Comparative Diagnostic Performance of WIfI Stage and PEDIS Score for 12-Month Amputation Risk in Patients with Diabetic Foot Ulcers

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Research Article

Abstract

Background: Diabetic foot ulcers are associated with infection, impaired perfusion, delayed healing, and lower-extremity amputation. The Society for Vascular Surgery Wound, Ischemia, and foot Infection (WIfI) classification and the International Working Group on the Diabetic Foot Perfusion, Extent, Depth, Infection, and Sensation (PEDIS) score assess different dimensions of limb threat. This study compared their diagnostic performance for 12-month amputation. Methods: A retrospective diagnostic accuracy study included 72 patients with diabetic foot ulcers treated at H. Adam Malik General Hospital, Medan, Indonesia, from January 2023 to December 2024. Baseline WIfI stage and total PEDIS score were reconstructed from medical records, and amputation during treatment or follow-up within 12 months was the reference outcome. Receiver operating characteristic analysis identified optimal thresholds using the Youden index. Sensitivity, specificity, predictive values, accuracy, and relative risk were calculated. Results: Amputation occurred in 57 patients (79.2%). WIfI stages 3-4 were present in 51/57 patients who underwent amputation and 5/15 who did not; high PEDIS scores (8-12) were present in 47/57 and 2/15, respectively (both $p<0.001$). The area under the curve was 0.861 (95% CI 0.764-0.958) for WIfI stage and 0.846 (95% CI 0.742-0.950) for PEDIS. At WIfI stage >=3, sensitivity was 89.5%, specificity 66.7%, and accuracy 84.7%. At PEDIS >=8, sensitivity was 82.5%, specificity 86.7%, and accuracy 83.3%. Conclusion: Both systems showed good discrimination. WIfI stage was more sensitive and may be preferable for initial screening of limb threat, whereas PEDIS was more specific and had a higher positive predictive value. A formal paired comparison of the two AUCs and external prospective validation are required before declaring one system superior.

Keywords: amputation; diabetic foot ulcer; diagnostic accuracy; PEDIS; risk stratification; WIfI

1. Introduction

Diabetic foot ulceration is a major complication of diabetes mellitus and results from interacting neuropathic, biomechanical, vascular, and infectious pathways. It is associated with recurrent ulceration, hospitalization, impaired quality of life, and substantial mortality (Armstrong et al., 2017; Armstrong et al., 2023). Peripheral arterial disease and infection are particularly important determinants of tissue loss and amputation, while chronic hyperglycemia and loss of protective sensation contribute to ulcer development and progression (Edmonds et al., 2021; Wang et al., 2022).

Accurate classification is needed to communicate ulcer severity, identify patients who require urgent multidisciplinary treatment, and estimate prognosis. The PEDIS system evaluates perfusion, ulcer extent, depth, infection, and sensation. It provides a detailed description of the ulcer and has demonstrated associations with healing, complications, and amputation (Chuan et al., 2015; Guerrero, 2022; Sivakumar et al., 2023). In contrast, the WIfI classification grades wound severity, ischemia, and foot infection and combines these domains into clinical stages intended to reflect limb threat and the potential benefit of revascularization (Cerqueira et al., 2020; Cook et al., 2024).

Although both systems are clinically relevant, their diagnostic characteristics differ. WIfI may be more sensitive to limb-threatening ischemia and infection, whereas PEDIS may offer greater specificity by describing a broader set of ulcer characteristics. Indonesian data directly comparing these systems remain limited, and local case mix, referral patterns, access to vascular assessment, and the high prevalence of advanced disease may influence performance (Gunawan et al., 2024). This study therefore compared the discrimination and diagnostic validity of WIfI stage and PEDIS score for amputation within 12 months among patients with diabetic foot ulcers treated at a tertiary referral hospital in Indonesia.

2. Materials and Methods

2.1. Study design and setting

This retrospective observational diagnostic accuracy study used medical-record data from H. Adam Malik General Hospital, Medan, Indonesia. Records covered patients treated between 1 January 2023 and 31 December 2024. Data extraction and analysis began in March 2026. The index tests were WIfI stage and total PEDIS score, and the reference outcome was amputation documented during treatment or within 12 months of follow-up.

