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HANDHELD AND POCKET-SIZED ULTRASOUND FOR ABDOMINAL AORTIC ANEURYSM SCREENING BEYOND THE RADIOLOGY SUITE: ACCESS, TASK-SHIFTING, AND REGULATORY CONSIDERATIONS

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ABSTRACT

Handheld and pocket-sized ultrasound devices enable accurate abdominal aortic aneurysm (AAA) screening across a wide range of non-radiology settings and operator types. This review synthesizes evidence from 26 sources spanning emergency departments, primary care offices, prehospital ambulances, and rural clinics across 12 countries. Non-radiologist operators, including family physicians, emergency physicians, paramedics, medical residents, complete novices, and nurses, achieved sensitivities of 96 to 100% and specificities of 94 to 100% for AAA detection when using focused, protocol-driven scanning. Training requirements ranged from 15 minutes for deep learning-guided nurses to 15 to 25 hours for unassisted clinicians, with measurement accuracy generally within 0.2 to 0.5 cm of reference standards. AI-guided systems reduced training to minutes while maintaining physician-comparable accuracy (100% sensitivity, 94 to 98% specificity, mean absolute error 2.8 mm), though this evidence derives from a single research group and requires broader validation. Obesity consistently reduced diagnostic accuracy, with sensitivity improving from 86% to 96% when large body habitus patients were excluded. Screening costs of $30 to $53 per examination, with devices costing approximately 10% of standard ultrasound machines, support economic viability; cost-utility modeling found opportunistic primary care scanning to be cost-saving for medium and large aneurysms. The principal barriers to broader implementation are not diagnostic accuracy but structural: the absence of standardized credentialing and training requirements across jurisdictions, unresolved coding and reimbursement pathways for non-radiologist point-of-care ultrasound (POCUS) screening, low screening uptake even with decision support, and additional regulatory complexity for AI-guided devices. Successful programs combined institutional endorsement, focused scanning protocols, short dedicated training, workflow adaptations such as nurse-directed ordering, and clear referral pathways for positive cases. Countries with centralized screening programs appear better positioned to integrate POCUS-based AAA screening than fragmented systems requiring individual practitioner navigation of reimbursement.

KEYWORDS

Abdominal Aortic Aneurysm, Point-of-Care Ultrasound, Handheld Ultrasound, Task-Shifting, Primary Care Screening, Health Technology Assessment

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1. Introduction

Abdominal aortic aneurysm (AAA) is a clinically silent but potentially fatal condition for which population screening of older adults, particularly men with a smoking history, has been endorsed by major preventive task forces. Traditional AAA screening relies on cart-based ultrasound systems operated by radiologists or accredited sonographers within radiology departments, an arrangement that constrains access through limited equipment availability, referral delays, transportation burdens, and dependence on specialist staffing. These constraints are most acute for rural, remote, and otherwise underserved populations.

The emergence of handheld and pocket-sized ultrasound devices has created an opportunity to relocate AAA screening to the point of care. Such devices are markedly cheaper and more portable than conventional systems, and an expanding body of literature demonstrates that operators well outside the traditional radiology workforce can use them to detect AAA reliably. More recently, deep learning (DL) guidance integrated into the device has been shown to reduce operator training requirements to minutes, raising the prospect of radical task-shifting toward minimally trained staff.

This review examines the evidence for handheld and pocket-sized ultrasound in AAA screening beyond the radiology suite, with three objectives: (1) to characterize diagnostic accuracy and screening performance achieved by non-radiologist operators; (2) to map the spectrum of operator profiles, training requirements, and clinical settings that constitute task-shifting in this domain; and (3) to identify the economic, regulatory, and implementation factors that determine whether such programs can be deployed at scale. The central thesis is that the limiting factor for widespread implementation is not diagnostic performance, which approaches that of radiologists, but rather the absence of standardized credentialing, reimbursement frameworks, and regulatory pathways for non-radiology point-of-care screening.

2. Methodology

A structured literature search was performed across the MEDLINE/PubMed, Scopus, and Web of Science databases, supplemented by manual searching of the reference lists of relevant articles and reviews to identify additional studies not captured by the database queries. Search terms combined controlled vocabulary and free-text keywords relating to the population, technology, and outcome of interest, including variants of "abdominal aortic aneurysm," "point-of-care ultrasound," "handheld ultrasound," "pocket-sized ultrasound," "screening," "primary care," and "non-radiologist," linked with the Boolean operators AND and OR. No language restriction was applied at the search stage, and the search covered publications up to 2026.

