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REVIEW

Ethics and shared decision-making in major amputation for the diabetic foot

Ética y toma de decisiones compartida en la amputación mayor del pie diabético

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ABSTRACT

Major lower-extremity amputation for diabetic foot disease is a decision with lasting physical and existential consequences, and it is frequently reached under prognostic uncertainty and without fully shared deliberation. This narrative review synthesizes the evidence on the ethical considerations and shared decision-making processes that surround the choice between limb salvage and major amputation in people with diabetes-related foot disease. The synthesis shows that long-term mortality after diabetic foot disease exceeds that of several cancers, that prognostic and frailty tools inform but do not resolve the decision, and that the four principles of biomedical ethics remain in recurring tension. Shared decision-making is inconsistently achieved: patients, surgeons and care teams describe communication gaps, decisional conflict is mediated by anxiety and depression, and patients weight amputation-level outcomes differently from providers. Decision aids exist but remain under-implemented, and ethnic, insurance, income and social vulnerability gradients modify who is amputated and who receives limb preservation. The review concludes that the amputation decision should be reframed as an ethical and preference-sensitive process supported by equity-informed decision tools and structured communication, and it identifies the outcome gaps that future studies should address.

Keywords: diabetic foot; amputation; shared decision making; clinical ethics; patient preference; limb salvage.

RESUMEN

La amputación mayor de la extremidad inferior por pie diabético es una decisión con consecuencias físicas y existenciales duraderas, que se toma bajo incertidumbre pronóstica y sin una deliberación plenamente compartida. Esta revisión narrativa sintetiza la evidencia sobre las consideraciones éticas y los procesos de toma de decisiones compartida que rodean la elección entre salvamento de extremidad y amputación mayor en el pie diabético. La síntesis muestra que la mortalidad a largo plazo tras la enfermedad del pie diabético supera la de varios cánceres, que las herramientas pronósticas y de fragilidad informan pero no resuelven la decisión, y que los cuatro principios de la ética biomédica permanecen en tensión recurrente. La toma de decisiones compartida se logra de forma inconsistente: pacientes, cirujanos y equipos describen brechas de comunicación, el conflicto decisional está mediado por ansiedad y depresión, y los pacientes ponderan los desenlaces de manera distinta a los profesionales. Existen ayudas para la decisión, pero siguen infrautilizadas, y los gradientes étnicos, de seguro, de ingreso y de vulnerabilidad social condicionan quién es amputado y quién recibe salvamento. La revisión concluye que la decisión de amputación debe reformularse como un proceso ético y sensible a las preferencias, apoyado en herramientas de decisión con enfoque de equidad y en comunicación estructurada, e identifica las brechas de desenlace que deberán abordar los estudios futuros.

Palabras clave: pie diabético; amputación; toma de decisiones compartida; ética clínica; preferencia del paciente; salvamento de extremidad.

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INTRODUCTION

Diabetes-related foot disease opens with ulceration and, in a substantial proportion of cases, closes with major amputation. Schaper et al.(1) set out the prevention and management framework of the International Working Group on the Diabetic Foot, including its risk classification, and located major amputation at the far end of a pathway that good care is meant to interrupt. Xiang et al.(2) quantified the incidence of diabetes-related foot disease in two prospective cohorts and a meta-analysis, and Zhu et al.(3) described the hospital burden, amputation risk and mortality trends that follow it. The most sobering figure comes from Zeng et al.,(4) who found in three international cohorts that long-term mortality in diabetic foot disease exceeds that of overall cancer. Chuter et al.(5) added that, although amputation rates are declining in several countries, the declines are uneven and coexist with local inequities.

The choice that sits at the centre of this pathway is between limb salvage and major amputation. Nypaver (6) reviewed chronic limb-threatening ischemia and framed revascularization against primary amputation, while Radomski et al.(7) examined how the same trade-off is navigated in older adults. Chiu et al.(8) reported that multidisciplinary management reduces readmission, major amputation and mortality, and Fereydooni et al.(9) observed that an extremity preservation program improved quality of life for patients with advanced limb threat. Leo et al.(10) found that podiatric care is associated with reduced mortality and enhanced amputation-free survival, and Chávez Moya et al.(11) summarized the podiatric and technological strategies that move a foot from ulcer to remission. None of these authors, however, resolved which patient should accept salvage and which should accept amputation when both options remain technically available.