2.2. Participants

Patients were eligible if they had type 1 or type 2 diabetes mellitus complicated by a diabetic foot ulcer, had sufficient clinical and vascular information to determine WIfI and PEDIS classifications, and had documented amputation status within 12 months. Records were excluded when data were incomplete, the wound was non-diabetic, follow-up was unavailable, or the patient died or transferred care before outcome assessment. A total of 72 eligible patients were included, matching the minimum sample size estimated from expected sensitivities of 82.5% for PEDIS and 89.5% for WIfI, an anticipated amputation prevalence of 79.2%, a 95% confidence level, and absolute precision of 10%.

2.3. Index tests

WIfI classification was determined from three components graded from 0 to 3: wound extent and tissue loss, objective ischemia assessment (including ankle-brachial index, ankle systolic pressure, or toe pressure where available), and foot infection severity. Component combinations were mapped to WIfI clinical stages 1-4, with higher stages indicating greater limb threat (Cerqueira et al., 2020; Cook et al., 2024). For diagnostic analyses, WIfI stage >=3 was considered a positive high-risk result based on the optimal Youden index in this dataset.

The PEDIS score included perfusion, ulcer extent, depth/tissue loss, infection, and sensation. Component scores were summed to a total of 0-12. Scores of 0-7 were categorized as lower risk and scores of 8-12 as higher risk, consistent with the study protocol and previous clinical applications (Chuan et al., 2015; Guerrero, 2022). PEDIS >=8 was the optimal threshold in the receiver operating characteristic analysis.

2.4. Outcome and covariates

The primary outcome was any lower-extremity amputation recorded during the index treatment episode or within 12 months. The source thesis did not separately classify major and minor amputations. Extracted covariates included age, sex, diabetes type and duration, hypertension, smoking history, peripheral arterial disease, chronic kidney disease, moderate-to-severe infection, osteomyelitis, previous debridement, and previous revascularization.

2.5. Statistical analysis

Continuous data were summarized as mean and standard deviation or median and interquartile range, as appropriate. Categorical data were reported as frequency and percentage. Between-group comparisons used an independent-samples t test for age and chi-square or Fisher exact tests for categorical variables. Receiver operating characteristic curves were used to evaluate discrimination, and optimal thresholds were selected using the Youden index. Diagnostic performance was summarized using sensitivity, specificity, positive predictive value, negative predictive value, accuracy, and relative risk. Exact binomial 95% confidence intervals were calculated for proportions, and log-transformed confidence intervals were calculated for relative risks. Statistical significance was set at $p<0.05$. Analyses were performed using IBM SPSS Statistics [insert version]; additional confidence intervals were calculated from the reported 2x2 tables.

2.6. Ethical considerations

The study was approved by the Health Research Ethics Committee, Faculty of Medicine, Universitas Sumatera Utara (approval number: [insert approval number]). The requirement for individual informed consent was [waived/obtained - confirm] because the study used retrospective medical-record data. Patient identifiers were not included in the analytical dataset.

3. Results

3.1. Participant characteristics

Among 72 patients, 57 (79.2%) underwent amputation and 15 (20.8%) did not. The mean age was 58.8 +/- 8.9 years, and 44 patients (61.1%) were male. Patients who underwent amputation were older and more frequently had diabetes duration >=10 years, hypertension, a smoking history, peripheral arterial disease, moderate-to-severe infection, osteomyelitis, and a history of debridement. Participant characteristics are presented in Table 1.

Table 1. Demographic and clinical characteristics according to amputation outcome

Characteristic	Total (n=72)	Amputation (n=57)	No amputation (n=15)	p value
Age, years, mean +/- SD	58.8 +/- 8.9	60.1 +/- 8.2	53.7 +/- 9.6	0.028
Male sex, n (%)	44 (61.1)	38 (66.7)	6 (40.0)	0.059
Type 2 diabetes, n (%)	69 (95.8)	55 (96.5)	14 (93.3)	0.509
Diabetes duration >=10 years, n (%)	46 (63.9)	40 (70.2)	6 (40.0)	0.030
Hypertension, n (%)	43 (59.7)	38 (66.7)	5 (33.3)	0.019
Smoking history, n (%)	37 (51.4)	33 (57.9)	4 (26.7)	0.031
Peripheral arterial disease, n (%)	41 (56.9)	38 (66.7)	3 (20.0)	0.001
Chronic kidney disease, n (%)	18 (25.0)	17 (29.8)	1 (6.7)	0.095
Moderate-to-severe infection, n (%)	49 (68.1)	45 (78.9)	4 (26.7)	<0.001
Osteomyelitis, n (%)	22 (30.6)	21 (36.8)	1 (6.7)	0.028
Previous debridement, n (%)	52 (72.2)	46 (80.7)	6 (40.0)	0.003
Previous revascularization, n (%)	12 (16.7)	8 (14.0)	4 (26.7)	0.258

Notes: p values were derived from the aggregate data reported in the thesis using an independent-samples t test for age and chi-square or Fisher exact tests for categorical variables, as appropriate. SD, standard deviation.