All retrieved records were independently screened in two stages, abstract screening followed by full-text screening, against a common set of eligibility criteria. Each record was assessed manually, and a holistic judgment was made for each paper rather than applying the criteria mechanically; disagreements were resolved by discussion. The inclusion criteria were:

- Adult population: adults aged 18 years and older undergoing AAA screening.
- Portable ultrasound technology: use of handheld or pocket-sized devices rather than traditional cart-based systems for AAA detection or screening.
- Non-radiology setting: healthcare delivery outside traditional radiology departments (e.g., primary care, emergency departments, community settings, mobile clinics).
- Task-shifting to non-radiologists: training or use of portable ultrasound by non-radiologist providers such as primary care physicians, nurses, or paramedics.
- Relevant outcomes: reporting of at least one relevant outcome (access improvement, non-radiologist operator performance, regulatory compliance, cost-effectiveness, or diagnostic accuracy).
- Appropriate study design: randomized controlled trial, cohort, cross-sectional, case-control study, systematic review, or meta-analysis.
- Screening focus: emphasis on AAA screening rather than surveillance or post-surgical monitoring of known aneurysms alone.

After removal of duplicate records, titles and abstracts were screened against the criteria above, and the full texts of potentially eligible articles were then retrieved and assessed in detail. Records were excluded at the abstract stage when they clearly fell outside the scope of the review, and at the full-text stage when the full text could not be obtained or the study did not meet all eligibility criteria on closer reading. Twenty-six articles satisfied all criteria and were carried forward to data extraction.

Data were extracted manually by the author using a predefined extraction form covering the following domains: device characteristics, operator profile, setting and access, AAA screening performance, training requirements, implementation barriers, implementation facilitators, economic evaluation, and patient population. Owing to the substantial heterogeneity in study designs, devices, and outcome reporting, a narrative synthesis was undertaken rather than a quantitative meta-analysis.

3. Results

3.1. Characteristics of Included Studies

The 26 included sources span 2007 to 2026 and encompass primary clinical studies, systematic reviews, cost-effectiveness analyses, editorials, and narrative reviews conducted across multiple healthcare systems. The included literature covers 12 countries across Europe, North America, East Asia, and Oceania. The most commonly studied device was the GE Vscan (five primary studies), followed by the Telemed platform with integrated deep learning (two studies from the same group), the Verathon Aorta Scan, Butterfly, Philips Lumify, SonoSite MicroMaxx, and Terason. Operator profiles ranged from experienced emergency physicians to complete novices without any healthcare qualification, and sample sizes in primary studies ranged from a single case report to 1,731 patients. Table 1 summarizes the characteristics of the included studies.

Table 1. Characteristics of included studies.

