ¹²	United Kingdom	129 143	45.1	2100	4.0	3.7	3.7	HR	Diagnostic code using Read or OXMIS	1.06 (1.01 to 1.11)	A, G, H, D, C, S, N
Ahlehoff et al ³⁶	Denmark	36 765	46.1	838	3.1	4.5	5.0	RR	Ischemic stroke using ICD-9 codes	1.25 (1.17 to 1.34)	A, G, SD, M

Event rates are reported as events/1000 person-years. NR indicates not reported; SMR, standardized mortality ratio; ICD, International Classification of Diseases; RR, risk ratio; HR, hazard ratio; A, age; G, gender; M, medical comorbidities (individual comorbidities not reported); OXMIS, Oxford Medical Information System; H, hypertension; D, diabetes; C, cholesterol; S, smoking; U, healthcare utilization; N, neurovascular disease; MI, prior myocardial infarction; BMI, body mass index; SD, social demographics.

*Authors did not distinguish mild from severe psoriasis.

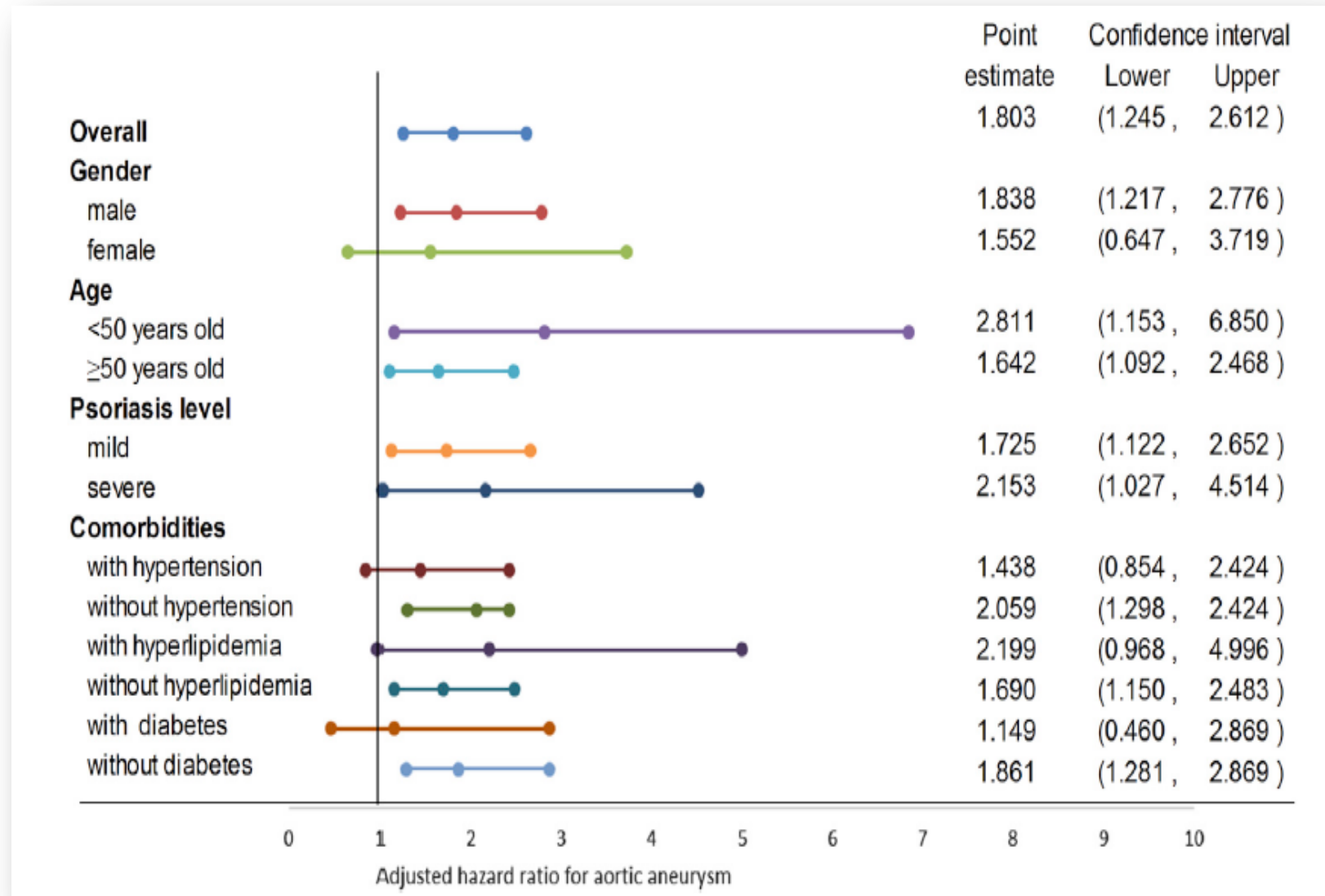
Severe psoriasis and rate of major CV events

