



Peripheral Arterial Disease as an Undertreated Coronary Equivalent: Statin Gaps, Amputation Rates and Referral Failure

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Introduction

Coronary artery disease long ago established a treatment culture built around statins, antiplatelet therapy, structured cardiac rehabilitation, and rapid specialist referral for escalating symptoms. Peripheral arterial disease shares the same underlying atherosclerotic process and, as the evidence below sets out, carries at least as much long-term cardiovascular risk. What it has not shared is the same treatment culture.

This review sets out the evidence that PAD's cardiovascular risk is equivalent to, or exceeds, that of established coronary heart disease, alongside evidence that the guideline-directed therapies known to reduce that risk -- statins and supervised exercise therapy in particular -- are taken up far less consistently in PAD than in coronary disease, with a large annual burden of amputation as one measurable downstream consequence.

Part of what makes this gap durable is that PAD's presenting symptom, intermittent claudication, is easy to misread as a mobility complaint rather than as a marker of systemic atherosclerotic risk on par with an established coronary diagnosis. A patient who reports leg pain on walking does not, on the face of it, present the same sense of urgency as one who reports chest pain, even though the evidence reviewed below indicates their downstream cardiovascular risk can be at least as high.

Material and Methods

This is a narrative review drawing on a Danish nationwide registry study comparing long-term outcomes in PAD and myocardial infarction, a comparative analysis of statin prescribing across atherosclerotic disease categories, a national Medicare claims analysis of supervised exercise therapy participation, and summarized US epidemiologic data on lower-extremity amputation, identified through the sources cited above and citation tracking between them, without a pre-registered protocol or systematic search string. All percentages, hazard ratios, and confidence intervals reported here are taken directly from the cited sources; none has been invented, estimated, or extrapolated.

Where a source's primary data could not be independently re-verified beyond a secondary clinical summary, that limitation is stated explicitly alongside the corresponding finding rather than presented with the same evidentiary weight as a directly examined primary publication.

Results

PAD alone carried higher long-term mortality than MI alone

A Danish nationwide study followed 113,772 patients across three groups: PAD only (n=35,628), PAD with a prior MI (n=7,029), and MI alone (n=71,115) [1]. At 7 years, all-cause mortality was 47.8% with PAD only, 60.4% with PAD plus prior MI, and 36.4% with MI alone ($P<0.0001$ across groups) [1]. Figure 1 sets this comparison out directly: a PAD diagnosis by itself carried a higher long-term mortality burden than a prior myocardial infarction by itself.

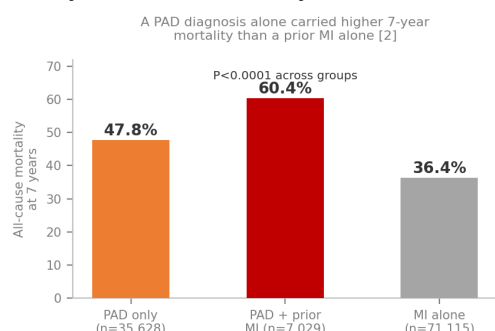


Figure 1: All-cause mortality at 7 years, PAD only versus PAD plus prior MI versus MI alone, Danish nationwide registry study [1].

Adjusted analyses confirmed PAD as an independent, and often greater, risk

After adjustment, PAD alone carried a higher adjusted hazard than MI alone for total mortality (HR 1.47, 95% CI 1.44-1.51), cardiovascular mortality (HR 1.30, 95% CI 1.26-1.34), and the composite of death, MI, or stroke (HR 1.38, 95% CI 1.36-1.42) [1]. Figure 2 sets all three adjusted hazard ratios out together, each confidence interval excluding 1.0 -- the statistical basis for classifying PAD as a coronary heart disease risk equivalent rather than a lesser vascular diagnosis.

