Latest updates: Aus CVD guidelines

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Consultant Cardiologist, Royal Prince Alfred Hospital, Sydney
Consultant in Cardiovascular MRI, Royal Prince Alfred Hospital, Children's Hospital Westmead Sydney

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Always was and always will be….

Acknowledgement of country

- I acknowledge the Traditional Custodians of Country throughout Australia and their connections to land, sea, and community.
- We pay our respect to their Elders past and present and extend that respect to all Aboriginal and Torres Strait Islander Peoples today.

CVD in Australia

The burden of CVD

- Heart disease remains the single leading cause of death in Australia
- Over 42,700 deaths (25% of all deaths) attributed to CVD in 2021[1]
- In 2017-18, just over 4 million Australians had a long-term CVD condition[2]
- In 2018–19, an estimated 8.7% of total allocated expenditure in the Australian health system ($11.8 billion) was attributed to CVD
- New AIHW report shows that the death rate of coronary heart disease in Australia increased for the first time in decades in 2021[3]

1. *AIHW, Heart, stroke and vascular disease – Australian facts, Web report. Last updated 30 June 2023*
2. *ABS National Health Survey: First results, 2017-18, Australia*
3. *AIHW, Deaths in Australia – Web report. Last updated: 11 July 2023*

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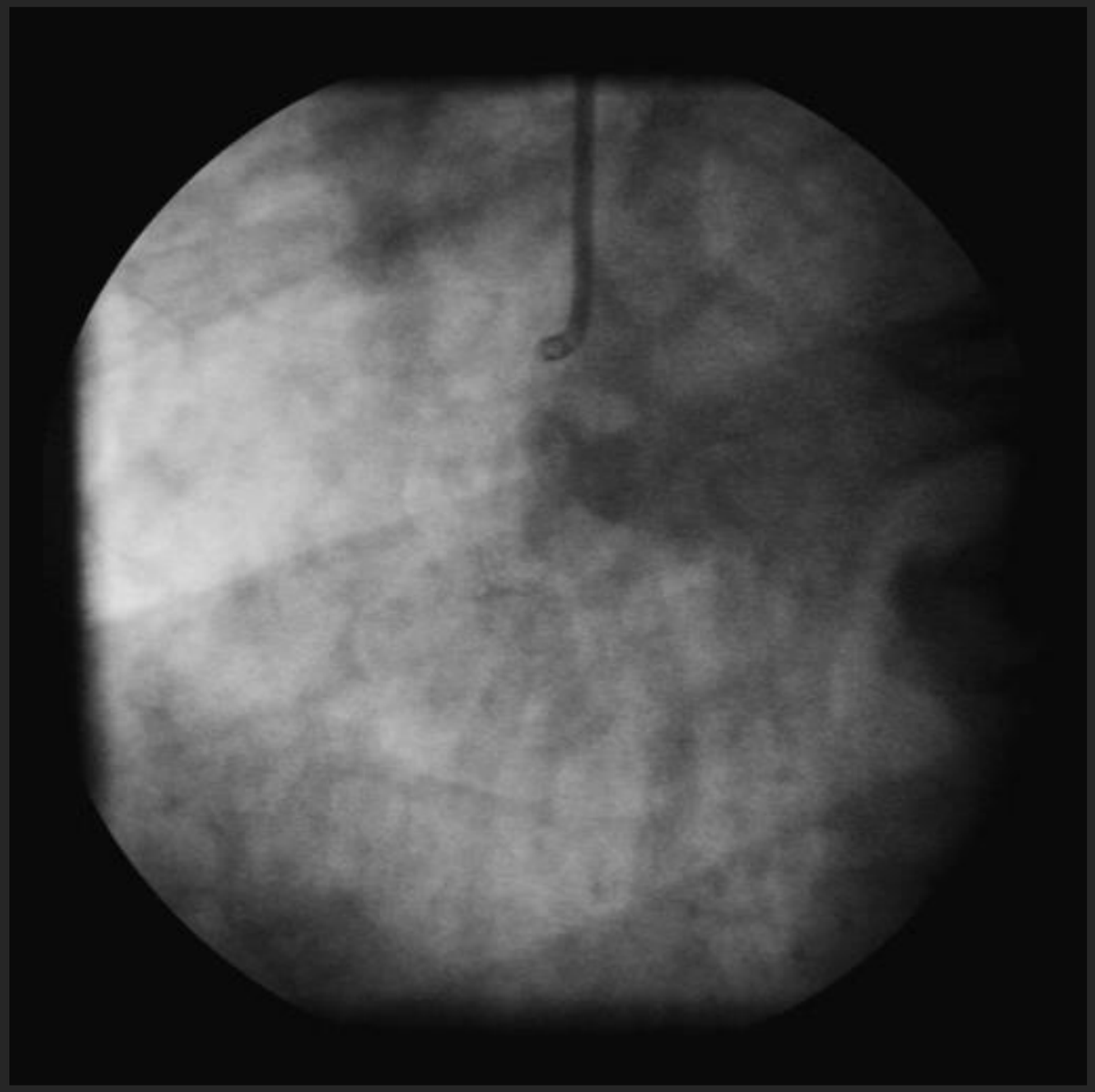
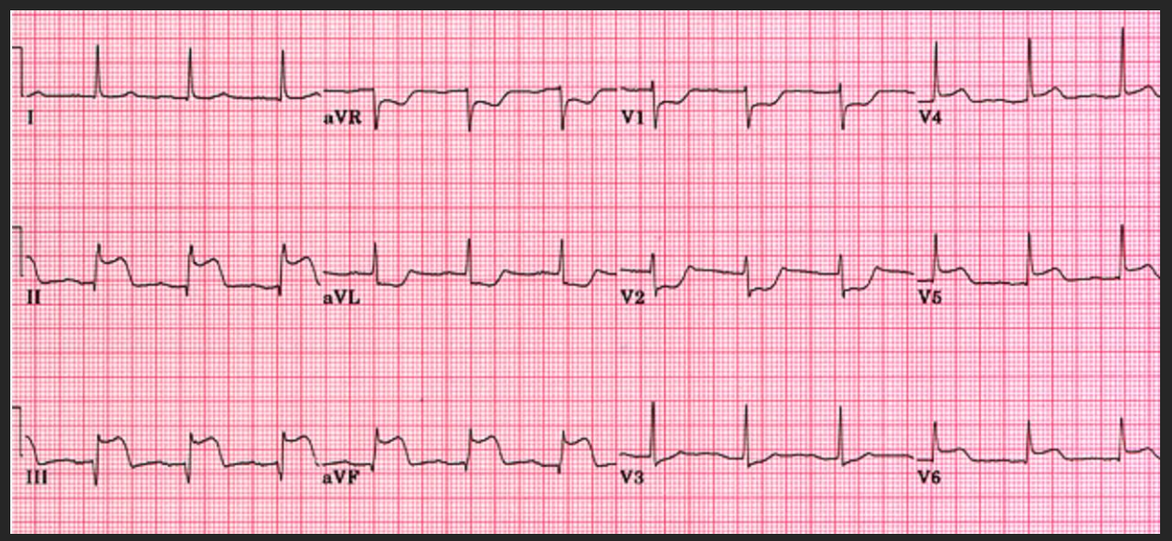
Acute Coronary Disease

60yo MALE WITH FIRST PRESENTATION OF CHEST PAIN





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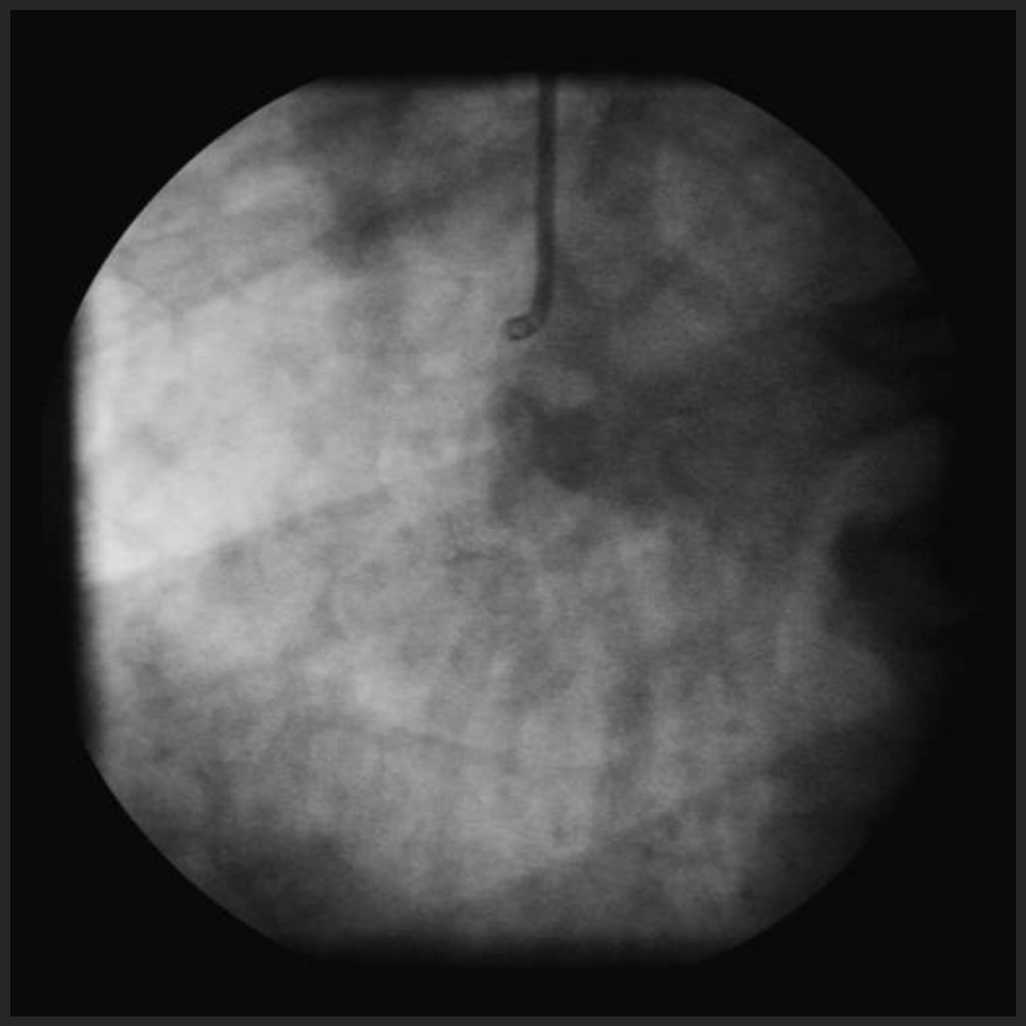
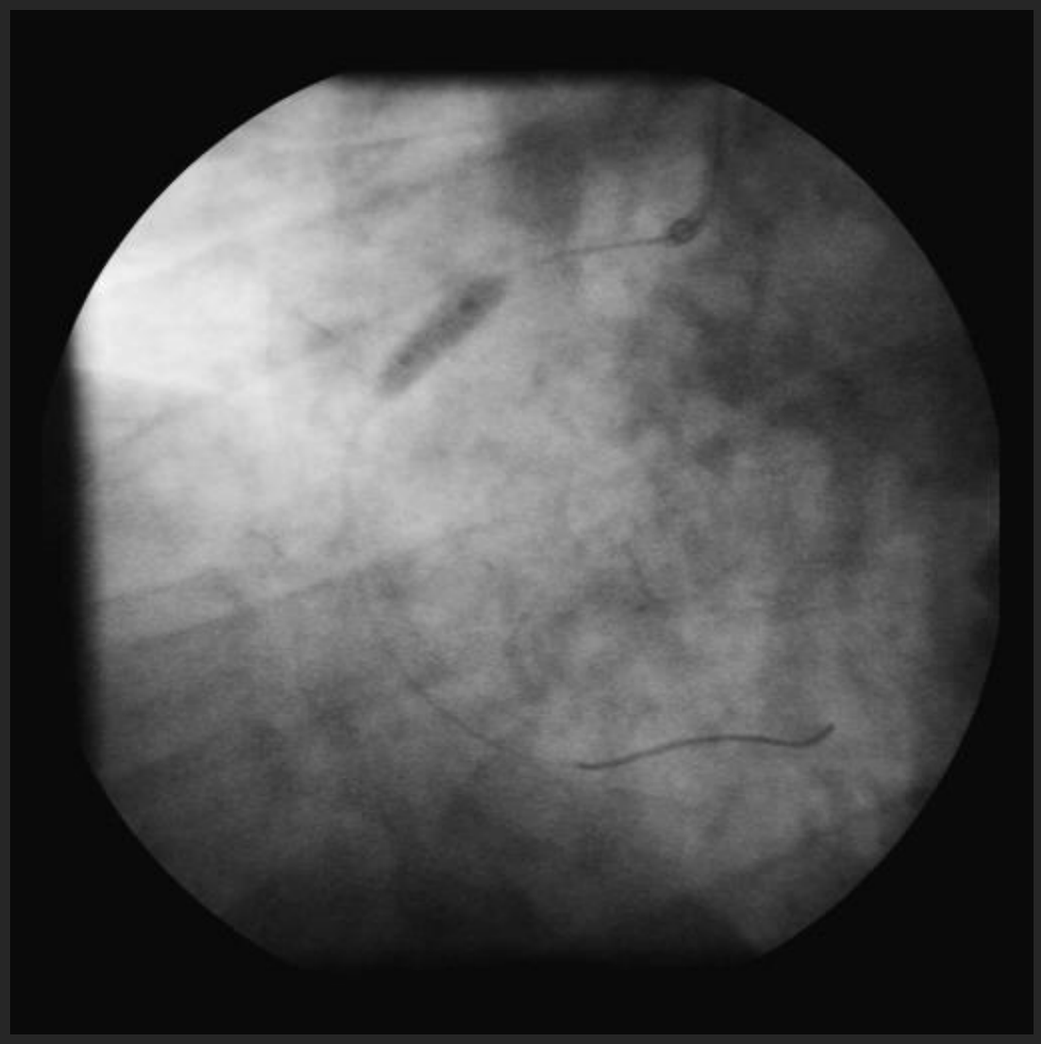
Acute Coronary Disease

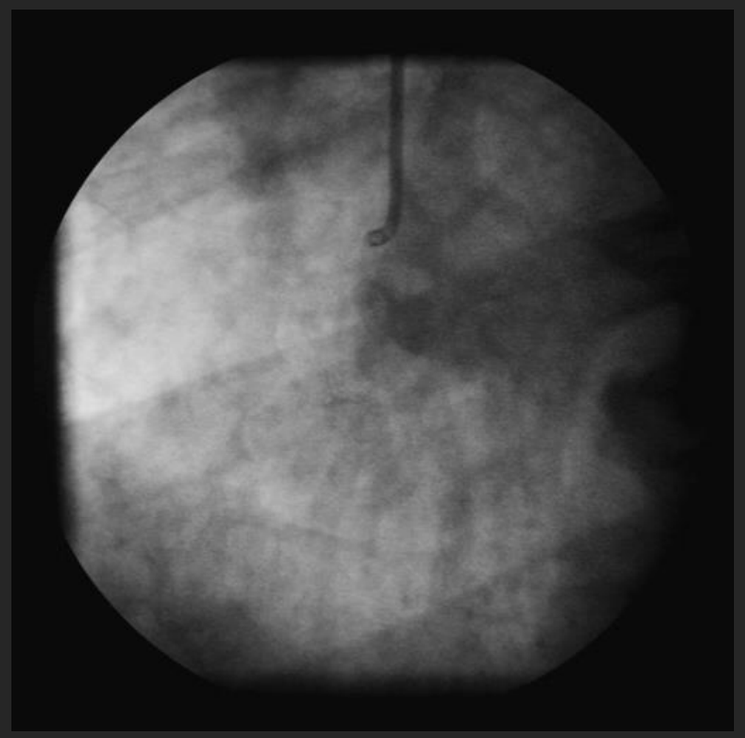
60yo MALE WITH FIRST PRESENTATION OF CHEST PAIN

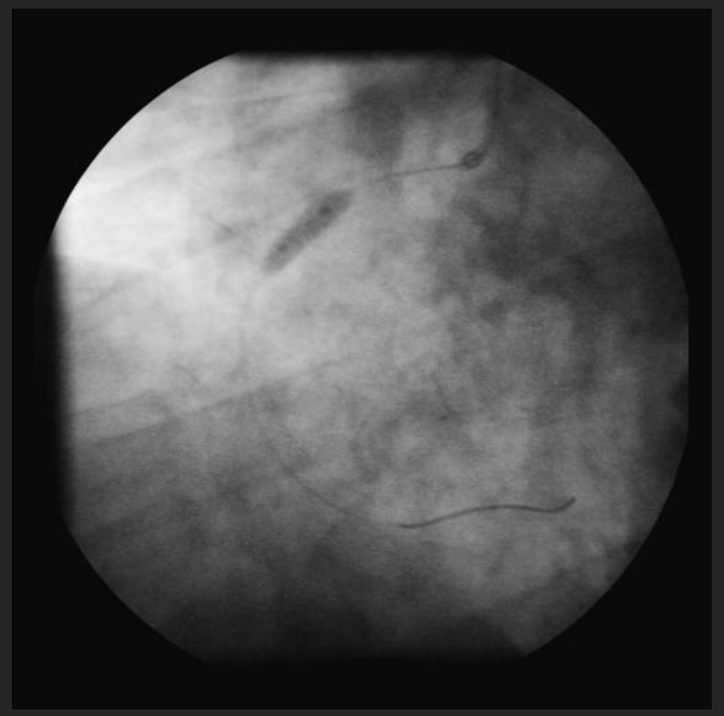


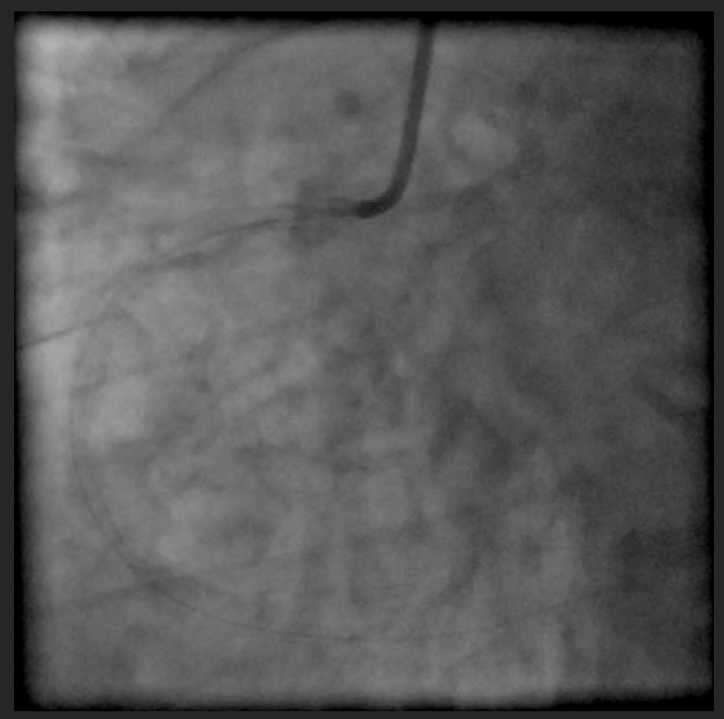


“Open Artery” hypothesis

60yo MALE WITH FIRST PRESENTATION OF CHEST PAIN







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Ischemia Trial

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 APRIL 9, 2020 VOL. 382 NO. 15

Initial Invasive or Conservative Strategy for Stable Coronary Disease

D.J. Maron, J.S. Hochman, H.R. Reynolds, S. Bangalore, S.M. O'Brien, W.E. Boden, B.R. Chaitman, R. Senior, J. López-Sendón, K.P. Alexander, R.D. Lopes, L.J. Shaw, J.S. Berger, J.D. Newman, M.S. Sidhu, S.G. Goodman, W. Ruzyllo, G. Gosselin, A.P. Maggioni, H.D. White, B. Bhargava, J.K. Min, G.B.J. Mancini, D.S. Berman, M.H. Picard, R.Y. Kwong, Z.A. Ali, D.B. Mark, J.A. Spertus, M.N. Krishnan, A. Elghamaz, N. Moorthy, W.A. Hueb, M. Demkow, K. Mavromatis, O. Bockeria, J. Peteiro, T.D. Miller, H. Szwed, R. Doerr, M. Keltai, J.B. Selvanayagam, P.G. Steg, C. Held, S. Kohsaka, S. Mavromichalis, R. Kirby, N.O. Jeffries, F.E. Harrell, Jr., F.W. Rockhold, S. Broderick, T.B. Ferguson, Jr., D.O. Williams, R.A. Harrington, G.W. Stone, and Y. Rosenberg, for the ISCHEMIA Research Group*

CONCLUSIONS

Among patients with stable coronary disease and moderate or severe ischemia, we did not find evidence that an initial invasive strategy, as compared with an initial conservative strategy, reduced the risk of ischemic cardiovascular events or death from any cause over a median of 3.2 years. The trial findings were sensitive to the definition of myocardial infarction that was used. (Funded by the National Heart, Lung, and Blood Institute and others; ISCHEMIA ClinicalTrials.gov number, NCT01471522.)

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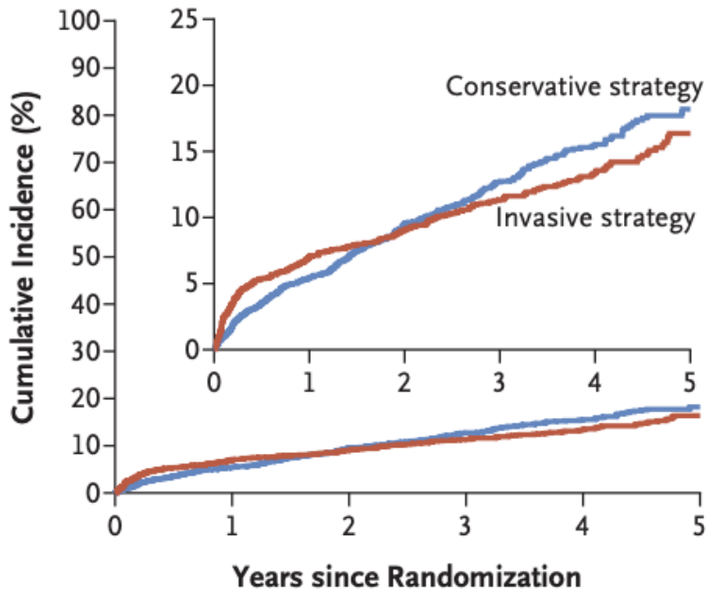
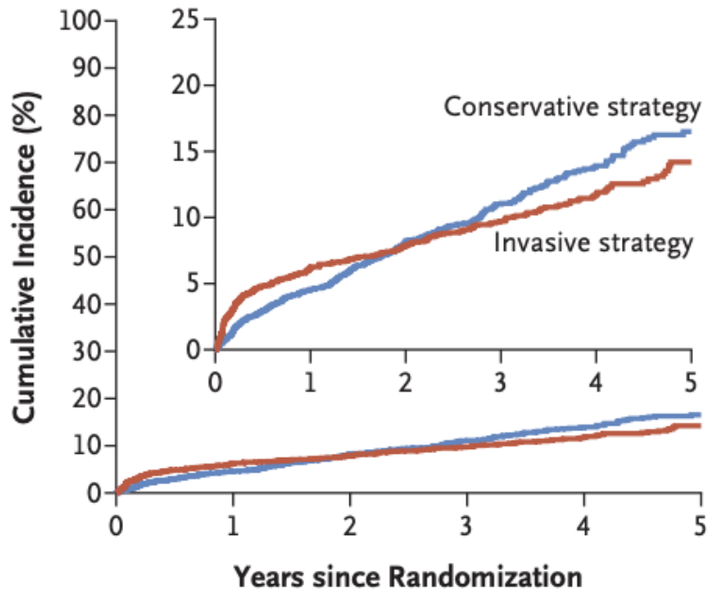
Medical therapy works!