Reference	Study Country	Number of Patients	Mean Age, Years	Events	Event Rate, Control	Event Rate, Psoriasis	Mean Follow-Up Time, Years	Effect Measure	Definition of Outcomes	Adjusted Effect Size	Adjustment Variables
Cardiovascular mortality											
Mallbris et al ¹⁸	Sweden	8991	NR	1529	10.6	16.2	10.5	SMR	Death registry; ICD-7, ICD-8, and ICD-9 codes	1.52 (1.44 to 1.60)	A, G
Abuabara et al ³³	United Kingdom	3603	52.2	108	6.2	8.7	2.7	HR	Diagnostic code using READ or OXMIS	1.57 (1.26 to 1.96)	A, G
Ahlehoff et al ²⁰	Denmark	2621	46.9	41	2.0	3.1	5.0	RR	Cardiovascular death using ICD-10 code	1.57 (1.27 to 1.94)	A, G, M
Stern et al ¹⁹	USA	1376	46	246	7.8	8.0	22.4	SMR	Telephone interviews and national death index	1.02 (0.90 to 1.16)	A, G
Myocardial infarction											
Gelfand et al ¹¹	United Kingdom	3837	49.8	112	3.6	5.1	5.4	HR	Diagnostic code using READ or OXMIS	7.08 (3.06 to 16.36)	H, D, C, A, G, S, MI, BMI
Ahlehoff et al ²⁰	Denmark	2621	46.9	45	2.4	3.4	5.0	RR	MI using ICD-10 code	1.45 (1.10 to 1.90)	A, G, M
Lin et al ³⁵	Taiwan	590	NR	5	0.4	1.7	5.5	HR	New MI, using insurance database	1.81 (0.69 to 4.74)	H, D, C, A, G, SD
Stroke											
Gelfand, 2009 ¹²	United Kingdom	3603	52.2	74	4.4	6.1	2.7	HR	Diagnostic code using READ or OXMIS	1.43 (1.10 to 1.87)	A, G, H, D, C, S, N
Ahlehoff et al ³⁶	Denmark	2793	46.0	90	3.1	6.8	4.7	RR	Ischemic stroke using ICD-9 codes	1.65 (1.33 to 2.05)	A, G, SD, M

NR indicates not reported; SMR, standardized mortality ratio; ICD, International Classification of Diseases; RR, risk ratio; HR, hazard ratio; A, age; G, gender; M, medical comorbidities (individual comorbidities not reported); H, hypertension; D, diabetes; C, cholesterol; S, smoking; U, healthcare utilization; MI, prior myocardial infarction; BMI, body mass index; SD, social demographics; N, neurovascular disease, including prior stroke or transient ischemic attack.

