

THE DUPLEX ABI INITIATIVE

A Proposed Framework for Coordinated Physiologic and Anatomic Evaluation of Lower-Extremity Peripheral Arterial Disease

PUBLIC REVIEW DRAFT 1.0

Prepared to support multidisciplinary review, revision, and authorship development

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This document is a discussion manuscript. It is not a clinical practice guideline, consensus statement, reimbursement proposal, or endorsement of any specific product or technology.

The term “Duplex ABI” is used in this manuscript as a proposed descriptive clinical term. The terminology, scope, and recommendations are intentionally open to revision by the vascular community.

Document Status and Invitation to Contribute

This foundational manuscript is deliberately complete enough to permit substantive review, yet provisional enough to permit meaningful change. Prospective contributors are invited to challenge its clinical assumptions, terminology, indications, workflow models, reporting recommendations, and research priorities. Participation may include written edits, targeted review of a section, contribution of evidence or examples, or service on a future writing group.

The immediate objective is not endorsement. It is to determine whether the vascular community recognizes a real communication and workflow problem, whether the proposed terminology is useful, and what boundaries are necessary to ensure evidence-based use.

Suggested Contributor Roles

- Founding clinical reviewer
- Section reviewer or contributor
- Evidence reviewer
- Vascular laboratory workflow advisor
- Consensus-methodology advisor
- Research-design collaborator
- Professional-society liaison

Provisional Authorship and Governance

Authorship, committee structure, disclosures, sponsor identification, and publication venue have not been determined. These matters should be resolved transparently after an initial multidisciplinary group has reviewed the scientific premise and scope.

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Executive Summary

Lower-extremity peripheral arterial disease (PAD) is evaluated through complementary forms of noninvasive testing. Physiologic assessment—most commonly the ankle-brachial index (ABI), supplemented as appropriate by toe pressures, pulse volume recordings, Doppler waveforms, segmental pressures, or exercise testing—describes the limb-level hemodynamic consequence of disease. Arterial duplex ultrasound localizes disease, grades lesion severity, characterizes flow, and provides an anatomic map. Current guidelines and vascular laboratory literature recognize these modalities as distinct, complementary tools rather than interchangeable tests.[1–8]

The clinical concept is longstanding. Vascular laboratories have combined physiologic measurements and duplex imaging for decades, and authoritative publications explicitly describe duplex interpretation in conjunction with limb-pressure measurements.[4,9–12] However, no widely accepted descriptive term identifies the coordinated evaluation as a single clinical episode when both components are indicated. Referring providers may order “ABI,” “arterial Doppler,” “lower-extremity duplex,” or “vascular studies,” with variable expectations. Testing may occur in separate visits, produce disconnected reports, or require a second order even when the eventual need for both components is foreseeable.

Core proposition: The clinical combination is not new. The proposed common language is new.

This manuscript proposes Duplex ABI as a descriptive clinical term for coordinated physiologic and anatomic evaluation of lower-extremity arterial disease when both assessments are clinically appropriate. It does not propose a new procedure, a new billing code, routine dual testing, or replacement of guideline-directed patient selection. The proposed terminology is intended to improve ordering clarity, laboratory workflow, education, research, and integrated clinical interpretation while preserving separate technical performance and coding requirements.

The framework includes two models. A same-visit Duplex ABI is ordered in advance when the clinical question clearly requires both limb-level physiologic assessment and lesion-level anatomic characterization. A staged Duplex ABI begins with physiologic testing and proceeds to duplex under predefined clinical or test-based criteria, ideally during the same episode of care. Both models require medical necessity for each component.

The initiative should be evaluated through multidisciplinary review and prospective research. Initial studies should focus on pragmatic outcomes: one-visit completion, time to diagnostic completion, repeat orders, report completeness, referring-clinician understanding, changes in management, patient experience, and resource use. Claims of improved limb outcomes or universal superiority would be premature.

