

CLINICAL PRACTICE GUIDELINES

Editor's Choice – Focused Update on Paclitaxel Coated Technologies, from the 2024 European Society for Vascular Surgery (ESVS) Guidelines on the Management of Asymptomatic Peripheral Arterial Disease and Intermittent Claudication

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WHAT THIS PAPER ADDS

European Society for Vascular Surgery (ESVS) clinical practice guidelines (CPGs) are renewed regularly, usually every five years. ESVS CPG focused updates are issued to convey important new data that have emerged between the publication of full guidelines that affect patient safety or that in a decisive way impact decision making or patient management. This focused update provides guidance on the use of paclitaxel coated devices during infrainguinal endovascular procedures in patients with intermittent claudication (Rutherford stage 1–3). More specifically, it provides an update of relevance to the previously published recommendations 64 and 66 in the 2024 ESVS CPGs on the management of asymptomatic peripheral arterial disease and intermittent claudication.

Objective: This focused update to the European Society for Vascular Surgery (ESVS) clinical practice guidelines (CPGs) on asymptomatic peripheral arterial disease and intermittent claudication (IC) provide revised recommendations on paclitaxel coated devices for endovascular infrainguinal interventions. Recent evidence, particularly from the SWEDEPAD 2 trial, prompted re-evaluation of their efficacy and potential long term risks. As the previously published guidelines were directed towards patients with Rutherford categories 0–3, the present update maintains the same scope.

Methods: A narrative systematic review assessed the benefits and risks of paclitaxel coated balloons and stents in infrainguinal revascularisation for IC. The ESVS Guidelines Writing Committee incorporated new randomised trial data into updated recommendations, graded according to the ESVS CPGs recommendation grading system.

Results: The updated evidence suggested limited clinical benefit and possible long term harm from paclitaxel coated devices in this population. SWEDEPAD 2 reported no improvement in quality of life (difference in six item Vascular Quality of Life Questionnaire [VascuQoL-6] score at 12 months was -0.02 [95% confidence interval $-0.66 - 0.62$], indicating no clinically relevant effect) or in reduced re-intervention at 12 months compared with uncoated devices, and indicated a potential excess in the long term all cause mortality rate. These findings corroborate earlier safety concerns raised in a 2018 meta-analysis and in subsequent pooled analyses. Recently published long term efficacy and safety data from some additional pivotal drug coated balloon trials were also considered but reported no or marginal clinical benefits. The update consistently emphasises supervised exercise therapy and best medical therapies as first line treatment. Endovascular revascularisation is recommended only for persistent lifestyle limiting symptoms despite conservative therapy. Paclitaxel coated devices may be considered only for selected cases with re-stenosis following transparent discussion of uncertain long term safety and, at best, modest symptomatic benefit.

[†] A list of the authors in the ESVS Peripheral Arterial Disease Guidelines Writing Committee and the ESVS Guidelines Steering Committee is included in [Appendix C](#).

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Conclusion: This ESVS focused update integrates emerging evidence to guide contemporary management of IC. Clinicians should carefully balance the limited short term procedural benefits of paclitaxel coated devices against the lack of proven quality of life improvement and the persisting uncertainty regarding long term mortality risk. Management of IC should follow a stepwise approach, prioritising lifestyle modification, exercise therapy, and optimal secondary preventive pharmacotherapy, with revascularisation reserved for compliant patients who remain significantly limited. Emphasis should be placed on conservative management, shared decision making, and continued research to further define the long term safety profile of paclitaxel coated endovascular devices.

Keywords: Endovascular interventions, Intermittent claudication, Paclitaxel coated devices, Peripheral arterial disease

