AI in action: Efficiency without compromise
Achieving improved outcomes and clinical confidence with AI-powered ultrasound

Background

Sonographers face a high risk of occupational burnout, driven by a combination of heavy workloads, long hours, and the physical demands of scanning. Work-related musculoskeletal disorders (WRMSDs) are particularly prevalent, with one study reporting that 86% of sonographers experience regular musculoskeletal discomfort due to their work.[1,2]

These challenges highlight the urgent need for workflow solutions that not only improve diagnostic efficiency, but also support user well-being. Ultrasound exams can be lengthy and vary significantly by operator, making consistency, speed, and ease of use essential to elevating the standard of care and reducing strain on clinicians.

Artificial intelligence (AI) offers a promising path forward in ultrasound imaging. By automating repetitive tasks and guiding users through complex workflows, AI helps reduce variability, improve reproducibility, and minimize both physical and cognitive fatigue. On LOGIQ™ systems, AI is built on **deep learning intelligent anatomy recognition**, leveraging background **organ segmentation trained on pathology** to deliver high measurement accuracy and rapid caliper adjustments.

The following research explores how AI-powered tools in the LOGIQ E10 Series enhance the ease, quality, and speed of ultrasound examinations—reinforcing the value of automation in supporting clinical performance and sonographer wellness.

Methodology[3]

Overview

To evaluate the impact of AI technologies on workflow efficiency, GE HealthCare conducted an unblinded study in Wauwatosa, Wisconsin (USA) in June 2025 using the latest LOGIQ E10 ultrasound system. The study compared the manual workflow with the automated workflow of the latest LOGIQ E10 system equipped with Scan Assistant (a customizable workflow automation solution).

Objective

The primary objective of the study was to quantify workflow efficiency by measuring time savings and the number of system interactions (keystrokes) when using manual workflows compared to AI-powered automated workflows on the latest LOGIQ E10.

The following AI tools, which comprise Auto Abdominal Suite 2.0, were included in the assessment:

- **Auto Abdominal Color Assistant 2.0** – Detects the anatomy being scanned and automatically adjusts the color parameters, region of interest (ROI) size and position
- **Auto Aorta Measure Assistant with SmartEdit** – Automatically provides A/P and transverse measurement of the abdominal aorta
- **Auto CBD Measure Assistant with SmartEdit** – Automatically measures the AP dimension of the common bile duct
- **Auto Renal Measure Assistant with SmartEdit** – Automatically detects the kidney and measures the length, height and width in seconds

Methodology[3] *(continued)*

Participants

All participants in the study were recruited externally: **14 registered sonographers** with varied experience levels and 14 subjects. For accuracy, each sonographer was assigned a subject to scan and the sonographer scanned the same subject throughout the study.

Evaluation workflow

Briefing and informed consent → Training → Live scanning → Post scanning survey

Training

All participants were trained on both manual and automated workflow modes on LOGIQ E10 to ensure consistency.

Live scanning

Each participant performed a full abdominal exam in three different scanning protocols using both manual and AI-powered automated workflow. Time and system interactions were recorded and compared for each workflow.

Scanning protocols

- **Test 1:** All participants performed live abdominal Doppler (Color Flow) using both manual and auto workflows with Auto Abdominal Color Assistant 2.0

- **Test 2:** All participants performed live abdominal measurements on both manual and auto workflows

- **Test 3:** All participants performed measurements and edits on both sets of recalled images

Steps for each scanning protocol

Columns 1 and 2 show the ordered list of the abdominal views captured on human subjects for Test 1 and Test 2, respectively. Column 3 shows each step performed on the 5 recalled images including editing the caliper placement for 4 out of 5 of the images.

Test 1: Live abdominal Doppler	Test 2: Live abdominal measurements	Test 3: Measurement and edits on recalled images
1. Pancreas transverse	1. Common bile duct (CBD)	1. Measure common bile duct
2. Long aorta proximal	2. Long aorta proximal	2. Edit CBD calipers
3. Long liver	3. Long aorta mid	3. Measure trans aorta
4. Long right kidney	4. Long aorta distal	4. Edit trans aorta calipers
5. Trans left kidney	5. Trans aorta proximal	5. Measure long aorta
6. Long spleen	6. Trans aorta mid	6. Edit long aorta calipers
	7. Trans aorta distal	7. Measure long renal
Note: B-Mode and Color Flow captured for each numbered view.	8. Long right kidney	8. Edit long renal calipers
	9. Trans right kidney	9. Measure trans renal
	10. Long left kidney	
	11. Trans left kidney	

Post scanning: user experience survey

Participants completed a questionnaire assessing user experience, diagnostic confidence and satisfaction, including if they would recommend the LOGIQ E10 system's AI features.

Common bile duct measurement using Auto CBD Measure Assistant with SmartEdit, C1-6-D

Long abdominal aorta mid measurement using Auto Aorta Measure Assistant with SmartEdit, C1-6-D

Key findings[3]

In this study, the AI features demonstrated improvements in time savings and reduced system interactions.

- In Test 1, Auto Abdominal Color Assistant 2.0 delivered up to **46%** **time savings**, with **system interactions reduced by two-thirds**, helping sonographers complete exams faster and with fewer manual steps

↓

Test 1: Live abdominal Doppler heat maps

Manual

Auto

- When Auto Abdominal Suite 2.0 was used in Test 2 in combination with Scan Assistant, **measurement speed increased by up to 65%**, and **system interactions were reduced by 80%**, streamlining the scanning process and reducing the physical effort required

↓

Scan Assistant guides users through the entire exam, automatically selecting the appropriate mode and imaging parameters while advancing seamlessly to the next step. This results in a faster exam process and greater image consistency from exam to exam and user to user.