The controversy is practical rather than theoretical. Teams must decide whether a patient is offered one more revascularization or a well-timed amputation, and the literature assembled so far does not state how that offer should be made or who should make it. Elwyn et al.(12) supplied the shared decision-making model that now governs that conversation, and Stacey et al.(13) showed in a Cochrane review that decision aids improve knowledge and participation across preference-sensitive decisions. Xu et al.(14) applied the four principles of biomedical ethics to the amputation versus limb salvage decision and concluded that the principles remain in recurring tension. The empirical picture is less tidy. Ong et al.(15) found in a scoping review that decision-making processes for non-emergency diabetes-related lower extremity amputations are heterogeneous and poorly described, and Prout et al.(16) documented the challenges that patients, families and clinicians confront when they try to share the decision about major lower limb amputation.

The moment is also a methodological one. The guidance of Schaper et al.(1)and the decision tools of Czerniecki et al.(17)and Smolderen et al.(18)are recent enough that practice has not yet absorbed them, while the qualitative work of Prout et al.(16)and Uhrenfeldt et al.(19)has only now supplied the patient voice that earlier normative analyses lacked. A synthesis written today can therefore do what earlier reviews could not: it can hold the prognostic, the ethical and the decision-making evidence in a single frame and ask where they fail to meet.

What those authors left open is the connection among the three levels. Xu et al.(14) provided a normative analysis without field-testing it against patient accounts; Ong et al.(15) mapped the process but not the ethical content of the decision; Prout et al.(16) identified communication challenges without linking them to the equity gradients that determine who reaches the decision at all. The objective of this review is to synthesize the ethics and the practice of shared decision-making in major amputation for the diabetic foot, to organize the evidence in four thematic axes, and to derive from that synthesis a practical agenda for clinicians and a research agenda for the field.

DEVELOPMENT

Clinical and prognostic context of the decision

The decision about major amputation takes place inside a clinical context in which the stakes are already measured in mortality. Zeng et al.(4)reported from three international cohorts that long-term mortality in diabetic foot disease is higher than that of overall cancer, a finding that reframes amputation as one turn in a longer illness rather than as its endpoint. Schaper et al.(1)supplied the classification that stages foot risk and guides prevention, and Xiang et al.(2)quantified the incidence of diabetes-related foot disease in two prospective cohorts and a meta-analysis. Zhu et al.(3) described how hospital burden, amputation risk and mortality have evolved over time, and Chuter et al.(5)observed that the declines in amputation are real but locally uneven, so the probability of

limb loss is not distributed uniformly across the population that faces it.

Against that background clinicians attempt to predict who will lose the limb and who will survive its loss. Lu et al.(21) developed a risk prediction model for major amputation in patients with diabetic foot, Tillqvist et al.(22) showed that the clinical frailty scale predicts outcomes after lower extremity amputation among people with diabetes, and Trivedi et al.(23) mapped the amputation levels available in high-risk chronic limb-threatening ischemia. These instruments describe the probability space, but none of them encodes what the patient values, which is why the same prediction can be used to justify aggressive salvage in one consultation and early amputation in another. A model that predicts a high probability of amputation can, in one service, trigger an earlier referral for salvage and, in another, a faster acceptance of limb loss, because the instrument carries no instruction about which response respects the patient's priorities. The tools therefore sharpen the clinical question without narrowing the ethical one, and their developers report discrimination but not deliberation.