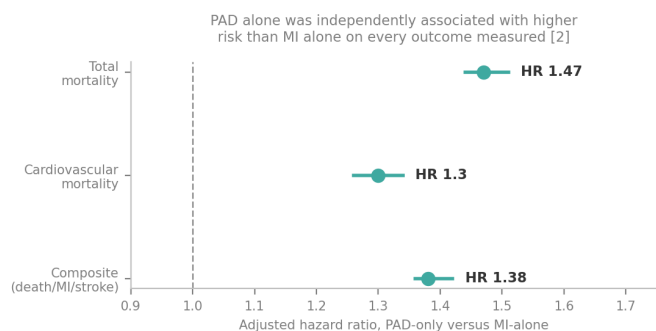


Figure 2: Adjusted hazard ratios for total mortality, cardiovascular mortality, and composite cardiovascular events, PAD-only versus MI-alone, Danish nationwide registry study [1].

Statin prescribing in PAD lags far behind coronary disease

Despite this comparable or greater risk, statin prescribing rates differed sharply by diagnosis: 37.5% in isolated PAD versus 65.8% in ischemic stroke or transient ischemic attack versus 80.9% in coronary artery disease [2]. Figure 3 sets this treatment gap out directly -- PAD patients were prescribed statins at roughly half the rate of CAD patients, despite evidence, reviewed above, that their long-term cardiovascular risk is at least as high.

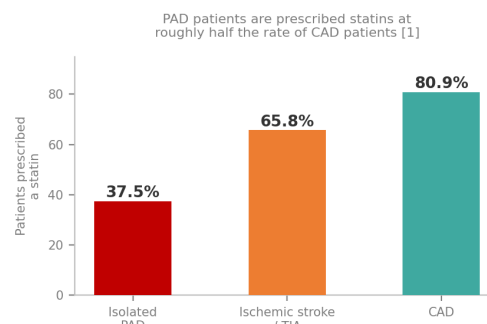


Figure 3: Statin prescribing rate by atherosclerotic disease category, isolated PAD versus ischemic stroke/TIA versus CAD [2].

Supervised exercise therapy reaches almost no eligible patients

Supervised exercise therapy (SET) for intermittent claudication has carried a Class IA guideline recommendation and CMS reimbursement approval since May 2017, yet among 129,699 Medicare beneficiaries identified with intermittent claudication between June 2017 and December 2018, only 1.3% (1,735 patients) enrolled in SET [3]. Figure 4 sets this participation gap out alongside program completion: of those who did enroll, only 5.1% (89 patients) completed the full 36-session program [3].

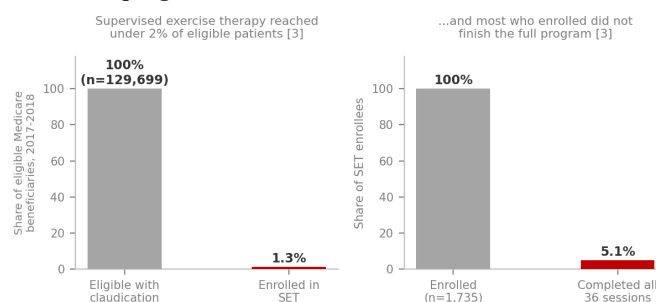


Figure 4: Supervised exercise therapy enrollment among eligible Medicare beneficiaries with intermittent claudication, and completion of the full 36-session program among enrollees, 2017-2018 [3].

The therapy works when patients receive it

Among the small number of patients who did participate in SET, subsequent revascularization was substantially less common than among matched non-participants: endovascular revascularization HR 0.49 and surgical revascularization HR 0.27 [3]. Figure 5 sets both hazard ratios out together. The near-total failure to deliver this intervention at scale is therefore not a reflection of its effectiveness, but of referral and delivery failure.