Armstrong E J et al. J Am Heart Assoc
2013;2:e000062

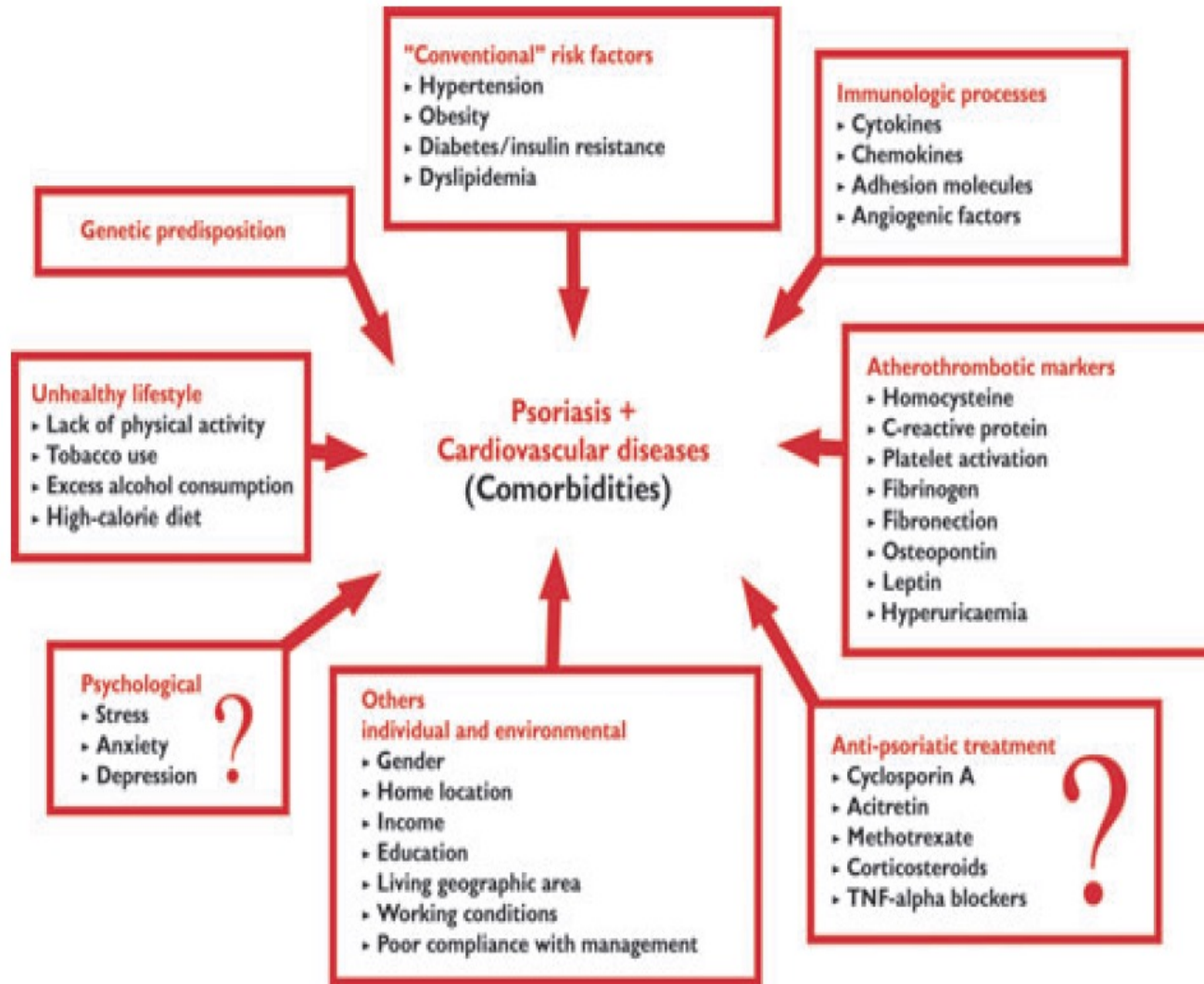
Overall adjusted hazard ratios for *aortic aneurysm* in all patients with psoriasis and subgroups of psoriasis



Adjusted for CV conditions, comorbidities, and medication use during the preceding year

Chiu HX et Al., J Am Acad Dermatol 2016, article in press

Factors that may contribute towards the co-occurrence of psoriasis and CVD



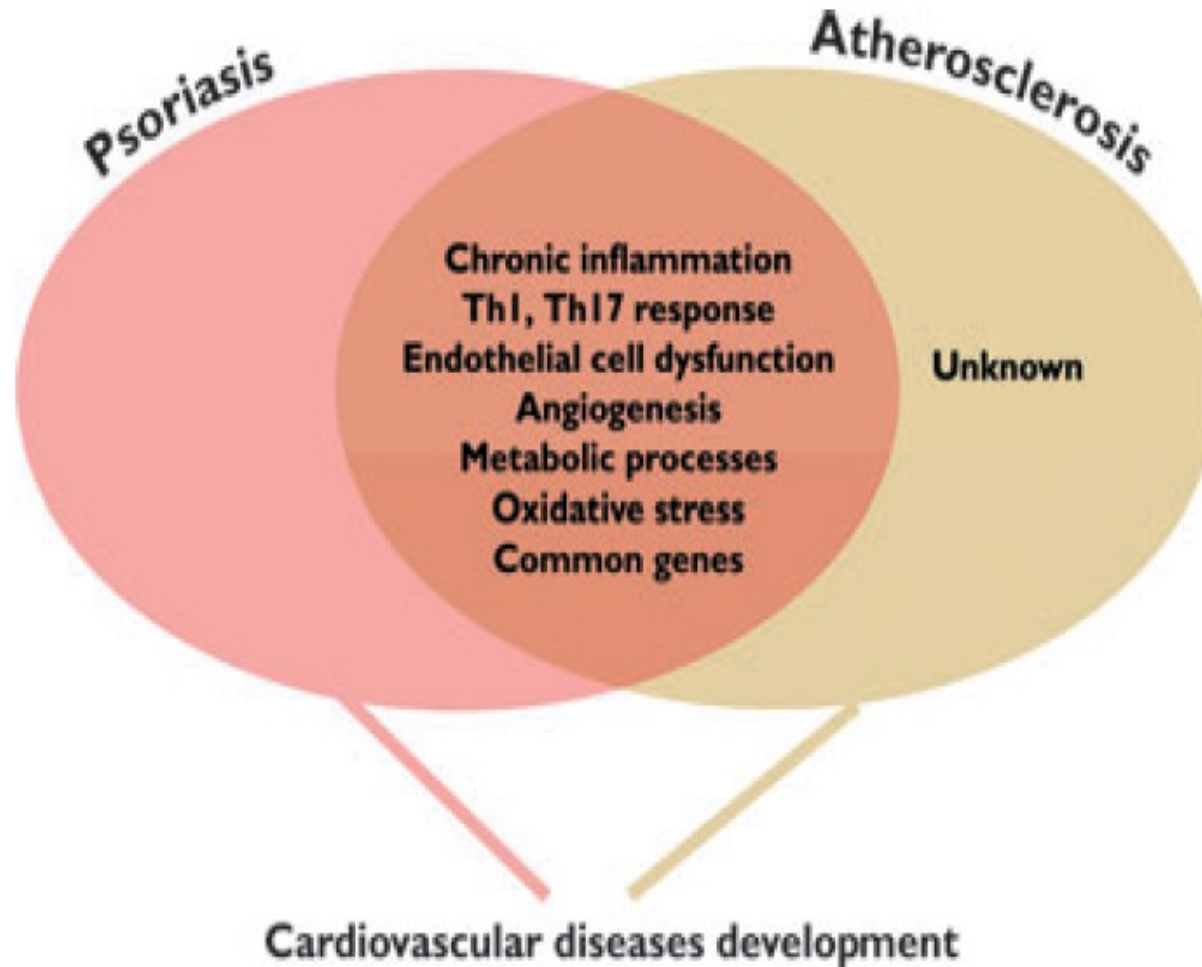
Odds ratios (95 % CI) for CV risk factors for patients with psoriasis, mild psoriasis, and severe psoriasis compared to the general population