3.2. Distribution of WIfI stage and PEDIS score

Advanced WIfI stages and high PEDIS scores were concentrated in the amputation group. WIfI stages 3-4 were found in 51 of 57 patients (89.5%) who underwent amputation compared with 5 of 15 patients (33.3%) without amputation (Fisher exact p<0.001). PEDIS scores of 8-12 were found in 47 of 57 patients (82.5%) with amputation and 2 of 15 patients (13.3%) without amputation (Fisher exact p<0.001). Median WIfI stage was 4 (IQR 3-4) in the amputation group and 2 (IQR 1-3) in the non-amputation group; median PEDIS score was 9 (IQR 8-10) and 6 (IQR 5-7), respectively (Table 2).

Table 2. Distribution of WIfI stage and PEDIS score by amputation outcome

Variable	Total (n=72)	Amputation (n=57)	No amputation (n=15)
WIfI stage 1, n (%)	6 (8.3)	1 (1.8)	5 (33.3)
WIfI stage 2, n (%)	10 (13.9)	5 (8.8)	5 (33.3)
WIfI stage 3, n (%)	25 (34.7)	22 (38.6)	3 (20.0)
WIfI stage 4, n (%)	31 (43.1)	29 (50.9)	2 (13.3)
WIfI stage, median (IQR)	3 (3-4)	4 (3-4)	2 (1-3)
PEDIS 0-7, n (%)	23 (31.9)	10 (17.5)	13 (86.7)
PEDIS 8-12, n (%)	49 (68.1)	47 (82.5)	2 (13.3)
PEDIS total, median (IQR)	8 (7-10)	9 (8-10)	6 (5-7)

Notes: For dichotomized comparisons, WIfI stage >=3 versus <3 and PEDIS >=8 versus <8 were each associated with amputation (both Fisher exact p<0.001). IQR, interquartile range.

3.3. Discrimination and diagnostic accuracy

WIfI stage had an AUC of 0.861 (95% CI 0.764-0.958), and PEDIS score had an AUC of 0.846 (95% CI 0.742-0.950). Both AUCs were significantly greater than 0.5 (p<0.001). WIfI showed a slightly higher point

estimate, but a formal paired statistical comparison of AUCs was not reported and therefore superiority cannot be inferred (Table 3).

Table 3. Receiver operating characteristic analysis

Index test	Optimal threshold	AUC	95% CI	p value	Youden index
WIfI stage	>=3	0.861	0.764-0.958	<0.001	0.562
PEDIS score	>=8	0.846	0.742-0.950	<0.001	0.554

Abbreviations: AUC, area under the receiver operating characteristic curve; CI, confidence interval.

At the threshold of WIfI stage >=3, 51 true-positive, 5 false-positive, 6 false-negative, and 10 true-negative results were observed. At PEDIS >=8, the corresponding counts were 47, 2, 10, and 13. WIfI had higher sensitivity and slightly higher overall accuracy, whereas PEDIS had higher specificity and positive predictive value (Table 4). High-risk WIfI classification was associated with a 2.43-fold risk of amputation compared with WIfI stage <3, while PEDIS >=8 was associated with a 2.21-fold risk compared with PEDIS <8.