A **Primary Composite Outcome**



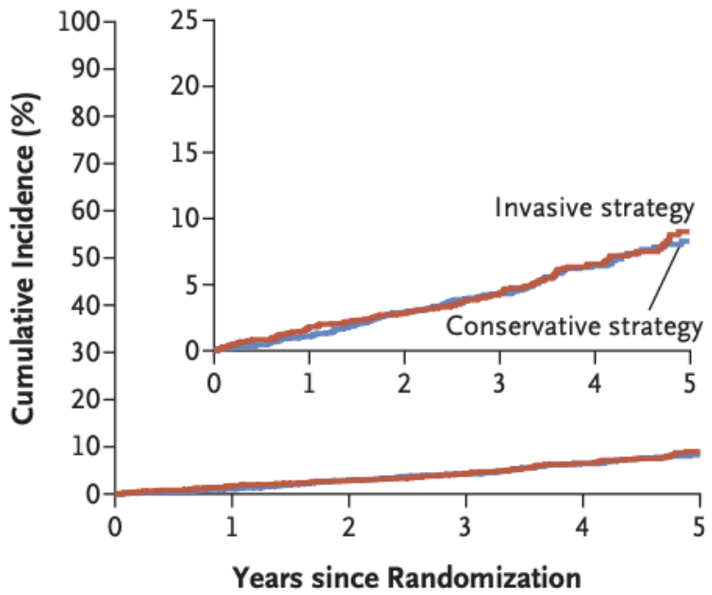
No. at Risk						
Conservative strategy	2591	2431	1907	1300	733	293
Invasive strategy	2588	2364	1908	1291	730	271

B **Death from Cardiovascular Causes or Myocardial Infarction**



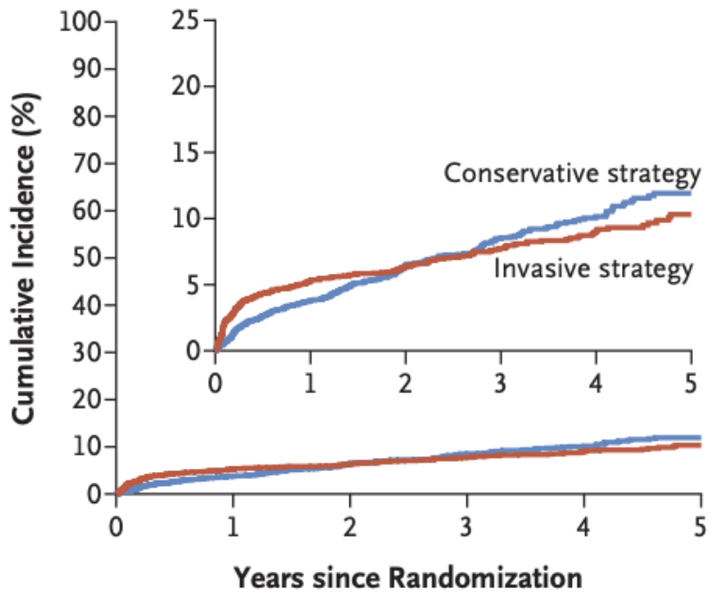
No. at Risk						
Conservative strategy	2591	2453	1933	1325	746	298
Invasive strategy	2588	2383	1933	1314	742	282

C **Death from Any Cause**



No. at Risk						
Conservative strategy	2591	2548	2065	1445	844	349
Invasive strategy	2588	2518	2061	1431	827	317

D **Myocardial Infarction**



No. at Risk						
Conservative strategy	2591	2452	1931	1321	747	298
Invasive strategy	2588	2379	1931	1313	742	283

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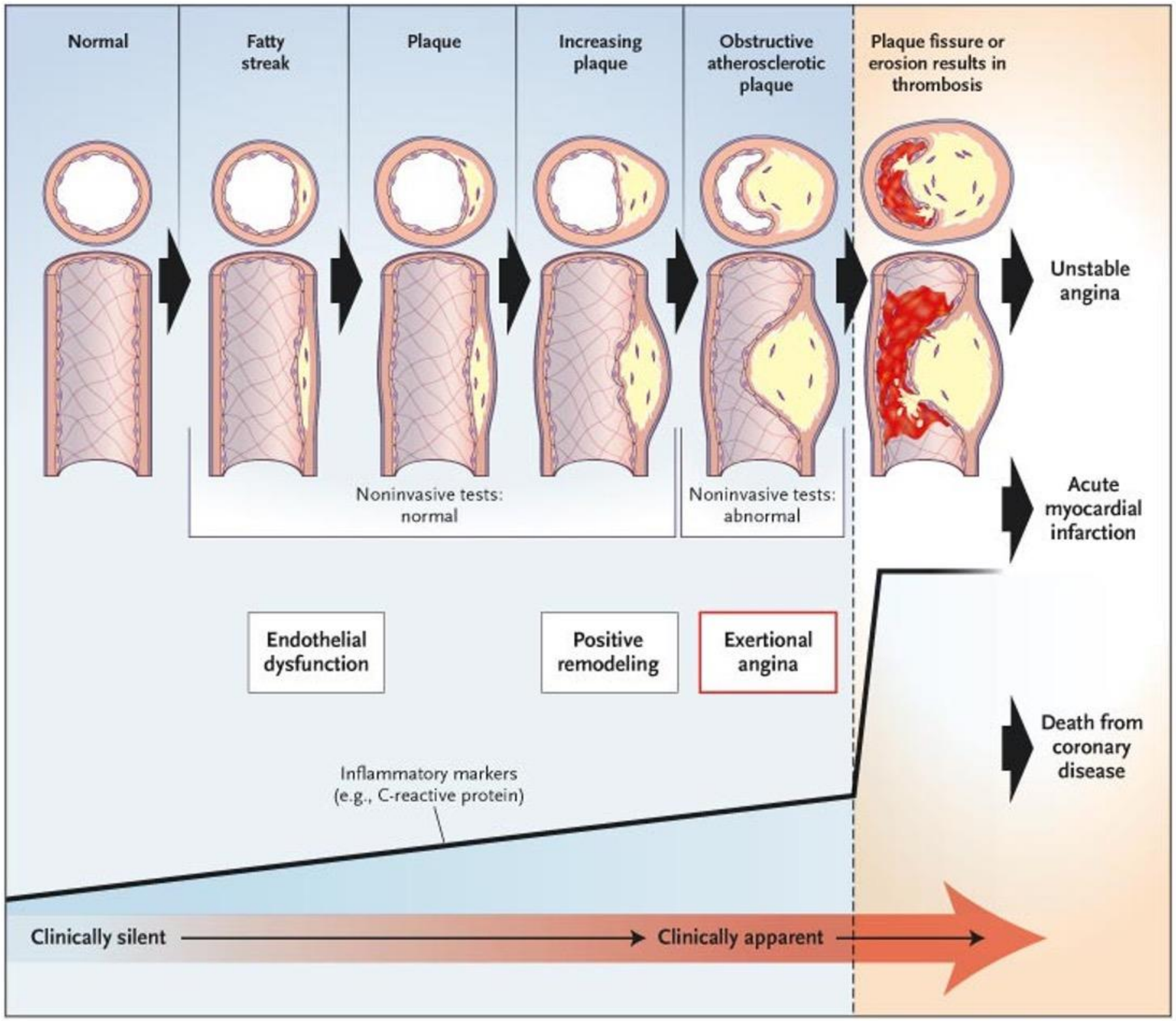
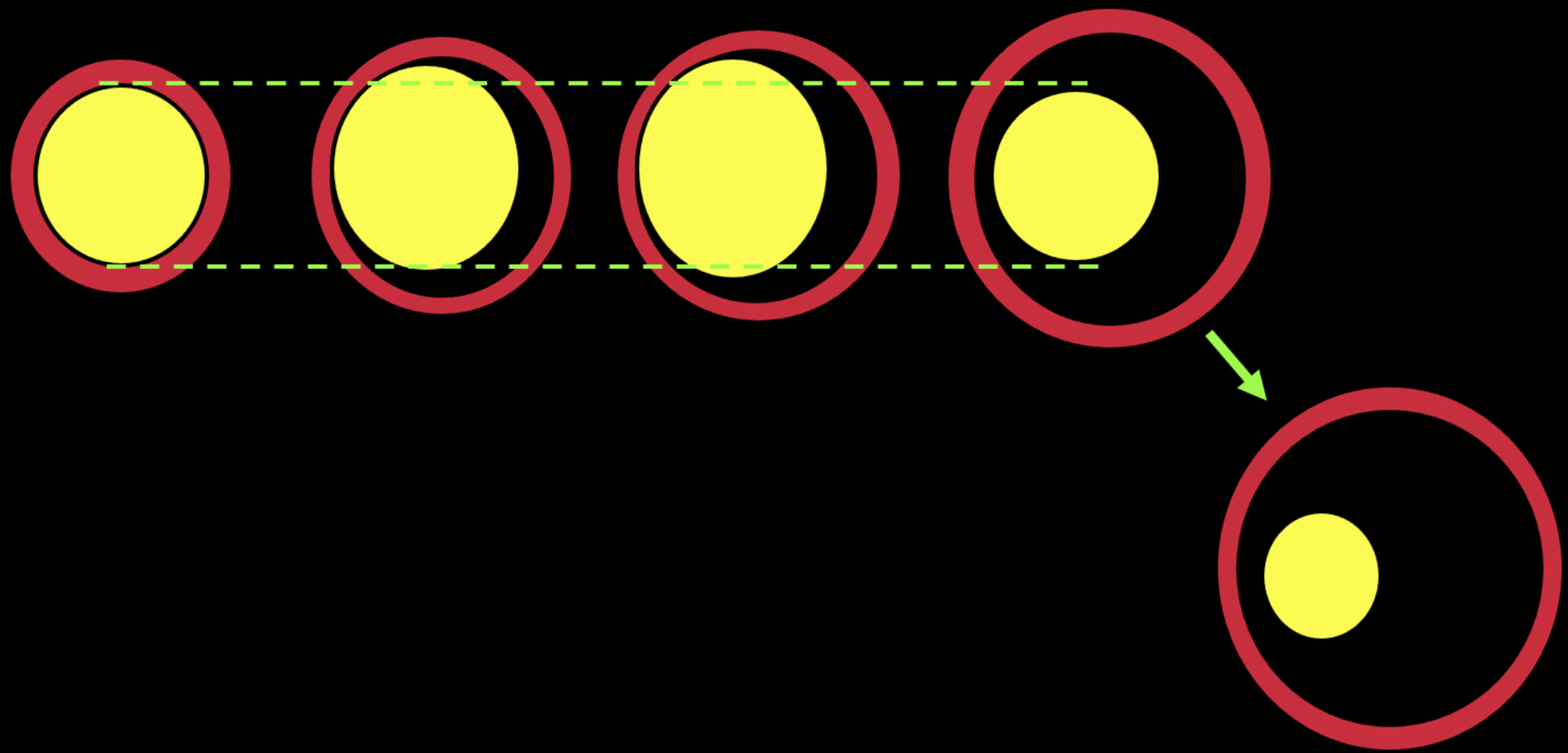
Life long process of atherosclerosis



Arterial Remodelling



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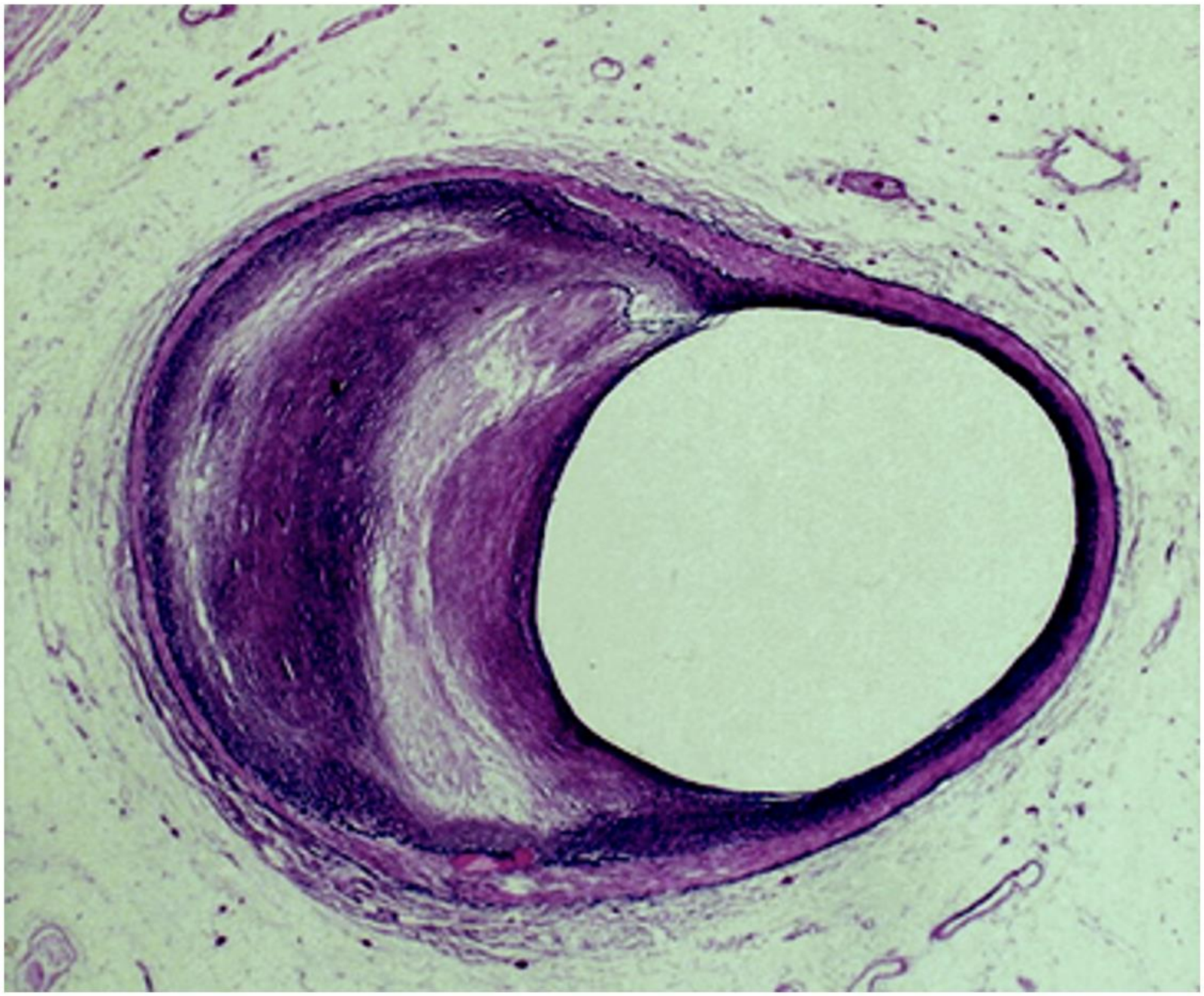
Glagov Phenomenon



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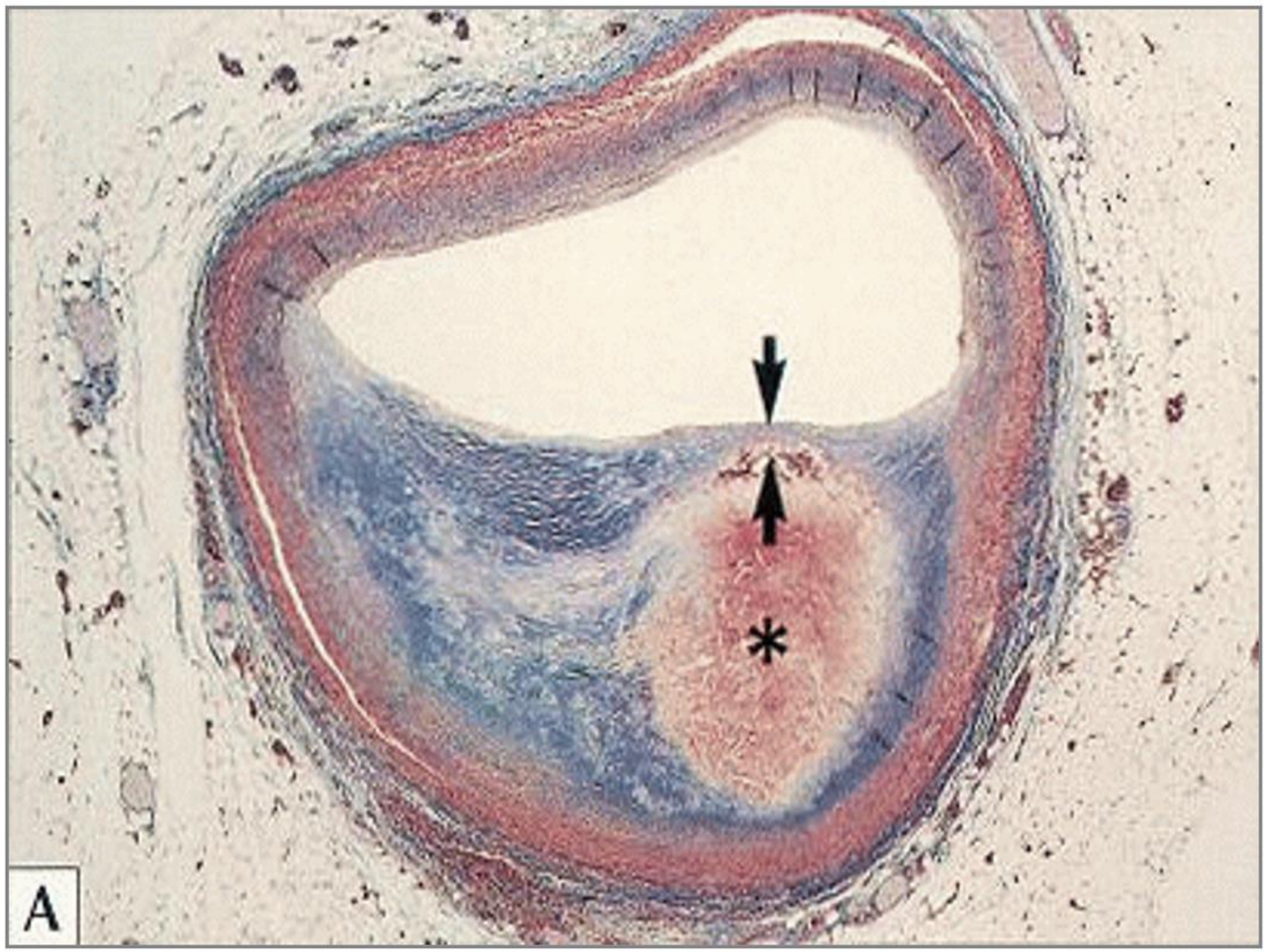
Vulnerable Plaque



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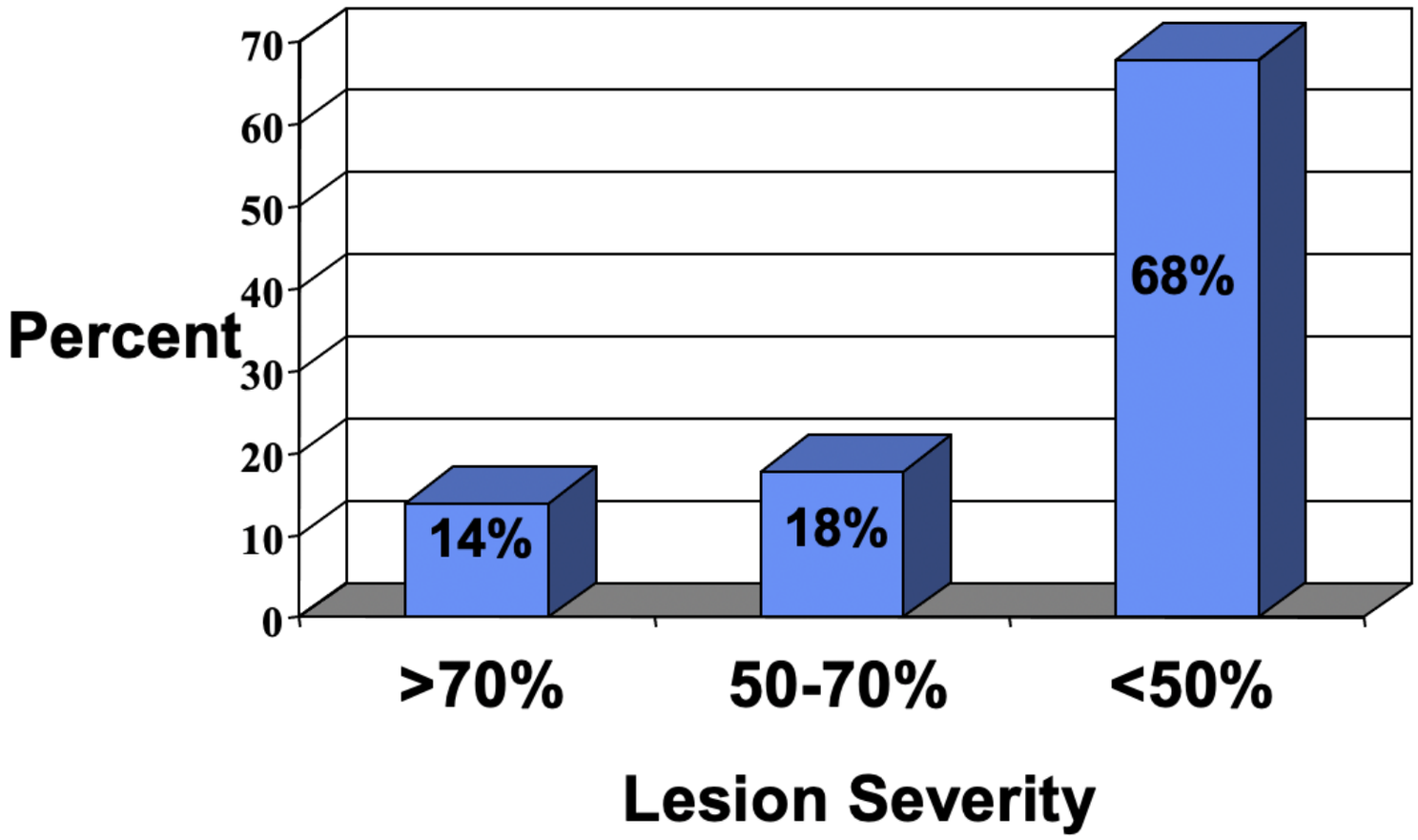
Plaque severity and events

Severity of Coronary Plaques before MI



Ambrose et al. *J Am Coll Cardiol* 1988;12:56-62
Little et al. *Circulation* 1988;78:1157-66
Nobuyoshi et al. *J Am Coll Cardiol* 1991;18:904-10
Giroud et al. *Am J Cardiol* 1992;62:729-32