1. Purpose and Scope

The purpose of the Duplex ABI Initiative is to examine whether a standardized descriptive term and coordinated framework can improve communication surrounding lower-extremity arterial evaluation. The initiative begins from an established scientific premise: physiologic testing and duplex ultrasound provide complementary information. It does not begin from the assumption that every patient should undergo both examinations.

1.1 What this manuscript proposes

- A concise definition of Duplex ABI as a clinical concept.
- A bounded indication framework that distinguishes appropriate coordinated testing from unnecessary routine dual testing.
- Two practical workflow models: same-visit and staged evaluation.
- A structure for integrated interpretation while retaining separate procedural documentation and coding.
- An education, research, and consensus pathway through which the vascular community can accept, revise, replace, or reject the proposal.

1.2 What this manuscript does not propose

- A new diagnostic procedure or device.
- A new CPT or reimbursement code.
- A recommendation that ABI and duplex always be performed together.
- A challenge to existing PAD guidelines or coverage policies.
- A proprietary clinical protocol controlled by one company or institution.
- A claim that coordinated testing improves clinical outcomes before such outcomes are studied.

1.3 Intended audience

The intended audience includes vascular medicine physicians, vascular surgeons, vascular laboratory medical and technical directors, registered vascular technologists and sonographers, cardiologists, radiologists, podiatrists, wound-care clinicians, primary-care clinicians, educators, researchers, professional societies, payers, and health-system leaders.

2. Why Clinical Language Matters

Clinical terminology is not merely shorthand. It shapes expectations, ordering behavior, education, reporting, quality measurement, and research. Terms become useful when they compress a complex but recognizable clinical process into language that is sufficiently precise for communication and sufficiently flexible for practice.

Examples such as carotid duplex, the FAST examination, point-of-care ultrasound, and structured reporting systems illustrate different pathways by which terminology can become embedded in care. These examples should not be treated as direct analogues or proof that Duplex ABI will be adopted. They demonstrate a narrower principle: standardized language can organize existing components into a recognizable clinical concept.

2.1 Characteristics of useful clinical terminology

- It identifies a real and recurring clinical activity.
- It distinguishes that activity from related but different examinations.
- It communicates enough content to guide the receiving clinician or laboratory.
- It has boundaries that discourage misuse.
- It can be taught, studied, and refined.
- It is accepted through professional use rather than declared by commercial promotion.

2.2 The proposed language problem

Lower-extremity arterial evaluation lacks a commonly understood term for the coordinated episode in which physiology and anatomy are both required. “Lower-extremity arterial study” may refer to physiologic testing, duplex imaging, or both. “Arterial Doppler” is used variably for continuous-wave Doppler pressure testing, duplex ultrasound, or a generic vascular examination. The ambiguity can be resolved locally through order sets and protocols, but it persists across institutions and specialties.

A proposed term is only useful if clinicians recognize the underlying activity and agree that the communication benefit outweighs the risk of confusion. That question—not ownership of a phrase—is the central question for public review.

3. Evolution of Lower-Extremity Arterial Testing

Noninvasive arterial testing developed through complementary technical traditions. Continuous-wave Doppler enabled detection of blood flow and indirect systolic pressure measurement. Segmental pressures, pulse volume recordings, and waveform analysis developed as physiologic methods for identifying and localizing hemodynamically important disease. Duplex ultrasound later combined B-mode imaging with Doppler velocity assessment, allowing direct visualization and lesion-level evaluation.[9–13]

3.1 Physiologic testing

The ABI became the most widely recognized noninvasive physiologic test for PAD. It is inexpensive, portable, reproducible when performed correctly, prognostically important, and central to current diagnostic guidelines.[1,2,14] Yet ABI is not a complete arterial map and may be limited by noncompressible arteries, technical factors, distal disease, exercise-induced disease, or discordance between limb-level pressure and lesion distribution.[1,2,15–20]

3.2 Duplex ultrasound

Lower-extremity arterial duplex provides direct anatomic and hemodynamic information. It can identify lesion location, estimate stenosis severity, document occlusion, characterize inflow and outflow, assess bypass grafts and treated segments, and support procedural planning or surveillance.[4,5,9,10,21–24] Its limitations include operator dependence, examination time, body habitus, calcification, depth, and difficulty in some arterial segments.

