Unrealised potential of intensive low density lipoprotein-cholesterol reduction in patients with small AAA

Jonathan Golledge

James Cook University and Townsville University Hospital

Conflict of interest: Supported by funding from the NHMRC, JCU and Queensland Government.

QRCPVD

Queensland Research Centre for Peripheral Vascular Disease

Unrealised potential of intensive low density lipoprotein-cholesterol reduction in patients with small AAA

Dom Nastasi

Richard Norman

Joe Moxon

Ramesh Velu

Frank Quigley

Jason Jenkins

QRCPVD

Queensland Research Centre for Peripheral Vascular Disease

ESVS AAA guidelines: Reduction of cardiovascular risk

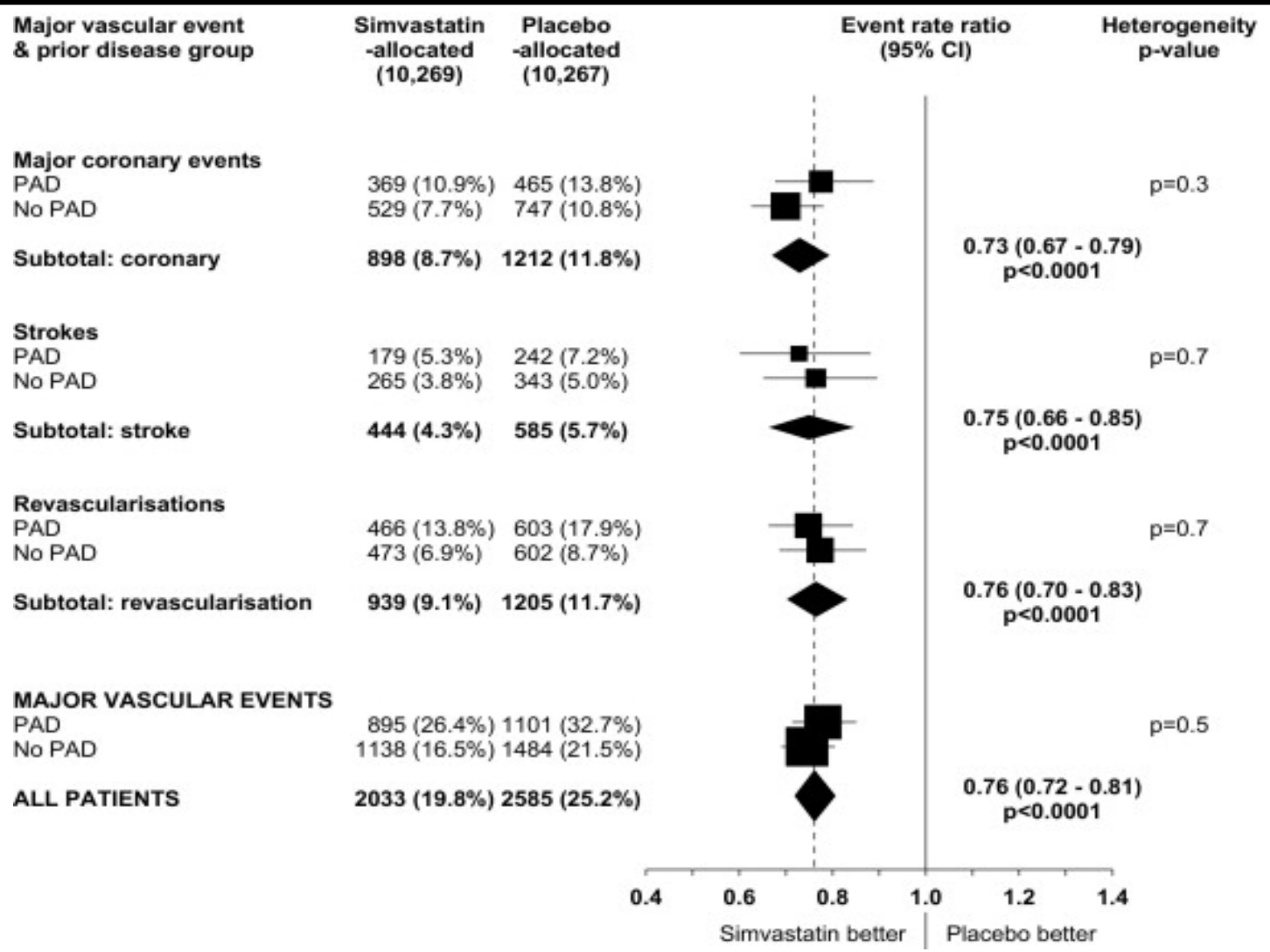
<u>Recommendation 21</u>

Blood pressure control, statins and antiplatelet therapy should be considered in all patients with abdominal aortic aneurysm

Class IIa: Weight of evidence in favour of usefulness
Level B: Data derived from a single RCT or large non RCT studies

Wanhainen A, et al. Eur J Vasc Endovasc Surg. 2019;57(1):8-93.

What is the RCT evidence for LDL-C reduction in AAA patients? UK HPS



Definition of PAD included previous AAA repair. HPS collaborative group. JVS. 2007;45: 645-54.

QRCPVD
Queensland Research Centre for Peripheral Vascular Disease