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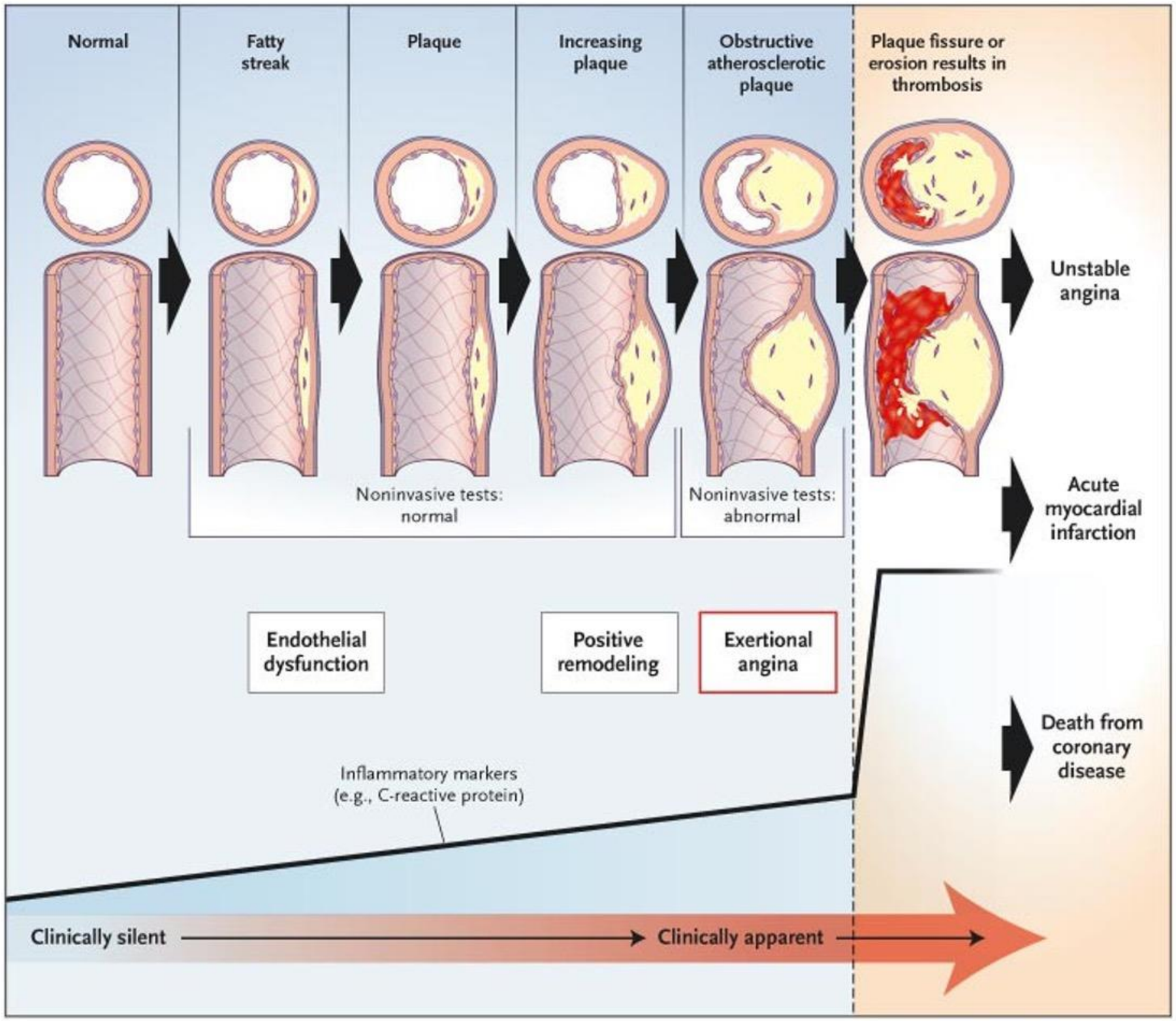
Life long process of atherosclerosis



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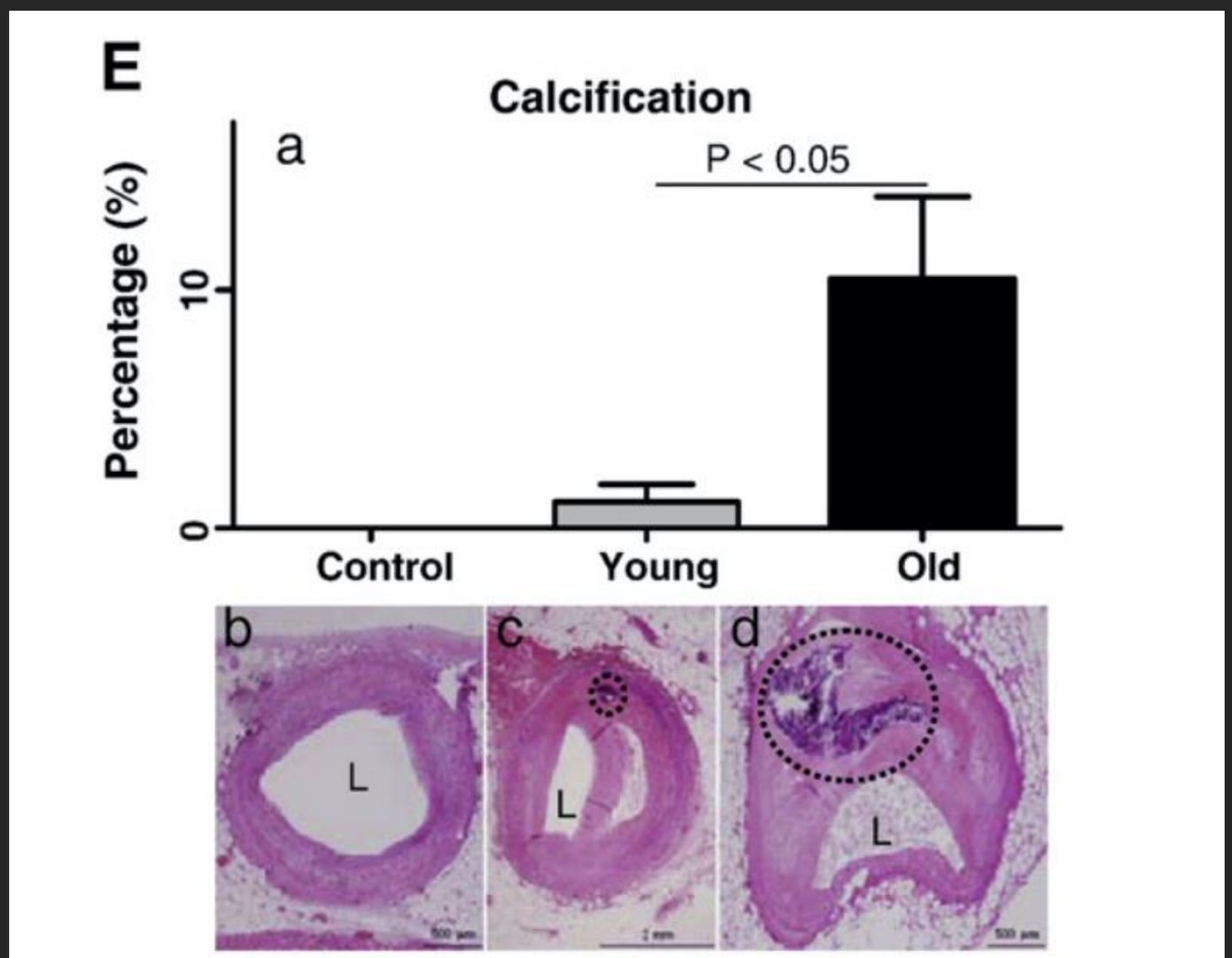
Age related inflammatory characteristics of coronary artery disease

Elias Najib [a], Rajesh Puranik [a,b,d], Johan Duflou [c], Qiong Xia [a], Shisan Bao [a,*]



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Age related inflammatory characteristics of coronary artery disease

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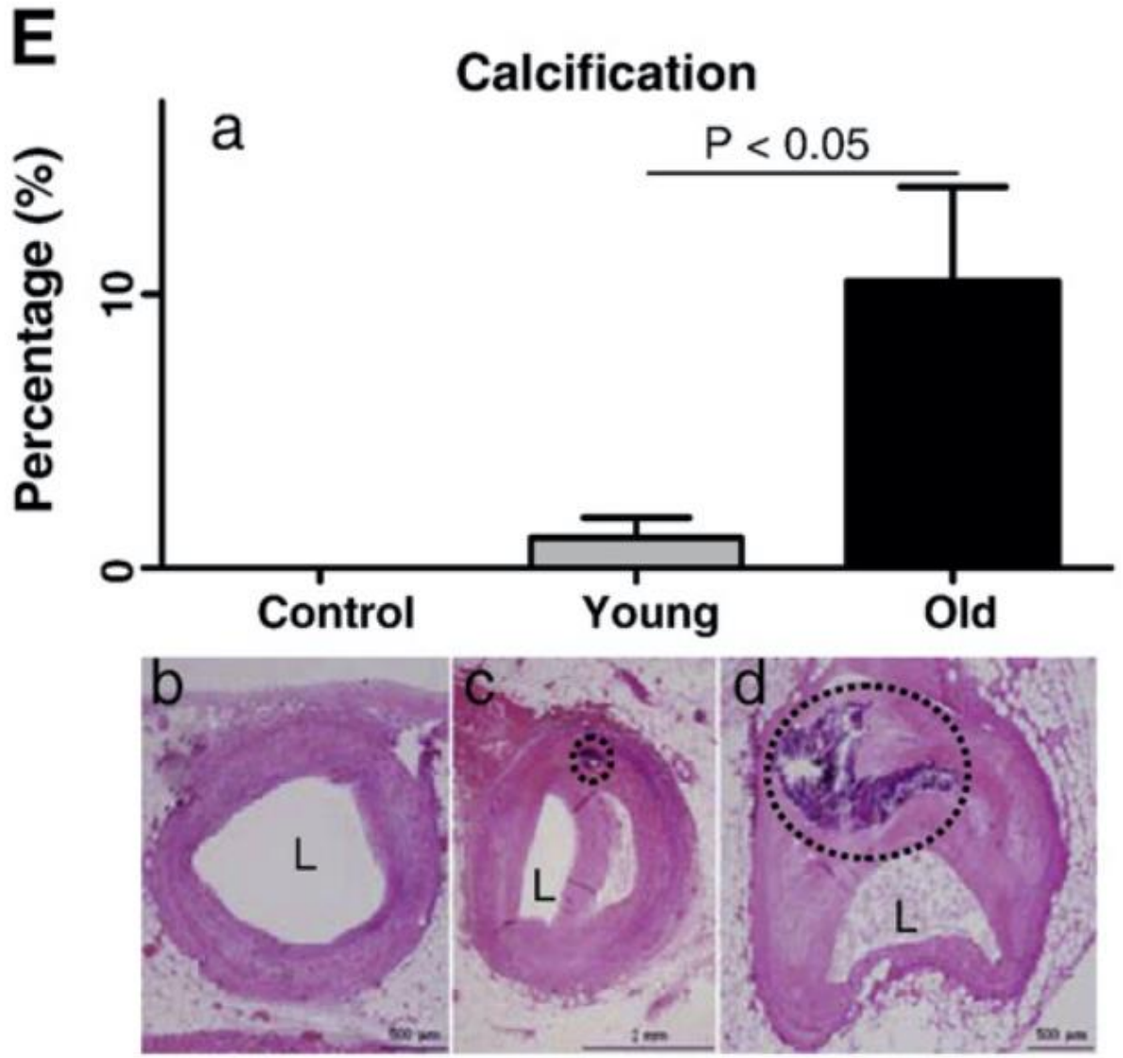
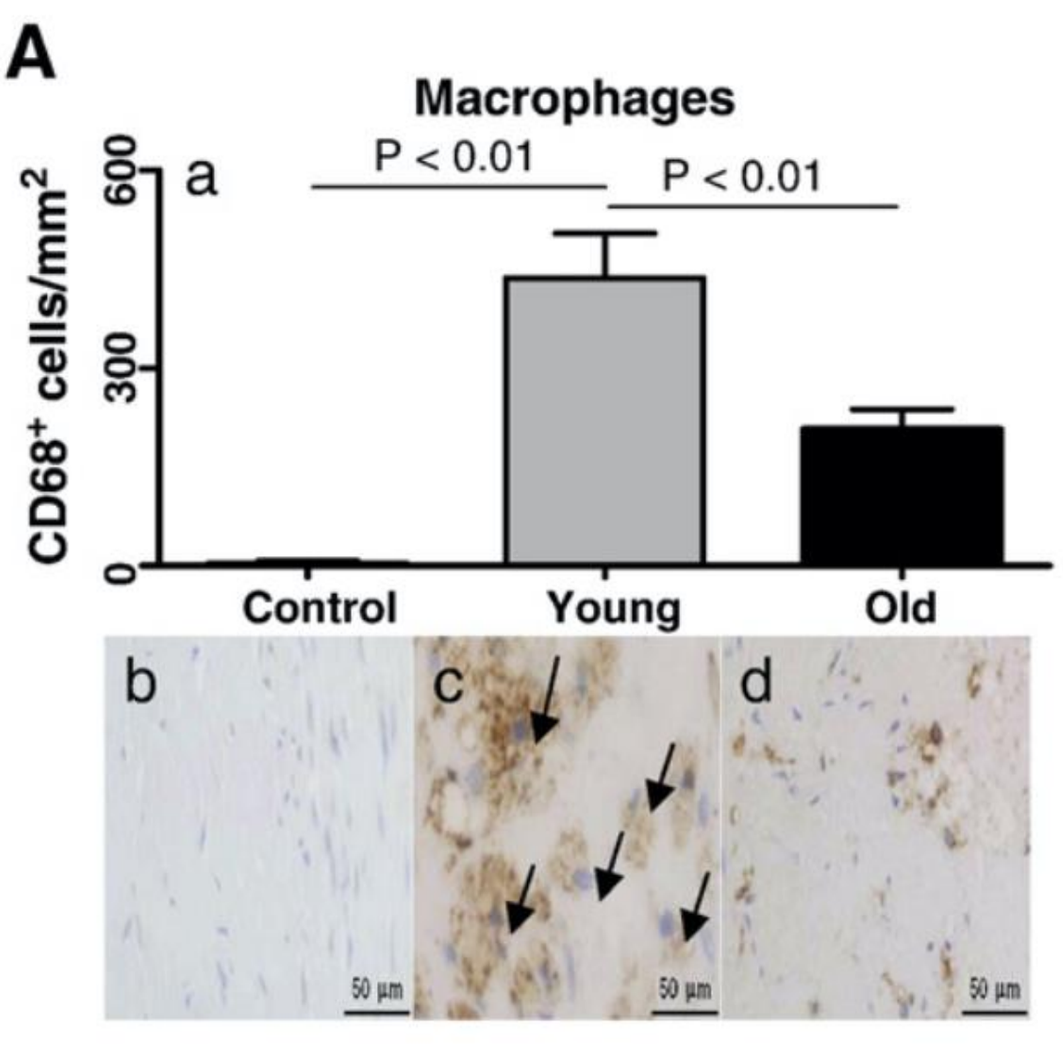




Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case-control study

*Salim Yusuf, Steven Hawken, Stephanie Ôunpuu, Tony Dans, Alvaro Avezum, Fernando Lanas, Matthew McQueen, Andrzej Budaj, Prem Pais, John Varigos, Liu Lisheng, on behalf of the INTERHEART Study Investigators**

Lancet 2004; 364: 937–52

Published online
September 3, 2004

In conclusion, our study has shown that nine easily measured risk factors are associated with more than 90% of the risk of an acute myocardial infarction in this large global case-control study. These results are consistent across all geographic regions and ethnic groups of the world, men and women, and young and old. Although priorities can differ between geographic regions because of variations in prevalence of risk

Interpretation Abnormal lipids, smoking, hypertension, diabetes, abdominal obesity, psychosocial factors, consumption of fruits, vegetables, and alcohol, and regular physical activity account for most of the risk of myocardial infarction worldwide in both sexes and at all ages in all regions. This finding suggests that approaches to prevention can be based on similar principles worldwide and have the potential to prevent most premature cases of myocardial infarction.

Risk factor	Sex	Control (%)	Case (%)	Odds ratio (99% CI)	PAR (99% CI)
Current smoking	F	9·3	20·1	2·86 (2·36–3·48)	15·8% (12·9–19·3)
	M	33·0	53·1	3·05 (2·78–3·33)	44·0% (40·9–47·2)
Diabetes	F	7·9	25·5	4·26 (3·51–5·18)	19·1% (16·8–21·7)
	M	7·4	16·2	2·67 (2·36–3·02)	10·1% (8·9–11·4)
Hypertension	F	28·3	53·0	2·95 (2·57–3·39)	35·8% (32·1–39·6)
	M	19·7	34·6	2·32 (2·12–2·53)	19·5% (17·7–21·5)
Abdominal obesity	F	33·3	45·6	2·26 (1·90–2·68)	35·9% (28·9–43·6)
	M	33·3	46·5	2·24 (2·03–2·47)	32·1% (28·0–36·5)
Psychosocial index	F	–	–	3·49 (2·41–5·04)	40·0% (28·6–52·6)
	M	–	–	2·58 (2·11–3·14)	25·3% (18·2–34·0)
Fruits/veg	F	50·3	39·4	0·58 (0·48–0·71)	17·8% (12·9–24·1)
	M	39·6	34·7	0·74 (0·66–0·83)	10·3% (6·9–15·2)
Exercise	F	16·5	9·3	0·48 (0·39–0·59)	37·3% (26·1–50·0)
	M	20·3	15·8	0·77 (0·69–0·85)	22·9% (16·9–30·2)
Alcohol	F	11·2	6·3	0·41 (0·32–0·53)	46·9% (34·3–60·0)
	M	29·1	29·6	0·88 (0·81–0·96)	10·5% (6·1–17·5)
ApoB/ApoA1 ratio	F	14·1	27·0	4·42 (3·43–5·70)	52·1% (44·0–60·2)
	M	21·9	35·5	3·76 (3·23–4·38)	53·8% (48·3–59·2)

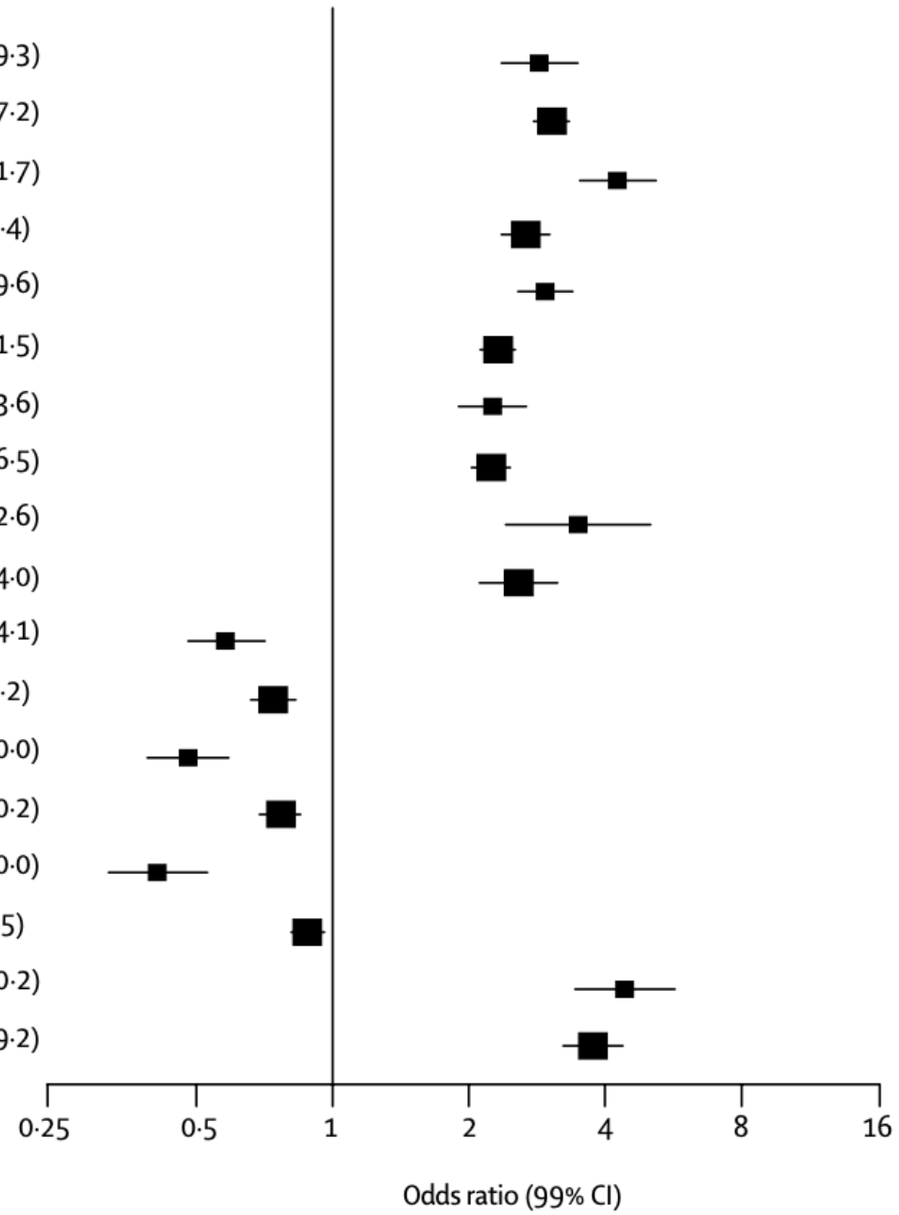


Figure 4: **Association of risk factors with acute myocardial infarction in men and women after adjustment for age, sex, and geographic region**
For this and subsequent figures, the odds ratios are plotted on a doubling scale. Prevalence cannot be calculated for psychosocial factors because it is derived from a model.

Interpretation Abnormal lipids, smoking, hypertension, diabetes, abdominal obesity, psychosocial factors, consumption of fruits, vegetables, and alcohol, and regular physical activity account for most of the risk of myocardial infarction worldwide in both sexes and at all ages in all regions. This finding suggests that approaches to prevention can be based on similar principles worldwide and have the potential to prevent most premature cases of myocardial infarction.