Cardiovascular risk factors	Psoriasis	Mild psoriasis	Moderate-to-severe psoriasis
Obesity ^a	1.66 (1.46–1.89)	1.46 (1.17–1.82)	2.23 (1.63–3.05)
Hypertension ^a	1.58 (1.42–1.76)	1.30 (1.15–1.47)	1.49 (1.20–1.86)
Type 2 diabetes mellitus ^a	1.59 (1.38–1.83)	1.53 (1.16–2.04)	1.97 (1.48–2.62)
Metabolic syndrome	2.26 (1.70–3.01) ^a	1.22 (1.11–1.35) ^b	1.98 (1.62–2.43) ^b

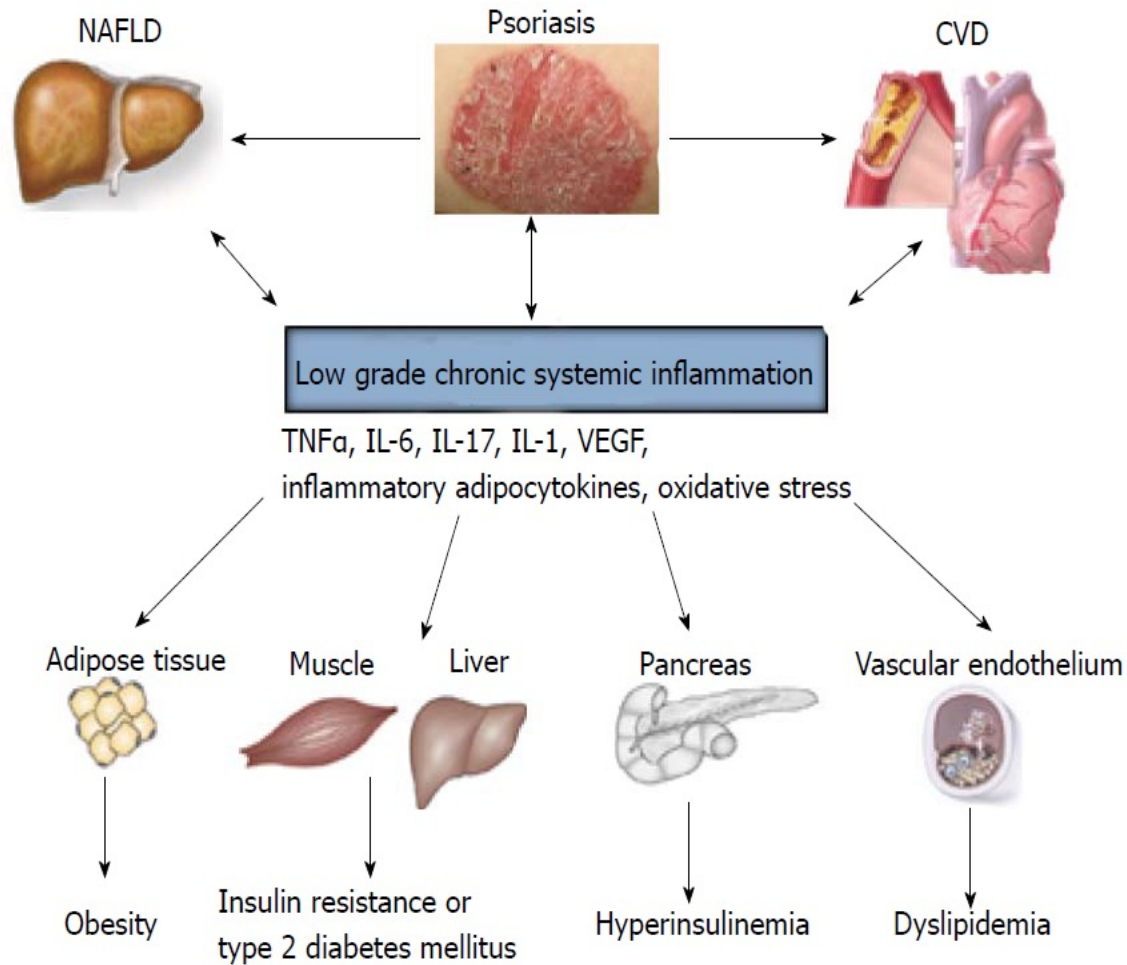
^a From Armstrong et al., meta-analyses synthesizing the global epidemiologic associations between psoriasis or psoriasis disease severity and obesity, hypertension, type 2 diabetes mellitus, and metabolic syndrome, from January 1980 to January 2012