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INTRODUCTION

Management of intermittent claudication (IC) aims to relieve symptoms, improve walking distance and health related quality of life (HRQoL), and reduce cardiovascular risk through a combination of lifestyle measures, supervised exercise therapy, best medical treatment and, where appropriate, lower limb revascularisation procedures. These interventions have traditionally been performed by balloon angioplasty and may be further improved by other technical devices. Drug coated balloons (DCBs), specifically paclitaxel coated balloons and paclitaxel eluting stents, have been widely used in infrainguinal endovascular interventions because available evidence suggested their comparative effectiveness in reducing angiographic re-stenosis and early target vessel re-intervention.¹ However, their impact on outcomes that matter most to patients, long term survival, limb preservation, and quality of life, has remained uncertain. Furthermore, in 2018, Katsanos *et al.* reported an increased risk of long term death with paclitaxel coated devices.^{2,3} Although these findings have been debated by the global vascular community,^{4–6} owing to these safety concerns the benefit risk balance for using paclitaxel coated devices among patients with IC has also remained uncertain. More recently, an updated and substantially larger systematic review with meta-analysis, incorporating 34 randomised studies (7 486 patients; 25 465 person years of follow up), evaluated mortality patterns from randomised controlled trials of various paclitaxel coated devices. Although the included populations comprised a spectrum of peripheral arterial disease severity, the majority of patients had IC. This updated meta-analysis also identified a temporal signal suggestive of an increased post-procedural mortality rate potentially associated with paclitaxel coated devices.⁷

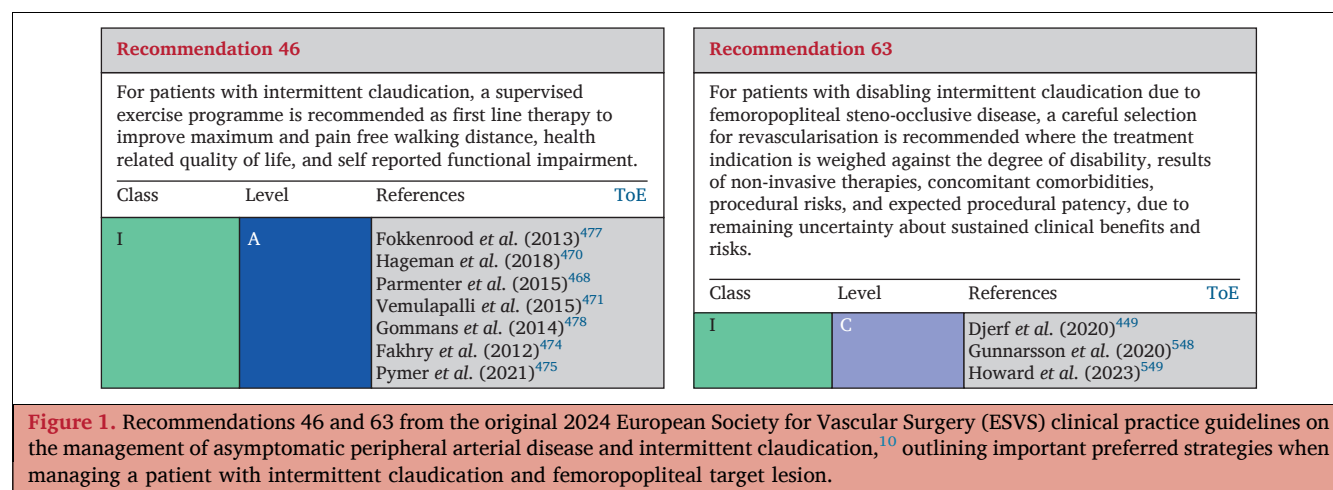
The recently published Swedish Drug Elution Trial in Peripheral Arterial Disease 2 (SWEDEPAD 2) registry based randomised trial exclusively enrolled patients with IC (Rutherford stage 1–3) undergoing infrainguinal endovascular interventions and compared paclitaxel coated devices with uncoated devices.⁸ The SWEDEPAD 2 trial assessed the performance of paclitaxel coated devices when applied in clinical practice, encompassing a broader range of lesions and vascular pathologies than those typically seen in pivotal device trials. SWEDEPAD 2 found no