What is the incidence of major adverse CV events in patients with small AAA and potential to limit these by LDL-C reduction?

Aims: 1. Investigate control of LDL-c in patients with small AAA

2. Examine incidence of MVE and PVE in these patients

3. Model effect and cost of intensive LDL-C control on outcome

Design: Prospective cohort and modeling using RCTs data from UKHPS

Participants: 30-54mm AAA recruited 2002-19

Outcomes (UKHPS): MVE: MI, stroke, CV death, revascularisation

PVE: Non-coronary revascularisation, AAA repair or major amputation

Data analysis: KM, Cox to look at outcome and model impact of 1 mol/L reduction on events and costs using HPS relative reductions

Aim 1: Risk factors and medical management in relation to year of recruitment for 583 participants with small AAA

	2002-2007 (n=137)	2008-2013 (n=295)	2014-2019 (n=151)	P-value
Diameter (mm)	42 (35.0-48.0)	42.6 (37.0-49.0)	40.7 (36.5-46.9)	0.603
CHD	79 (57.7 %)	143 (48.5%)	68 (45.0%)	0.034
Stroke	12 (9.2%)	38 (13.0%)	9 (6.0%)	0.320
Statins	82 (59.9%)	215 (72.9%)	114 (75.5%)	0.004
High dose statin	9 (13.4%)	34 (22.8%)	18 (15.9%)	0.930
Any antiplatelet	90 (65.7%)	207 (70.2%)	91 (60.3%)	0.300
LDL-C	2.6 (1.9-3.2)	2.4 (1.8-3.0)	2.2 (1.7-3.0)	0.120
LDL-C <1.8mmol/L	31 (22.6%)	84 (28.5%)	51 (33.8%)	0.037

Nastasi DR, et al. Eur J Vasc Endovasc Surg. 2021;62:643-50.