^b From Langan et al., a primary investigation of the association between psoriasis disease severity and metabolic syndrome in the UK in February 2009

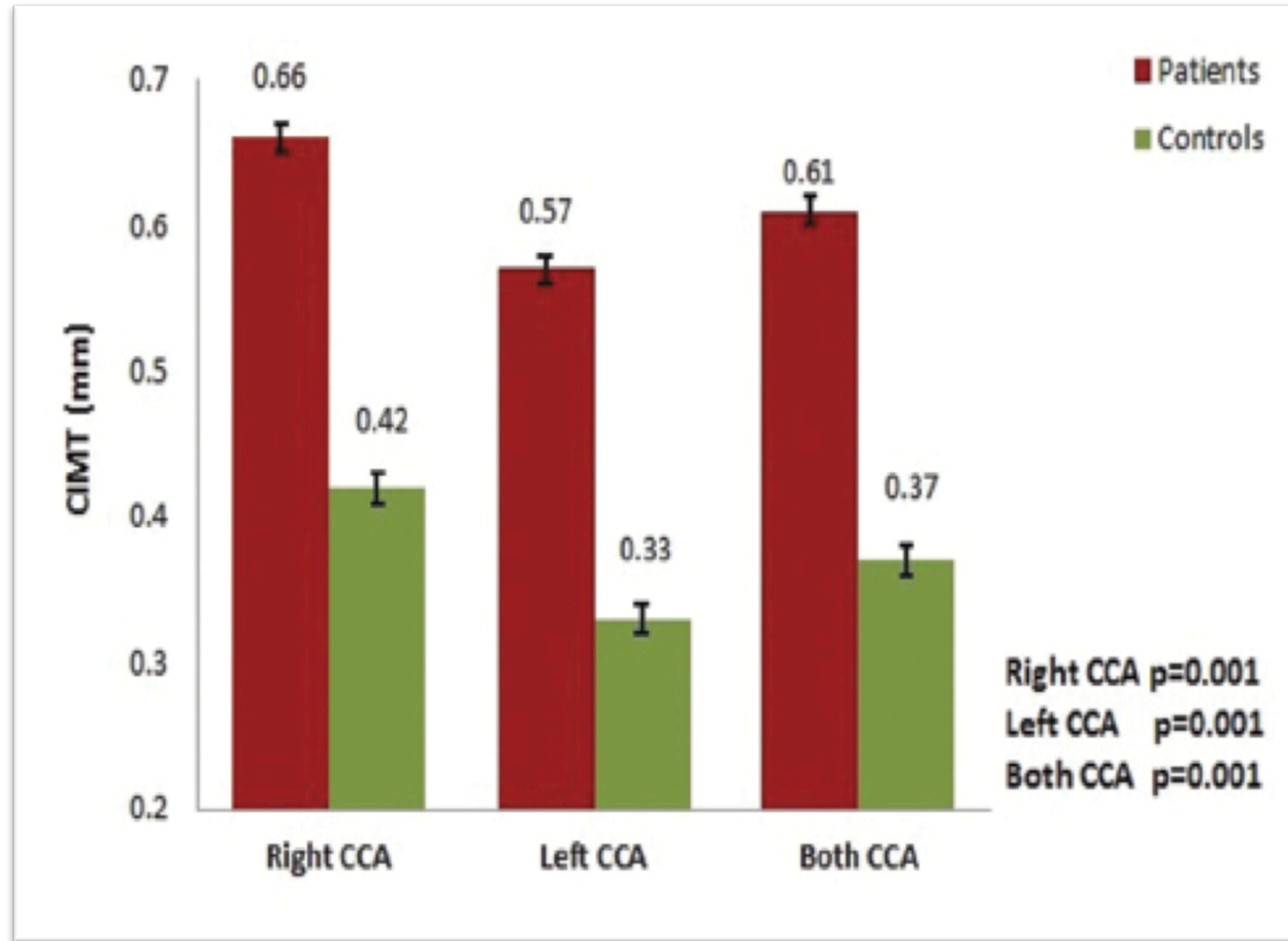
Pathogenetic mechanisms in psoriasis and atherosclerosis with the potential to trigger CVD