clinically important improvement in peripheral arterial disease specific HRQoL at 12 months with paclitaxel coated devices and raised additional concerns about a signal of increased long term all cause mortality rate in the paclitaxel group over extended follow up. Furthermore, the use of drug coated devices did not improve either short or longer term rates of target vessel re-intervention or overall ipsilateral infrainguinal re-interventions throughout a median follow up of 6.2 years.⁸ Hence, these findings challenge the current assumptions about net patient benefit from paclitaxel coated technology and therefore re-open the effectiveness and safety debate.⁹ Considering these results, this focused guideline update revisits the recommendations on the use of paclitaxel coated devices during infrainguinal interventions in patients with IC. Specifically, the update: (1) summarises the SWEDEPAD 2 evidence alongside previous guideline recommendations and new data from recently published randomised trials; (2) re-emphasises the primacy of supervised exercise therapy and best medical therapies as first line treatments for IC; (3) recommends a more cautious, individualised approach to the use of paclitaxel coated devices; (4) highlights the need for transparent consent discussion, robust post-procedure routines, and continued research to further clarify the ultimate role for paclitaxel coated devices in patients with IC; and (5) suggests a brief written information directed to patients (“patient leaflet”) that may facilitate a discussion between caregivers and patients who face an infrainguinal revascularisation procedure where the use of drug coated devices is considered.

In this context, the Guideline Writing Committee would also like to re-emphasise two recommendations from the original guideline document (Fig. 1).¹⁰

METHODS

A narrative systematic review of the literature was undertaken to assess the effectiveness and medium to long term safety of paclitaxel coated devices in infrainguinal endovascular revascularisation for patients with IC. The review was based on a comprehensive PubMed search from November 2022 (coinciding with the last systematic search conducted for the 2024 European Society for Vascular Surgery [ESVS] clinical practice guidelines on the management of asymptomatic



peripheral arterial disease and intermittent claudication) through to November 2025, using the terms “peripheral arterial disease” and “paclitaxel”. The SWEDEPAD 2 data were first published on 31 August 2025. Only new randomised trial data, including extended follow up reports from previous trials, where the target population was foremost patients with IC (Rutherford stage 1–3) were considered, limited to full text original articles in English. Conference abstracts and unpublished data were not considered. Given the focused scope of the update, a narrative systematic approach was adopted; this may not capture all minor non-randomised reports published during the same period.

Following evidence scrutiny, the ESVS Guidelines Writing Committee formulated updated recommendations. These recommendations were graded according to the ESVS clinical practice guidelines recommendation grading system,^{11,12} whereby the strength (class) of each recommendation is ranked from I to III, and the level of evidence is denoted by the letters A to C. In accordance with standard ESVS guidelines procedures, this document was subsequently reviewed and approved by the members of the ESVS Guidelines Steering Committee.

RESULTS

Table 1 summarises findings from the focused, updated literature search, identifying four randomised controlled trials, with SWEDEPAD 2 being the largest.^{8,13–15}

The SWEDEPAD 2 trial ($n = 1\,155$) reported similar one year HRQoL (assessed with the six item Vascular Quality of Life Questionnaire [VascuQoL-6]) and Rutherford stage clinical improvement between paclitaxel coated and uncoated devices. At five years, death was statistically significantly more frequent with paclitaxel devices (4.57 vs. 3.28 per 100 person years; hazard ratio [HR] 1.47, 95% confidence interval [CI] 1.09–1.98, $p = .010$), although this excess attenuated and became non-significant with extended follow up to a median of 7.1 years (HR 1.18, 95% CI 0.94–1.48, $p = .16$). There was no loss of follow up for death. Among patients enrolled to SWEDEPAD 2, the rates of target vessel re-interventions as well as the total number of ipsilateral intrainguinal interventions were also

comparable, both up to one year and throughout full (median 6.2 years, interquartile range 3.1, 7.6) available follow up.⁸

Long term follow up in the Stellarex DCB performance trial (ILLUMENATE; $n = 300$), which achieved near complete (> 99%) five year follow up (however, endpoint ascertainment at 60 months was conducted predominantly via telephone interview), showed comparable five year freedom from clinically driven target lesion revascularisation (CD-TLR) (70.3% vs. 68.2%; $p = .505$) and freedom from all cause death (80.1% vs. 80.2%; $p = .980$) compared with percutaneous transluminal angioplasty (PTA) alone; clinical improvement and HRQoL were not specifically reported.¹³