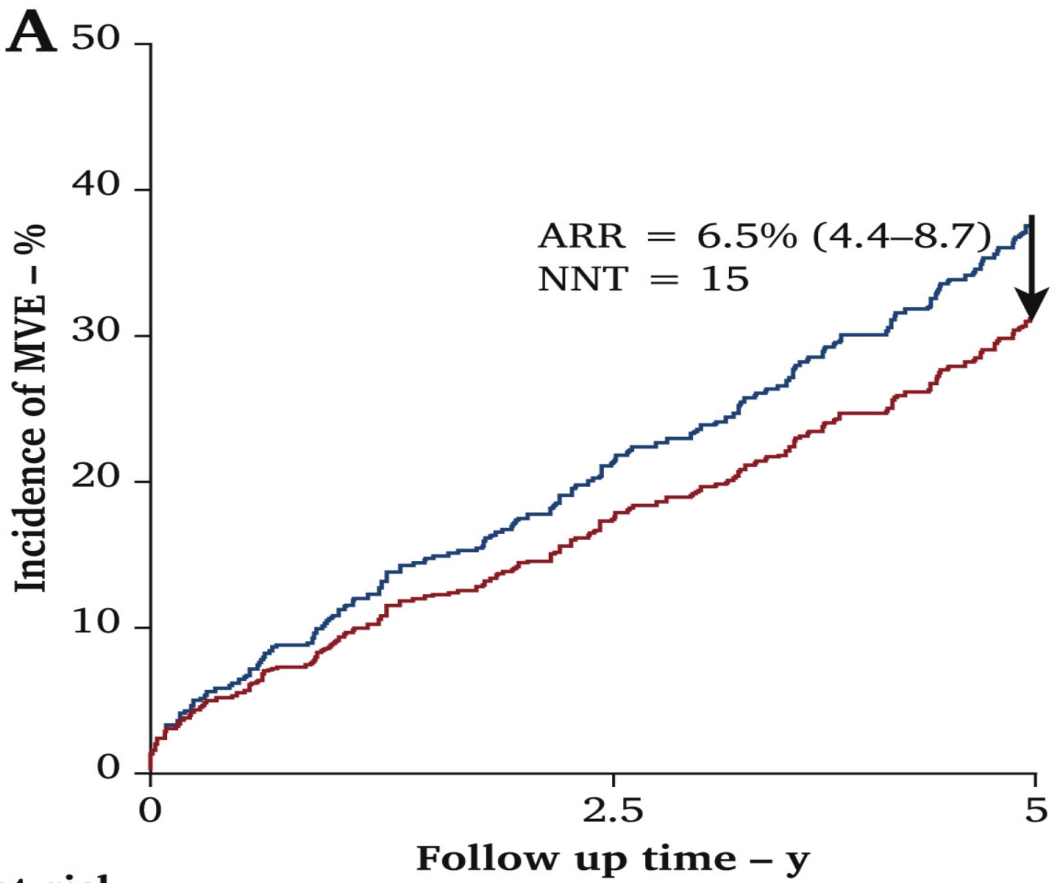
Aim 2: Major adverse events at 5 years

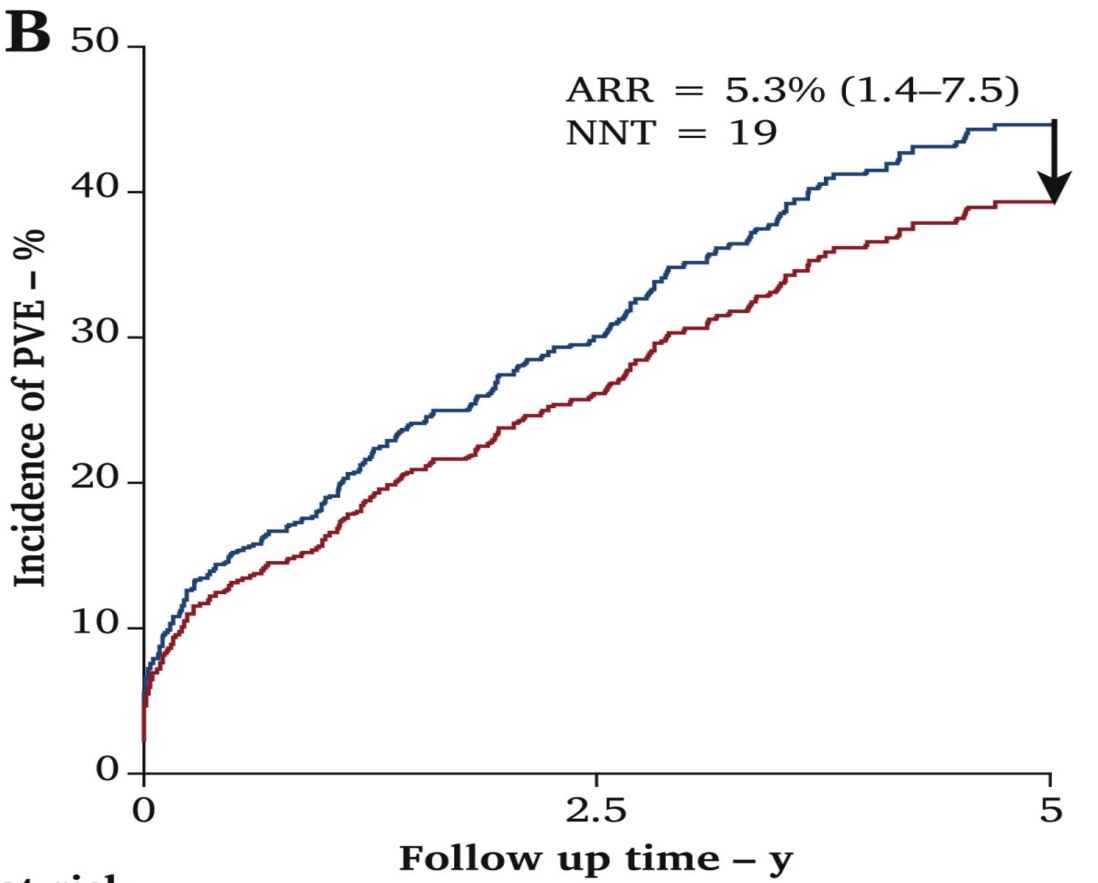
	Number experiencing event	KM event rate (%)
Major vascular event	163	38.1
Peripheral vascular event	208	44.7
Coronary revascularisation	36	8.4
Myocardial infarction	47	11.5
Stroke	23	5.6
Cardiovascular death	52	13.8
Lower limb peripheral revascularisation	64	15.4
Abdominal aortic aneurysm repair	186	39.2