3.3 Integration in vascular laboratory practice

The literature has long described physiologic and duplex testing as complementary. Gale, Scissons, Salles-Cunha and colleagues evaluated how pressure data improved Doppler waveform interpretation. Hodgkiss-Harlow and Bandyk stated that duplex testing is interpreted with limb-pressure measurements to categorize arterial hemodynamics and functional impairment. Andersen described lower-extremity assessment in distinct domains of physiologic/hemodynamic measurement, anatomic imaging, and tissue perfusion.[4,6,11]

The historical record therefore supports an important distinction: coordinated evaluation is an established practice pattern, but standardized nomenclature for that coordinated episode is not established.

4. The Current Communication and Workflow Gap

4.1 Ordering ambiguity

A referring clinician who writes “lower-extremity arterial Doppler” may expect an ABI, segmental study, duplex ultrasound, or a combination. Laboratories often clarify the order, substitute a locally defined protocol, or perform the ordered component and request an additional order later. These solutions can work, but they depend on local knowledge and do not create consistent expectations across systems.

4.2 Sequential care that may be avoidable

A sequential pathway is clinically appropriate when physiologic testing alone resolves the question. It becomes inefficient when the initial history already indicates that both hemodynamic assessment and anatomic localization will be needed, or when predefined findings predictably trigger duplex. In such cases, separate scheduling and authorization may add delay without adding clinical value.

4.3 Fragmented interpretation

Physiologic and duplex reports may be issued independently, interpreted by different readers, and delivered at different times. Each report may be technically correct while leaving the referring clinician to reconcile discordant or complementary findings. A coordinated clinical impression can add value by explaining how limb-level physiology relates to lesion-level anatomy.

4.4 Educational inconsistency

Training programs appropriately teach physiologic testing and duplex imaging as distinct competencies. The gap arises when learners are not also taught how to integrate the findings into one clinical interpretation, when to escalate from one component to another, and when combined testing is or is not justified.

4.5 Research and quality measurement

Without shared terminology, studies of coordinated testing may be difficult to identify, compare, or reproduce. A defined framework can support multicenter research, but the terminology must not prejudice the evidence. The initiative therefore proposes both a name and a research agenda.

5. Clinical Foundation: Physiology and Anatomy

5.1 Physiologic domain

The physiologic component of a Duplex ABI evaluation should be tailored to the clinical question rather than reduced to one number. Resting ABI may be sufficient in some patients. Toe pressures or TBI may be necessary when ankle arteries are noncompressible. Pulse volume recordings and continuous-wave Doppler waveforms add information regarding arterial compliance and flow. Exercise testing may be required when resting results are normal or borderline despite exertional symptoms.[1,2]

5.2 Anatomic domain

The duplex component evaluates the lower-extremity arterial pathway appropriate to the indication. A full bilateral examination is not automatically required. The scope may be unilateral or bilateral, focused or complete, native-artery or post-intervention, provided the examination addresses the documented clinical question and follows laboratory standards.

5.3 Interpretation of concordance

Concordant abnormal physiology and focal or multilevel duplex disease strengthen diagnostic confidence and help contextualize severity. Concordant normal findings may support exclusion of hemodynamically important disease within the limitations of the examination.

5.4 Interpretation of discordance

Discordance is not necessarily error. A normal or borderline ABI may coexist with focal disease, distal disease, robust collateralization, exercise-induced ischemia, or technical limitations. A high ABI may reflect medial arterial calcification rather than normal perfusion. Conversely, abnormal physiology may reflect inflow disease outside the interrogated field, diffuse disease, or other factors not represented by one focal duplex lesion. Coordinated interpretation should explain plausible reasons for discordance and recommend additional evaluation only when clinically warranted.[15–20]

5.5 Beyond ABI alone

The proposed term uses “ABI” because it is the most familiar physiologic anchor in lower-extremity PAD evaluation. The initiative must nevertheless avoid implying that ABI alone is sufficient physiology for every patient. A clinically accurate Duplex ABI framework includes appropriate adjuncts such as TBI, toe pressure, PVR, waveforms, segmental pressures, or exercise testing when indicated.