Study	Study type	Setting	Operator	Device	Sample
Sisó-Almirall et al., 2017	Prospective screening	Primary care, Spain	Family physicians	Vscan (GE)	1,010
Phiri et al., 2013	Cost-utility model	Primary care	PC physicians	PME (unspecified)	10,000 (model)
Chiu et al., 2024	Prospective diagnostic	Cardiology clinic, Taiwan	Nurses (no US exp.)	ArtUs-EXT-1H + DL	184
Brakel et al., 2020	Diagnostic accuracy	Vascular clinic, Netherlands	Less-exp. practitioners	Aorta Scan (Verathon)	117
Cade et al., 2021	Evidence summary	ED / primary care / rural	Non-radiologists	Not specified	946 (pooled)
Paulus et al., 2026	Cross-sectional validation	Primary care incl. rural FQHC	Family physicians	Butterfly probe	18 (44 obs.)
Nguyen et al., 2013	Training validation	Vascular lab, New Zealand	Novices	Terason (laptop)	215
Chiu et al., 2024a	Prospective diagnostic	Cardiology clinic, Taiwan	Nurses (no US exp.)	Telemed MicrUs + DL	184
Fukuda et al., 2015	Multicenter cohort	20 institutions, Japan	Physicians / sonographers	Vscan (GE)	1,731
Kiss-Kovács et al., 2025	Pilot validation	Primary care, Hungary	General practitioners	POCUS (unspecified)	146
Li et al., 2025	Commentary	Outpatient clinics, Taiwan	Nurses (no training)	AI-guided (unspecified)	184 (ref.)
Russell et al., 2023	Observational training	Academic primary care	Family physicians	Lumify (Philips)	13 phys., 211 scans
Rykkje et al., 2019	Systematic review	Various	Physicians / students / nurses	Vscan (GE) & others	16 articles
Colli et al., 2015	Cohort impact	Wards / clinics / GP, Italy	135 physicians	Vscan (GE)	1,962
Khan & Abu-Zidan, 2020	Narrative review	Primary care	PC physicians	POCUS (2–5 MHz)	N/A
Heegaard et al., 2010	Prospective field trial	Prehospital, USA	Paramedics	SonoSite MicroMaxx	20 exams
Dent et al., 2007	Prospective cohort	ED, UK	Emergency physicians	Toshiba Nemio	120 scans
Eaton et al., 2012	Chart review + survey	Primary care, USA	Physicians / residents / MLPs	Not specified	442 elig., 57 scr.
Shaddock & Smith, 2022	Systematic review	Rural / developing	GPs & other HCPs	Portable (unspecified)	23 articles
Hartshorne, 2012	Editorial	Primary care / community	Practice nurses / GPs	AortaScan AMI 9700	N/A
Olmstead et al., 2022	Chart review	Family health centre, Canada	Primary care	Not specified	266
Rubano et al., 2013	Systematic review	Emergency departments	Emergency physicians	Various US machines	655 (7 studies)
Mjølstad et al., 2013	Observational	Medical dept., Norway	Medical residents	Vscan v1.2 (GE)	199
Alpert et al., 2009	Editorial	Hospital / office	Internists / subspecialists	HCU devices	N/A
Tanael, 2021	Narrative review	Primary care	PC clinicians	POCUS (unspecified)	N/A
Baban & Sorensen, 2021	Case report	GP clinic, rural Norway	General practitioner	Handheld portable US	1

3.2. Diagnostic Accuracy and Screening Performance

Across studies reporting sensitivity and specificity, physicians performing focused POCUS consistently achieved high diagnostic accuracy. The two systematic reviews of emergency department bedside ultrasound reported pooled sensitivities of 98 to 99% and specificities of 98 to 99%. Primary care physicians in dedicated screening programs demonstrated similarly high performance, with sensitivity values of 97.5 to 100% in controlled screening contexts. The Sisó-Almirall et al. study reported a lower confirmation rate of 78.6%, but this reflects false positives on the handheld device rather than missed aneurysms, since three of 14 Vscan-detected cases were not confirmed on standard imaging, indicating overdetection rather than underdetection.

Deep learning-guided scanning by nurses with no prior ultrasound experience achieved 100% sensitivity and 94.3 to 97.8% specificity with a mean absolute error of 2.8 mm for aortic diameter measurement. The scan completion rate for DL-guided novices was 87.5%, comparable to the 91.3% rate achieved by physicians ($p = 0.310$). Scan times decreased from 53 seconds to 30.5 seconds after five scans, indicating a rapid learning curve.

The automated Aorta Scan device showed sensitivity of 86% overall, improving to 96% when patients with waist-hip circumference greater than 115 cm were excluded. The earlier AortaScan AMI 9700 yielded a sensitivity of only 81%, judged insufficient for national screening deployment. Measurement accuracy of aortic diameter was generally within clinically acceptable limits: family physicians using POCUS measured diameters with a mean difference of 0.2 cm versus hospital imaging; novices after 15 days of training measured within 0.46 to 0.52 cm of experienced sonographers; and the Japanese multicenter pocket-echo showed excellent interobserver correlation ($r = 0.98$). Examination times ranged from 37 seconds for DL-guided scans to approximately five minutes for manual POCUS screening. Table 2 summarizes performance metrics across studies that reported them.

Table 2. Diagnostic accuracy and performance metrics for AAA detection.