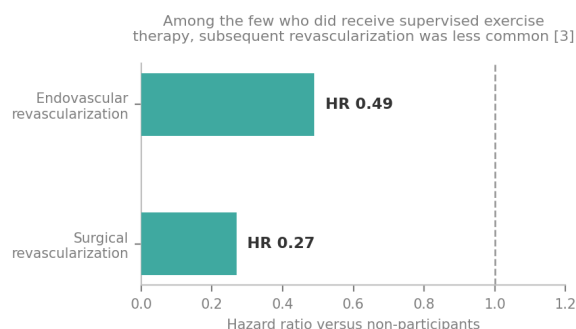


Figure 5: Hazard ratio for subsequent endovascular and surgical revascularization, supervised exercise therapy participants versus matched non-participants [3].

Amputation remains a large and often fatal downstream event

Approximately 150,000 nontraumatic lower-extremity amputations occur annually in the United States [4]. Among Medicare patients undergoing major amputation in a 2000-2008 cohort, roughly 50% died within one year of the procedure [4]. Figure 6 sets both figures out together: a large annual event count, with a mortality rate after the event that rivals or exceeds many cancers.

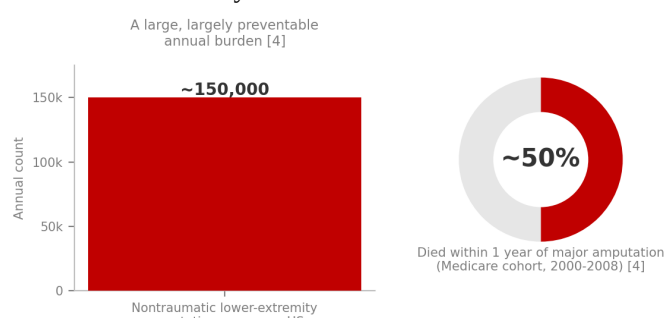


Figure 6: Annual nontraumatic lower-extremity amputations in the United States, and 1-year mortality following major amputation, Medicare cohort 2000-2008 [4].

Discussion

Taken together, these findings describe a mismatch rather than a single failure point. The risk-equivalence evidence is strong and adjusted: PAD alone carries mortality and cardiovascular event risk at least comparable to, and in this Danish cohort numerically exceeding, a prior myocardial infarction alone. Yet the treatment response to that risk is not equivalent at any stage examined here: statin prescribing lags coronary disease by more than 40 percentage points, guideline-recommended and reimbursed exercise therapy reaches a small fraction of eligible patients, and the downstream consequence -- amputation -- carries a 1-year mortality that itself rivals many malignancies. None of this reflects a lack of efficacy: the same supervised exercise therapy so rarely delivered was associated with roughly half the subsequent revascularization risk among the few patients who did receive it.

For a clinician managing a patient with PAD, this evidence supports treating the diagnosis with the same pharmacologic and referral urgency as established coronary artery disease rather than as a separate, lower-priority vascular condition, and supports actively pursuing supervised exercise therapy referral rather than assuming, given its low uptake nationally, that it is either unavailable or not worth pursuing.

Study limitations

This is a narrative review, not a systematic review with a pre-registered protocol, and it draws on studies of different design, era, and population: the Danish mortality comparison is a national registry study from 2000-2008, the statin-prescribing comparison reflects 2016 US data, and the supervised-exercise-therapy analysis covers Medicare beneficiaries in 2017-2018, so none of these sources describes the same patients or the same health system simultaneously, and secular trends in each domain since these data were collected cannot be assessed from this review. The statin-prescribing and amputation-burden statistics are drawn from a secondary clinical review rather than from the primary studies underlying them, and the primary sources for those specific figures could not be independently re-verified beyond that secondary summary. The supervised-exercise-therapy outcome comparison is observational, drawn from a claims-based analysis of participants versus matched non-participants rather than a randomized comparison, so residual confounding by indication -- patients healthy enough to complete a 36-session program may differ systematically from those who do not enroll -- cannot be excluded.