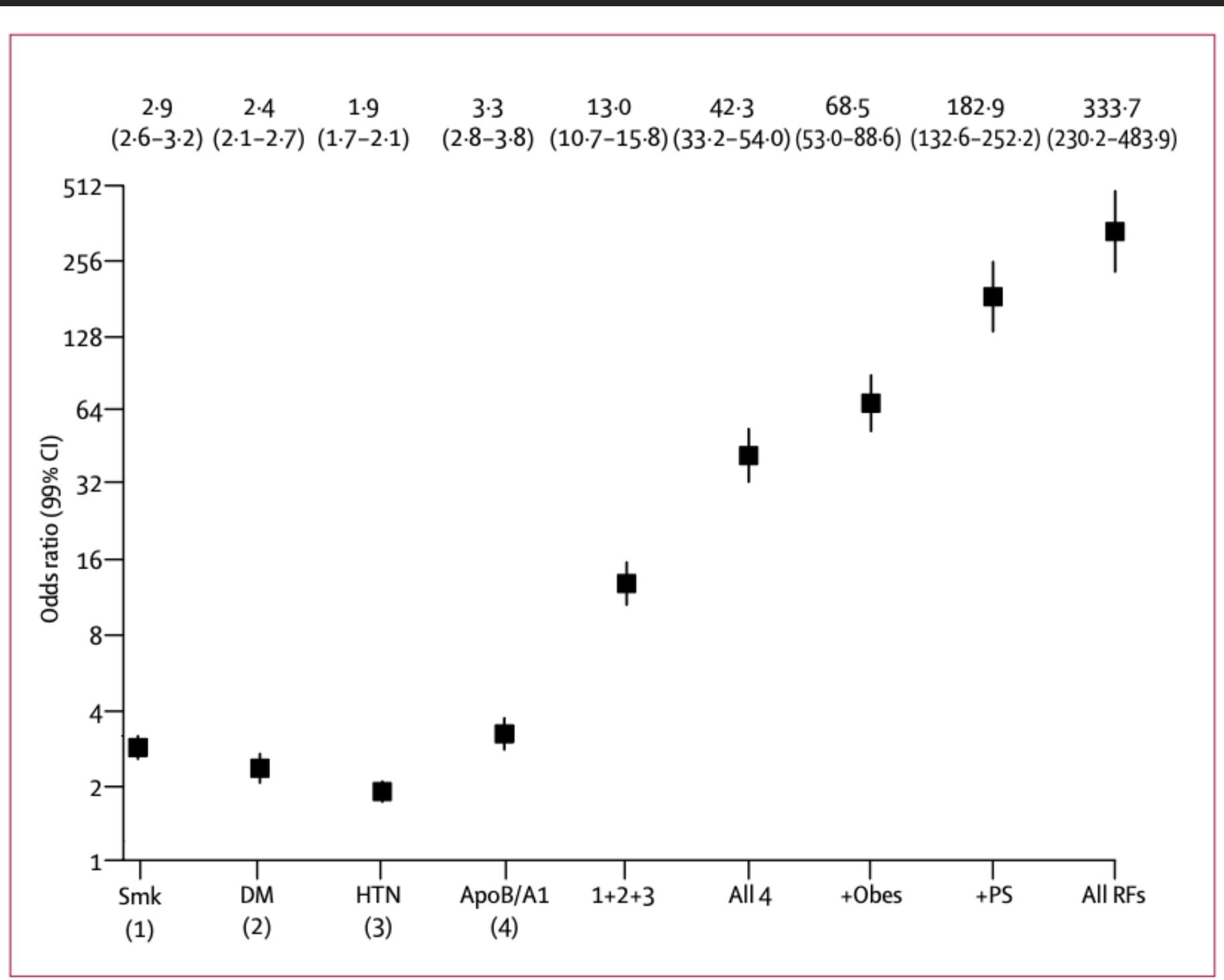
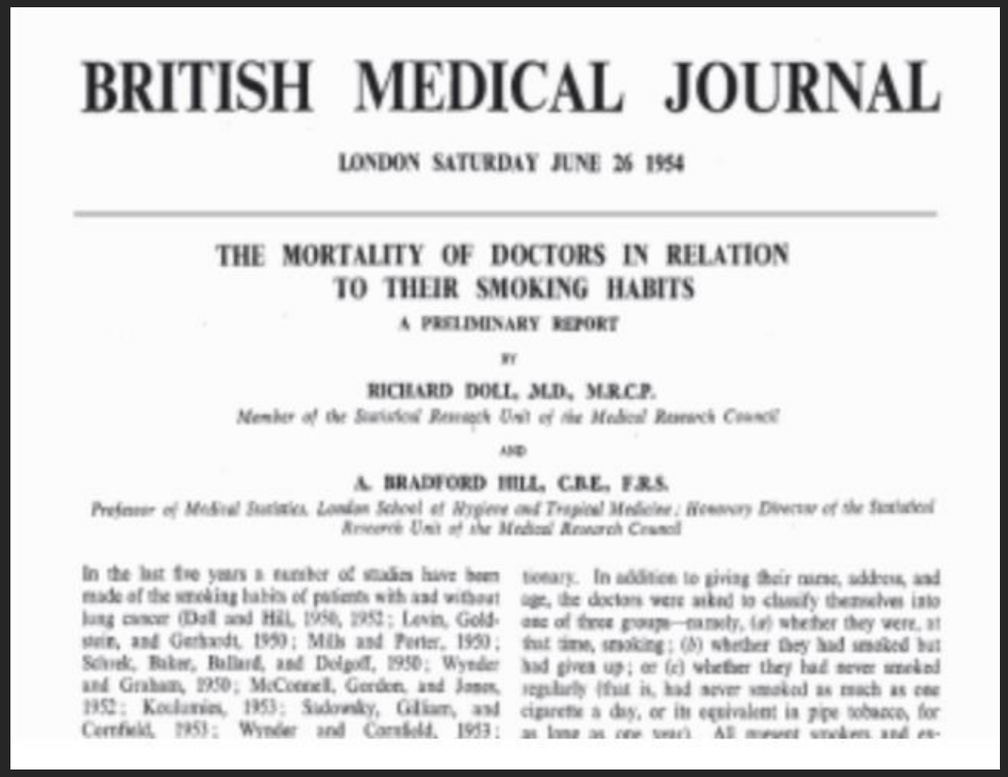


Figure 2: **Risk of acute myocardial infarction associated with exposure to multiple risk factors**

Smoking as a risk factor

Introduced model of smoking, using and marketing tobacco and it's impact on health and well-being **IS THE ISSUE**

British Doctors study, Doll and Hill et al



BRITISH MEDICAL JOURNAL

LONDON SATURDAY JUNE 26 1954

THE MORTALITY OF DOCTORS IN RELATION TO THEIR SMOKING HABITS

A PRELIMINARY REPORT

BY

RICHARD DOLL, M.D., M.R.C.P.

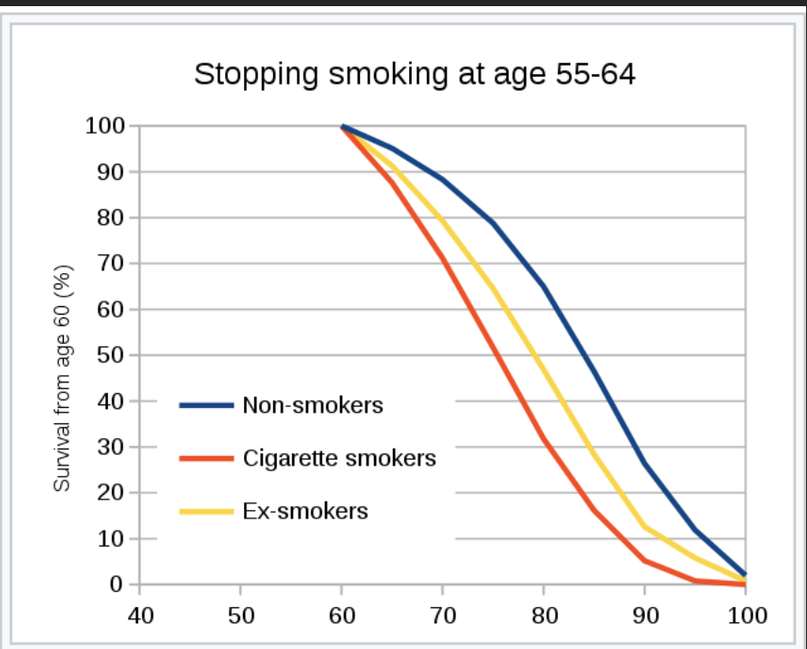
Member of the Statistical Research Unit of the Medical Research Council

AND

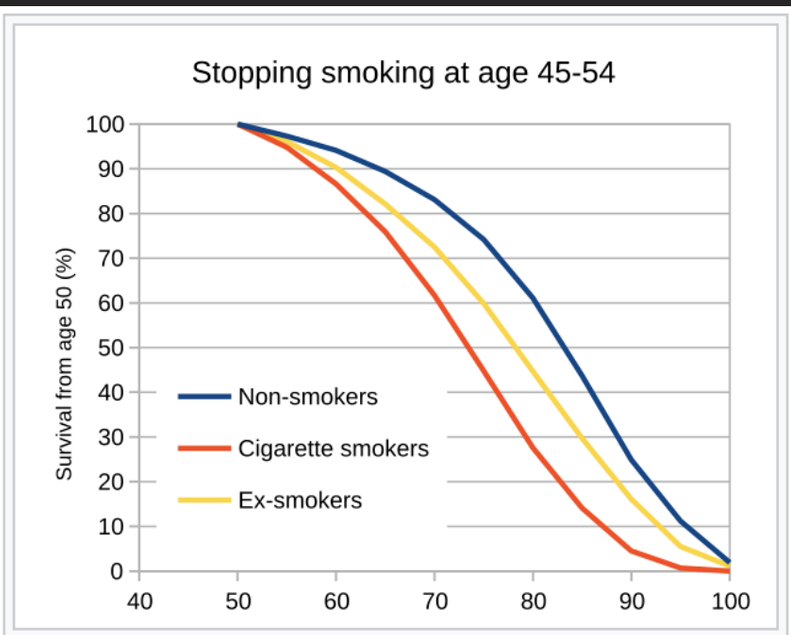
A. BRADFORD HILL, C.B.E., F.R.S.

Professor of Medical Statistics, London School of Hygiene and Tropical Medicine; Honorary Director of the Statistical Research Unit of the Medical Research Council

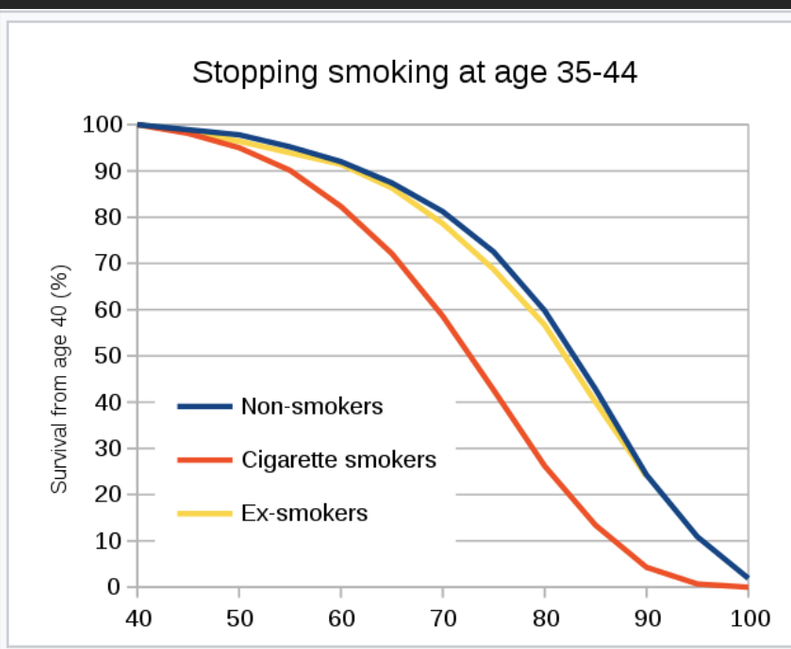
In the last five years a number of studies have been made of the smoking habits of patients with and without lung cancer (Doll and Hill, 1950, 1952; Levin, Goldstein, and Gerhardt, 1950; Mills and Porter, 1950; Schrek, Baker, Ballard, and Dolgoff, 1950; Wynder and Graham, 1950; McConnell, Gordon, and Jones, 1952; Kreyberg, 1953; Sadowsky, Gilliam, and Cornfield, 1953; Wynder and Cornfield, 1953; tionary. In addition to giving their name, address, and age, the doctors were asked to classify themselves into one of three groups—namely, (*a*) whether they were, at first time, smoking; (*b*) whether they had smoked but had given up; or (*c*) whether they had never smoked regularly (that is, had never smoked as much as one cigarette a day, or its equivalent in pipe tobacco, for as long as one year). All present smokers and ex-



Survival from age 60 of non-smokers, cigarette smokers and ex-smokers who stopped smoking between 55 and 64 years old[1]

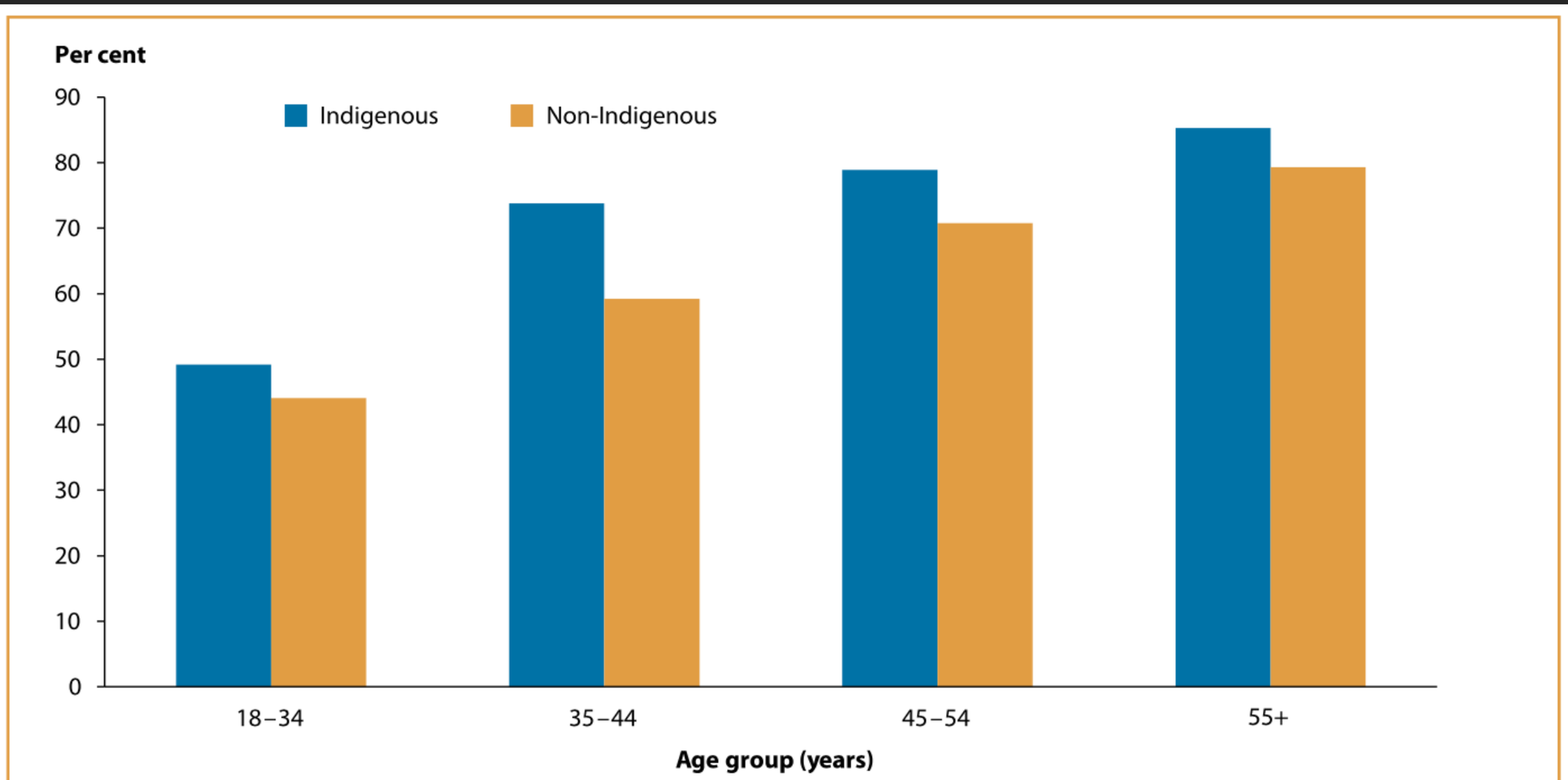


Survival from age 50 of non-smokers, cigarette smokers and ex-smokers who stopped smoking between 45 and 54 years old[1]



Survival from age 40 of non-smokers, cigarette smokers and ex-smokers who stopped smoking between 35 and 44 years old[1]

Dyslipidemia



Note: Data for this figure are shown in Table S4.17.

Source: ABS 2014b.

Figure 4.16: Age-specific prevalence rates of dyslipidaemia among people aged 18 and over, by Indigenous status, 2012–13

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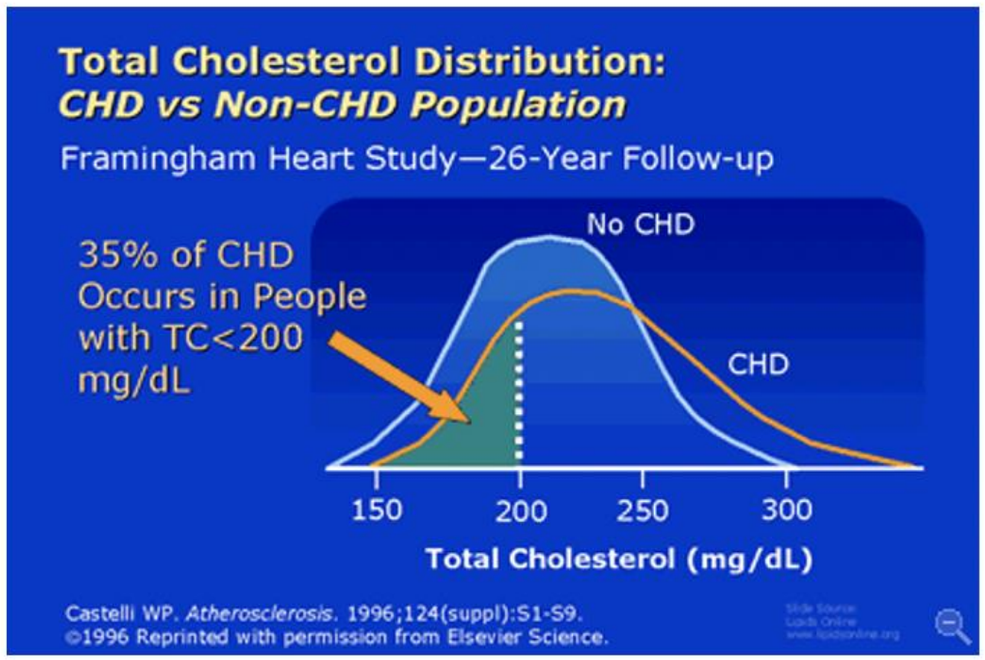
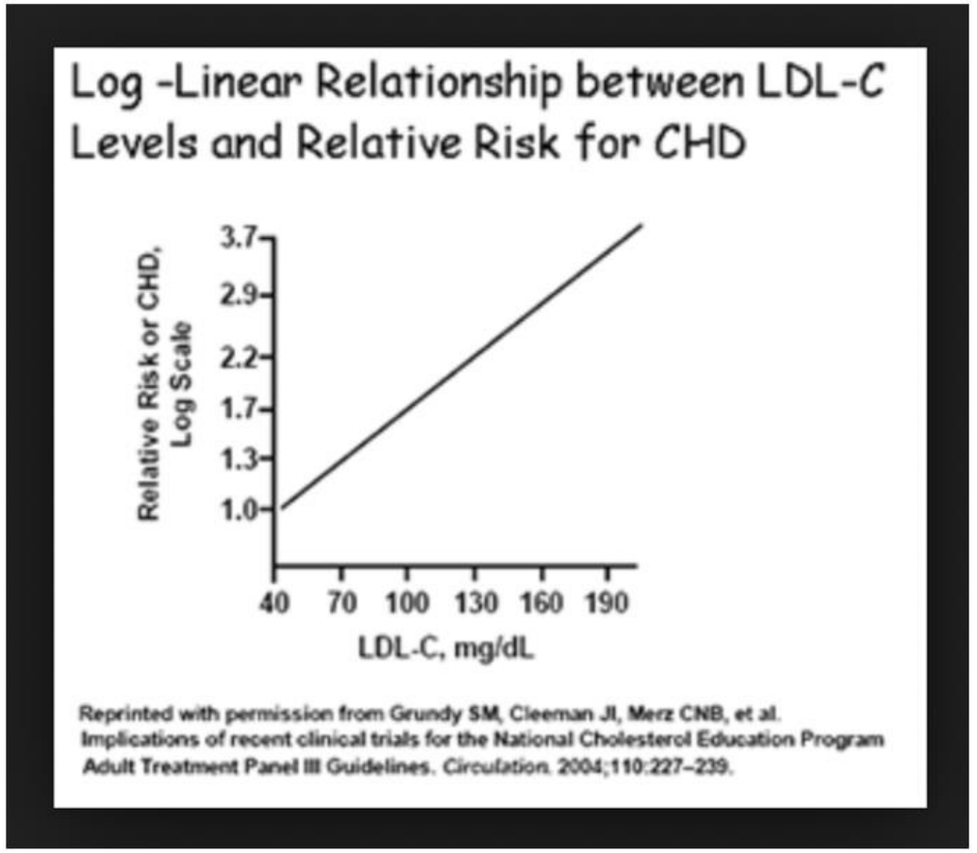
Dyslipidemia

Lipids

Goals

- Low-density lipoprotein cholesterol (LDL-C) < 1.8 mmol/L[§]
- High-density lipoprotein cholesterol (HDL-C) > 1.0 mmol/L
- Triglyceride (TG) < 2.0 mmol/L
- Non–high-density lipoprotein cholesterol (NHDL-C) < 2.5 mmol/L[**]





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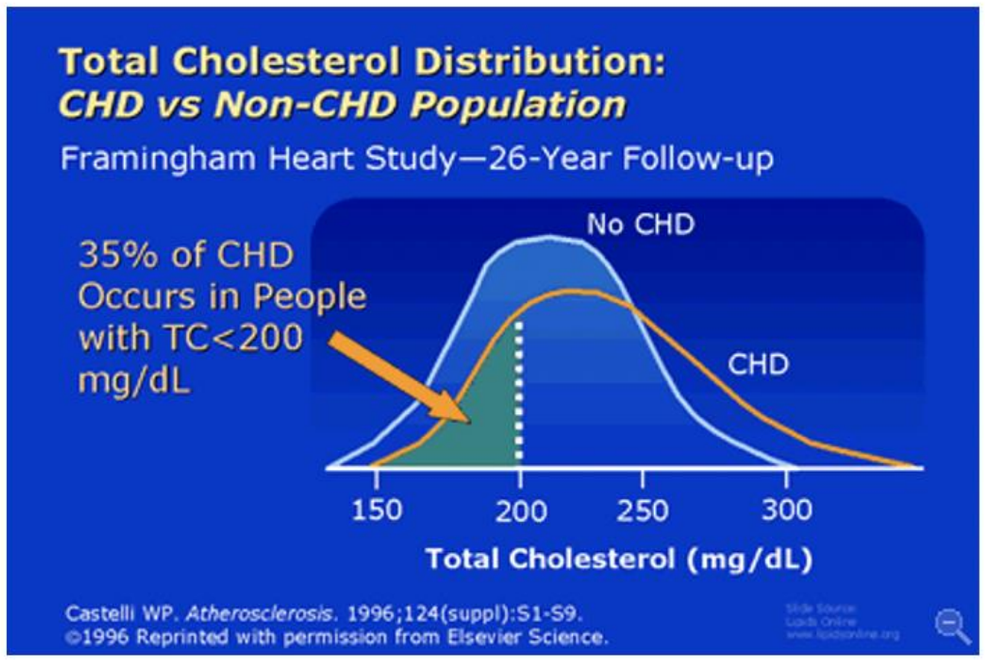

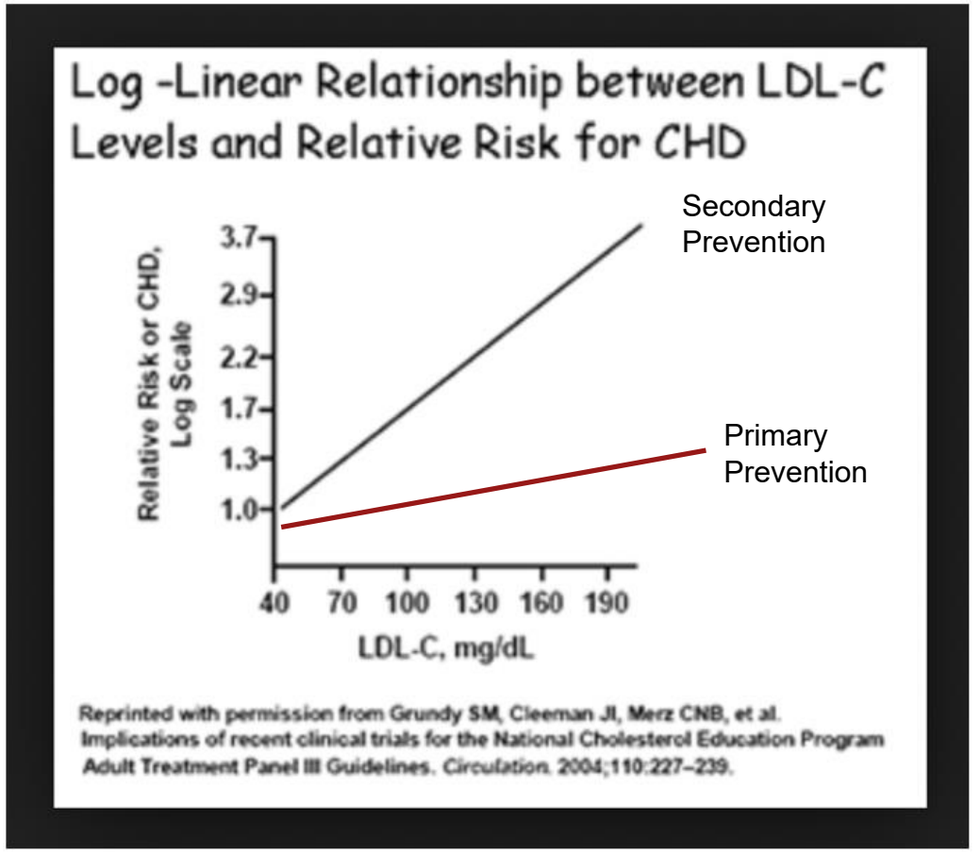

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Interpretation of the evidence for the efficacy and safety of statin therapy

Rory Collins, Christina Reith, Jonathan Emberson, Jane Armitage, Colin Baigent, Lisa Blackwell, Roger Blumenthal, John Danesh, George Davey Smith, David DeMets, Stephen Evans, Malcolm Law, Stephen MacMahon, Seth Martin, Bruce Neal, Neil Poulter, David Preiss, Paul Ridker, Ian Roberts, Anthony Rodgers, Peter Sandercock, Kenneth Schulz, Peter Sever, John Simes, Liam Smeeth, Nicholas Wald, Salim Yusuf, Richard Peto

- Lowering LDL cholesterol by 2 mmol/L with an effective statin regimen for about 5 years in 10 000 patients would typically prevent major vascular events in about 1000 (10%) patients at high risk of heart attacks and strokes (eg, secondary prevention) and 500 (5%) patients at lower risk (eg, primary prevention).