The treatment options themselves are described by authors who reach compatible conclusions about the trade-off. Nypaver(6)reviewed chronic limb-threatening ischemia and positioned revascularization against primary amputation, and Radomski et al.(7)examined how older adults face that same choice, where functional recovery and time at home matter as much as limb retention. Hinojosa et al.(24)added the trajectory view by showing how minor amputations progress to major ones in patients with diabetes and peripheral arterial disease, which means the decision is not a single event but a series of escalations. Each escalation is an opportunity for a shared decision that clinical practice does not consistently take, because the minor amputation that precedes the major one is not discussed in the same ethical terms as the major one that follows. The salvage option is summarized by Chiu et al.,(8)who found that multidisciplinary management reduces readmission, major amputation and mortality, by Fereydooni et al.,(9)who observed that an extremity preservation program improves quality of life, and by Leo et al.,(10)who reported that podiatric care is associated with reduced mortality and enhanced amputation-free survival. Chávez Moya et al.(11)summarized the podiatric and technological strategies that move a diabetic foot from ulcer to remission, and Ruemenapf et al.(25)described the therapeutic alternatives for patients without an option for revascularization, a group for whom primary amputation can be the humane rather than the failed choice. Unlike the findings of Chiu et al.(8)and Leo et al.,(10)who emphasized the gains of organized salvage, Ruemenapf et al.(25) described a subgroup in whom salvage is not available and for whom the clinical question is not whether to save the limb but how to time its loss. The gap that remains after these contributions is not clinical but deliberative: none of the authors evaluated whether their prognostic instruments changed the quality of the decision conversation itself, which is the step the next three axes examine.

Ethical principles and value conflicts

The ethical reading of the amputation decision has its clearest statement in the analysis of Xu et al.,(14)who applied the four principles of biomedical ethics to the choice between amputation and limb salvage in limb-threatening lower extremity conditions and concluded that autonomy, beneficence, non-maleficence and justice pull in different directions in almost every case. Autonomy defers to the patient's expressed wish; beneficence points toward the intervention most likely to prolong a functional life; non-maleficence cautions against the morbidity of either path; and justice asks how scarce revascularization and prosthetic resources are distributed. The consequence of Xu et al.(14)is that a purely principle-based analysis clarifies the conflict but does not resolve it, because the principles must be weighted rather than applied. The fourth principle is also the least developed in this literature. None of the ethical analyses collected here quantifies how revascularization capacity, operating time and prosthetic funding are rationed across the populations in which, as the fourth axis shows, the amputation burden concentrates, which leaves the justice dimension of the decision asserted rather than measured.

What those principles mean on the ground is supplied by Uhrenfeldt et al.,(19)who described the ethical dimensions of living with one leg in a qualitative study and showed that amputation is experienced as an existential and moral disruption that goes beyond functional loss. Just as Xu et al.(14)found the principles in tension, Uhrenfeldt et al.(19)found that the meaning of benefit is reconstructed by patients after the fact, which weakens any clinician's confidence in predicting it beforehand. Amputation is experienced as an existential and moral disruption that reaches beyond functional loss, and the analysis of Uhrenfeldt et al.(19)implies that a limb a surgeon judges non-viable may still be the limb a patient needs for identity, while a life that looks shortened on a survival curve may still feel worth living to the person who owns it.

A second conflict concerns the point at which continued salvage becomes harm. Zhou et al.(26)argued that deferring amputation in diabetic foot osteomyelitis can do more harm than good, because prolonged infection and repeated procedures accumulate morbidity that a timely amputation would have spared. de Mestral et al.(27)described end-of-life care following leg amputation in patients with peripheral artery disease or diabetes, positioning amputation within palliative rather than curative trajectories, and Cattermole et al.(28)reported that integrating palliative care consultation into the management of chronic limb-threatening ischemia changes the conversation from limb to life. Martelli et al.(29)framed the decision to stop as the most difficult and painful one clinicians face, and Nash et al.(30)argued that amputation above the ankle can be the intervention that achieves the best outcome for the patient, reversing the assumption that salvage is always the virtuous choice. Guo et al.(31)showed that a statewide one-year mortality estimate can be generated prospectively and used to mark futility, although they also demonstrated that a probability is not a judgment. The unresolved question is empirical: the normative analyses of Xu et al.(14)have not been tested against the accounts that patients such as those interviewed by Uhrenfeldt et al.(19)actually give. That testing is precisely what the shared decision-making axis describes, and its results suggest that the principles are easier to assert than to operationalize.