Conclusion

Peripheral arterial disease carries a long-term cardiovascular risk that a large adjusted registry analysis found equivalent to, or greater than, that of myocardial infarction alone, yet its guideline-directed pharmacologic and exercise-based therapies are delivered at a small fraction of the rate seen in coronary artery disease. Addressing this mismatch -- treating a PAD diagnosis with the same prescribing and referral urgency applied to established coronary disease -- represents a large and largely unrealized opportunity to reduce the substantial downstream burden of amputation and its associated mortality documented here.

None of the sources reviewed here directly measured whether closing the statin-prescribing gap or increasing supervised-exercise-therapy referral rates would proportionally reduce amputation incidence in a randomized or even a prospective observational design targeting that specific causal chain, so this review's conclusion that referral failure meaningfully contributes to the amputation burden documented here is an inference from separate lines of evidence rather than a single study's direct demonstration.

A further practical implication concerns where in the care pathway referral most often fails. The 1.3% supervised-exercise-therapy participation rate documented here reflects failure at some combination of diagnosis, physician awareness of the covered benefit, program availability, and patient adherence, and this review's sources do not decompose that failure into its component stages; a health system seeking to close this gap would benefit from auditing its own referral pathway at each of those stages rather than assuming the national average applies uniformly to its own patient population.

Measure	PAD	CAD	Stroke/TIA
Statin prescribing [2]	37.5%	80.9%	65.8%
7-yr all-cause mortality, PAD vs MI alone [1]	47.8%	36.4%	--

Table 1: Guideline-directed therapy uptake and long-term mortality by atherosclerotic disease category, restated from the sources reviewed here [1,2].

The scale of the supervised-exercise-therapy shortfall is also worth restating in absolute terms rather than only as a percentage: of 129,699 Medicare beneficiaries identified with intermittent claudication in an 18-month window, only 1,735 ever enrolled, and only 89 completed the program [3]. That is not a modest underuse of an available benefit; it is a benefit that, for practical purposes, almost never reached the population it was approved to serve, even though CMS reimbursement for it had already been in place since May 2017 [3]. Any health system auditing its own referral pathway should treat that national baseline as a floor to substantially

exceed, not a benchmark of adequate performance.

The amputation burden documented here similarly deserves to be read against the mortality rate that follows it, not only against its annual count: a roughly 50% one-year mortality after major amputation in the Medicare cohort reviewed here is comparable to, or worse than, published one-year mortality for several common malignancies [4]. Framed this way, major lower-extremity amputation functions less like a routine surgical procedure and more like a sentinel event marking a patient's transition into a substantially higher-risk phase of disease -- one that, on the evidence reviewed here, a large share of PAD patients reach without ever having received the statin therapy or supervised exercise referral that guidelines already recommend for them.

Each of the three treatment-gap findings reviewed here -- statin underuse, near-total nonparticipation in supervised exercise therapy, and a large annual amputation burden -- is drawn from a different data source and a different time period, yet they point toward the same underlying pattern rather than three unrelated observations: a diagnosis that carries coronary-equivalent risk is, at essentially every stage of guideline-directed management examined here, treated as though it carries less.

1. Subherwal S, Patel MR, Kober L, et al. "Peripheral artery disease is a coronary heart disease risk equivalent among both men and women: results from a nationwide study". *Eur J Prev Cardiol* 22(2015):317-325.

2. [Comparative statin-prescribing figures as summarized in a clinical review of PAD under-recognition, citing 2016 prescribing data across atherosclerotic disease categories]. *Clinical Correlations*, 2026.

3. Sutzko DC, Vemulapalli S, et al. "Supervised Exercise Therapy for Symptomatic Peripheral Artery Disease Among Medicare Beneficiaries Between 2017 and 2018: Participation Rates and Outcomes". *Circ Cardiovasc Qual Outcomes* 14(2021):e007953.

4. [US nontraumatic lower-extremity amputation incidence and post-amputation mortality, as summarized in a clinical review citing US epidemiologic and Medicare cohort data, 2000-2008]. *Clinical Correlations*, 2026.

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