Psoriasis, non-alcoholic fatty liver disease, CV diseases and CV risk factors: a unique inflammatory background

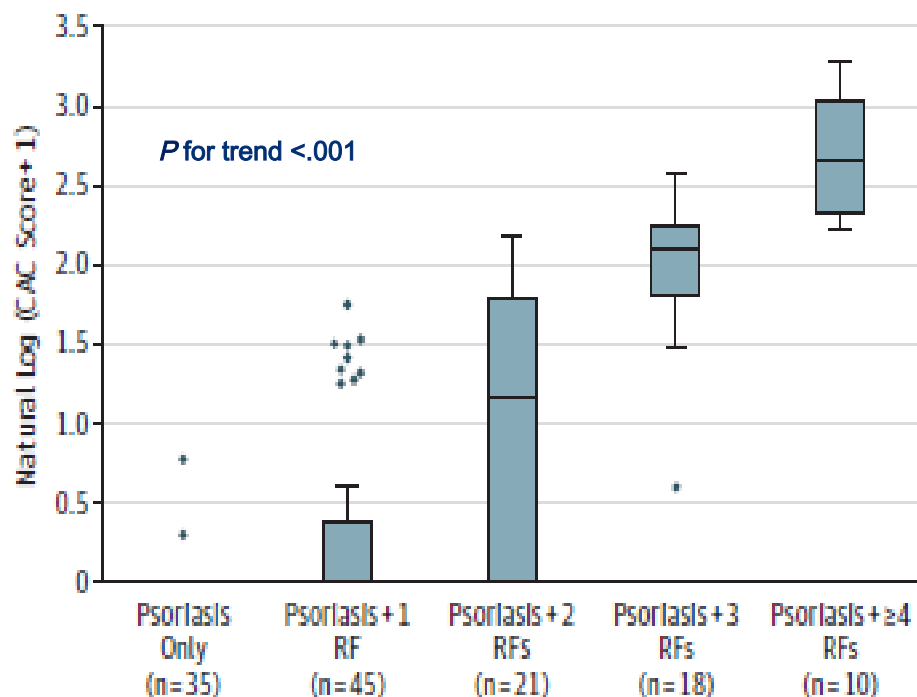


Mean intima-media thickness of the right and left common carotid artery in 30 patients with chronic plaque psoriasis and 30 controls (CIMT: Carotid intima-media thickness, CCA: Common carotid artery)

