

## **Anesthesia Patient Safety Foundation Publishes Expanded Dartmouth Hitchcock Medical Center Results with Post-Surgical Monitoring Using Masimo SET@ and Patient SafetyNetT**

The Associated Press

Masimo (NASDAQ: MASI) announced today that a follow-up analysis appearing in the Spring-Summer 2012 issue of the Anesthesia Patient Safety Foundation newsletter demonstrated that implementing Masimo SET Measure-through Motion and Low Perfusion pulse oximetry and the Masimo Patient SafetyNetT remote monitoring and clinician notification system in all post-surgical, general floor units at Dartmouth Hitchcock Medical Center resulted in reduced rescue events and transfers to the intensive care unit (ICU) and offered significant opportunity cost savings.(1) And even more impressive, no patients have died since the Masimo Patient SafetyNet system was instituted on the original study unit in December of 2007 as a result of respiratory depression from opioids.

The results confirm and expand the findings from the original 2010 landmark Anesthesiology publication of the study at Dartmouth Hitchcock showing that use of Masimo SET and Patient SafetyNet in a single orthopedic post-surgical unit led to a significant reduction in rapid response activations and intensive care unit (ICU) transfers.(2) After the original study, Dartmouth Hitchcock mandated continuous monitoring for all patients in medical and surgical units when they are not directly observed by a healthcare provider.

After expanding post-surgical monitoring to the general and thoraco-vascular post-surgical units, Dartmouth Hitchcock reported: -- 57% overall reduction in rescue events over all units (4.4 to 1.9 per 1,000 patient days) -- 168 ICU days saved in the thoraco-vascular unit in the first 12 months after implementation - 10 more days per year than the original orthopedic unit -- 21% decrease in average length of stay of a patient with transfer to the ICU (total 5.1 days decreased, 1.8 days in the ICU and 3.3 days on the general floor) in the original orthopedic unit -- \$1.48 million in annual opportunity cost savings in the original orthopedic unit due to the decreased ICU transfer rate (compared to initial costs just \$167,993 for equipment and training and annual operational costs of just \$58,261 for implementation and disposable sensors) -- \$58,459 saved per patient who was not transferred to the ICU in the original orthopedic unit (\$76,044 vs. \$17,585) Study authors Drs. Andreas H. Taenzer and George T. Blike stated: "Retrospective reviews demonstrated that adverse (patient) events are preceded by a period of physiologic instability of 6-8 hours.(3,4) Therefore, identification of at-risk patients by spot checks every 6 hours for 10 minutes, which observes vital signs only 5% of the time, begs for improvement." They added, "While monitoring cannot prevent all physiologic deterioration, it can function as a 'patient safety airbag.'" The Dartmouth Hitchcock results speak for themselves, as the study authors reported that "no patients have

suffered irreversible severe brain damage or died since patient surveillance was instituted on the original study unit in December of 2007 as a result of respiratory depression from opioids." Dartmouth Hitchcock continues to investigate ways to further improve patient safety by expanding monitoring beyond pulse oximetry in higher risk populations such as post-operative patients on supplemental oxygen, in whom pulse oximetry can be a late indicator of respiratory depression. The study authors also reported their initial experience in evaluating Masimo rainbow@ Acoustic Monitoring for noninvasive and continuous monitoring of respiration rate with a cloth sensor that is easily and comfortably applied to the patient's neck: "These (acoustic) monitors are better tolerated than our earlier trials in the immediate post-operative phase with chest straps for respiratory rate monitoring or nasal cannulas for end tidal CO<sub>2</sub> monitoring, but not as well as finger pulse oximetry probes." Joe Kiani, Masimo Founder and CEO, stated: "When we invented Masimo SET pulse oximetry over twenty years ago, we believed that by solving the motion artifact and low perfusion problem we could improve patient outcomes and reduce cost of care by taking noninvasive monitoring to new sites and applications, such as the general floor of hospitals. We applaud the exceptional work of the clinicians and investigators at Dartmouth Hitchcock Medical Center in showing the world that post-surgical monitoring with Masimo SET pulse oximetry and Patient SafetyNet do in fact help clinicians save lives and costs on the general floor. In today's healthcare climate, this is the perfect combination for hospitals under pressure to improve quality and reduce costs at the same time." 1 Taenzer A, Blike G, McGrath S, Pyke J, Herrick M, Renaud C, Morgan J. "Postoperative Monitoring - The Dartmouth Experience." Anesthesia Patient Safety Foundation Newsletter Spring-Summer 2012. Available online 2 Taenzer, Andreas H.; Pyke, Joshua B.; McGrath, Susan P.; Blike, George T. "Impact of Pulse Oximetry Surveillance on Rescue Events and Intensive Care Unit Transfers: A Before-and-After Concurrence Study." Anesthesiology, February 2010, Vol. 112, Issue 2. Available online here 3 Buist MD, Jarmolowski E, Burton PR, Bernard SA, Waxman BP, Anderson J. "Recognising clinical instability in hospital patients before cardiac arrest or unplanned admission to intensive care. A pilot study in a tertiary-care hospital." Med J Aust 1999;171:22-5.