Shared decision-making in practice

The largest recent empirical contribution comes from Prout et al.,(16)whose PERCEIVE qualitative study documented the challenges of shared decision-making about major lower limb amputation and found that patients, families and clinicians struggle with timing, information and the weight of a decision that feels irreversible. The distance between the shared decision-making model set out in the introduction and the practice that Prout et al.(16)observed is the central finding of this axis, and the studies that follow locate the gap at each step of the conversation.

Ong et al.(15)showed in a scoping review that decision-making processes for non-emergency diabetes-related lower extremity amputations are heterogeneous, under-documented and not made explicit, which means the field cannot yet say what a typical decision looks like. Leonard et al.(32)found that patients and their care teams perceive shared decision-making differently, with patients reporting less involvement than clinicians believe they offer. Støvring(33)reported from a national cross-sectional survey that patient experience of pre-amputation communication is variable, and Støvring(34)described the facilitators and barriers that surgeons themselves perceive when deciding the level of amputation. The affective dimension is not incidental to these gaps. Wang et al.(35)found that anxiety and depression mediate the relationship between decisional conflict and decision regret in diabetic foot amputation patients, and Cach et al.(36)identified the factors that influence acceptance of lower extremity amputation. The timing of the conversation is part of the difficulty. Prout et al.(16)found that patients are approached about amputation at moments of crisis, when pain, sepsis or altered cognition limit the very capacity that shared decision-making presupposes, and Støvring(33)showed that the quality of pre-amputation communication improves when the conversation begins before that crisis.

Preferences are measurable and differ between the parties. O'Hara et al.(37) quantified patient preferences regarding limb salvage for diabetic foot ulcers in a discrete choice experiment and showed that patients assign measurable value to avoiding major amputation. Poehler et al.(38) developed a multiple criteria decision analysis to compare patient and provider priorities around amputation-level outcomes, and Poehler et al.(39) found that those priorities diverge, with patients and providers ranking the same amputation-level outcomes in different orders. Günbaş et al.(40) described how the fear of amputation shapes the lives of patients with diabetic foot ulcers even before any decision is made, which helps explain why the offer of information alone does not produce a shared decision.

Tools exist but remain at the edge of practice. Czerniecki et al.(17)developed the AMPDECIDE decision aid for patients facing amputation secondary to chronic limb-threatening ischemia, Henderson et al.(41)tested its feasibility, and Smolderen et al.(18)described the development and alpha testing of the SHOW-ME PAD decision aid for treatment decisions in peripheral artery disease. Laor et al.(42)assessed the online patient education materials available for major lower extremity amputation, and Anderson et al.(43)showed that shared decision-making for prosthetic care after amputation remains similarly underdeveloped. The digital layer is arriving without a settled role. ten Klooster et al.(44)interviewed stakeholders about machine learning models that predict diabetic foot ulcers and amputations, Shan et al.(45)traced how non-professional health information delays standard care, and Anil et al.(46)showed that discomfort avoidance and a desire for normality drive footwear choices in underserved communities at risk of ulceration. Goodney et al.(47)reviewed pa-

tient-reported outcome measures in chronic limb-threatening ischemia, and Alabdullah et al.(48) synthesized the lived experience of phantom limb after lower extremity amputation; both matter because the consequences of the decision are measured in the patient's own terms. No published trial yet links a decision aid to decisional conflict, regret or satisfaction after major amputation. The endpoints that such a trial would need are already in use: the conflict and regret scales employed by Wang et al.(35)supply the primary outcome, and the discrete choice methods of O'Hara et al.(37) supply the preference weights against which the decision could be audited. The decision also does not end with the incision. Alabdullah et al.(48)synthesized the lived experience of phantom limb after lower extremity amputation, and Anderson et al.(43)showed that the shared decisions that follow amputation, about prosthesis and mobility, are as under-supported as the decision that preceded it. A patient who consents to amputation is therefore consenting to a rehabilitation that the system may not deliver, and consent that stops at the operation overstates what the patient has actually agreed to.