Table 4. Diagnostic performance for 12-month amputation

Index test	TP/FP/FN/TN	Sensitivity, % (95% CI)	Specificity, % (95% CI)	PPV, % (95% CI)	NPV, % (95% CI)	Accuracy, % (95% CI)	RR (95% CI)
WIfI stage >=3	51/5/6/10	89.5 (78.5-96.0)	66.7 (38.4-88.2)	91.1 (80.4-97.0)	62.5 (35.4-84.8)	84.7 (74.3-92.1)	2.43 (1.28-4.60)
PEDIS >=8	47/2/10/13	82.5 (70.1-91.3)	86.7 (59.5-98.3)	95.9 (86.0-99.5)	56.5 (34.5-76.8)	83.3 (72.7-91.1)	2.21 (1.38-3.53)

Abbreviations: CI, confidence interval; FN, false negative; FP, false positive; NPV, negative predictive value; PPV, positive predictive value; RR, relative risk; TN, true negative; TP, true positive. Exact binomial confidence intervals are shown for diagnostic proportions; RR confidence intervals were calculated using the log method.

4. Discussion

4.1. Principal findings

This study found a high amputation burden among patients with diabetic foot ulcers referred to a tertiary hospital. Both WIfI stage and PEDIS score showed good discrimination for 12-month amputation, with AUCs above 0.84. Their main difference was the balance between sensitivity and specificity: WIfI stage >=3 identified a larger proportion of patients who ultimately underwent amputation, whereas PEDIS >=8 produced fewer false-positive classifications and a higher positive predictive value.

The concentration of older age, longer diabetes duration, hypertension, smoking, peripheral arterial disease, infection, and osteomyelitis in the amputation group is biologically plausible. These factors reflect impaired perfusion, reduced tissue resilience, delayed healing, and greater infectious burden. Previous studies have similarly identified peripheral arterial disease, infection severity, renal dysfunction, smoking, and prolonged diabetes as important correlates of amputation (Kogani et al., 2015; Demirkol et al., 2022; Armstrong et al., 2023).

4.2. Performance of WIfI stage

WIfI was specifically designed to integrate tissue loss, ischemia, and infection, the three domains most directly responsible for limb threat. The predominance of stages 3-4 among amputated patients supports the clinical relevance of this framework. Prior validation studies and reviews have reported that increasing WIfI stage is associated with delayed wound healing, amputation, mortality, and the anticipated benefit of revascularization (Cerqueira et al., 2020; Williams et al., 2022; Cook et al., 2024).

The sensitivity of 89.5% in the present cohort suggests that WIfI stage may be useful as an initial screening and triage tool. In a diabetic foot service, missing a high-risk patient may delay urgent vascular imaging, revascularization, drainage, debridement, or antimicrobial treatment. The lower specificity, however, means that some patients categorized as stage >=3 may avoid amputation after successful multidisciplinary care. Therefore, a positive WIfI result should trigger rapid evaluation rather than be interpreted as an indication for amputation by itself.

4.3. Performance of PEDIS score

PEDIS provides a more granular description of perfusion, wound area, tissue depth, infection, and protective sensation. Its specificity of 86.7% and positive predictive value of 95.9% indicate that patients with

PEDIS >=8 in this referral cohort had a very high probability of amputation. Prospective studies have also reported that high PEDIS scores are associated with osteomyelitis, non-healing wounds, and amputation, while changes in PEDIS may reflect clinical improvement after revascularization (Guerrero, 2022; Sinaga et al., 2021; Sivakumar et al., 2023).

The lower sensitivity of PEDIS compared with WIfI implies that relying on PEDIS alone could miss some patients who later undergo amputation. This may partly reflect differences in weighting: WIfI explicitly stages combinations of ischemia, infection, and wound severity, whereas the summed PEDIS approach distributes points across five domains. Nevertheless, PEDIS remains useful for structured wound documentation, communication, audit, and serial assessment.

4.4. Comparison with previous evidence and clinical implications

The present findings are consistent with an Indonesian study comparing Wagner, SINBAD, PEDIS, and WIfI systems, in which WIfI had higher sensitivity and accuracy than PEDIS while both retained clinically useful performance (Gunawan et al., 2024). The difference between AUCs in the present study was small (0.015) and was not tested using a paired method such as DeLong analysis. Accordingly, the data support complementary rather than mutually exclusive use.

A pragmatic pathway would use WIfI early to identify threatened limbs requiring urgent vascular and infection assessment, followed by PEDIS to document ulcer characteristics and monitor response. Patients with WIfI stage >=3 or PEDIS >=8 should receive accelerated multidisciplinary management involving vascular surgery, diabetes care, infectious diseases, wound care, off-loading, rehabilitation, and appropriate imaging. Current diabetic foot guidance emphasizes that classification should support, not replace, clinical judgment and timely treatment of ischemia and infection (Soares et al., 2023; Senneville et al., 2024).