Median follow-up 4.1 years and five year outcomes estimated with KM analysis

Nastasi DR, et al. Eur J Vasc Endovasc Surg. 2021;62:643-50.

Aim 3: Potential impact of lowering LDL-C by 1 mol/L





Nastasi DR, et al. Eur J Vasc Endovasc Surg. 2021;62:643-50.

Cost-effectiveness

- Estimated the costs saved from prevented events using published hospital data as €1,846,446

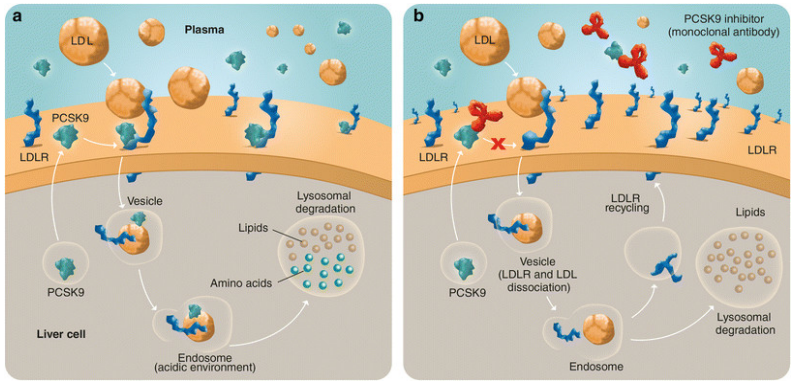
- To meet a cost-effectiveness threshold of <$28,000 per QALY gained a LDL-C lowering program could cost €768 per patient

- To meet a cost-effectiveness threshold of <$50,000 per QALY gained a LDL-C lowering program could cost €981 per patient

Nastasi DR, et al. Eur J Vasc Endovasc Surg. 2021;62:643-50.

Conclusions

- Rates of major vascular events and interventions in patients with small AAA very high
- Control of cardiovascular risk factors is poor offering enormous untapped potential to reduce burden
- Intensive LDL-c lowering may not be cost-effective with new agents like PCSK9 inhibitors (cost in Australia about 15k per year per patient) but a telehealth optimal medical management program could perhaps be cost-effective
- Limitations: Small sample size and modelling based on past RCT including repaired AAAs



QRCPVD
Queensland Research Centre for Peripheral Vascular Disease