Contextual and equity factors

Who reaches the amputation decision, and who is offered salvage, is shaped by factors that ethics and shared decision-making do not control. Hamtzany et al.(49) reported ethnic disparities in mortality following hospitalization for diabetic foot ulcer, Eakers et al.(50) found that patient insurance status and race modify outcomes for diabetic patients undergoing care for foot ulcers and infections, and Zhang et al.(51) used a large electronic health record database to show how social determinants of health mark the diabetic population that receives major lower extremity amputation. Lee et al.(52) described income-based disparities in diabetic limb preservation in South Korea, Hart et al.(53) linked the social vulnerability index to outcomes in chronic limb-threatening ischemia, and Daly et al.(54) showed that marital status, a proxy for caregiving support, predicts clinical outcomes in the same population. The consistency of these gradients across countries and designs suggests that the amputation decision is partly determined before any consent conversation begins.

The meaning of the foot and of its loss is culturally loaded. Otene et al.(55) described the cultural and spiritual impact of diabetes-related lower limb amputation among Māori, for whom the feet carry a sacred connection that standard consent forms do not capture. Kalhan et al.(56) quantified the caregiver burden of diabetes-related foot complications in multi-ethnic Asian families, and Turner et al.(57) reviewed multidisciplinary management of diabetic foot ulcers impacted by social determinants of health. These accounts converge on the same point: a shared decision is impossible when the decision is framed only in biomedical terms, because the values that should be elicited are social, spiritual and relational before they are clinical. The implication for consent is direct. A process can be formally valid and substantively empty when the risks it lists omit the loss of a spiritual relationship to the ground or the transfer of a caregiving burden, and both omissions appear in the accounts collected here.

The health system sets the outer boundary of what any conversation can achieve. Al Ghafri et al.(58)used a COM-B framework to describe how healthcare professionals in Oman perceive the management of diabetic foot disease and where their capability, opportunity and motivation fall short of what shared decision-making requires. Chuter et al.(5)documented the global declines in amputation alongside local inequities, Roberts et al.(59)described the structure and initial outcomes of a multi-specialist limb preservation clinic, and Nomali et al.(60)compared the 2019 and 2023 versions of the IWGDF guidelines to show how rapidly the normative frame is moving. Chuter et al.(5)tied the clinical axis to the equity axis at the level of the health system by showing that declining amputation rates have not reached all regions equally, so the decision is constrained before it begins. The consequence for practice is that equity cannot be added after the conversation. If the gradients of Hamtzany et al.(49)and Hart et al.(53)are reproduced in part because some patients arrive at the decision already disadvantaged, then the remedy lies upstream, in access to foot screening, podiatric care and revascularization, and downstream, in auditing each service's amputation decisions against the social profile of the patients who receive them. What none of these studies does is connect the documented disparity to the documented decision gap: the gradients in who is amputated are measured in one literature, and the failures of shared decision-making are measured in another, with almost no study that joins them.

Taken together, the four axes describe a decision that is prognostic in its inputs, ethical in its conflicts, preference-sensitive in its resolution and inequitable in its distribution. The synthesis is condensed in Table 1 (Table 1), which lists for each axis the key findings, the representative studies and the gap that remains.

Table 1. Synthesis of evidence by thematic axis.

Axis	Key findings	Representative studies	Main gap
Clinical and prognostic context	Long-term mortality after diabetic foot disease exceeds that of several cancers; prognostic and frailty tools inform but do not resolve the decision; multidisciplinary teams reduce major amputation	Zeng 2026; Schaper 2024; Radomski 2025	Prognostic tools are not evaluated for their effect on decision quality
Ethical principles and value conflicts	The four principles remain in recurring tension; amputation can be palliative or harm-reducing; futility informs but does not decide	Xu 2025; Uhrenfeldt 2026; Zhou 2021	Normative analyses are not field-tested with patient accounts
Shared decision-making in practice	Shared decision-making is inconsistently achieved; decisional conflict is mediated by anxiety and depression; patients weight outcomes differently from providers; decision aids remain under-implemented	Prout 2026; O'Hara 2025; Czerniecki 2024	No trial links a decision aid to decisional outcomes after amputation
Contextual and equity factors	Ethnic, insurance, income and social vulnerability gradients modify amputation and limb preservation; cultural and caregiver dimensions are overlooked	Hamtzany 2026; Otene 2026; Hart 2026	Disparities are not linked to decision processes; no equity-informed aids

Note: Studies are identified by first author and year for readability; the full references appear in the reference list.