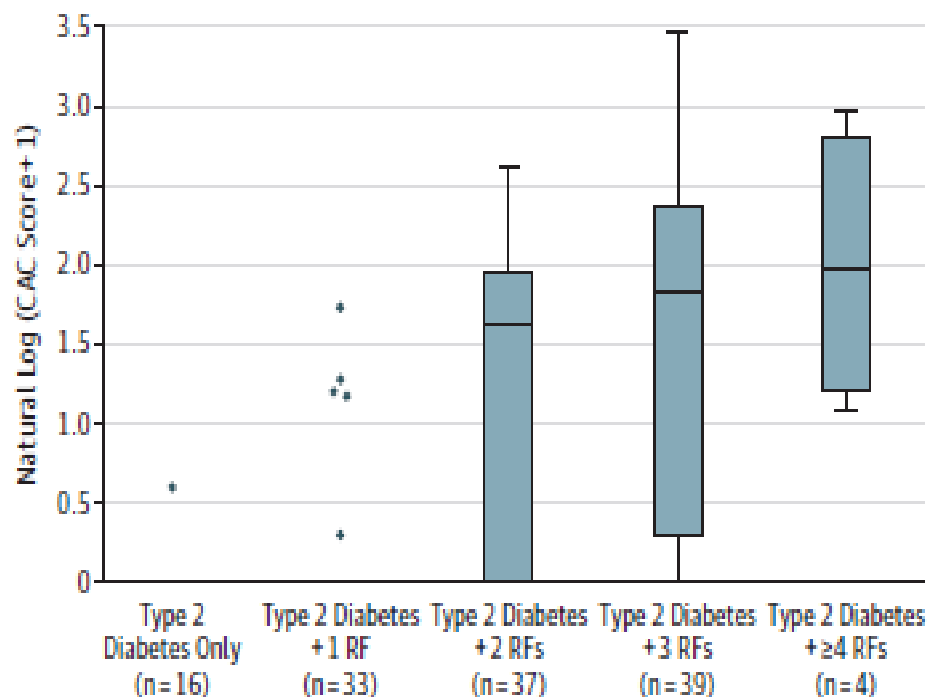


Median Coronary Artery Calcium (CAC) as Assessed by Mean Agatston Scores in Psoriasis and Diabetes Mellitus