The Freeway DCB trial (comparing DCB with PTA subsequent to primary nitinol stenting) reported improved five year freedom from CD-TLR compared with PTA (85.3% vs. 72.7%; $p = .032$), with a similar five year all cause mortality rate (12.0% vs. 15.0%; risk ratio 0.81, 95% CI 0.35–1.90); however, it should be noted that only 151 patients (74.0%) from the original trial ($n = 204$) were included in this extended follow up analysis.¹⁴

The EffPac trial ($n = 171$, with approximately 50% followed up to five years) demonstrated higher five year primary patency with Luminor DCB vs. PTA (61.4% vs. 53.5%; $p = .040$), with comparable CD-TLR (82.1% vs. 73.7%; $p = .050$) and five year mortality rates (11.5% vs. 14.0%; $p = .34$); Rutherford clinical improvement, however, was similar between groups (61% vs. 64%), and HRQoL outcomes were not reported.¹⁵

For further details, please also refer to the more comprehensive table of evidence included as [Appendix A](#). Finally, a suggested document (“patient leaflet”; [Appendix B](#)) is included to help patients and clinicians during shared decision making.

DISCUSSION

Considering their higher costs and the uncertain impact on patient centred outcomes, routine use of paclitaxel coated devices for femoropopliteal interventions in IC appears unjustified. Until further evidence is available, clinicians should therefore weigh modest, mainly short term,

Table 1. Summary of published evidence regarding the use of paclitaxel coated devices in intermittent claudication, following the latest literature search undertaken when developing the 2024 European Society for Vascular Surgery (ESVS) clinical practice guidelines on the management of asymptomatic peripheral arterial disease and intermittent claudication.

Study (year)	Device/ intervention	Comparator	Patients – <i>n</i> (Rutherford stage)	Lesion location/ length	Key efficacy outcomes	Key secondary/safety/ mortality outcomes
SWEDEPAD 2 (2025) ⁸	Treatment strategy with paclitaxel coated devices (specific device used was decided by the operator)	Treatment strategy with uncoated devices	1 155 (all Rutherford 1–3)	Mostly (96.1%) femoropopliteal, 36.1% had TASC II C or D lesions	○ One year QoL (VascuQoL-6) mean sum score difference –0.02 (95% CI –0.66 –0.62; <i>p</i> = .96)	● Five year all cause mortality rate higher with paclitaxel (4.57 vs. 3.28 per 100 person years; HR 1.47 [95% CI 1.09–1.98], <i>p</i> = .010); median 7.1 year mortality no significant difference (HR 1.18 [95% CI 0.94–1.48], <i>p</i> = .16) ○ One year Rutherford stage clinical improvement similar across treatment arms ○ TVR rates similar across treatment arms
For the primary QoL endpoint analysis, 1 136 patients were included in the intent to treat analysis. No patients were lost to follow up for the mortality assessment						
ILLUMENATE (2024) ¹³	Stellarex DCB, (paclitaxel dosing 2.0 µg/mm ²)	PTA	300 (>90% Rutherford 2–3)	Femoropopliteal, mean lesion length 8.0 ± 4.5 cm (DCB) and 8.9 ± 4.6 cm (PTA)	○ Freedom from CD-TLR 70.3% vs. 68.2% (<i>p</i> = .505)	○ Five year freedom from all cause death 80.1% vs. 80.2% (<i>p</i> = .980); primary safety event 69.2% vs. 68.2% (<i>p</i> = .623)
99.3% of DCB patients and 100% of PTA patients completed the 60 month visit						
Freeway trial (2024) ¹⁴	Nitinol stenting followed by Freeway DCB (paclitaxel dosing 3.0 µg/mm ²)	Nitinol stenting followed by PTA	204 (>90% Rutherford 2–3)	SFA/proximal popliteal, mean lesion length 7.7 ± 4.2 cm (DCB) and 8.3 ± 4.1 cm (PTA)	● Five year freedom from CD- TLR 85.3% vs. 72.7% (<i>p</i> = .032)	○ Five year all cause mortality rate 12.0% (DCB) vs. 15.0% (plain balloon angioplasty)
151 patients included in the five year follow up extension						
EffPac (2022) ¹⁵	Luminor DCB (paclitaxel dosing 3.0 µg/mm ²)	PTA	171 (>90% Rutherford 2–3)	Femoropopliteal, mean lesion length 5.9 ± 4.3 cm (DCB) and 5.6 ± 3.9 cm (PTA)	● Five year primary patency 61.4% vs. 53.5% (<i>p</i> = .040)	○ Freedom from TLR 82.1% vs. 73.7% (<i>p</i> = .050) ○ Five year all cause mortality rate 11.5% (DCB) vs. 14.0% (plain balloon angioplasty) (<i>p</i> = .34) ○ Rutherford clinical improvement similar (61% vs. 64%)
At five years, clinical follow up was completed by 55% (DCB) and 53% (PTA); duplex ultrasound follow up was 46% and 50%, respectively						