DISCUSSION

The principal finding of this synthesis is that major amputation for the diabetic foot is one decision experienced as three: a prognostic decision about the limb and the life, an ethical decision about whose values count, and a preference-sensitive decision that the health system distributes unequally. What the assembled evidence shows is that these three readings live in separate literatures that seldom cite one another. Zeng et al.(4)measured the mortality without asking how it should be communicated, Xu et al.(14)derived the principles without testing them against patient accounts, and Prout et al.(16)described the communication failures without linking them to the gradients of Hamtzany et al..(49)The contribution of this review is to place those literatures in the same conversation and to show where they confirm, contradict and ignore one another.

On the prognostic axis, the vascular and surgical literature treats the decision as a technical trade-off. Nypaver(6)and Radomski et al.(7)framed revascularization against primary amputation, and Chiu et al.(8)as well as Fereydooni et al.(9)reported that organized limb preservation changes the outcome. Unlike the findings of those authors, Zeng et al.(4)located the real endpoint in survival rather than limb retention, which reframes the entire exchange: if mortality is the dominant outcome, then an amputation that is early, clean and followed by rehabilitation can be the life-saving option that a prolonged salvage attempt is not. The discrepancy is explained by the outcome each author chose to measure rather than by any conflict in the underlying data, and it matters because a patient who is counselled only about limb survival has been counselled about the wrong thing.

The ethical axis turns on the gap between the normative and the empirical. Xu et al.(14) showed that the four principles cannot be applied mechanically, and Uhrenfeldt et al.(19)showed why: the meaning of benefit is reconstructed after the event by people who live with one leg, so a pre-operative judgement of what is good for them is necessarily provisional. Along the same lines, Zhou et al.(26)and Nash et al.(30)converge on a conclusion that some clinicians still resist, namely that amputation is sometimes the beneficent act and deferral the harmful one. The divergence between the normative analysis of Xu et al.(14)and the qualitative accounts of Uhrenfeldt et al.(19) is a difference of method, not of substance: principles frame the question, and only the patient's account can weight the answer. de Mestral et al.(27)and Cattermole et al.(28)complete this axis by showing that the amputation conversation is often, in truth, an end-of-life conversation that should be conducted with palliative rather than surgical expectations.

The decision-making axis shows that the confirmations are as informative as the contradictions. Prout et al.(16)and Leonard et al.(32)independently found that clinicians overestimate the sharedness of the decision, which reproduces the classic gap between the model of Elwyn et al.(12)and its execution. Støvring(34)located part of the cause on the surgical side, where level

decisions are constrained by habit and team norms, while Wang et al.(35)located another part on the patient side, where anxiety and depression inflate decisional conflict. The preference data of O'Hara et al.(37)and Poehler et al.(39)add the decisive observation that patients and providers weight amputation-level outcomes differently, which means a decision cannot be shared simply by sharing more information; it requires eliciting values that are known to diverge. As previously noted by Stacey et al.,(13)decision aids exist precisely to structure that elicitation, yet the tools of Czerniecki et al.,(17)Henderson et al.(41)and Smolderen et al.(18)remain feasibility-stage and, as Laor et al.(42) showed, the freely available patient materials do not fill the gap.

The divergences have a common explanation. Patients and providers differ because they experience the outcomes asymmetrically: the provider sees wound healing, reoperations and survival curves, whereas the patient anticipates stairs, work, body image and dependence, which is the asymmetry that O'Hara et al.(37)and Poehler et al.(39)measured and that the lived-experience syntheses of Uhrenfeldt et al.(19)and Alabdullah et al.(48) give voice to. Shared decision-making fails not for lack of willingness but because its preconditions are absent: the conversation begins late and under crisis, without a decision aid and under a distress that Wang et al.(35)showed is itself a driver of regret. Where those preconditions are restored, as Roberts et al.(59)and Fereydooni et al.(9)showed in structured limb preservation programmes, outcomes and quality of life improve together, which suggests that the decision process and the clinical result are the same intervention seen from two sides.