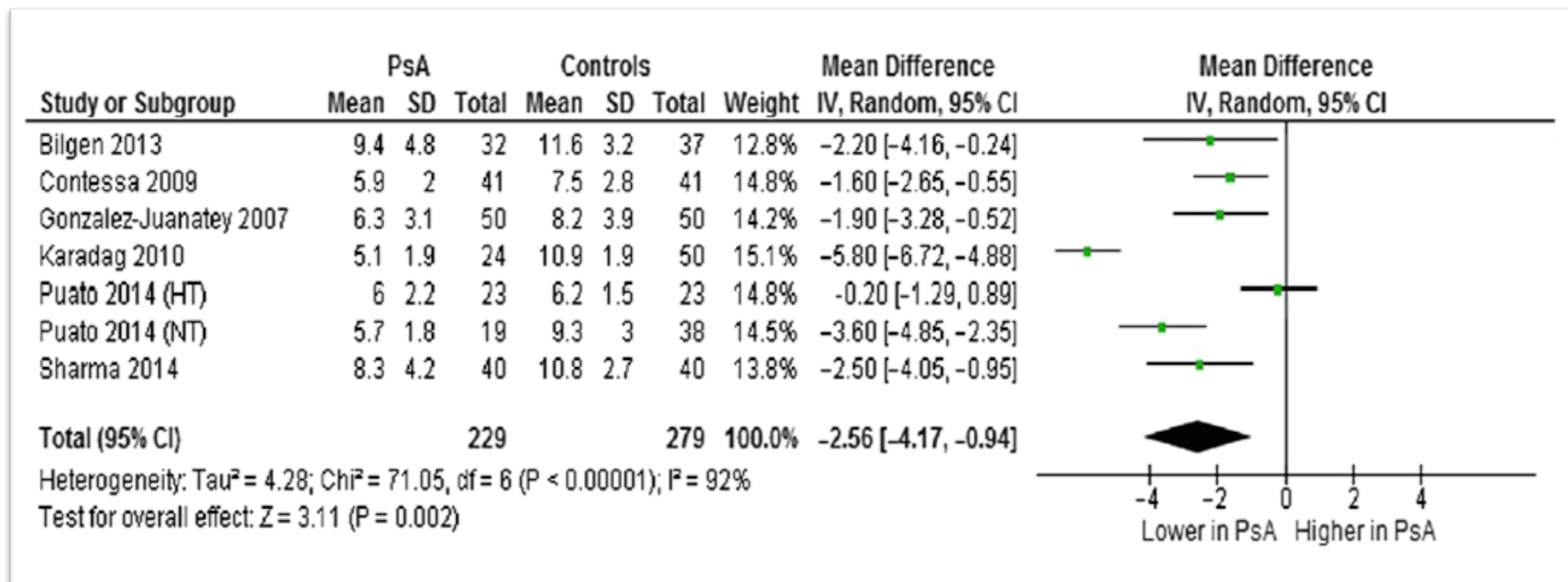
A CAC in psoriasis by risk factors



B CAC in type 2 diabetes by risk factors

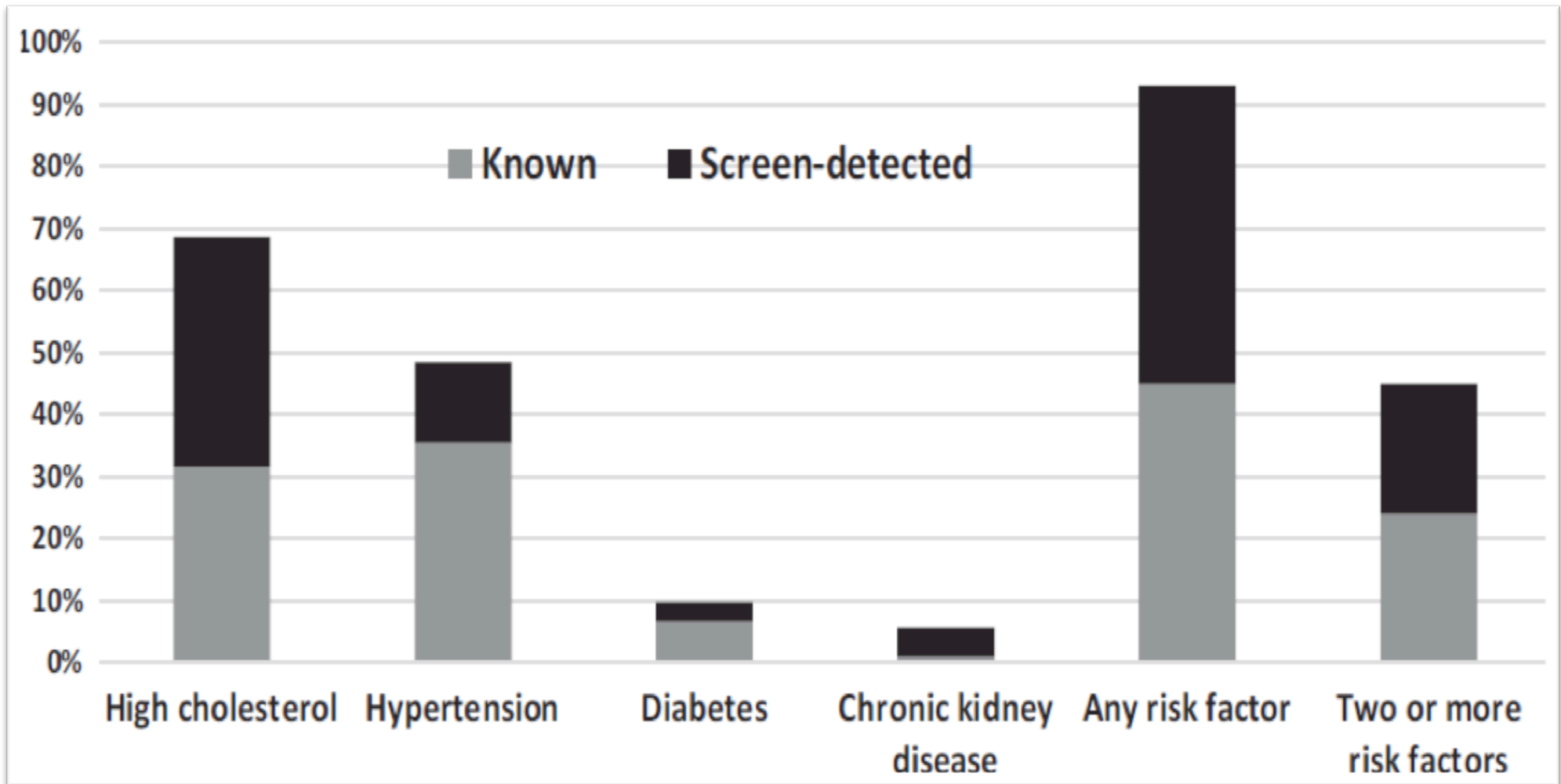


Flow-mediated dilation (FMD) in psoriatic arthritis patients and controls



Di Minno MND et Al., *Annals of Medicine*, 2015;1–8

Proportion of Identification and Management of Psoriasis Associated Comorbidity (IMPACT) study participants with known and screen-detected CVD risk factors



Data are proportions of IMPACT study participants. 'Known' is the sum of (i) self-report, (ii) medical or nursing staff knowing about this RF and (iii) medication for this RF. HBP was defined as SBP \geq 140 mmHg or DPB \geq 90 mmHg. High cholesterol was defined as T-chol \geq 5 mmol/L. Diabetes was defined by high glycated Hb \geq 48 mmol/mol. CKD was defined by low estimated GFR $<$ 60 mL/min.

Cardiovascular disease in patients with psoriasis: key point

- Psoriasis is a *systemic inflammatory skin disorder* associated with a significantly increased of *CV risk profile*
- Traditional CV risk scores *underestimates* the CV risk in patients with psoriasis.
- *Systemic inflammation* is probably involved in the genesis of atherosclerosis and CV diseases associated with psoriasis.
- A significant *under-treatment* of CV risk factors is an issue in patients with psoriasis compared with the general population
- *Anti-psoriatic treatment* may modify CV risk, however, results from randomized clinical trials are awaited
- The importance of screening and effective management of CV risk factors, should be emphasized for patients with psoriasis