- Typically, treatment of 10 000 patients for 5 years with a standard statin regimen (such as atorvastatin 40 mg daily) would be expected to cause about 5 cases of myopathy, 50–100 new cases of diabetes, and 5–10 haemorrhagic strokes.

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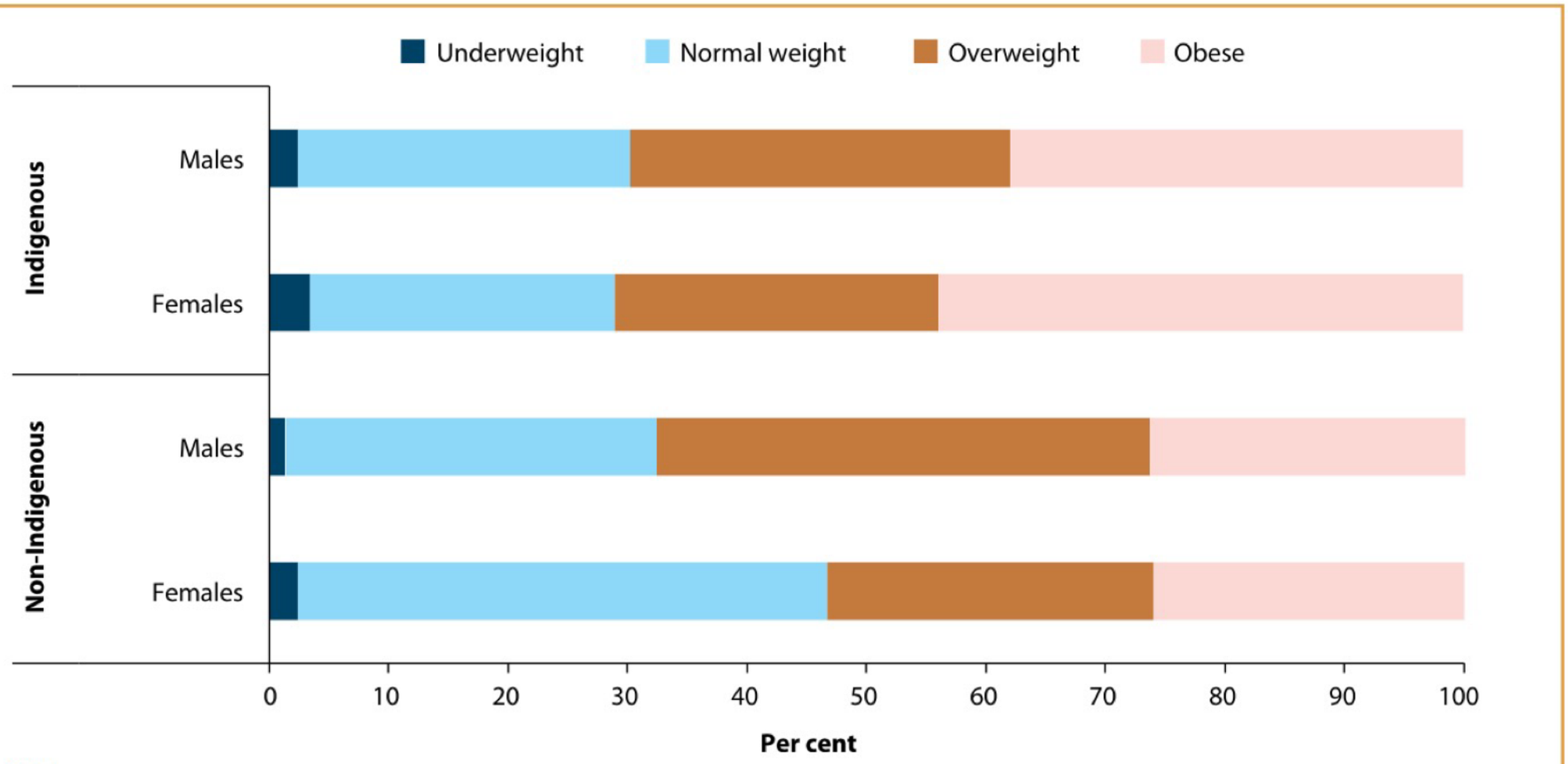
Weight distribution

non-Indigenous counterparts (1.4 times as likely for males and 1.7 times as likely for females) (Figure 4.13).



Notes

1. Rates have been directly age-standardised to the 2001 Australian standard population and are expressed per 100 population.
2. Data for this figure are shown in Table S4.13.

Source: ABS 2014d.

Figure 4.13: Body weight category among people aged 15 and over, by sex and Indigenous status, 2012–13

- 60% of Aboriginal people are reported overweight or obese

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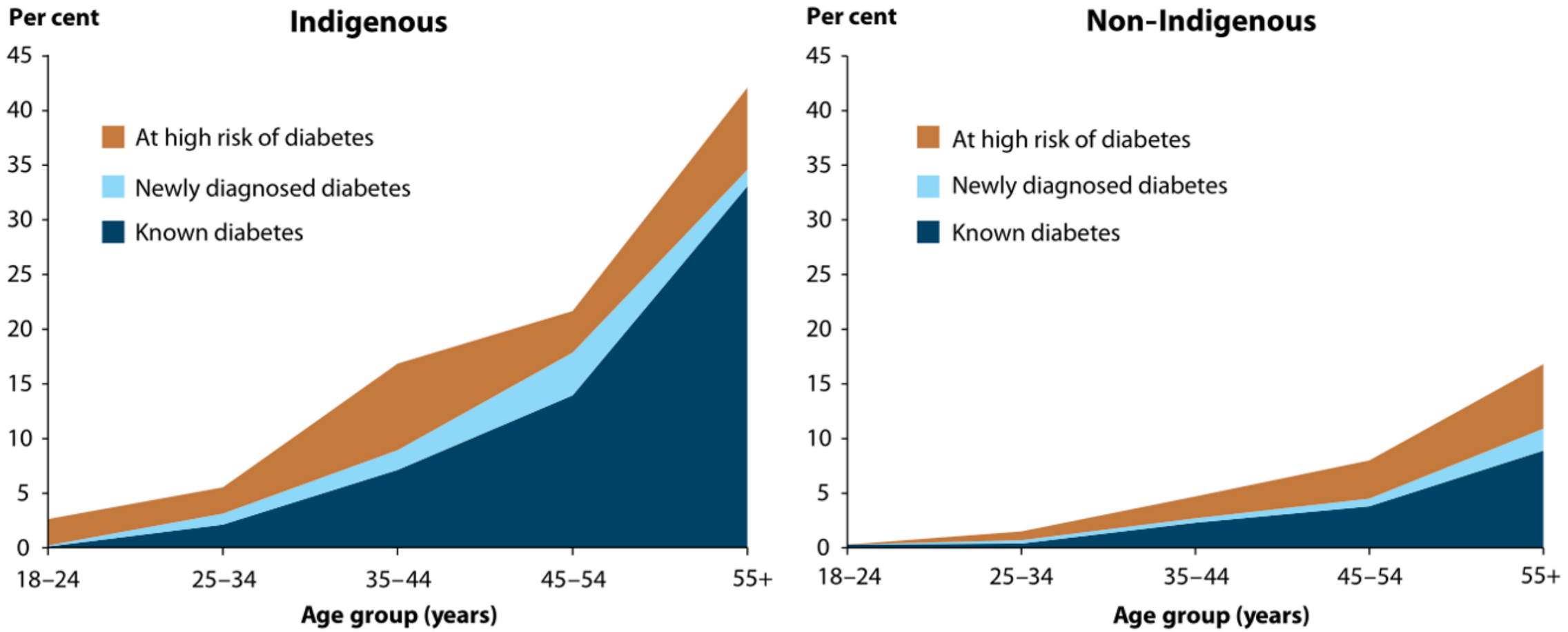
Diabetes



Note: Data for this figure, which are based on fasting plasma glucose results, are shown in Table S5.22; data based on HbA1c results are shown in Table S5.23.

Source: ABS 2014b.

Figure 5.9: Age-specific prevalence rates of diabetes and those at high risk among people aged 18 and over, by Indigenous status, 2012–13

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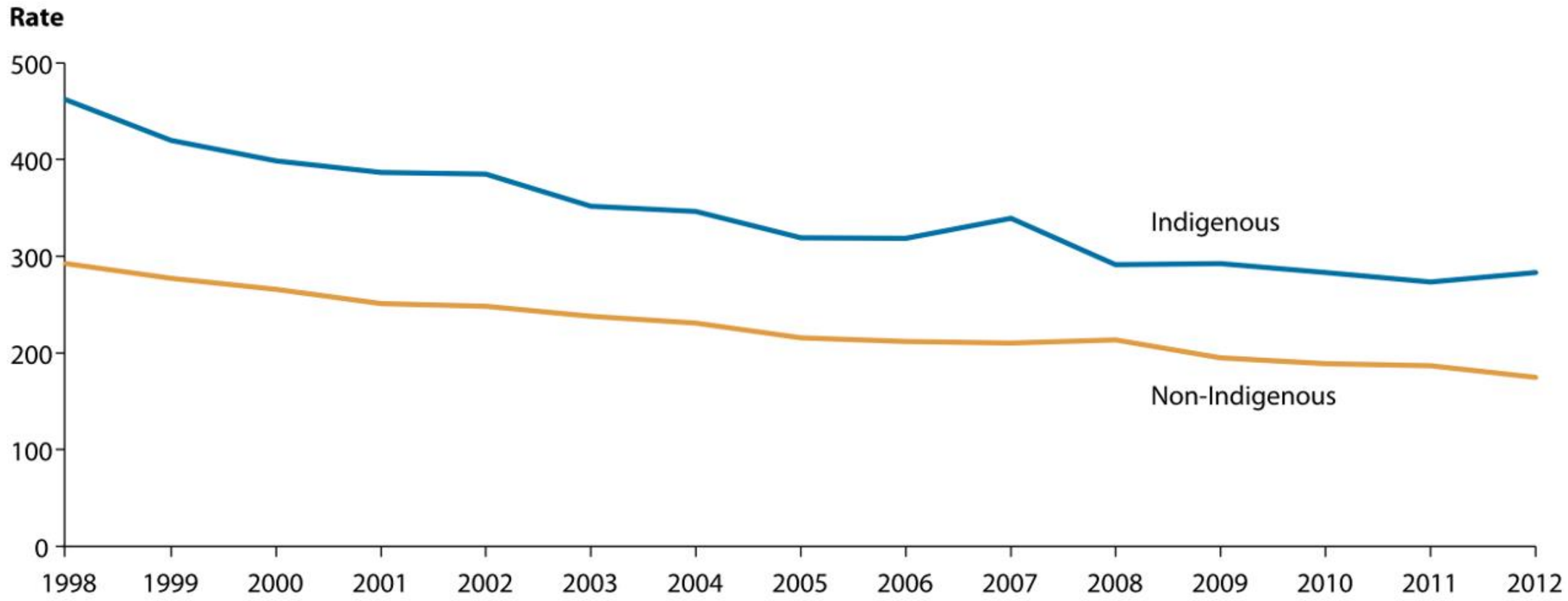
Can we close this Gap?



Notes

1. Rates have been directly age-standardised to the 2001 Australian standard population and are expressed as deaths per 100,000 population.
2. Data are for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory.
3 Data for this figure are shown in Table S5.19; summary statistics about change over the period are shown in Table S6.10.

Source: AIHW National Mortality Database.

Figure 5.8: Mortality rates from cardiovascular disease, by Indigenous status, 1998 to 2012

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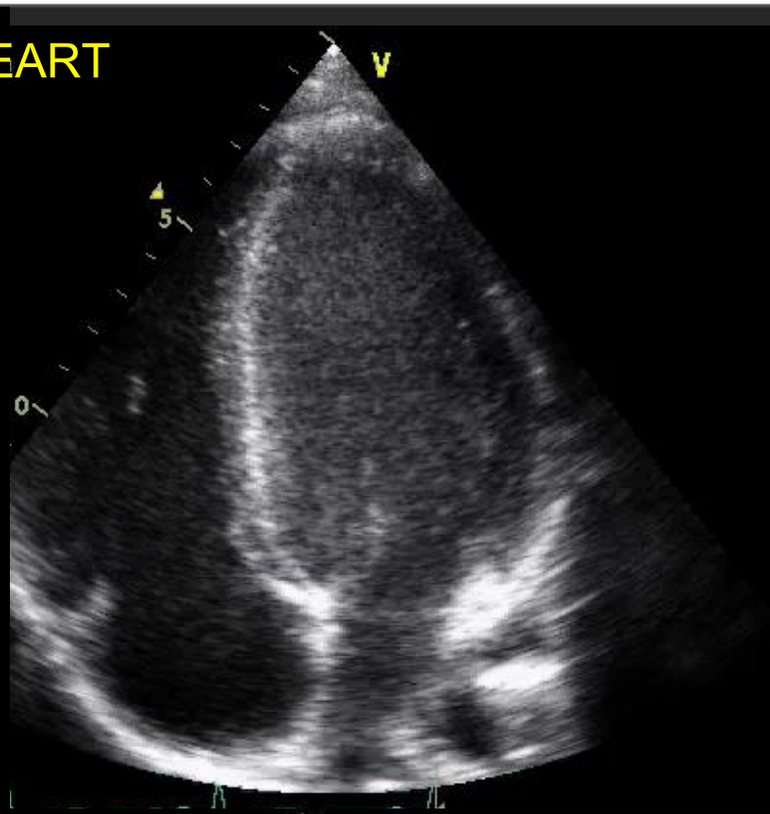
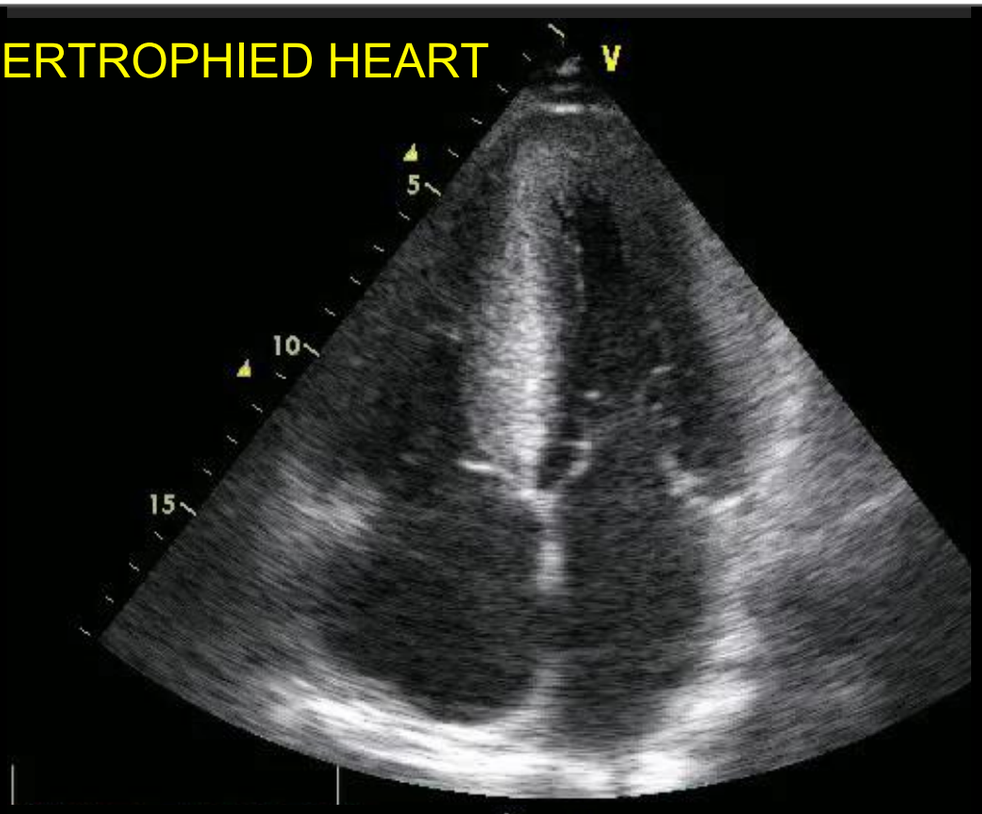
Impact of risk factors on the rest of the heart