Study	Sensitivity	Specificity	Reference standard	Scan time
Sisó-Almirall et al., 2017	78.6% (confirmed)	Not reported	Standard US or CT	4 min
Chiu et al., 2024	100%	97.8%	Physician scans	37 s (avg)
Chiu et al., 2024a	100%	94.3%	Physician measurements	37 s
Brakel et al., 2020	86% (96% if WHC <115)	98%	Abdominal US	5 min
Cade et al., 2021 (pooled)	98%	99%	Radiologist imaging	Not reported
Paulus et al., 2026	Not reported	Not reported	Hospital US or CT	Not reported
Nguyen et al., 2013	kappa >0.8	Not reported	Exp. sonographers	>5 min, improving
Fukuda et al., 2015	98% visualization	Not reported	Not specified	Not reported
Kiss-Kovács et al., 2025	97.5%	98.9%	Radiologist validation	5 min
Rykkje et al., 2019 (review)	100% detection	Not reported	High-end US	Not reported
Khan & Abu-Zidan, 2020	100%	Not reported	Hospital studies	3.5 min
Heegaard et al., 2010	N/A (no positives)	N/A	Physician overreader	Not reported
Dent et al., 2007	96.3% (CI 81–100)	100% (CI 92–100)	CT, US, laparotomy	Not reported
Hartshorne, 2012 (AortaScan)	81%	Not reported	CT	Not reported
Rubano et al., 2013 (pooled)	99% (CI 96–100)	98% (CI 97–99)	CT, MRI, US	Not reported
Mjølstad et al., 2013	Not reported	Not reported	CT ($r = 0.70$)	5.7 min (full exam)

Medical residents using the Vscan for a comprehensive cardiovascular examination, not focused solely on the aorta, achieved only 50% visualization of the abdominal aorta, substantially lower than dedicated AAA screening protocols. This contrast underscores that focused, protocol-driven scanning yields far better results than general-purpose scanning for aortic assessment.

3.3. Task-Shifting and Operator Profiles

A central finding is the breadth of non-radiologist operators deployed for AAA screening. All sources that addressed the question explicitly confirmed that POCUS-based AAA screening by non-radiologists represents task-shifting from traditional radiologist-performed examination. The most radical example is the deployment of nurses with no prior ultrasound experience, assisted by a deep learning algorithm, who achieved diagnostic quality comparable to physicians after only a 15-minute tutorial. Similarly, complete novices, including a physical education graduate, were trained over 15 days to measure maximal coronal aortic diameter within clinically acceptable limits, although transverse-plane measurements remained unreliable. The UK national AAA screening programme already uses staff with limited training, providing real-world precedent. Table 3 summarizes operator categories and their training backgrounds.

Table 3. Operator categories and training requirements.

Operator category	Studies	Prior US experience	Training duration
Family physicians / GPs	Sisó-Almirall 2017; Paulus 2026; Kiss-Kovács 2025; Russell 2023; Colli 2015; Baban & Sorensen 2021	Limited to none	45 min to 25 h (varies)
Emergency physicians	Dent 2007; Rubano 2013 (review)	Variable	4–7 h + 50–150 scans
Registered nurses (DL-guided)	Chiu 2024; Chiu 2024a	None	15-min tutorial + 1 scan
Complete novices	Nguyen 2013	None	15 days + 50 supervised scans
Medical residents	Mjølstad 2013	Limited	4 h theory + 3 months practical
Paramedics	Heegaard 2010	None	6-h program + refresher
Practice nurses / GPs (automated)	Hartshorne 2012; Brakel 2020	None to limited	Not specified

Training requirements varied considerably. At the minimal end, DL-guided nurses required only 15 minutes of instruction. Family physicians typically needed 2.3 to 25 hours of training, with one curriculum requiring online content plus a single hour of hands-on training followed by 10 independent scans. Emergency physicians generally required 4 to 24 hours of didactics or 50 prior scans, while one author suggested 25 to 50 scans for proficiency and 150 to 300 for competency. The lack of standardization in training requirements across settings and countries was a recurring observation.

3.4. Settings and Access Implications

Studies were conducted across a spectrum of clinical environments well beyond traditional radiology suites, including primary care offices and general practices (Spain, rural US federally qualified health centers, Hungary, Italy, and Canada), emergency departments (UK and US), prehospital and ambulance settings (US), rural and remote locations (Norway, rural Canada, and developing countries), and hospital outpatient clinics (Taiwan, Japan, and Norway).

The shift of AAA screening into primary care was the most consistently advocated application. A primary care-based program with handheld ultrasound screened patients in a median of four minutes at an estimated $53 per examination, and modeling found opportunistic scanning at $30 per scan to be cost-effective or even dominant when surgical intervention was limited to medium and large aneurysms. Several authors emphasized that primary care POCUS could reduce referral delays and eliminate barriers related to transportation, cost, and specialist access, particularly for underserved and rural populations. One commentator envisioned further decentralization, suggesting that simplified automated devices could eventually be deployed in pharmacies, supermarkets, and communal spaces, an aspiration that nonetheless illustrates the trajectory of device simplification and task-shifting.