6. Evidence for Complementary Assessment

6.1 Guideline foundation

The 2024 ACC/AHA multisociety guideline describes resting ABI as the cornerstone initial physiologic test in patients with suggestive history or examination findings. It recommends additional physiologic testing in specific circumstances and uses duplex ultrasound for anatomic assessment, post-revascularization evaluation, and surveillance. Importantly, the guideline explicitly pairs ABI and arterial duplex in patients with new lower-extremity signs or symptoms after revascularization and recognizes combined surveillance pathways after selected bypass and endovascular procedures.[1]

The guideline does not recommend routine simultaneous ABI and duplex for every patient with suspected or stable PAD. This boundary is central to the proposed framework.

6.2 Vascular laboratory literature

Foundational vascular laboratory publications describe integration rather than competition. Zierler and Zierler reviewed duplex as a direct method for identifying disease severity and location. Gale and colleagues showed that ABI data improved Doppler waveform interpretation. Hodgkiss-Harlow and Bandyk emphasized interpretation of duplex with limb-pressure measurements. Andersen described surveillance using combinations of physiologic testing and duplex imaging.[4–6,9,11]

6.3 Diagnostic comparison and discordance studies

Lewis, Williams, and Davies studied 205 referred patients who underwent ABI, pulse volume waveform analysis, and duplex ultrasound. ABI sensitivity was 79% and specificity 91% against duplex-defined disease; pulse-volume waveform sensitivity was 97% and specificity 81%. The study was not a trial of a Duplex ABI workflow, but it demonstrates same-patient integration and the nonidentical diagnostic information supplied by physiologic and duplex components.[12]

Studies in diabetes and calcification have shown that ABI can be falsely elevated or less sensitive, supporting selective use of TBI, waveforms, and imaging. These findings justify an escalation framework, not automatic duplex for all patients.[15–20]

6.4 Evidence from surveillance

Post-revascularization surveillance provides the strongest existing precedent for a coordinated physiologic and duplex approach. Serial ABI or related physiology can identify change in limb hemodynamics, while duplex can localize restenosis, graft lesions, or treated-segment abnormalities. The clinical value lies in interpreting change across both domains in relation to symptoms and prior intervention.[1,6,23,24]

6.5 Evidence gap

There is limited direct evidence comparing a deliberately coordinated “Duplex ABI” workflow with conventional ordering. The terminology itself has not been validated. Evidence is needed to determine whether the framework reduces delays, avoids duplicative encounters, improves report utility, changes management, or alters costs. The proposal should therefore be presented as a testable framework rather than a completed standard.

7. Proposed Duplex ABI Terminology

7.1 Proposed definition

Duplex ABI is a descriptive clinical term for coordinated physiologic and anatomic evaluation of lower-extremity arterial disease when both assessments are clinically indicated.

7.2 Essential elements

- A documented clinical indication for the physiologic component.
- A documented clinical indication for the duplex component.
- Coordination within the same episode of care, whether preordered or triggered by predefined criteria.
- Interpretation that relates physiologic findings to anatomic findings.
- Separate technical documentation and coding consistent with applicable requirements.

7.3 Preferred written and spoken use

For the clinical concept, this manuscript uses “Duplex ABI” as two words. A referring clinician might write or say, “Order a Duplex ABI for this patient,” provided the order set defines the included components and medical-necessity requirements. Educational text should define the term on first use and avoid implying universal testing.

7.4 Relationship to existing terms

Duplex ABI is not intended to replace ABI, lower-extremity arterial duplex, segmental physiologic evaluation, exercise ABI, or surveillance examinations. It describes the coordinated clinical episode when two existing categories of testing are appropriately combined.