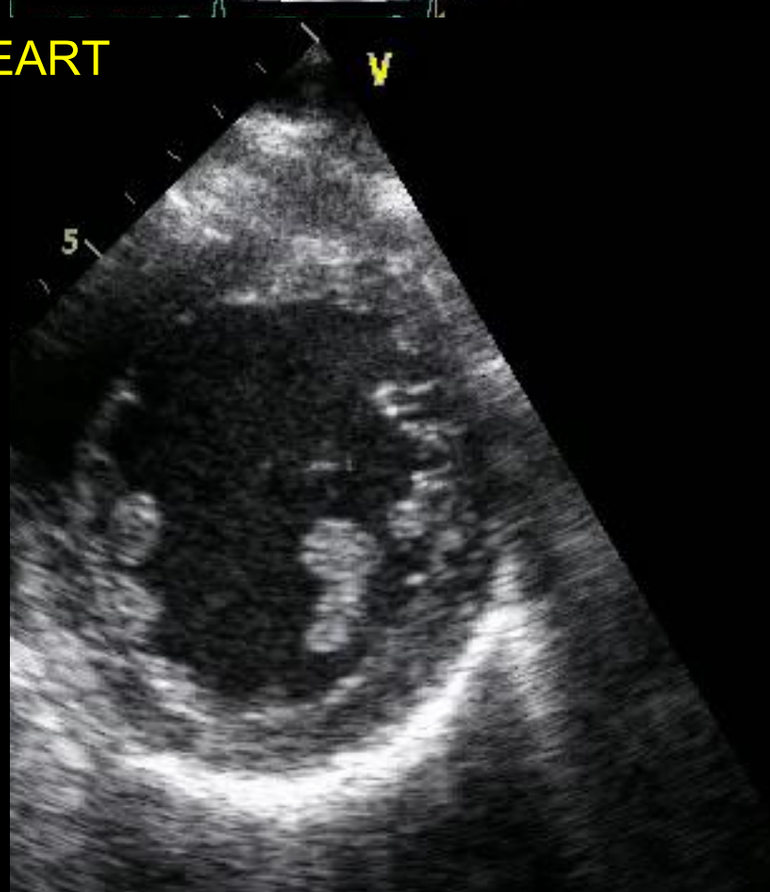
NORMAL HEART



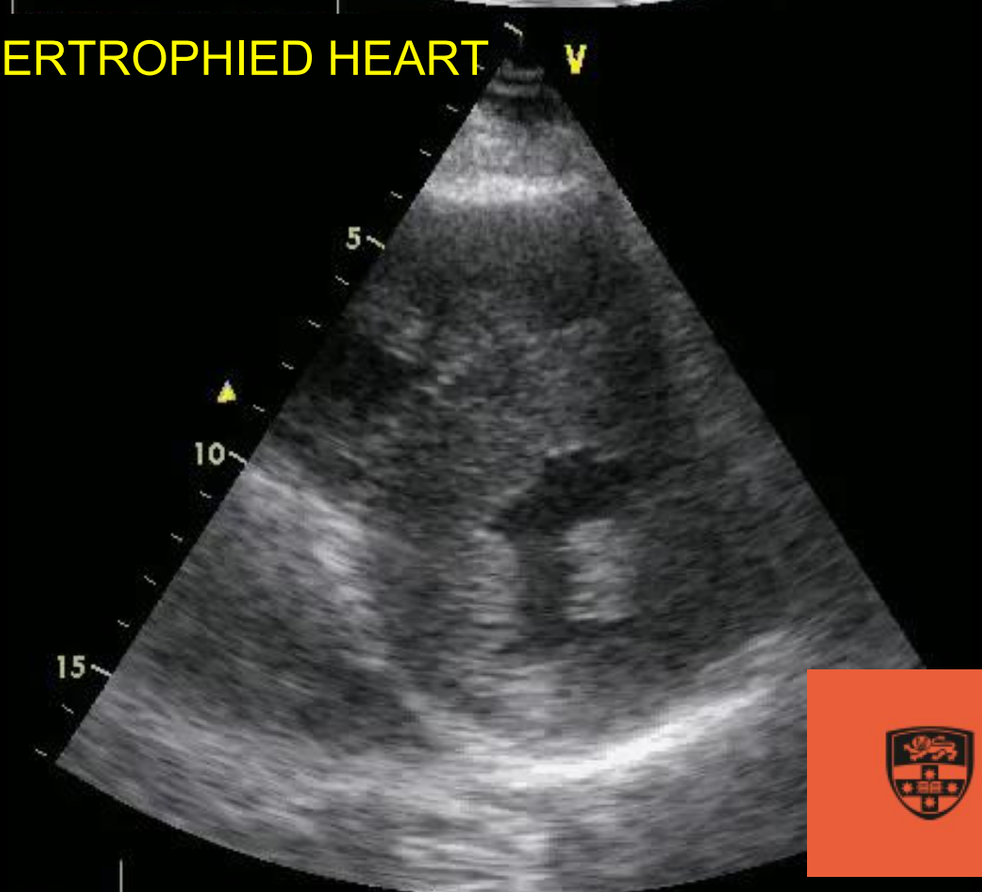
HYPERTROPHIED HEART



NORMAL HEART



HYPERTROPHIED HEART



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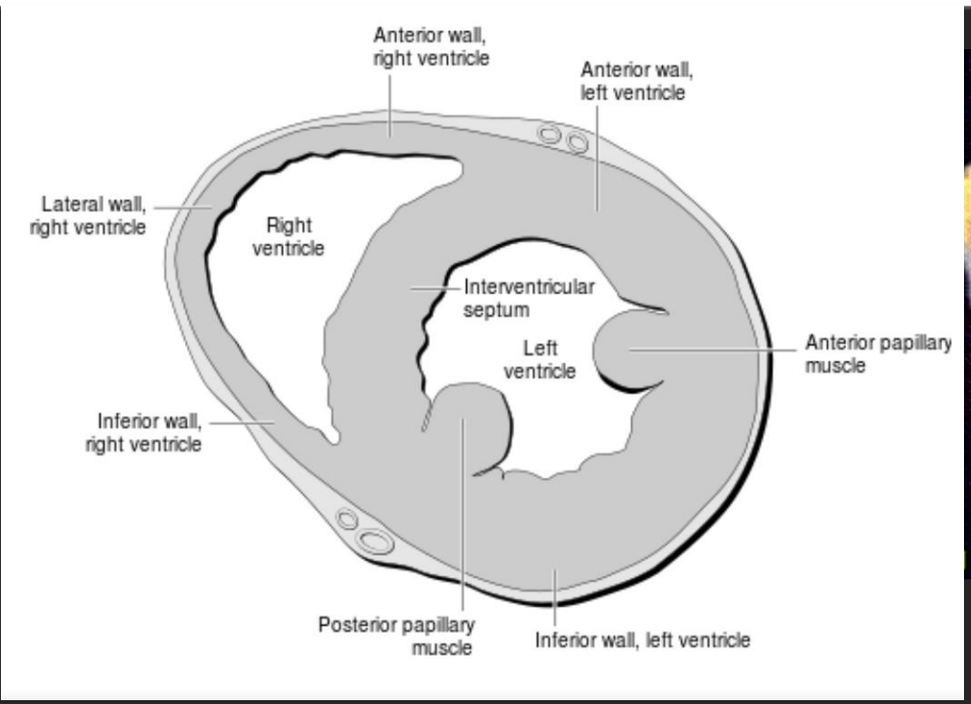
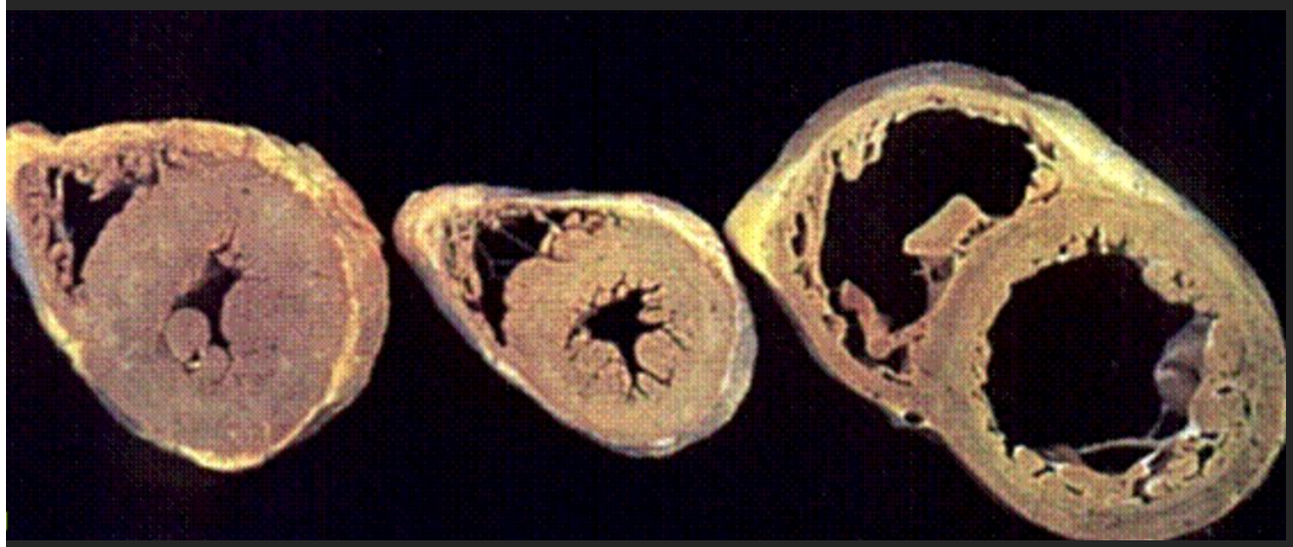
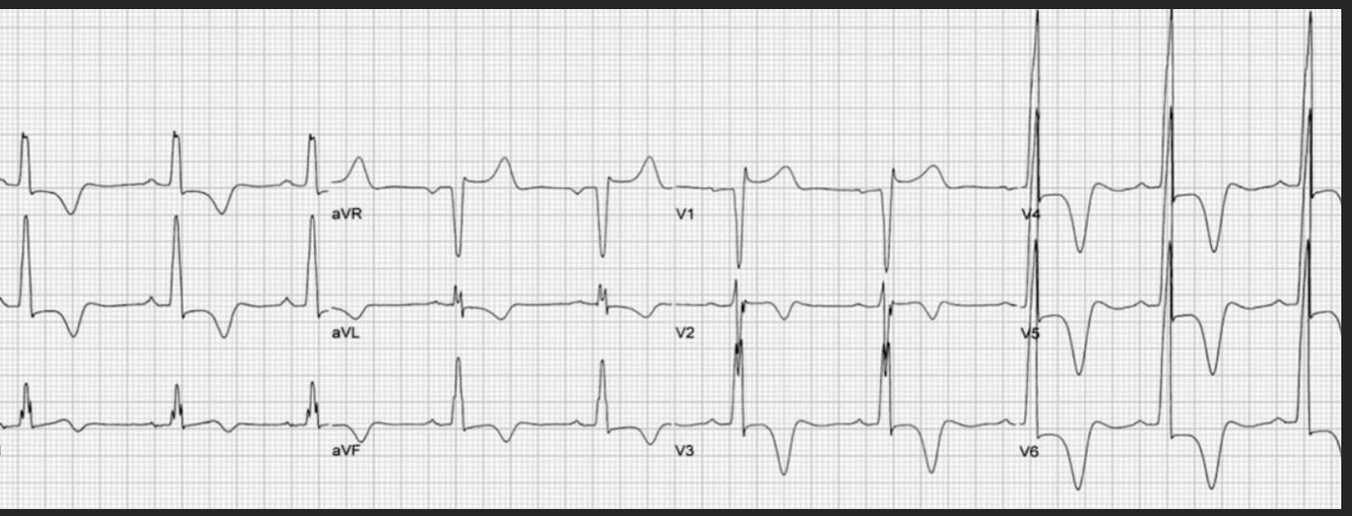
Global Pathology: Hypertrophic vs Dilated

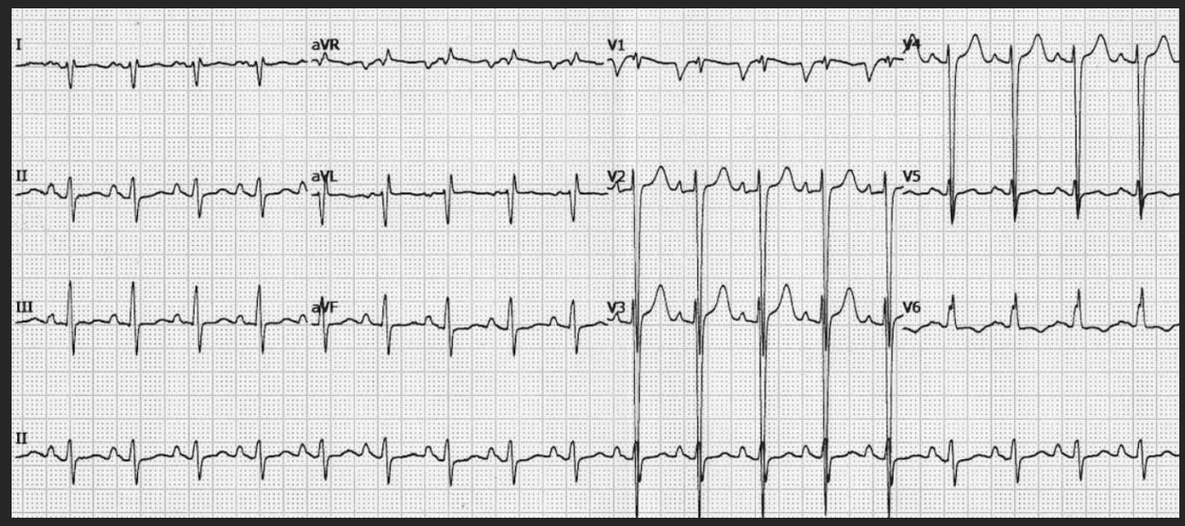




Loading Conditions:
Pressure vs Volume

Congenital vs Acquired





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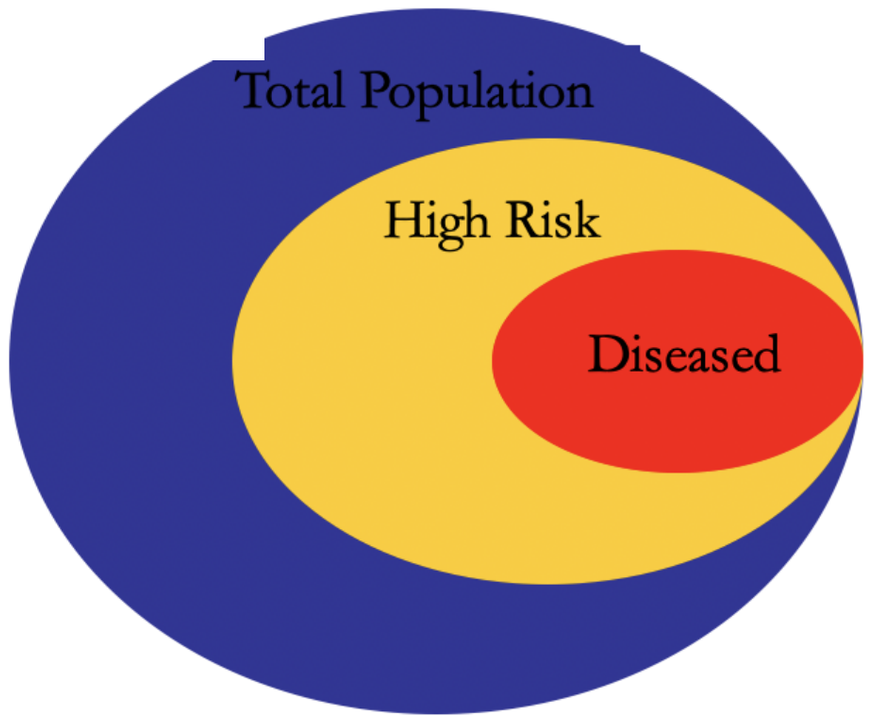
Absolute risk of a disease is your risk of developing the disease over a time period.

Relative risk is used to compare the risk in two different groups of people.

Risk Assessment

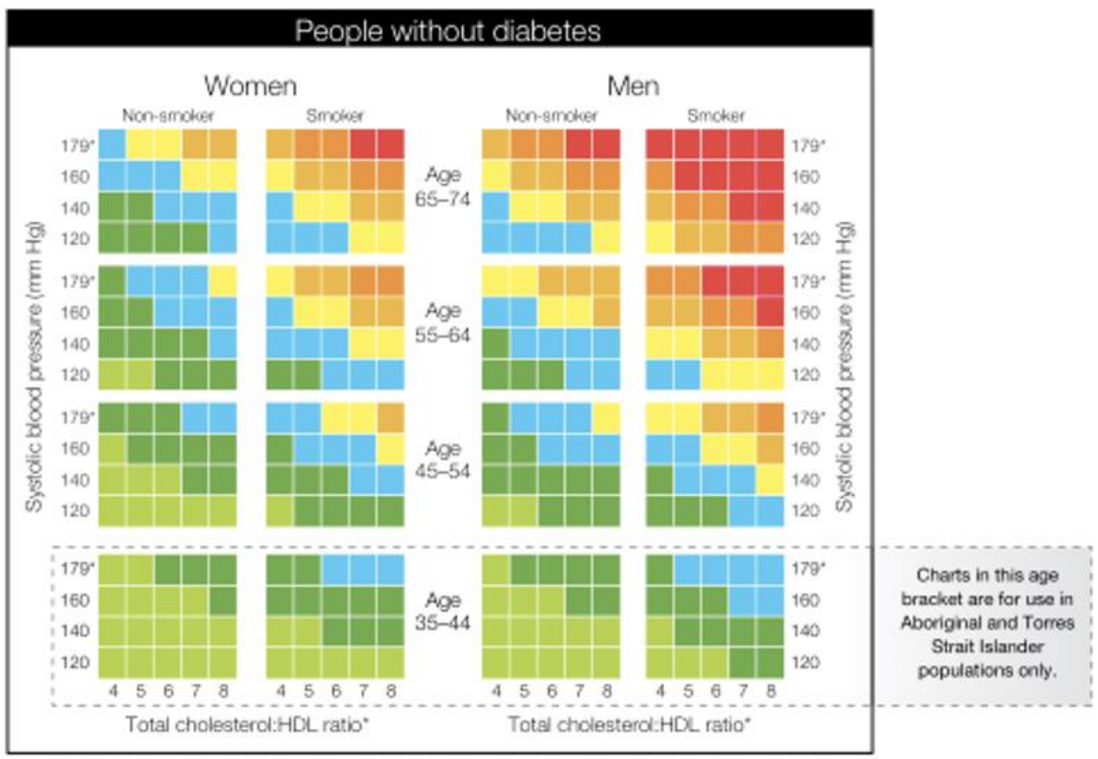
- Absolute risk = 4 in 100 in non-smokers.
- If relative risk is increased by 50% in smokers.
- The absolute risk of smokers developing this disease in smokers is 6 in 100.



Traditional risk assessement

Cardiovascular Risk Calculator

Australian cardiovascular **risk charts**



*In accordance with Australian guidelines, patients with systolic blood pressure ≥ 180 mm Hg, or a total cholesterol of > 7.5 mmol/L, should be considered at increased absolute risk of CVD.

Risk level for 5-year cardiovascular (CVD) risk

High risk	Moderate risk	Low risk
≥ 30%	10–15%	5–9%
25–29%		< 5%
20–24%		
16–19%		

European Heart Journal (2011) **32**, 581–590
doi:10.1093/eurheartj/ehq448

CLINICAL RESEARCH
Prevention and epidemiology

Estimating modifiable coronary heart disease risk in multiple regions of the world: the INTERHEART Modifiable Risk Score

Catherine McGorrian[1,2], Salim Yusuf[1], Shofiqul Islam[1], Hyejung Jung[1], Sumathy Rangarajan[1], Alvaro Avezum[3], Dorairaj Prabhakaran[4], Wael Almahmeed[5], Zvonko Rumboldt[6], Andrzej Budaj[7], Antonio L. Dans[8], Hertzel C. Gerstein[1], Koon Teo[1], and Sonia S. Anand[1]* on behalf of the INTERHEART Investigators

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Received 17 September 2010; accepted 26 October 2010; online publish-ahead-of-print 22 December 2010

Aims Summating risk factor burden is a useful approach in the assessment of cardiovascular risk among apparently healthy individuals. We aimed to derive and validate a new score for myocardial infarction (MI) risk using modifiable risk factors, derived from the INTERHEART case–control study ($n = 19\,470$).

Methods and results Multiple logistic regression was used to create the INTERHEART Modifiable Risk Score (IHMRS). Internal validation was performed using split-sample methods. External validation was performed in an international prospective cohort study. A risk model including apolipoproteins, smoking, second-hand smoke exposure, hypertension, and diabetes was developed. Addition of further modifiable risk factors did not improve score discrimination in an external cohort. Split-sample validation studies showed an area under the receiver-operating characteristic (ROC) curve *c*-statistic of 0.71 [95% confidence interval (CI): 0.70, 0.72]. The IHMRS was positively associated with incident MI in a large cohort of people at low risk for cardiovascular disease [12% increase in MI risk (95% CI: 8, 16%) with a 1-point increase in score] and showed appropriate discrimination in this cohort (ROC *c*-statistic 0.69, 95% CI: 0.64, 0.74). Results were consistent across ethnic groups and geographic regions. A non-laboratory-based score is also supplied.

Conclusions Using multiple modifiable risk factors from the INTERHEART case–control study, we have developed and validated a simple score for MI risk which is applicable to an international population.

Keywords Risk score • Myocardial infarction • Prediction • Ethnic • Global • Risk factors

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Modern risk assessment

Why did we need a new guideline?

The underlying premise

- An individual's risk of developing CVD depends on the **combined** effect of multiple risk factors.
- A better risk prediction modality will better predict risk, guide therapy, and help with previously unexplained events

Limitations of the 2012 guideline

- We have been using a 2012 instrument based on 60-year-old technology from Framingham, Massachusetts
- Small number of risk factor variables included
- Like all existing algorithms it overestimates risk in low risk populations and underestimates in high risk groups
- The prevalence of CVD has fallen

What we need

- An accurate and simple way of identifying high risk individuals before they develop CVD based on data more relevant to the Australian population and adapted for General Practice
- Strategies to lower CVD risk and prevent deaths, heart attacks, strokes and other CVD events
- An approach that is scalable across the population within the existing health infrastructure

1. Australian Institute of Health and Welfare. Heart, stroke and vascular disease — Australian facts [Cat. No. CVD 92]. Canberra: AIHW, 2021. https://www.aihw.gov.au/reports/heart-stroke-vascular-diseases/hsvd-facts/contents/about
2. Cost effective interventions for the prevention of cardiovascular disease in low and middle income countries: a systematic review. BMC Public Health. 2013;13:285

Interpretation Abnormal lipids, smoking, hypertension, diabetes, abdominal obesity, psychosocial factors, consumption of fruits, vegetables, and alcohol, and regular physical activity account for most of the risk of myocardial infarction worldwide in both sexes and at all ages in all regions. This finding suggests that approaches to prevention can be based on similar principles worldwide and have the potential to prevent most premature cases of myocardial infarction.

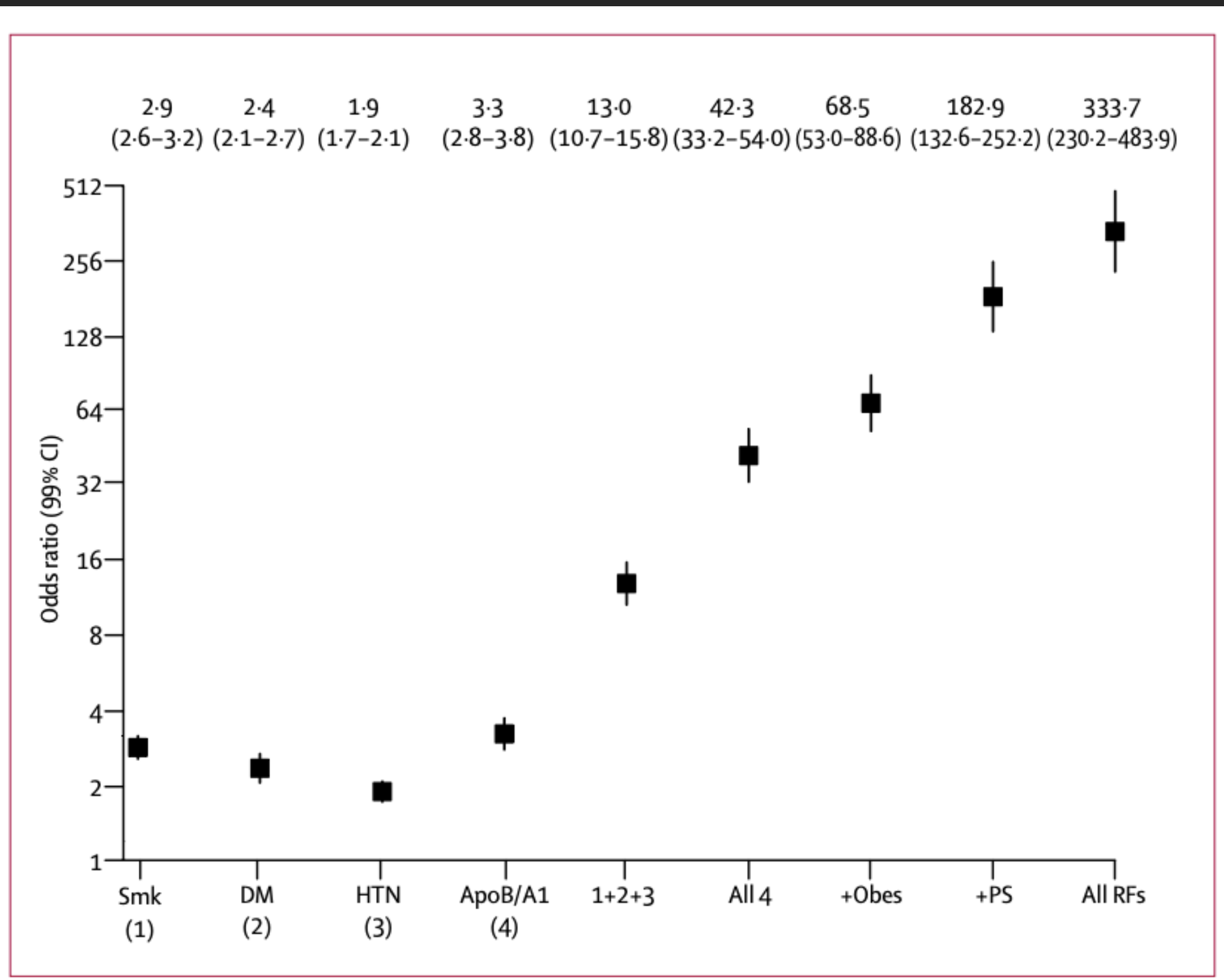
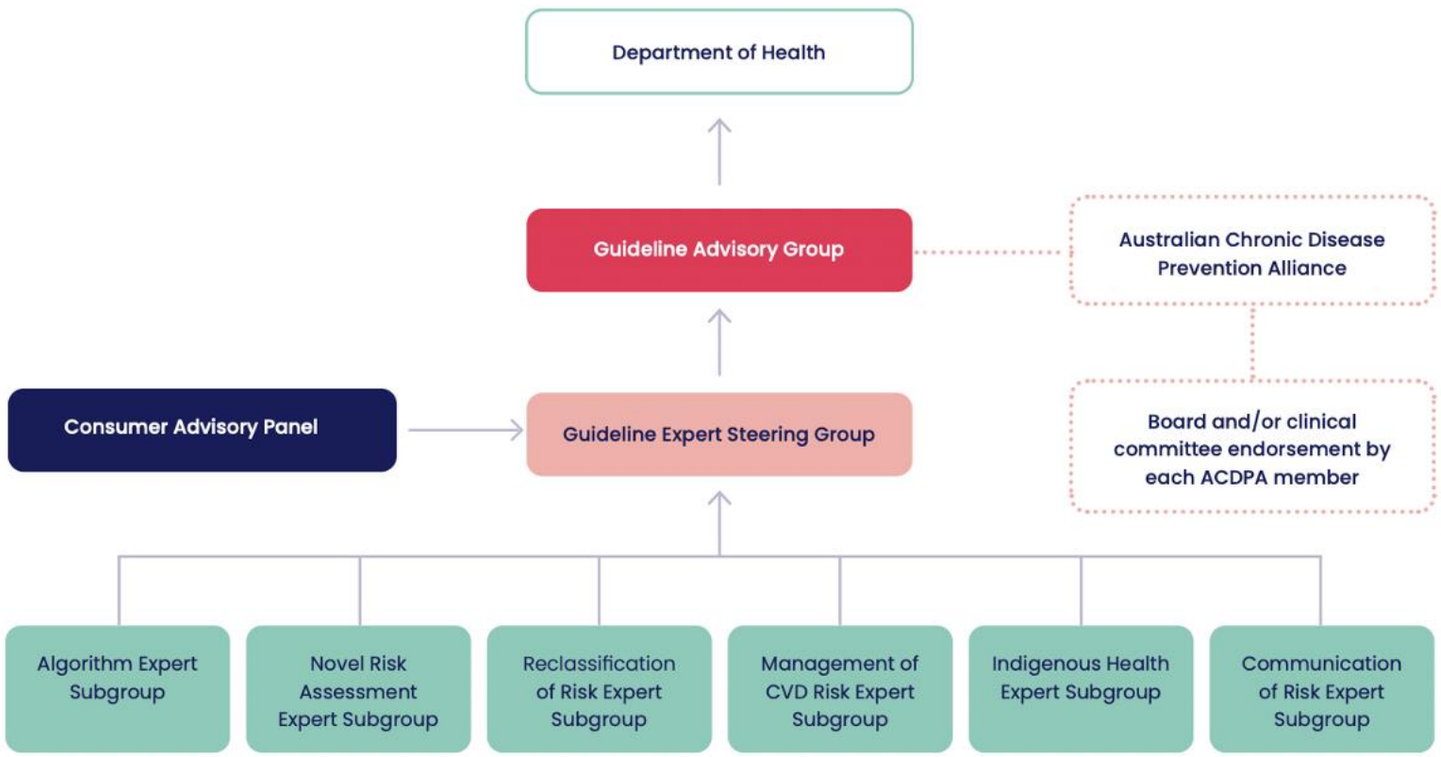