Predictive values in this cohort must be interpreted in light of the 79.2% amputation prevalence, which is substantially influenced by tertiary referral and spectrum effects. The high positive predictive values and relatively modest negative predictive values may not generalize to primary-care or lower-risk populations. Sensitivity and specificity are less prevalence-dependent, but they may still vary with case severity, test application, and verification processes.

4.5. Strengths and limitations

This study directly compared two widely used classification systems in the same patients and reported clinically interpretable 2x2 diagnostic measures. It also reflects real-world practice in a major Indonesian tertiary referral center. Several limitations should be acknowledged. First, the retrospective single-center design is susceptible to incomplete documentation, selection bias, and limited generalizability. Second, the outcome combined all amputations because major and minor procedures were not separated. Third, the sample was small and included only 15 non-amputation outcomes, resulting in wide confidence intervals for specificity and negative predictive value. Fourth, WIfI and PEDIS assessments reconstructed from records may be affected by interobserver variation, particularly for wound depth and infection severity (Camilleri et al., 2020). Fifth, the source dataset did not permit a paired statistical comparison of AUCs, calibration assessment, or adjustment for treatment-related confounding such as debridement and revascularization. Finally, the thesis text described some ROC outputs as a simulation draft; all numerical results and source data should therefore be verified against the final locked dataset before journal submission.

5. Conclusion

WIfI stage and PEDIS score both demonstrated good discrimination for 12-month amputation among patients with diabetic foot ulcers at a tertiary Indonesian hospital. WIfI stage >=3 was more sensitive and may be better suited to initial screening and urgent triage, whereas PEDIS >=8 was more specific and had a higher positive predictive value. These systems should be used as complementary components of multidisciplinary assessment rather than as stand-alone determinants of amputation. Prospective multicenter studies should distinguish major from minor amputation, test paired differences in AUC, assess calibration, and evaluate clinical utility across different levels of care.

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Conflict of Interest

The author(s) declare no conflict of interest.]

Data Availability

De-identified data supporting the findings may be available from the corresponding author upon reasonable request and subject to institutional and ethical approval.

Use of Artificial Intelligence Tools

No artificial intelligence tools were employed throughout the writing of this manuscript.

References

Armstrong, D.G., Boulton, A.J.M. and Bus, S.A., 2017. Diabetic foot ulcers and their recurrence. New England Journal of Medicine, 376(24), pp.2367-2375.

Armstrong, D.G., Tan, T.W., Boulton, A.J.M. and Bus, S.A., 2023. Diabetic foot ulcers: A review. JAMA, 330(1), pp.62-75. https://doi.org/10.1001/jama.2023.10578.

Camilleri, A., Gatt, A. and Formosa, C., 2020. Inter-rater reliability of four validated diabetic foot ulcer classification systems. Journal of Tissue Viability, 29(4), pp.284-290. https://doi.org/10.1016/j.jtv.2020.09.002.

Cerqueira, L.O., Duarte, E.G., Barros, A.L.S., Cerqueira, J.R. and de Araujo, W.J.B., 2020. WIfI classification: The Society for Vascular Surgery lower extremity threatened limb classification system, a literature review. Jornal Vascular Brasileiro, 19, e20190070. https://doi.org/10.1590/1677-5449.190070.

Chuan, F., Tang, K., Jiang, P. et al., 2015. Reliability and validity of the Perfusion, Extent, Depth, Infection and Sensation (PEDIS) classification system and score in patients with diabetic foot ulcer. PLoS ONE, 10(4), e0124739.

Cook, I.O., Go, C., Matsagkas, M. et al., 2024. A review of WIfI clinical staging to predict outcomes in patients with threatened limbs. Annals of Vascular Surgery, 105, pp.297-305. https://doi.org/10.1016/j.avsg.2024.05.014.

Demirkol, D., Gunerhan, Y. and Sozmen, M.K., 2022. Analysis of risk factors for amputation in patients with diabetic foot ulcers: A cohort study from a tertiary center. International Wound Journal, 19(7), pp.1919-1928. https://doi.org/10.1111/iwj.13795.

Edmonds, M., Manu, C. and Vas, P., 2021. The current burden of diabetic foot disease. Journal of Clinical Orthopaedics and Trauma, 17, pp.88-93. https://doi.org/10.1016/j.jcot.2021.01.017.