7.5 Terminology requiring further review

The vascular community should determine whether “Duplex ABI” is sufficiently inclusive when the physiologic component is dominated by TBI, toe pressure, PVR, or exercise testing. Alternatives such as “integrated lower-extremity arterial evaluation” may be more technically complete but less concise. Public review should explicitly examine whether the familiarity of ABI is an advantage or an oversimplification.

8. Proposed Clinical-Use Framework

The following framework is provisional. It is intended to stimulate review, not establish appropriateness criteria.

Clinical situation	Physiologic role	Duplex role	Provisional Duplex ABI position
Asymptomatic screening or risk assessment	ABI/physiologic testing may be appropriate under guideline criteria	Duplex generally not routine	Not ordinarily a Duplex ABI indication
Symptoms or abnormal pulse examination suggesting PAD	Resting ABI with waveforms/PVR as appropriate	Selective based on the clinical question	Staged pathway may be appropriate
Exertional symptoms with normal or borderline resting ABI	Exercise ABI or additional physiology	Selective if diagnosis/localization remains needed	Potential staged Duplex ABI
Noncompressible ankle arteries; diabetes or CKD with diagnostic uncertainty	TBI/toe pressure, waveforms, PVR	Often useful when anatomy or disease localization is needed	Strong selective indication
Confirmed symptomatic PAD when anatomy will affect management	Physiology establishes limb-level burden	Duplex localizes and grades disease	Strong same-episode indication
Chronic limb-threatening ischemia or tissue loss	ABI plus toe pressure/perfusion testing as appropriate	Anatomic mapping commonly required	Strong indication; physiology must extend beyond ABI when needed
New symptoms or signs after revascularization	ABI/physiology recommended	Duplex recommended	Established combined-use precedent

Bypass or selected endovascular surveillance	Serial physiology	Duplex surveillance per procedure and guideline	Established or conditional combined workflow
Stable PAD without new symptoms or management consequence	Selective follow-up	Routine duplex may not be indicated	Avoid automatic Duplex ABI

The principal safeguard is simple: each component must answer a clinically relevant question. The term should never substitute for documentation of medical necessity.

9. Coordinated Workflow Models

9.1 Same-visit Duplex ABI

In the same-visit model, the referring clinician orders both components because the clinical presentation makes the need for physiology and anatomy reasonably foreseeable. Examples may include symptomatic PAD when lesion localization will guide management, chronic limb-threatening ischemia, or selected post-revascularization evaluations.

9.2 Staged Duplex ABI

In the staged model, the patient is scheduled for a coordinated arterial evaluation beginning with physiologic testing. Duplex proceeds only when predetermined criteria are met, such as abnormal or discordant physiology, noncompressible arteries, symptoms disproportionate to resting findings, or a management question requiring localization. The process should comply with local order, authorization, supervision, and payer requirements.

9.3 Separate-visit pathway remains valid

Coordination does not require same-day testing in all settings. A separate-visit pathway may be appropriate when the initial test resolves the clinical question, when duplex requires authorization, when patient tolerance or laboratory capacity limits same-day completion, or when a specialist consultation is needed before imaging.

9.4 Operational requirements

- Clearly defined order nomenclature and included components.
- Clinical-indication prompts that prevent indiscriminate ordering.
- Laboratory criteria for staged escalation.
- Appropriate scheduling time and staffing.
- Separate acquisition protocols for physiology and duplex.
- A process for coordinated interpretation and timely final reporting.
- Quality review of utilization, completion rate, and downstream testing.

10. Integrated Interpretation and Reporting

Integrated interpretation is the feature that most clearly distinguishes coordinated evaluation from two unrelated tests. It should not collapse all findings into one simplistic conclusion. It should explain the relationship between limb-level physiology and lesion-level anatomy.

10.1 Proposed report structure

1. Clinical indication and relevant history.
2. Physiologic methods and results, including ABI category and adjuncts.
3. Duplex scope and major anatomic/hemodynamic findings.