Figure 2: **Risk of acute myocardial infarction associated with exposure to multiple risk factors**

Developing a new model

Extensive collaboration from across the health sector and the community



Heart Foundation

Stroke Foundation

Kidney Health Australia

diabetes australia

Endorsed clinical guideline

RACGP

Funded by:

Australian Government
Department of Health and Aged Care

- One of the largest health-sector guideline collaboratives inviting input across 9 expert advisory groups consisting of GPs, cardiologists, epidemiologists, endocrinologists, neurologists, nephrologists, pharmacists, nurses, dietitians, behaviour change scientists and consumers.
- Over 20,000 health professionals, 174 health stakeholder groups and 370,000 consumers were directly invited to provide feedback on the guidelines.

Process for evaluation

New clinical guidance: 5 steps

1 Identify people for CVD risk assessment

Age ranges for assessing CVD risk in people without known CVD

- All people aged 45–79 years
- People with diabetes aged 35–79 years
- First Nations people aged 30–79 years. Assess individual CVD risk factors in First Nations people aged 18–29 years.

3 Identify CVD risk category

Estimated 5-year CVD risk

- **High:** ≥10%
- **Intermediate:** 5% to <10%
- **Low:** <5%

Reclassification factors

These factors may move an individual's risk estimate up or down:

- Ethnicity ↑↓
- CAC ↑↓
- Family history ↑
- eGFR & uACR ↑
- Severe mental illness ↑

5 Manage CVD risk

Lifestyle* factors

- Smoking
- Nutrition
- Physical activity
- Healthy weight
- Alcohol

Pharmacotherapy

- BP-lowering treatment
- Lipid-modifying treatment

Identify people for CVD risk assessment → Use calculator to assess CVD risk → Identify CVD risk category → Communicate CVD risk → Manage CVD risk

2 Use calculator to assess CVD risk

Use new Australian CVD risk calculator with the following variables:

- Age, sex
- Smoking status
- Systolic BP
- TC: HDL-C ratio
- Diabetes status
- CVD medicines
- Postcode
- History of AF

For people with diabetes:

- HbA1c
- Time since diagnosis of diabetes
- uACR
- eGFR
- BMI
- Insulin

Do not use calculator in those already known to be at high risk: Moderate-to-severe CKD and FH

4 Communicate CVD risk

- Communicate CVD risk using a variety of formats
- Use a decision aid to support effective risk communication
- Combine risk communication tools with behavioural strategies, repeated over time

What age to screen?

1 Identify people without known CVD for risk assessment

All people aged 45–79 years	People with diabetes aged 35–79 years	First Nations people aged 30–79
		Assess individual risk factors from age 18–29 years

- There is very limited evidence available from Australian populations to guide starting age for CVD risk assessment.
- The current recommendations are therefore based on population-level observational data and expert consensus in consultation with consumers.
- However, this does not reduce the importance of considering, assessing and managing CVD risk in people from younger or older age groups, as clinically necessary.

Based off NZ PREDICT-1 equation

2 Use the new Aus CVD Risk Calculator with the following variables

Age | Diabetes | TC:HDL-C ratio

Systolic BP | Sex | Smoking status

CVD medicines **New**

BP-lowering | Lipid-modifying | Antithrombotic

+

New

Include optional variables to further improve accuracy of risk estimation:

- Postcode (marker of socioeconomic status)
- History of atrial fibrillation
- For people with diabetes:

uACR | eGFR | BMI | HbA1c

Insulin | Time since diagnosis

AusCVDRisk Access calculator at cvdcheck.org.au

The following groups are considered to be at **clinically determined high risk** and should be automatically managed as high risk:

- Moderate-to-severe chronic kidney disease (CKD)
- Familial hypercholesterolaemia

Risk categories

3 Identify risk category

Risk category	High	Intermediate	Low
Estimated 5-year CVD risk	≥10%	5% to <10%	<5%

Consider optional reclassification factors, which may refine risk estimates: **New**

- CKD (eGFR or uACR) ↑
- Family history[i] ↑
- Severe mental illness[ii] ↑
- Ethnicity ↑↓
- Coronary artery calcium score ↑↓

Reclassification factors are particularly relevant for people whose estimated risk is close to the threshold of another risk category.

Risk estimates represent the chance of having a cardiovascular event in the next 5 years. **Newly defined risk categories** help target pharmacotherapy to those who will benefit most while still limiting adverse effects of treatment.

[i] CHD or stroke in first-degree female relative aged <65 years or first-degree male relative aged <55 years
[ii] Current or recent (in the 5 years prior) mental health condition requiring specialist treatment

Additional factors

Reclassification factors

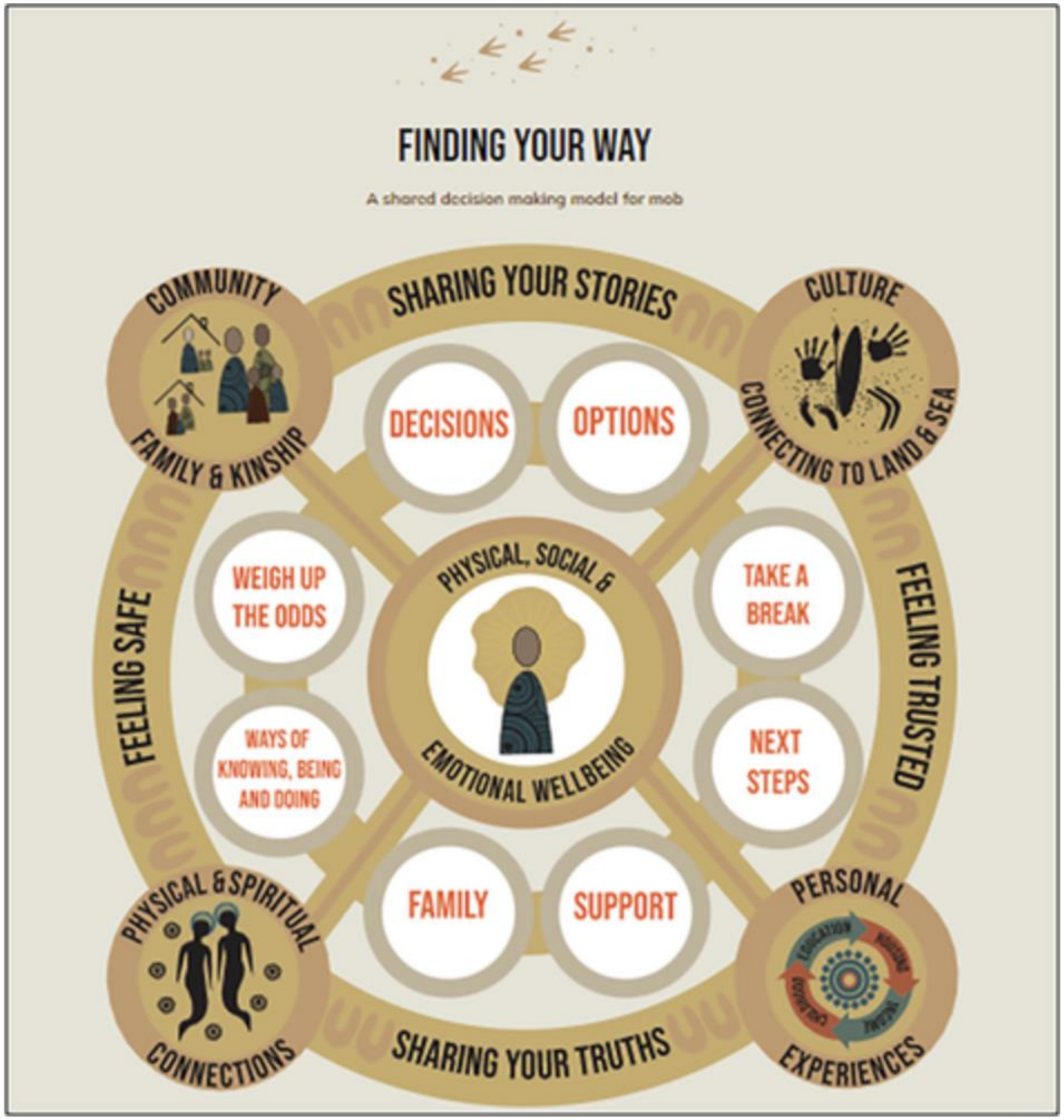
Reclassification factors and their potential effect on risk estimates

Factor	Potential to reclassify upward or downward
Ethnicity	↑ or ↓
Family history of premature CVD[a]	↑
Chronic kidney disease	↑
Severe mental illness[b]	↑
Coronary artery calcium score	↑ or ↓

[a] Family history of premature CVD is defined as coronary heart disease (CHD) or stroke in a first-degree female relative aged <65 years or a first-degree male relative aged <55 years.

[b] Severe mental illness is defined in this guideline as a current or recent mental health condition requiring specialist treatment, whether received or not, in the 5 years prior to the CVD risk assessment. Derived from PREDICT cohort.[50]

www.heartyarningtool.com



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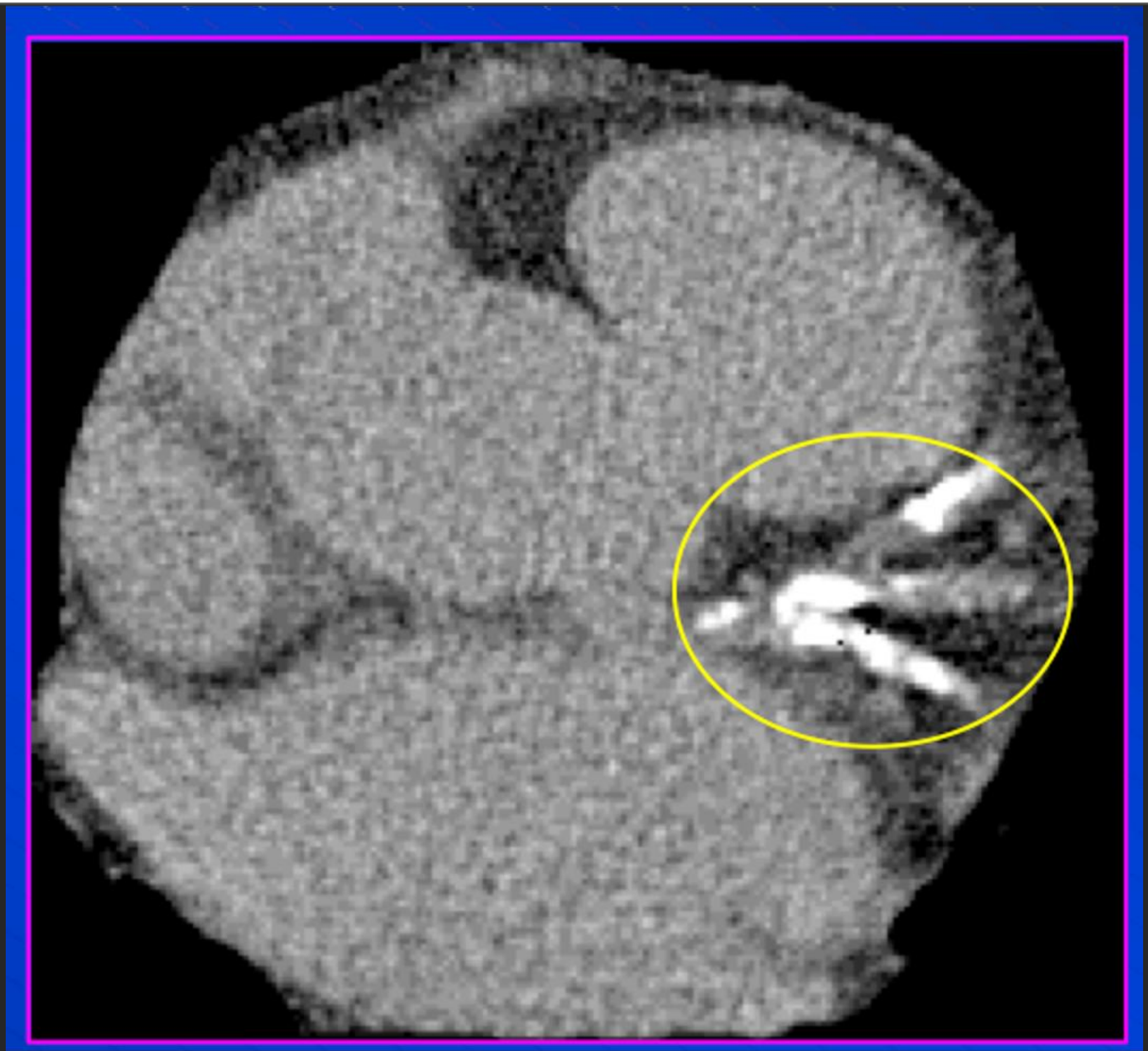
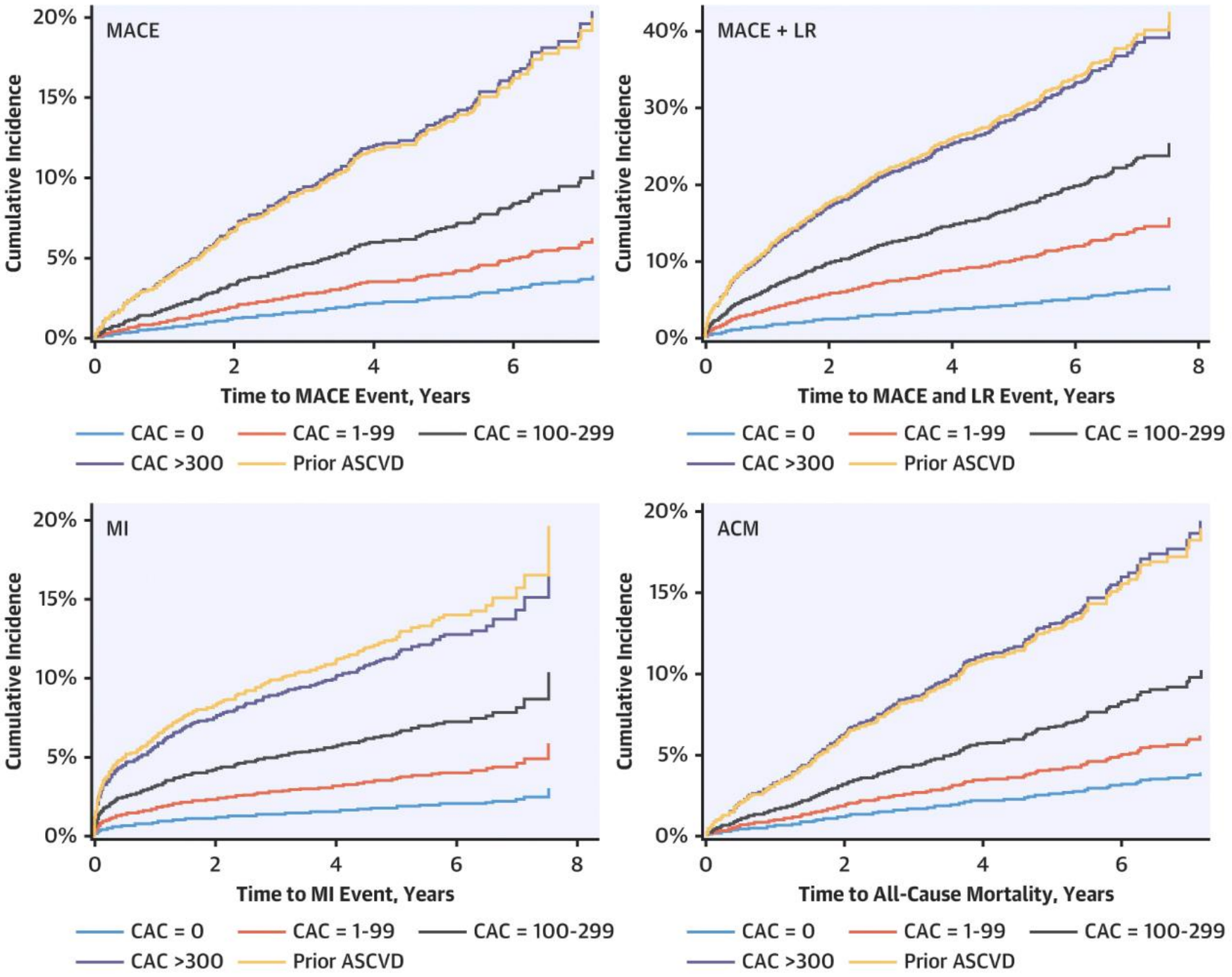
Calcium scoring



Calcium score risk equivalents

CENTRAL ILLUSTRATION: Event Rates by CAC Score Categories for MACE Compared to Prior ASCVD Patients



Budoff MJ, et al. J Am Coll Cardiol Img. 2023;16(9):1181-1189.

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Recommendations

↑ or ↓ Coronary artery calcium score

Recommendations	Strength	Certainty of evidence
Coronary artery calcium (CAC) score is not recommended for generalised population screening for CVD risk.	Strong	Moderate
Do not consider measuring CAC if: • the person has a history of myocardial infarction or revascularisation, or known coronary heart disease • the person is already known to be at high CVD risk. Treatment to reduce risk is indicated in these people, regardless of the CAC result.	Conditional	Moderate
When assessing CVD risk, reclassifying risk level due to CAC score can be considered when treatment decisions are uncertain, e.g.: • when risk of cardiovascular events is assessed as low or intermediate using the Australian cardiovascular disease risk calculator and other risk concerns are present that are not accounted for by the calculator. • when further information is required to inform discussions between practitioner and the person on whether to modify therapy.	Conditional	Moderate

CAC score of 0 could reclassify estimate to a lower CVD risk category

CAC score >99 Au, or ≥75th percentile for age and sex, could reclassify estimate to a higher level.

Managing CVD risk - principles

- Management approach is refined in collaboration with the patient regarding the risks and benefits of treatment options, and their personal values and preferences.
- People vary in what they find motivating; for some this is having targets in place.
- Set targets in consultation with the person according to what is practicable and achievable for them.

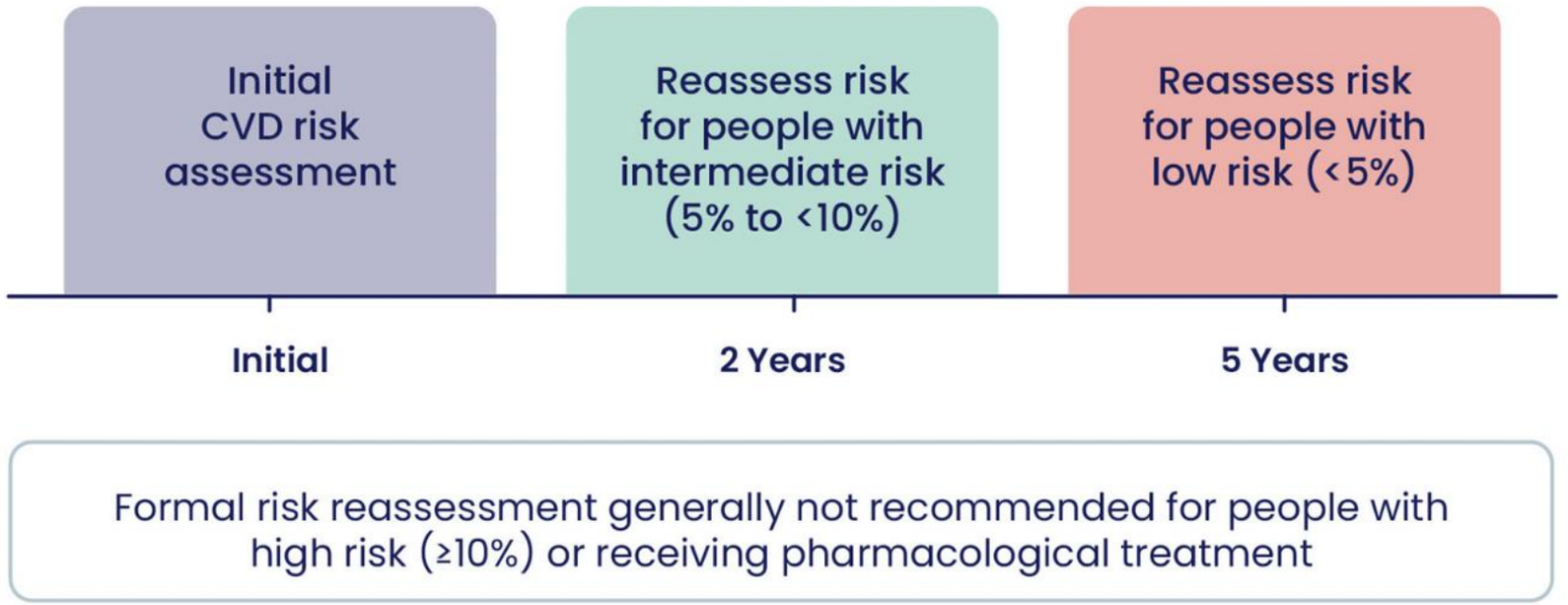
Pharmacotherapy

Risk category	Pharmacotherapy	Lifestyle modification
High risk (≥ 10%)	**Prescribe** BP and lipid lowering therapy	Recommended for all risk categories
Intermediate risk (5 to <10%)	***Consider prescribing*** BP and lipid lowering therapy	
Low risk (< 5%)	Pharmacotherapy not routinely recommended	

- Detailed advice on pharmacotherapy not within scope
- The higher the initial CVD risk, the greater the expected reductions in risk. For people with intermediate or high risk of cardiovascular events, any reduction in blood lipid levels reduces this risk
- Reducing blood pressure reduces CVD risk, in a wide range of age groups, irrespective of baseline blood pressure. The higher the initial CVD risk, the greater the benefit.
- Targets not provided, should be a shared discussion between clinician and patient

How often should you reassess CVD risk?