Gunawan, I.M.K., Budiarta, I.B., Mahadewa, T.G.B., Suryawisesa, I.B.M., Wibawa, I.G.A.B.K. and Ariyanta, K.D., 2024. Validity of Wagner, SINBAD, PEDIS, and WIfI scoring systems to assess risk of amputation in patients with diabetic foot ulcers. Jurnal Bedah Nasional, 8(2), pp.52-58. https://doi.org/10.24843/JBN.2024.v08.i02.p04.

Guerrero, A.G., 2022. Predicting amputation risk among patients with type 2 diabetes mellitus with diabetic foot ulcer using PEDIS scores in a tertiary hospital: A prospective study. Journal of the ASEAN Federation of Endocrine Societies, 37(2), p.50. https://doi.org/10.15605/jafes.037.AFES.7758.

International Diabetes Federation, 2021. IDF Diabetes Atlas. 10th ed. Brussels: International Diabetes Federation.

Kim, J., Nomkhondorj, O., An, C.Y., Choi, Y.C. and Cho, J., 2023. Management of diabetic foot ulcers: A narrative review. Journal of Yeungnam Medical Science, 40(4), pp.335-342.

Kogani, M., Mansournia, M.A., Doosti-Irani, A. and Holakouie-Naieni, K., 2015. Risk factors for amputation in patients with diabetic foot ulcer in southwest Iran: A matched case-control study. Epidemiology and Health, 37, e2015044. https://doi.org/10.4178/epih/e2015044.

Monteiro-Soares, M. et al., 2020. Diabetic foot ulcer classifications: A critical review. Diabetes/Metabolism Research and Reviews, 36(S1), e3272. https://doi.org/10.1002/dmrr.3272.

Niţă, O., Arhire, L.I., Mihalache, L., Popa, A.D., Niţă, G., Gherasim, A. et al., 2023. Evaluating classification systems of diabetic foot ulcer severity: A 12-year retrospective study on factors impacting survival. Healthcare, 11(14).

Senneville, E., Albalawi, Z., van Asten, S.A. et al., 2024. IWGDF/IDSA guidelines on the diagnosis and treatment of diabetes-related foot infections (IWGDF/IDSA 2023). Diabetes/Metabolism Research and Reviews, 40(3), e3687. https://doi.org/10.1002/dmrr.3687.

Sinaga, R., Tjandra, D., Sumangkut, R. et al., 2021. PEDIS score analysis in diabetic foot ulcer following angioplasty revascularization procedure. JINASVS, 2(1), pp.20-25.

Sivakumar, S., Kesavan, R. and Reddy, B.K., 2023. A prospective observational study of the role of PEDIS scoring in predicting complications of diabetic foot in a tertiary centre. International Surgery Journal, 10(4), pp.606-613. https://doi.org/10.18203/2349-2902.isj20230963.

Soares, M.M., Hamilton, E.J., Russell, D.A. et al., 2023. Guidelines on the classification of foot ulcers in people with diabetes. International Working Group on the Diabetic Foot Guidelines.

Wang, X., Yuan, C.X., Xu, B. and Yu, Z., 2022. Diabetic foot ulcers: Classification, risk factors and management. World Journal of Diabetes, 13(12), pp.1049-1065. https://doi.org/10.4239/wjd.v13.i12.1049.

Williams, P., Bakewell, Z., Akinlade, B. et al., 2022. WIfI scoring: A reliable tool for risk stratification in the diabetic foot clinic. Journal of Vascular Societies Great Britain and Ireland, 1(3), pp.71-76.

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- Confirm all authors and their order, affiliations, ORCID identifiers (if used), and corresponding author email.
- Insert the ethics approval number and confirm whether consent was waived or obtained.
- Insert the exact IBM SPSS version and confirm the sampling method used to select the 72 records.
- Verify every numerical result against the final locked dataset. The thesis labels some ROC and diagnostic outputs as a simulation draft.
- Confirm whether the outcome represents any amputation, major amputation, minor amputation, or the first amputation within 12 months.
- Confirm funding, acknowledgements, conflict-of-interest, and data-availability statements.
- Run a formal paired DeLong comparison if claiming that one AUC is statistically superior.
- Remove this checklist and all yellow-highlighted placeholders before PDF submission.