4. Integrated impression describing concordance or discordance.
5. Comparison with prior studies or intervention when applicable.
6. Focused recommendation for additional testing only when justified.

10.2 Example integrated impressions

Concordant disease: Abnormal right-leg physiology is concordant with a hemodynamically significant superficial femoral artery stenosis and distal monophasic flow. Left-leg physiology and duplex findings do not show hemodynamically significant occlusive disease.

Noncompressible ABI: Ankle pressures are noncompressible. Abnormal toe pressure and dampened waveforms indicate impaired distal perfusion; duplex demonstrates multilevel femoropopliteal and tibial disease.

Discordant findings: Resting ABI is within the normal range; however, duplex demonstrates focal moderate disease without a clear resting limb-level pressure deficit. Correlate with symptoms and consider exercise physiologic testing when exertional ischemia remains suspected.

Post-intervention change: Compared with the prior examination, ABI has decreased and duplex demonstrates increased velocity at the treated segment, raising concern for clinically significant restenosis.

10.3 Coding and documentation

The proposed term does not merge procedural codes or technical documentation. Each performed component should be documented and coded according to applicable law, payer policy, laboratory accreditation standards, and medical necessity. Integrated interpretation must not obscure which examinations were performed.

11. Education and Implementation

11.1 Education for referring clinicians

Education should focus on clinical questions rather than equipment. Referring clinicians need to understand what physiology answers, what duplex answers, when one component is sufficient, and when coordinated evaluation is appropriate. Ordering tools should use plain language and provide indication-based options.

11.2 Education for vascular laboratory professionals

Laboratory education should emphasize integration, discordance, and communication. Sonographers and interpreting physicians should be able to explain how pressure, waveform, toe-perfusion, and duplex findings relate to one another, and identify situations in which one component should prompt additional evaluation.

11.3 Website and public-review platform

DuplexABI.com can serve as a neutral-appearing educational and public-review platform. Initial content should include the proposed definition, the Charter, evidence summaries, clinical-use boundaries, public-review questions, contributor information, and transparent disclosure of sponsorship. Product information should remain clearly separated from the clinical initiative.

11.4 Implementation sequence

7. Circulate Draft 1 confidentially to a small group of trusted reviewers.
8. Incorporate substantive edits and identify willing contributors.
9. Publish a public-review version with transparent disclosures.
10. Develop a concise clinical algorithm and integrated-report example.
11. Pilot terminology and workflows in selected laboratories.
12. Present results and unresolved questions in professional forums.
13. Pursue peer-reviewed publication and formal consensus only after broader review.

12. Research Agenda

12.1 Primary implementation questions

- Does coordinated ordering increase completion of appropriate physiology and duplex within one episode of care?
- Does it reduce time from referral to complete diagnostic information?
- Does it reduce repeat scheduling, duplicate histories, and additional orders?
- Does integrated reporting improve referring-clinician understanding or confidence?
- Does the framework change management decisions?
- Does it increase inappropriate dual testing?
- What is the net effect on patient burden, laboratory capacity, and cost?

12.2 Proposed pilot study

A pragmatic prospective or stepped-wedge implementation study could compare conventional ordering with a defined Duplex ABI pathway in patients meeting prespecified indications. Sites should record eligibility, tests completed, same-day completion, time to final diagnosis, additional orders, downstream imaging, management change, report usefulness, patient experience, and total resource use.

12.3 Consensus research

A modified Delphi process could assess agreement on definition, indications, exclusions, required components, terminology, and reporting. Panel composition should include physician and nonphysician vascular laboratory leaders, multiple specialties, educators, and international representation. Commercial stakeholders may provide technical input but should not control voting or conclusions.

12.4 Diagnostic research

Future studies should examine clinically important discordance among ABI, toe measures, waveforms, and duplex in populations such as diabetes, CKD, chronic limb-threatening ischemia, exercise-induced symptoms, and post-intervention surveillance. The objective should be to identify where coordinated evaluation adds value—not to prove universal superiority.