● = potential safety concern, ○ = no significant difference, ● = efficacy benefit. TASC II = Trans-Atlantic Inter-Society Consensus on the Management of Peripheral Arterial Disease; QoL = quality of life; VascuQoL-6 = six item Vascular Quality of Life Questionnaire; CI = confidence interval; HR = hazard ratio; TVR = target vessel revascularisation; DCB = drug coated balloon; PTA = percutaneous transluminal angioplasty; CD-TLR = clinically driven target lesion revascularisation; SFA = superficial femoral artery; TLR = target lesion revascularisation.

reductions in re-intervention against the absence of demonstrated HRQoL benefit and the unresolved potential for excess long term mortality.⁷ Decisions should be guided by shared decision making, prioritising outcomes meaningful to patients and supporting informed, transparent choices. The authors acknowledge that paclitaxel coated devices have previously been shown to enhance vessel patency and reduce re-intervention rates in selected patient cohorts, particularly in smaller industry sponsored trials and meta-analyses. The SWEDEPAD 2 findings do not dispute these procedural benefits; however, they suggest that, in a broader clinically routine population, such advantages may

not translate into meaningful improvements in quality of life or overall safety, both of which are cornerstones of widespread clinical adoption. Future research should aim to clarify the type and determinants of potential excess mortality, explore underlying biological mechanisms, establish whether the risk is a class effect or device specific, and approach the introduction of alternative drug coated devices, including limus based therapies, with caution. Another research priority is to further clarify potential effectiveness and safety differences between drug coated balloons and drug eluting stents. Such research efforts should also seek to achieve greater uniformity in trial reporting, including the

adoption of established frameworks for the standardisation of intervention descriptions and the use of agreed core outcome sets, thereby facilitating comparison of results across trials.^{16,17} Given current evidence, paclitaxel coated devices should not be used routinely for claudication and should be reserved for carefully selected cases of re-stenosis where benefits more clearly outweigh risks.

New recommendations (replacing recommendations 64 and 66 in the original 2024 European Society for Vascular Surgery [ESVS] clinical practice guidelines on the management of asymptomatic peripheral arterial disease and intermittent claudication)

Recommendation 1		Updated
For patients with intermittent claudication undergoing endovascular femoropopliteal intervention, the routine adjunctive use of paclitaxel coated balloons or paclitaxel eluting stents is not recommended owing to the lack of demonstrated quality of life benefit and concerns regarding potential long term mortality risk.		
Class	Level	References
IIIb	A	Nordanstig <i>et al.</i> (2025), ⁸ Krishnan <i>et al.</i> (2024), ¹³ Hausegger <i>et al.</i> (2024), ¹⁴ Teichgräber <i>et al.</i> (2022) ¹⁵

Recommendation 2		Updated
Paclitaxel coated devices may be considered for carefully selected patients with intermittent claudication and femoropopliteal re-stenosis with significantly impaired walking ability and quality of life, provided patients are fully informed of the uncertain long term safety profile.		
Class	Level	Reference
IIb	C	Consensus

CONFLICTS OF INTEREST AND FUNDING

J.N. reports a research grant from the Swedish Heart Lung Foundation; honoraria from Novo Nordisk for a podcast recording about peripheral artery disease; advisory board roles and trial executive committee memberships for AstraZeneca, Novo Nordisk, Eli Lilly, and iThera Medical; and is the President of the Swedish Society for Vascular Surgery. J.N. is also the Steering Committee Chair and Co-PI for the SWEDEPAD trials.

APPENDICES. SUPPLEMENTARY DATA

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ejvs.2026.04.037>.

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