4 Buist M, Bernard S, Nguyen TV, Moore G, Anderson J. "Association between clinically abnormal observations and subsequent in-hospital mortality: a prospective study." Resuscitation 2004;62:137-41.4 About Masimo Masimo (NASDAQ: MASI) is the global leader in innovative noninvasive monitoring technologies that significantly improve patient care-helping solve "unsolvable" problems. In 1995, the company debuted Measure-Through Motion and Low Perfusion pulse oximetry, known as Masimo SET@, which virtually eliminated false alarms and increased pulse oximetry's ability to detect life-threatening events. More than 100 independent and objective studies demonstrate Masimo SET provides the most reliable SpO<sub>2</sub> and pulse rate measurements even under the most challenging clinical conditions, including patient motion and low peripheral perfusion. In 2005, Masimo introduced rainbow SET@ Pulse CO-OximetryT technology, allowing noninvasive and continuous monitoring of blood constituents that previously required invasive procedures, including total hemoglobin (SpHb@), oxygen content (SpOCT), carboxyhemoglobin (SpCO@), methemoglobin (SpMet@), and Pleth Variability Index (PVI@), in addition to SpO<sub>2</sub>, pulse rate, and perfusion index (PI). In 2008, the

company introduced Masimo Patient SafetyNetT, a remote monitoring and wireless clinician notification system designed to help hospitals avoid preventable deaths and injuries associated with failure to rescue events. In 2009, Masimo introduced rainbow Acoustic MonitoringT, the first-ever noninvasive and continuous monitoring of acoustic respiration rate (RRaT).

Masimo's rainbow SET technology platform offers a breakthrough in patient safety by helping clinicians detect life-threatening conditions and helping guide treatment options. In 2010, Masimo acquired SEDLine@, a pioneer in the development of innovative brain function monitoring technology and devices. Masimo SET and Masimo rainbow SET technologies can also be found in over 100 multiparameter patient monitors from over 50 medical device manufacturers around the world. Founded in 1989, Masimo has the mission of "Improving Patient Outcome and Reducing Cost of Care ... by Taking Noninvasive Monitoring to New Sites and Applications@." Additional information about Masimo and its products may be found at [www.masimo.com](http://www.masimo.com).

**Forward-Looking Statements** This press release includes forward-looking statements as defined in Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934, in connection with the Private Securities Litigation Reform Act of 1995. These forward-looking statements are based on current expectations about future events affecting us and are subject to risks and uncertainties, all of which are difficult to predict and many of which are beyond our control and could cause our actual results to differ materially and adversely from those expressed in our forward-looking statements as a result of various risk factors, including, but not limited to: risks related to our assumptions of the repeatability of clinical results obtained using the new Masimo Pronto-7 and noninvasive sensor sizes, risks related to our belief that the Pronto-7 enables quick and easy noninvasive spot-checking of hemoglobin (SpHb@), SpO2, pulse rate, and perfusion index at the point-of-care for all patients, as well as other factors discussed in the "Risk Factors" section of our most recent reports filed with the Securities and Exchange Commission ("SEC"), which may be obtained for free at the SEC's website at [www.sec.gov](http://www.sec.gov). Although we believe that the expectations reflected in our forward-looking statements are reasonable, we do not know whether our expectations will prove correct. All forward-looking statements included in this press release are expressly qualified in their entirety by the foregoing cautionary statements. You are cautioned not to place undue reliance on these forward-looking statements, which speak only as of today's date. We do not undertake any obligation to update, amend or clarify these statements or the "Risk Factors" contained in our most recent reports filed with the SEC, whether as a result of new information, future events or otherwise, except as may be required under the applicable securities laws.

**Media Contact:** Mike Drummond Masimo Corporation Phone: (949) 297-7434 Email: [mrummond@masimo.com](mailto:mrummond@masimo.com) Masimo, SET, Signal Extraction Technology, Improving Patient Outcome and Reducing Cost of Care... by Taking Noninvasive Monitoring to New Sites and Applications, rainbow, SpHb, SpOC, SpCO, SpMet, PVI, rainbow Acoustic Monitoring, RRa, Radical-7, Rad-87, Rad-57, Rad-8, Rad-5, Pulse CO-Oximetry, Pulse CO-Oximeter, Adaptive Threshold Alarm, and SEDLine are

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