13. Consensus and Publication Pathway

The initiative should proceed through manageable stages that respect the limited time of potential contributors. A complete sponsor-prepared draft allows experts to make targeted, high-value contributions rather than authoring from a blank page.

13.1 Proposed stages

14. Foundational Draft 1: complete manuscript prepared for critique.
15. Confidential review: focused comments from 6–10 trusted experts.
16. Working-group Draft 2: contributor names and section responsibilities established.
17. Public review: transparent website publication and structured comment process.
18. Pilot implementation and evidence generation.
19. Peer-reviewed concept or consensus manuscript.
20. Society engagement based on evidence and demonstrated professional participation.

13.2 Efficient contribution model

Reviewers should be offered bounded options: review the definition, critique the indication table, revise one section, add missing references, evaluate the reporting framework, or advise on study design. A short structured response form may yield more useful participation than an open request to “help write the paper.”

13.3 Transparency

All future versions should disclose funding, sponsorship, product relationships, intellectual-property interests, and editorial support. Clinical contributors should retain authority over scientific conclusions. The public educational use of “Duplex ABI” and the commercial use of any related trademark should be clearly distinguished and reviewed by qualified legal counsel.

14. Limitations and Counterarguments

14.1 Risk of unnecessary testing

The strongest objection is that a memorable combined term could encourage routine performance of two separately billable studies. This risk is real. The framework therefore requires indication for each component, explicitly rejects universal dual testing, and recommends utilization monitoring.

14.2 Existing language may be sufficient

Some clinicians may consider “ABI and arterial duplex” sufficiently clear. A new term is justified only if it demonstrably improves communication or workflow. Adoption should not be pursued merely because the phrase is memorable.

14.3 ABI may be too narrow a label

Many patients require toe pressure, TBI, PVR, segmental pressures, waveforms, or exercise testing rather than ABI alone. The initiative must decide whether ABI functions acceptably as the familiar umbrella term or whether it creates technical inaccuracy.

14.4 Integrated reporting can mask uncertainty

A unified impression could oversimplify complex or discordant data. Reports should preserve component findings and explicitly describe uncertainty. Integration should add context, not erase nuance.

14.5 Commercial origin may reduce credibility

A concept initiated by an equipment manufacturer will face understandable skepticism. Credibility requires transparent sponsorship, independent clinical control, evidence-based boundaries, and willingness to revise or abandon the proposal if the community does not find it useful.

14.6 Terminology adoption cannot be manufactured

Clinical terms become durable through repeated useful application, education, research, and professional acceptance. A website or marketing campaign can introduce a proposal but cannot establish a standard. The initiative should measure value and invite ownership rather than declare adoption.

15. Conclusion and Invitation

The complementary role of physiologic testing and lower-extremity arterial duplex is established in vascular laboratory practice, published literature, and clinical guidelines. What is not established is a common descriptive term and coordinated framework for the episode of care in which both assessments are clinically indicated.

Duplex ABI is proposed as that term. The proposal is intentionally bounded: it is not a new procedure, not a new code, and not a recommendation for routine dual testing. Its potential value lies in clearer ordering, more coordinated workflow, integrated interpretation, consistent education, and researchable implementation.

The next step is not endorsement. It is disciplined multidisciplinary review. The vascular community is invited to refine the definition, identify overreach, strengthen the evidence, test the workflow, and determine whether the terminology deserves broader use.

A useful clinical term is not proclaimed. It is tested, refined, and adopted because it helps people care for patients more clearly.