The equity axis is where the synthesis reveals an absence rather than a disagreement. Hamtzany et al.,(49)Eakers et al.,(50)Lee et al.(52)and Hart et al.(53)each demonstrated that race, insurance, income and social vulnerability predict who is amputated and who survives, and Otene et al.(55) demonstrated that the cultural meaning of the foot is invisible to that arithmetic. What is missing is the study that joins the two literatures, the one that asks whether the documented disparity is produced at the bedside, in the decision conversation, or upstream of both. Until that question is answered, the equity findings of Hamtzany et al.(49)and the communication findings of Prout et al.(16)will remain two halves of the same problem with no author yet connecting them.

Prior reviews have treated pieces of this territory without closing it. Ong et al.(15)mapped the decision processes but stopped short of the ethical content, the work collected under the decision-making axis did not extend to the equity gradients, and the ethical analysis of Xu et al.(14) proceeded without the empirical accounts that Uhrenfeldt et al.(19)later supplied. The present synthesis adds the connection that those reviews left implicit: the same patient who faces the highest mortality is also the patient for whom the decision is least shared and the least equitable.

The practical implications follow from the synthesis. First, the amputation decision should be documented and structured as an ethical, preference-sensitive event rather than a surgical one, using the model of Elwyn et al.(12)and the evidence of Stacey et al.(13)to justify the routine use of a decision aid such as AMPDECIDE. Second, prognostic tools of the kind developed by Lu et al.(21)and Tillqvist et al.(22)should be coupled to the conversation rather than used as its substitute, because a probability is not a preference. Third, teams should adopt the palliative framing of Cattermole et al.(28)for the subset of patients in whom the question is not whether to save the limb but how to spend the remaining life, and should audit their own amputation rates against the social gradients reported by Hart et al..(53)

The limitations of this review are those of its method, and each suggests its own remedy. The selection was narrative and non-systematic, conducted by a single reviewer without the double screening of a systematic review; a registered systematic review with two independent screeners would strengthen the confidence of the map. The searches were conducted predominantly in English with a single Spanish string, so studies published in other languages and settings may be under-represented; a multilingual search would extend coverage. The bibliographic yield was heavily weighted toward Scopus, which favours indexed journals and may undercount grey literature and regional publications; adding regional databases and institutional reports would correct that tilt. The recency of the window concentrates many 2026 entries whose long-term influence is not yet visible, and no formal risk-of-bias appraisal was applied to the individual studies, as is appropriate to a narrative review but which limits the strength of any single causal claim drawn from them. Finally, the synthesis could not adjudicate the causal direction of the equity gradients, because the underlying studies are observational; designs that follow the decision conversation itself would be required for that.

The research agenda that emerges is concrete. Trials should test whether a decision aid reduces decisional conflict and regret after major amputation, with the outcomes that Wang et al.(35)identified as the mediators. Equity-informed decision aids should be developed and evaluated in the populations that Hamtzany et al.(49)and Otene et al.(55)describe. Studies should

link disparities to decision processes directly, by measuring what is said in the consultation, and should field-test the ethical framework of Xu et al.(14)against the accounts of patients of the kind collected by Uhrenfeldt et al..(19)Each of these questions is answerable with designs that already exist in the literature assembled here; what is missing is the decision to ask them together. Finally, the prognostic instruments of Lu et al.(21)and Tillqvist et al.(22)should be tested against standard counselling in randomized designs, so that prediction is shown to improve decisions rather than to predict them alone.

CONCLUSIONS

Major amputation for the diabetic foot is one decision made up of three, a prognostic decision, an ethical decision and a preference-sensitive decision, and the evidence synthesized here shows that those three dimensions are not yet practised as one. The clinical literature supplies the mortality and the tools but not the conversation, the ethical literature supplies the principles but not their weighting, and the decision-making literature supplies the method but not its equitable distribution. The amputation decision should therefore be reframed as an ethical and shared process, documented and supported by decision aids, coupled to prognostic information rather than replaced by it, and audited against the social gradients that determine who reaches it. Future work should test decision aids on decisional outcomes, develop equity-informed tools, and connect the disparities and the decision gaps that are currently measured in separate literatures.

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