Clinical Study Shows Targeted End-tidal Control Anesthesia Delivery Improves Efficiency and Accuracy to Help Optimize Patient Care

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- Published in *Anesthesia and Analgesia*, results from the multi-site trial evaluating End-tidal Control software provide compelling evidence for enhanced accuracy and efficiency of anesthesia delivery compared to conventional anesthetic gas delivery methods.[1]
- End-tidal Control is the first FDA-approved software that automatically adjusts and maintains exhaled oxygen and exhaled anesthetic concentrations, with more accuracy in reaching the clinician's target versus manual control. The utilization of End-tidal Control software reduces manual adjustments by clinicians, enabling them to focus on time with their patients.[2]
- Results support End-tidal Control's ability to reduce anesthetic agent usage, reducing greenhouse gas emissions and costs, compared to manual control. [1]

CHICAGO--(BUSINESS WIRE)--Aug. 20, 2024-- GE HealthCare (Nasdaq: GEHC) today announced the publication of the MASTER trial results in the peer-reviewed journal *Anesthesia and Analgesia*, demonstrating the safety and efficacy of End-tidal Control software for inhaled anesthetic administration for surgical patients.[1*] End-tidal Control software automatically achieves and maintains clinician-set targets of end-tidal anesthetic agent and oxygen concentrations. The results highlight End-tidal Control's performance in achieving and maintaining targeted agent and oxygen concentrations during anesthesia delivery compared to conventional manual control.

As healthcare systems continue to face workforce challenges, sicker patients, and increasing costs and administrative demands, the need for efficient care is critical. Automation in anesthesia gas delivery can help reduce manual intervention and cognitive burden for clinicians, while decreasing costs and optimizing patient care.

To ease the way to more efficient care, automated anesthesia gas delivery can also help support low-flow anesthesia —a technique in which anesthetic gas flow is reduced to the lowest level consistent with safe patient care. "In the dynamic surgical environment, the repeated manual adjustment of fresh gas flows and anesthetic vaporizer settings required to deliver low-flow anesthesia can be challenging for anesthesia clinicians. Results from the MASTER trial showed that End-Tidal Control software was able to achieve and sustain desired oxygen and anesthetic agent concentrations more consistently and timely compared to conventional methods," said Trial Investigator Melinda S. Seering, MD, Clinical Associate Professor of Anesthesia at University of Iowa Healthcare. "As less anesthetic agent is needed to maintain the respective targets, End-tidal Control software can help enhance patient safety in the operating room, while reducing greenhouse gas emissions and costs."**

The randomized, controlled MASTER trial (**M**ulti-site **A**nesthesia Randomized Controlled **ST**udy of **E**nd Tidal Control Compared to Conventional Anesthesia **R**esults) was conducted across four U.S.-based hospitals and analyzed data from 210 adult patients (18 years of age and older) scheduled for surgical procedures under general inhaled anesthesia. The study assessed the safety and efficacy of End-tidal Control software compared to conventional manual control in achieving and maintaining provider-set targets for end-tidal anesthetic agent and oxygen concentrations during patient care.

Study results showed that the End-tidal Control arm achieved:***

- **Targeted end-tidal anesthetic concentrations** within 5% of the set value 98 ± 2% of the time, compared to 46 ± 32% of the time with manual control ($p < 0.0001$).
- **Targeted end-tidal oxygen concentrations** within 5% of the set value 86 ± 23% of the time, compared to 41 ± 33% of the time with manual control ($p < 0.0001$).
- **Faster response times for achieving 90% of the initial desired end-tidal anesthetic concentration** (median 75 seconds), compared to manual control (median 158 seconds) ($p=0.0013$).

Additionally, results support End-tidal Control's ability to significantly reduce anesthetic agent usage, reducing greenhouse gas emissions and costs, compared to manual control.**** A separate study also showed a potential 44% decline in the rate of greenhouse emissions when employing End-tidal Control software.[3]

"Anesthesia professionals are focused on patient safety and have a history of utilizing technology to deliver improved clinical outcomes. End-tidal Control enables clinicians to automatically manage adequate oxygen and anesthetic delivery. Clinicians no longer have to continually adjust fresh gas flow and vaporizer settings, freeing up their time to focus on other tasks," said John Beard, MD, anesthesiologist and Chief Medical Officer of Patient Care Solutions, GE HealthCare. "Results from the MASTER trial reinforce the value of End-tidal Control software in surgical settings to potentially help reduce unnecessary variability in care and meet the unique needs of individual patients."

GE HealthCare designs anesthesia solutions to support care that can think one step ahead. End-tidal Control software can be used with the Aisys™ CS^2 Anesthesia Delivery System to enhance perioperative care. Additionally, the American Medical Association recently approved a new Category III CPT code to help facilities track patient outcomes associated with the use of End-tidal Control software, in addition to its other benefits. For more information, please visit: https://www.gehealthcare.com/products/anesthesia-delivery/aisys-cs2

** End-tidal Control in the United States is indicated for patients 18 years of age and older.*

*** The MASTER trial was funded by GE HealthCare. The views expressed are solely those of Dr. Melinda S. Seering, do not reflect the opinions or beliefs of the University of Iowa and are based on upon her own opinions and on results that were achieved in the trial. Since there is no "typical" hospital/clinical setting and many variables exist, i.e. hospital size, case mix, staff expertise, etc. there can be no guarantee that others will achieve the same results.*

**** Median percent deviation from the clinician's desired end-tidal anesthetic and oxygen targets with End-tidal Control was 1.68% and 1.63% respectively, whereas with the manual control, deviations were 17.6% and 16% respectively (p<0.0001).*

***** Studies have shown End-tidal Control can reduce anesthetic agent consumption by over 25% depending on agent.*

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[1] McCabe, M., et al. End-Tidal Control Versus Manual Control of Inhalational Anesthesia Delivery: A Randomized Controlled Noninferiority Trial, Anesthesia & Analgesia 2024.
[2] Lucangelo, U., Garufi, G., Marras, E. et al. End-tidal versus manually-controlled low-flow anaesthesia. J Clin Monit Comput 28, 117–121 (2014). https://doi.org/10.1007/s10877-013-9516-8. Also refer to the Et Control User's Reference Manual (5824844- USA).
[3] Tay. S, et al. Financial and environmental costs of manual versus automated control of end-tidal gas concentrations, Anaesthesia Intensive Care 2013; 41: 95-105.

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