Figure 3: CVD risk reassessment intervals using the Aus CVD risk calculator



The optimal interval between baseline CVD risk assessment and subsequent CVD risk reassessments balances the objective of detecting increased risk as early as possible to inform treatment decisions with that of avoiding unnecessary assessments.

New HF risk calculator: cvdcheck.org.au

cvdcheck.org.au/calculator

AusCVDRisk | Calculator | CVD Risk Guideline | About the Guideline and Calculator | Resources | Download

Australian CVD risk calculator

AusCVDRisk is a risk assessment, communication and management tool for health professionals. To learn more about how this calculator works, refer to the **Australian Guideline for assessing and managing cardiovascular disease risk**.

1 Enter variables

2 Consider reclassification factors

3 Discuss risk result & management

This risk assessment is recommended for the following individuals without known atherosclerotic cardiovascular disease:

- All people aged 45-79 years
- People with diabetes aged 35-79 years
- First Nations people aged 30-79 years (assess individual risk factors 18-29 years).

Clinically determined high risk*

Clinical conditions that automatically confer high risk. If either of these apply, you will be redirected to management for high risk category

- ☐ Moderate-severe chronic kidney disease ?
- ☐ Familial hypercholesterolaemia ?
- ☐ Neither present

Age* ?

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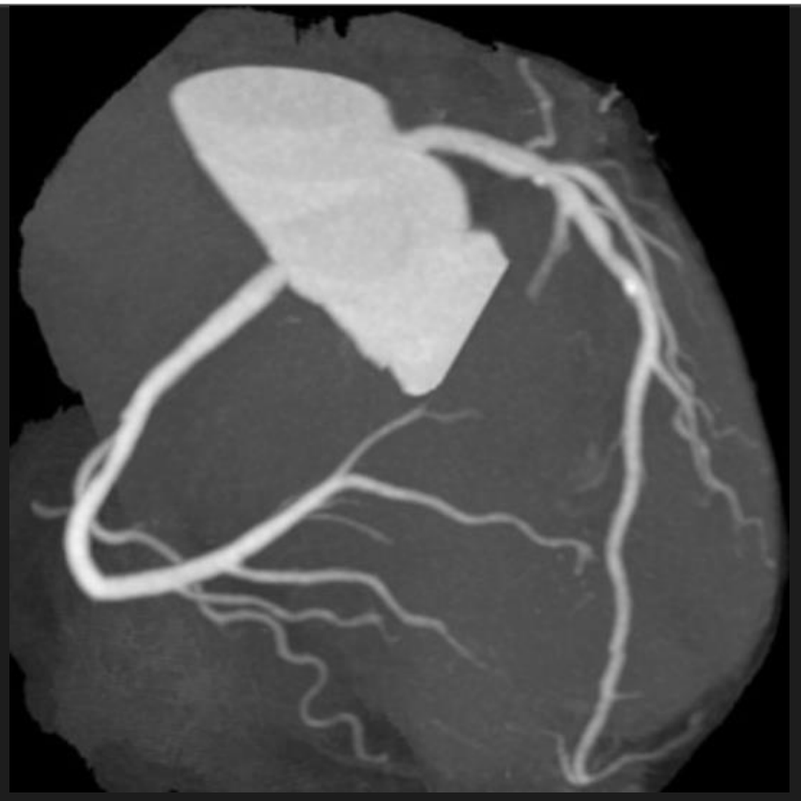
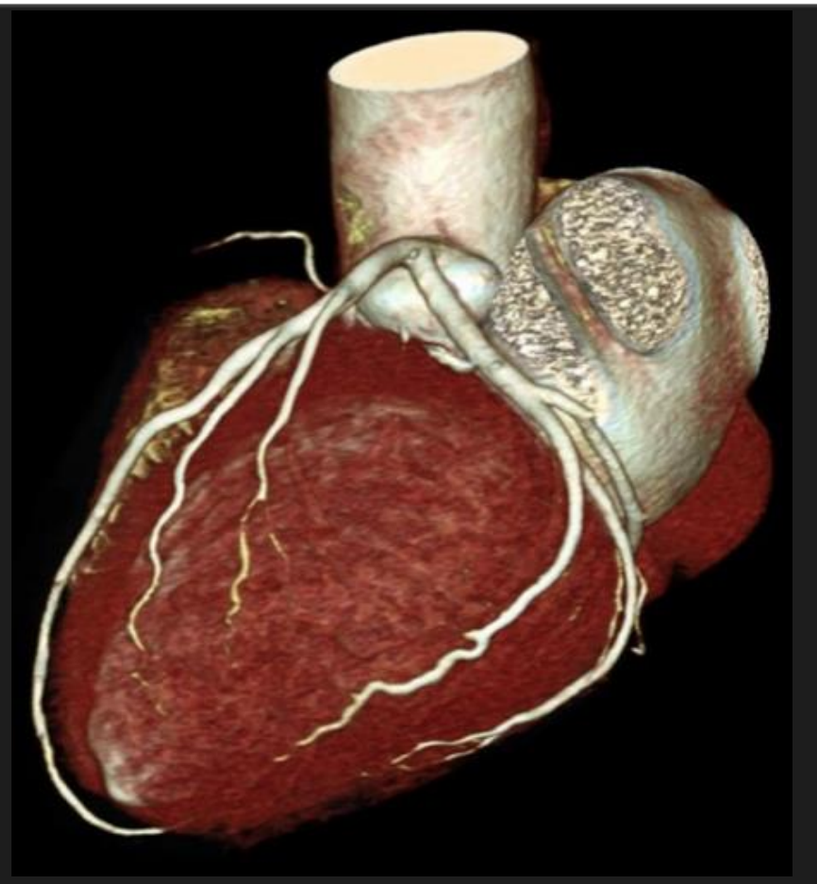
Regional Pathology: CTCA

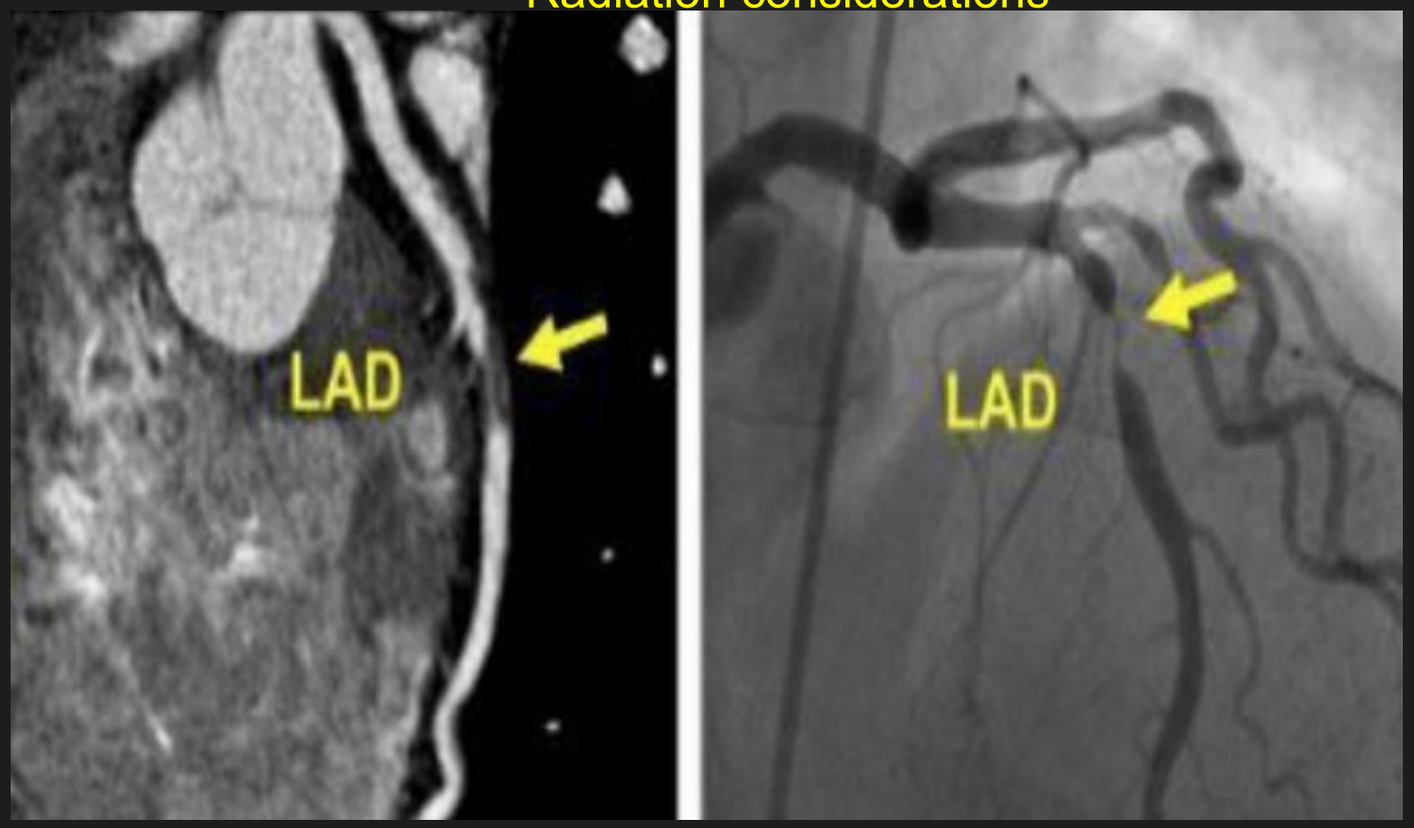


INDICATIONS
CAD suspected
Coronary grafts

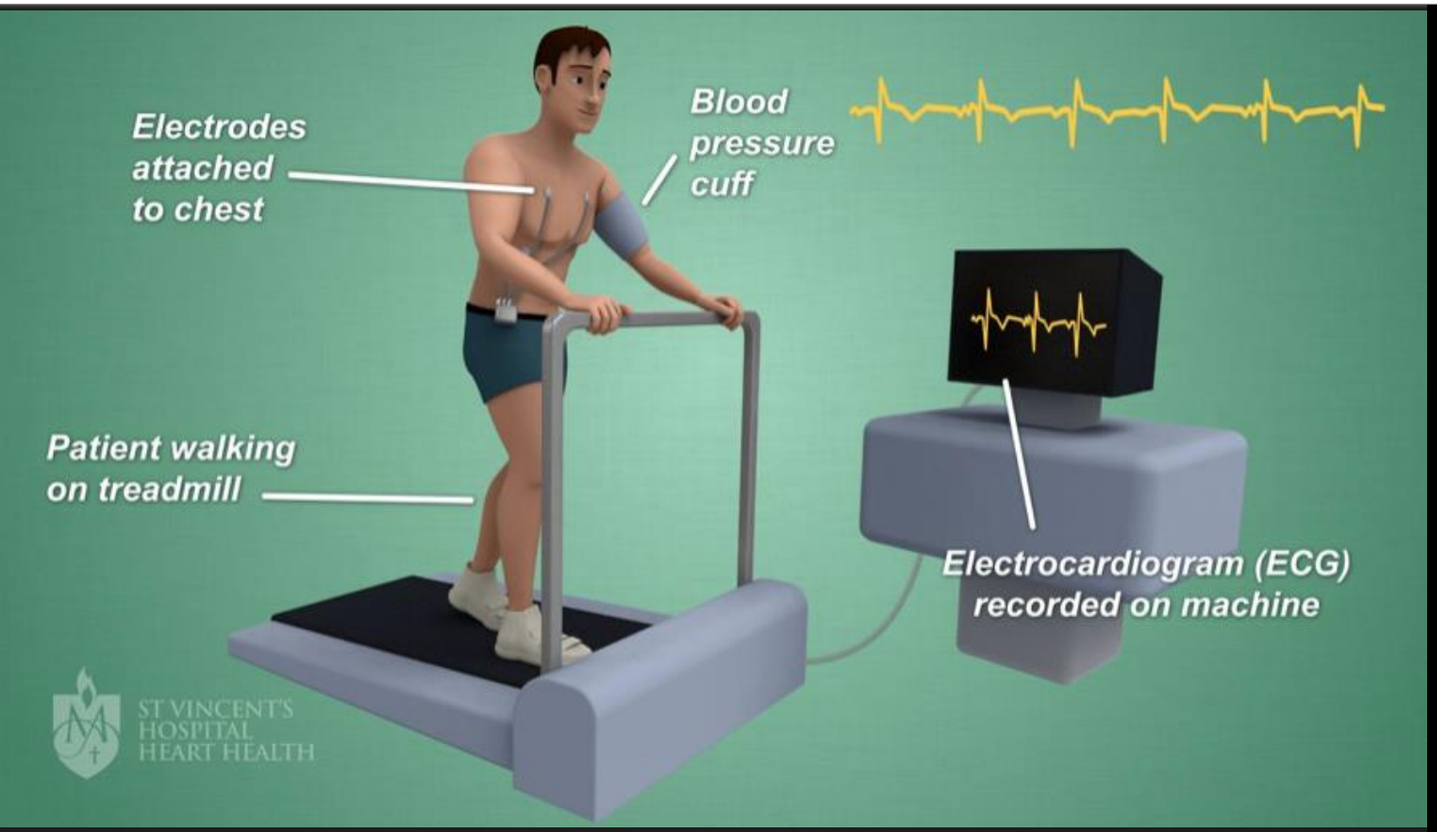
STRENGTHS OF TEST
Non-invasive
Rule out Test
Calcium score

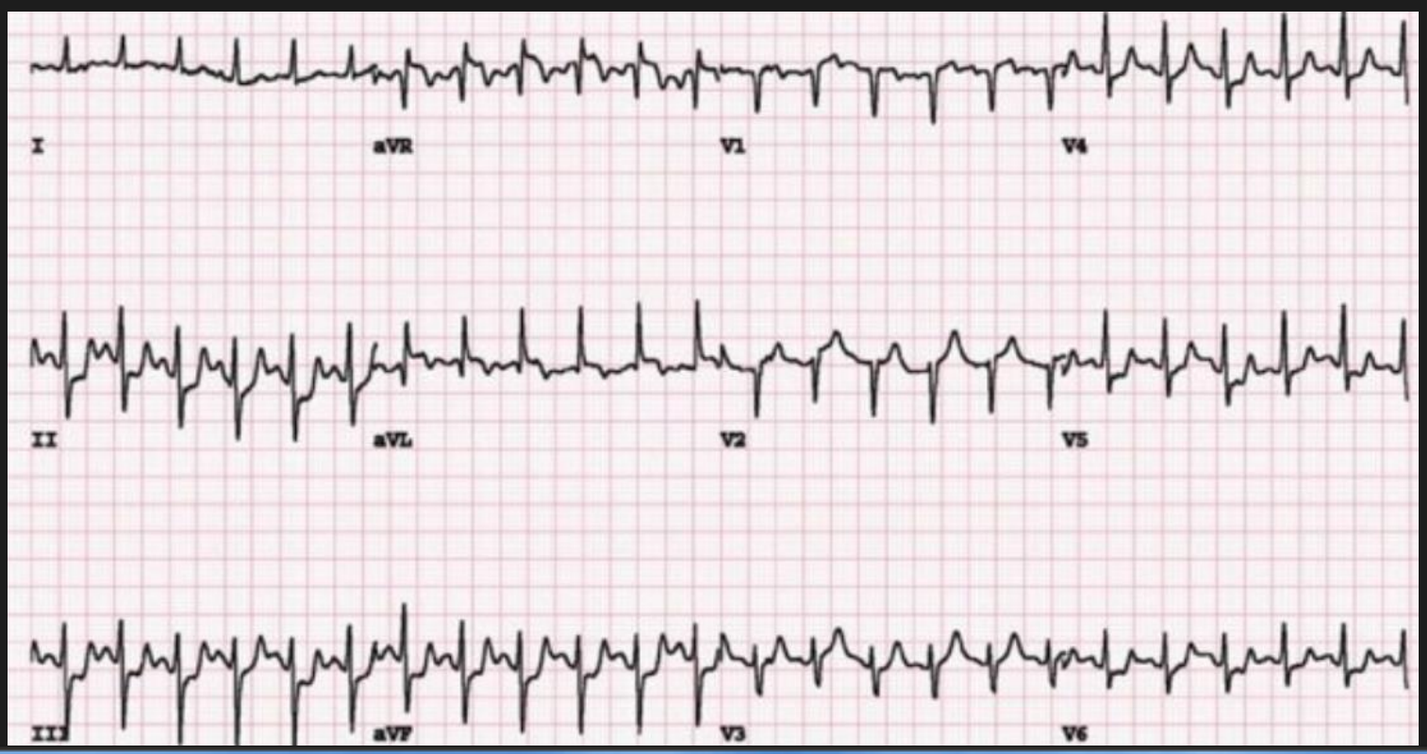
CONTRAINDICATIONS
Contrast Allergy
Renal Failure
Radiation considerations

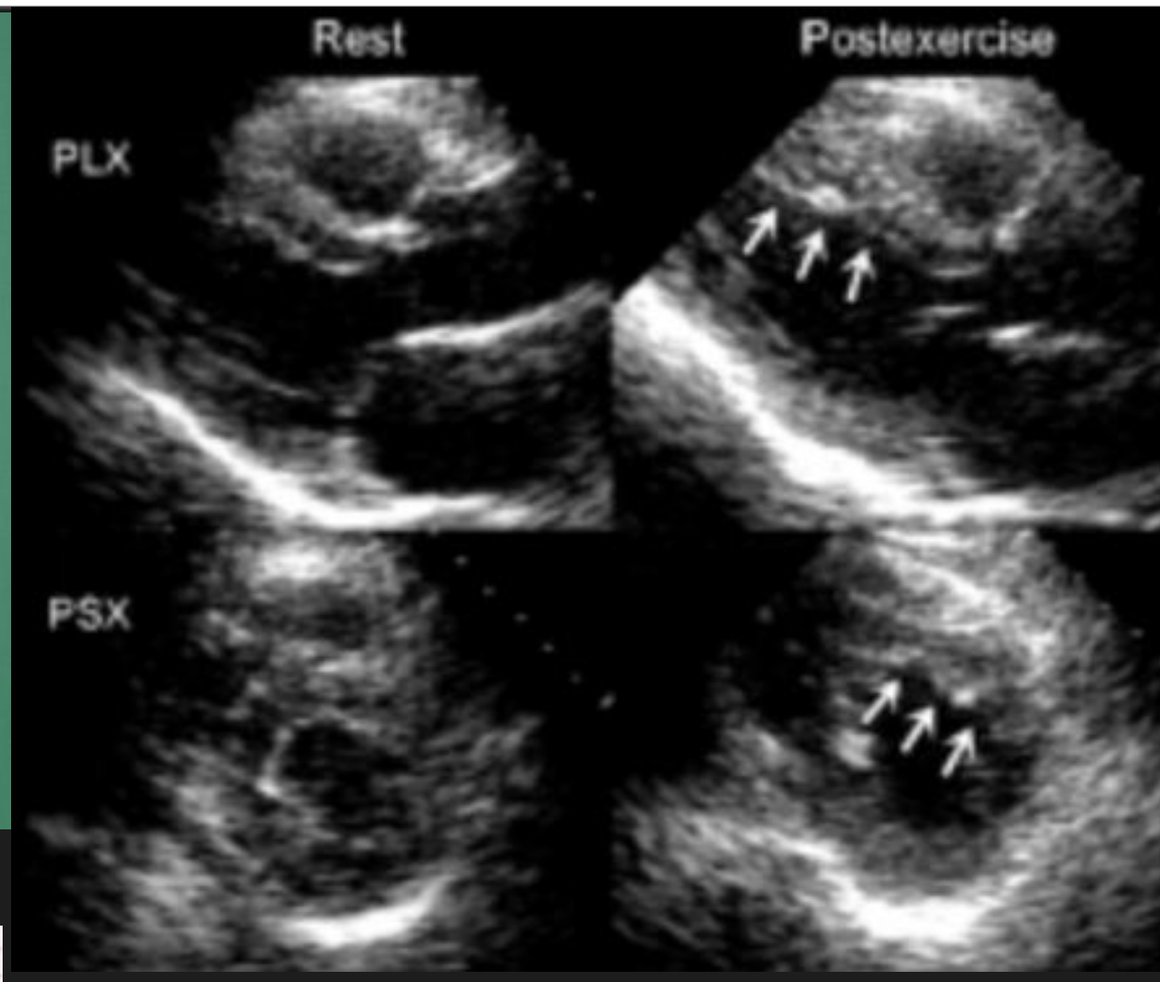


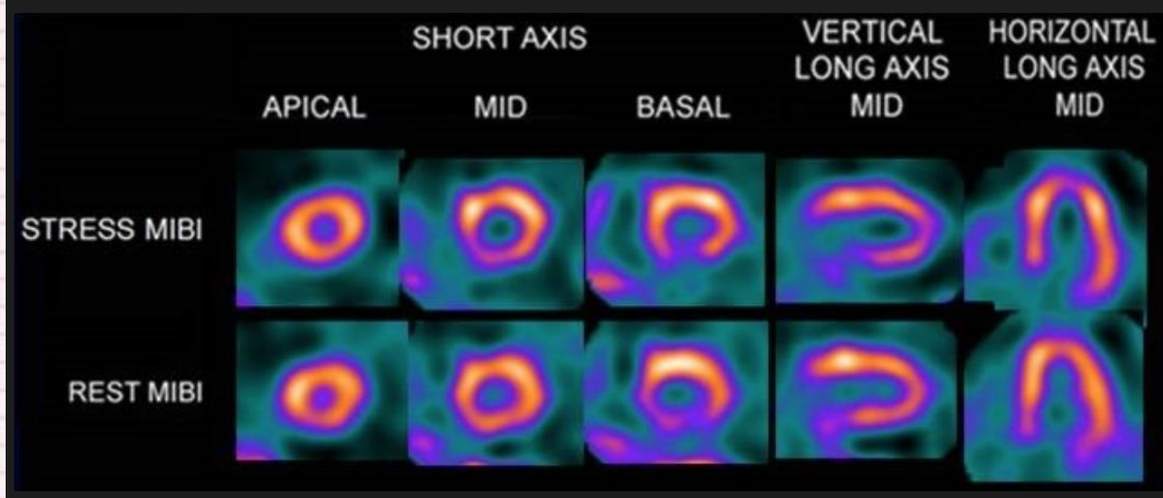


Regional Pathology: Screening Tests









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Thank You!