Appendix A. Selected Evidence Map

Source	Type	Key contribution	Relevance to initiative
Gornik et al., 2024	Multisociety PAD guideline	ABI as cornerstone physiologic test; duplex for anatomic assessment and paired ABI/duplex in defined post-revascularization settings.	Defines current evidence-based boundaries and combined-use precedent.
Hodgkiss-Harlow & Bandyk, 2013	Review of lower-extremity duplex interpretation	Duplex interpreted with limb-pressure measurements to categorize hemodynamics and functional impairment.	Direct conceptual support for integrated interpretation.
Gale, Scissons & Salles-Cunha, 1998	Diagnostic interpretation study	ABI improved accuracy of Doppler waveform interpretation at multiple levels.	Historic evidence that physiologic data improve interpretation of arterial flow findings.
Zierler & Zierler, 1997	Review	Duplex identifies severity and location of lower-extremity occlusive disease.	Foundational role of lesion-level imaging.
Andersen, 2010	Review/framework	Separates hemodynamic, anatomic, and tissue-perfusion assessment; describes combined surveillance.	Supports domain-based framework.
Lewis, Williams & Davies, 2016	Cross-sectional diagnostic study	Same-patient ABI, PVR, and duplex; nonidentical sensitivity and specificity.	Demonstrates coordinated testing and discordant information.
Premalatha et al., 2002	Diabetes comparison study	ABI had limitations when compared with color duplex in diabetes.	Supports selective escalation in high-risk populations.
AbuRahma et al., 2019	Diagnostic limitations study	Resting ABI can underestimate PAD severity in symptomatic	Supports additional testing when clinical

		patients.	suspicion persists.
SVU Performance Guidelines	Professional practice guidance	Separate minimum standards for lower-extremity physiologic and duplex examinations.	Shows established distinct competencies that may be coordinated.
Mittleider, 2019	Clinical review	Duplex provides morphologic and physiologic information and is used according to the clinical question.	Supports complementary role while noting limitations.

Appendix B. Guideline and Practice Matrix

Scenario	Physiology	Duplex	Implication
Initial diagnosis in symptomatic patient	Resting ABI with waveforms/PVR recommended or appropriate	Duplex based on need for anatomy or unresolved diagnosis	Do not imply automatic combined testing
Normal/borderline ABI with exertional symptoms	Exercise ABI recommended/appropriate	Selective duplex if localization or alternate explanation needed	Staged model
Noncompressible ABI	TBI/toe pressure recommended	Selective duplex often valuable	Physiology cannot be ABI-only
Post-revascularization new symptoms	ABI/physiology	Arterial duplex	Strong combined-use precedent
Bypass surveillance	Serial physiology	Duplex surveillance	Established coordinated framework
Stable disease without new findings	Clinical follow-up; selective physiology	Routine duplex often not indicated	Explicit exclusion safeguard

Appendix C. Proposed Minimum Reporting Elements

- Clinical indication
- Examination scope
- Physiologic methods and limitations
- ABI category and laterality
- Toe pressure/TBI or other adjuncts when applicable
- Waveform/PVR findings
- Duplex lesion location and severity
- Distal flow characteristics

- Concordance or discordance statement
- Comparison with prior examination
- Integrated impression
- Recommendation limited to a defined unresolved clinical question

Appendix D. Questions for Public Review

21. Does the proposed definition describe a recognizable clinical activity?
22. Does “Duplex ABI” improve clarity compared with “ABI and arterial duplex”?
23. Does the use of “ABI” improperly minimize other physiologic components?
24. Which indications are appropriate for same-visit testing?
25. Which indications should be explicitly excluded?
26. What findings should trigger a staged duplex examination?
27. What minimum elements are required for integrated interpretation?
28. What risks of overutilization or coding confusion remain?
29. Which outcomes should be measured in a pilot implementation study?
30. What specialties and professional groups must participate before publication?

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Draft 1 Editorial Notes

This manuscript is intentionally sponsor-prepared and comprehensive. The next editorial pass should focus on scientific accuracy, citation verification, terminology, and removal of any language that appears promotional or overreaching. Before public posting or journal submission, all references should be checked against original publications, the indication matrix should be reviewed by clinical experts, and legal/IP review should confirm the intended distinction between descriptive “Duplex ABI” terminology and any commercial branding.

Proposed reviewer instruction: Please identify the three statements you agree with most, the three statements that concern you most, any missing evidence, and the single change that would most improve the clinical usefulness of this proposal.