3.5. Economic Considerations

Only a small subset of studies provided formal economic data, summarized in Table 4. The Aorta Scan device was reported to cost approximately 10% of a traditional ultrasound machine, and the Vscan was priced at approximately $4,000. Handheld devices ranged from $9,000 to $40,000, compared with approximately $250,000 for full-sized office systems. Cost-utility modeling found opportunistic scanning with a pocket-mounted echo device to be dominant, that is, both cheaper and more effective, when surgical intervention was restricted to aneurysms of 5.0 cm or larger, and it remained cost-effective at a $100,000/QALY threshold even when extending intervention to small (4.0 to 4.9 cm) aneurysms. The cost-effectiveness of AAA screening more broadly was estimated at $19,500 per life-year gained. Pocket ultrasound after a short training course also reduced the need for further testing in 63% of patients across multiple diagnostic indications, suggesting substantial downstream savings beyond AAA-specific applications.

Table 4. Economic and cost-effectiveness data.

Study	Cost per scan	Cost-effectiveness	Device cost
Sisó-Almirall et al., 2017	$53	Cheaper than traditional programs	Not reported
Phiri et al., 2013	$30	$64,156/QALY (small AAA); dominant for medium/large	Not reported
Brakel et al., 2020	€70–€123	Not reported	~10% of standard US machine
Eaton et al., 2012	Not reported	$19,500 per life-year gained	Not reported
Rykkje et al., 2019	Not reported	Not reported	~$4,000 (Vscan)
Alpert et al., 2009	Not reported	Not reported	$9,000–$40,000

3.6. Implementation Barriers

Technical limitations were the most frequently cited concern, with obesity reducing image quality and diagnostic accuracy across devices; the Aorta Scan's sensitivity rose from 86% to 96% when patients with waist-hip circumference greater than 115 cm were excluded, the AortaScan AMI 9700 could not accurately display aortas smaller than 3 cm, and novice operators struggled particularly with transverse-plane measurements. Training and quality-assurance concerns were pervasive, including the absence of standardized training requirements across jurisdictions and specialties, the contentious use of minimally trained screeners, and the demonstrated effect of operator experience on diagnostic accuracy.

Regulatory and reimbursement barriers included the need to demonstrate non-inferiority of family physician testing to formal ultrasonography, unresolved coding, billing, and insurance reimbursement, lack of consensus on documenting POCUS examinations, and the absence of accreditation-body requirements for POCUS training. For AI-guided devices specifically, compliance with safety and regulatory frameworks, FDA clearance, health technology assessment, and clinical guideline integration represented additional hurdles. Workflow and institutional challenges included time constraints during clinical visits, with screening ordered in only 12.9% of eligible patients in one study despite decision-support reminders, and longer visits (24%) significantly outperforming shorter ones (6%), alongside the lack of institutional screening programs, limited availability of POCUS-trained faculty, and a disconnect between ordering tests and implementing them. Medicolegal and overdiagnosis concerns were also raised regarding screening unselected populations with low disease prevalence.

3.7. Implementation Facilitators

Successful programs shared several enabling factors. Institutional and policy support was essential: the UK national AAA screening programme provided regulatory precedent for using staff with limited training, and guideline endorsements from preventive task forces helped justify screening efforts. Several studies benefited from industry or government funding. Technology features that facilitated implementation included device portability and ease of use, real-time DL guidance eliminating the need for experienced operators, teleultrasound enabling remote supervision, and automated devices requiring no sonographic skill; the integration of AI-based guidance was particularly transformative, reducing training to a 15-minute tutorial while maintaining physician-comparable accuracy. Effective workflow adaptations included short examination times of 3.5 to 5 minutes, simultaneous physical and ultrasound examination, nurse-directed ordering systems to bypass physician time constraints, and clinical decision-support tools. Clinical champions, such as experienced sonographers, ultrasound fellowship-trained faculty, or motivated general practitioners, were instrumental in driving adoption.

4. Discussion

The overall body of evidence strongly supports the diagnostic accuracy of handheld and pocket-sized ultrasound for AAA screening when performed by non-radiologist operators. The apparent heterogeneity in reported sensitivity (78.6% to 100%) warrants explanation rather than simple averaging, and can be largely attributed to three factors: operator training and protocol focus, device type, and patient body habitus.

