

New Study Assesses the Utility of Masimo PVi® Monitoring During Colorectal Surgery



[Masimo](#) has announced the findings of a recent study conducted on low-risk patients undergoing colorectal surgery, in which researchers assessed the utility of noninvasive and continuous Masimo PVi® (Pleth Variability Index) monitoring to guide fluid management, as compared to esophageal Doppler, an invasive method. The researchers found no significant difference between the two technologies in mean total fluid administered and concluded that “PVi offers an entirely noninvasive alternative for goal-directed therapy in this group of patients.”¹

In the study, Dr. Warnakulasuriya and colleagues at York Teaching Hospital in York, United Kingdom, evaluated the performance of Masimo PVi monitoring in guiding fluid management, as compared to that of an established technology, esophageal Doppler. Forty low-risk patients undergoing elective colorectal surgery were enrolled in the study. The patients were randomly assigned to two groups, with each group having fluid therapy directed by one of the two technologies. The researchers measured the absolute volume of fluid given intraoperatively and fluid volume at 24 hours. The researchers found “no significant difference between PVi and esophageal Doppler groups in mean total fluid administered (1286 vs 1520 ml, $p=.300$) or mean intraoperative fluid balance (+839 v + 1145 mL, $p=.150$).”

The researchers concluded that “amongst fit patients undergoing major colorectal surgery there was no significant difference in the volume of fluid administered when targeted by noninvasive PVi technology compared to a stroke volume maximization technique using esophageal Doppler. There was no significant difference in postoperative outcomes between the groups. Therefore, PVi offers a noninvasive, consumable free alternative for intraoperative fluid optimization in fit patients undergoing major colorectal surgery, where intraoperative goal-directed therapy is deemed a standard of care but there is no requirement for arterial cannulation.”

PVi is a measure of the dynamic changes in perfusion index (PI) that occur during the respiratory cycle. In other clinical studies, PVi has been shown to provide benefits in the monitoring of mechanically-ventilated patients under general anesthesia during surgery,^{2,3,4,5} in the ICU in both adults and children,^{6,7} and in septic patients in the early stages of shock in the emergency department.⁸ Another study used PVi as part of goal-directed therapy for patients in an enhanced recovery after surgery (ERAS) program who underwent colorectal surgery; the program led to significant reductions in lengths of stay, costs, surgical site infections, fluid administered, as well as improvement in patient satisfaction.⁹ In a study in which PVi was used in conjunction with Masimo SpHb® (noninvasive hemoglobin measurement), the technologies were shown to reduce mortality at 30 and 90 days.¹⁰

“Clinical evidence for the utility of Masimo PVi continues to amass,” said Joe Kiani, Founder and CEO of Masimo. “Dr. Warnakulasuriya’s study provides additional information about the benefits of PVi. We are grateful for the opportunity we have to continue to improve patient outcomes and reduce cost of care with our innovative noninvasive monitoring.”

References

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