Test 2: Live abdominal measurements heat maps

Manual

Auto

The study demonstrated that AI-powered tools significantly enhance workflow efficiency—even when used independently of other automation features like Scan Assistant.

- Auto Abdominal Suite 2.0 delivered up to a **44% reduction in time spent** on measurement and editing, along with a **54% decrease in system interactions**, streamlining workflows for sonographers

- Auto Renal Measurement Assistant showed even greater efficiency, with up to **59% time savings** during renal exams and a **75% reduction in system interactions**, helping clinicians complete a renal exam faster and with fewer manual steps

These findings highlight how AI is transforming routine ultrasound workflows, enabling clinicians to focus more on patient care and less on system navigation.

Post-scanning survey results (measured on a 5-point Likert scale)

Experience level

AI tools were also widely recognized for their ability to support users across all experience levels:

- **93%** of participants agreed that AI measurements help users take reproducible measurements regardless of experience
- **100%** agreed that Auto Abdominal Color Assistant 2.0 improves consistency in color settings across all user levels

"[AI tools] are helpful for novice users. [The tools] help novice users learn and provide an easier experience learning."

– 5 years' experience, general imaging

This feedback reinforces the value of AI as a training aid and performance enhancer, helping new users build confidence while supporting expert-level precision.

Suite efficiency

- **100%** agreed AI will help create a more efficient scanning process

> *"[AI tools] set the sonographer up for success while saving time."*
>
> *– 15 years' experience, breast and general imaging*

Color Flow

- **100%** of users agreed that AI-powered Auto Color Abdominal Assistant 2.0 provided consistent Color Flow optimization and reliable region of interest (ROI) placement and sizing

By automating Color Flow adjustments and ROI placement, the AI tools help reduce variability and improve diagnostic confidence—especially in complex or artifact-prone exams.

"[AI tools] made the exam less stressful overall. AI Color Flow showed a significant positive difference, dealing less with artifacts, more focused inside the organ."
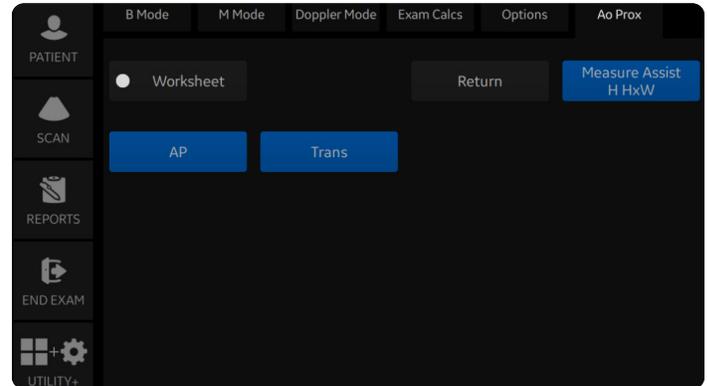
– 9 years' experience, vascular

Measurements

- **100%** of participants would recommend the LOGIQ E10 AI measurement tools
- All agreed that AI provides easy-to-use editing capabilities (through SmartEdit)

Auto Measure Assistant touch panel with configurable settings is designed for easy measurements

This level of endorsement reflects the reliability and usability of the AI tools, which help ensure consistent, high-quality measurements while reducing the burden of manual editing.

> *"Editing features [SmartEdit] are easy to use and allow for fast personalization."*
>
> *– 1.5 years of experience in general imaging & OB*

SmartEdit enhances Auto Measurement tools with intuitive shortcut keys and AI-assisted anatomy detection and segmentation. Measurements automatically populate, while still offering users the flexibility to adjust as needed—making the editing experience both efficient and customizable. Users can scroll, rotate, and edit calipers with ease, enabling greater personalization.

Long right kidney measurement using Auto Renal Measure Assistant with SmartEdit, C1-6-D

Long right kidney Color Flow using Auto Abdominal Color Assistant 2.0, C1-6-D

Conclusion

The study results[4] tell a compelling story: AI-powered automation on LOGIQ products can transform the ultrasound experience for both clinicians and sonographers. With up to **65% faster measurements** and **80% fewer system interactions**,[5] these tools are not just enhancing efficiency—they're redefining what's possible in everyday scanning.

By automating repetitive tasks and simplifying complex workflows, LOGIQ's AI tools help reduce the physical and cognitive demands of scanning—minimizing the risk of burnout and discomfort while improving consistency across users of all experience levels. These benefits are especially impactful in high-volume environments, where time savings and reproducibility are essential to maintaining quality care and clinician well-being.

Whether supporting novice users as they build confidence or enabling experienced sonographers to work faster and more precisely, LOGIQ E10's AI capabilities empower care teams to deliver consistent, high-quality imaging—**efficiently and reliably**—without compromise.

> *"Patient care will be enhanced with these tools—they allow for more time with patients."*
>
> *– 25 years' experience, general imaging, vascular & OB*

Transverse proximal abdominal aorta measurement using Auto Aorta Measure Assistant with SmartEdit, C1-6-D

References:

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2. Roll SC, Fukumura YE, Sommerich CM, Stigall-Weikle AN, Evans KD. Cross-disciplinary Prevalence and Associated Factors for Work-Related Discomfort in Users of Ultrasonography: Implications for Sonography Professionals and Health Care Administrators. Journal of Diagnostic Medical Sonography. 2023;39(4):314-330. doi:10.1177/87564793231170016.

3. GE HealthCare. LOGIQ Ultrasound AI and Automation claims evaluation study. Conducted June 2025. DOC3073348.

4. Auto Abdominal Suite 2.0 combined with Scan Assistant.

5. Renal, aorta, and CBD measurements.

GE HealthCare