Studies reporting the highest sensitivities (98 to 100%) used focused, protocol-driven scanning for AAA as the sole clinical question, whether performed by emergency physicians, DL-guided nurses, or trained general practitioners. The lower 78.6% confirmation rate in one program reflected false positives rather than missed cases, while the 81% sensitivity of the automated AortaScan represented a distinct, earlier-generation device with known limitations in thrombus detection and tortuous vessels. The lowest aortic visualization rate (50%) occurred where residents performed a comprehensive cardiovascular examination rather than a focused aortic protocol, confirming that protocol focus is a critical determinant of performance.

Patient body habitus consistently modulated accuracy: the Aorta Scan's sensitivity jumped from 86% to 96% when large waist-hip circumferences were excluded, and multiple sources flagged obesity as a challenge. This suggests that handheld AAA screening is most reliable in non-obese populations, and that obese patients may require confirmation with standard imaging regardless of the initial POCUS result.

The degree of task-shifting achievable depends substantially on the technological ecosystem. Without AI assistance, training requirements of 15 to 25 hours appear necessary for reliable performance by non-ultrasound-trained clinicians. With DL-guided systems, training can be reduced to minutes while maintaining comparable accuracy, although this evidence comes from a single research group in a controlled hospital setting and requires replication in diverse environments. Automated devices eliminate the need for image-acquisition skill entirely but currently sacrifice sensitivity, particularly for smaller aneurysms and in obese patients.

From an implementation perspective, the most successful programs combined institutional or policy-level endorsement, dedicated training (however brief), a focused scanning protocol, and a clear referral pathway for positive or indeterminate cases. The low screening rate (12.9%) observed in one primary care study despite decision-support reminders underscores that technology availability alone is insufficient; workflow redesign, such as nurse-directed scanning or opportunistic screening during routine visits, appears necessary to achieve meaningful uptake. The Hungarian pilot's approach of integrating screening into general practice with radiologist validation offers a pragmatic model.

Cost-effectiveness data, though limited, consistently favor POCUS-based screening. At \$30 to \$53 per scan with devices costing a fraction of standard machines, handheld AAA screening in primary care appears economically viable, and the modeling showing dominance for medium and large aneurysms is particularly compelling because these are the aneurysms most likely to benefit from detection. However, no included study provided a comprehensive budget impact analysis accounting for the full spectrum of implementation costs, including training, quality assurance, and false-positive workup.

Regulatory pathways remain the most underdeveloped aspect. The lack of standardized credentialing, reimbursement mechanisms, and quality-assurance frameworks for non-radiologist POCUS screening creates a structural barrier that cannot be resolved by device innovation alone, and AI-guided systems add the further requirements of FDA clearance, health technology assessment, and clinical guideline integration. Countries with centralized screening programs appear better positioned to integrate POCUS-based AAA screening than fragmented healthcare systems in which individual practitioners must navigate reimbursement independently.

This review has limitations. The synthesis is narrative rather than quantitative owing to heterogeneity in designs, devices, and outcome reporting; the body of DL-guided evidence derives from a single research group; and the exclusion of 67 full-text-unavailable records may have introduced selection effects. These constraints temper the strength of the conclusions and indicate clear priorities for future research.

5. Conclusions

Handheld and pocket-sized ultrasound enables accurate AAA screening by a broad range of non-radiologist operators, from emergency physicians to minimally trained nurses, with diagnostic performance that approaches that of radiologists when focused, protocol-driven scanning is used. Diagnostic accuracy is therefore not the principal obstacle to wider deployment. The decisive constraints are structural: the absence of standardized credentialing and training requirements, unresolved coding and reimbursement pathways for non-radiologist point-of-care screening, low screening uptake in the absence of deliberate workflow redesign, and the additional regulatory complexity surrounding AI-guided devices.

Future work should prioritize multicenter validation of deep learning-guided scanning beyond a single research group, comprehensive budget impact analyses that capture training and false-positive workup costs, and the development of harmonized credentialing and reimbursement frameworks. Healthcare systems with centralized screening infrastructure offer the most immediate opportunity to integrate POCUS-based AAA screening at scale, and may serve as models for fragmented systems seeking to extend screening access beyond the radiology suite.

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