

# The eye in the sky: intraoperative neurophysiological monitoring and associated malpractice risks

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Intraoperative neurophysiological monitoring (“IONM”) is the electronic monitoring of a patient’s nervous system while the patient undergoes surgery. IONM is utilized to prevent life-threatening injuries during surgery such as paralysis and death in cases where a patient’s nervous system could be harmed. IONM can immediately identify changes in the brain, spinal cord, and nerve function of a patient, sending warning signals if the patient’s nervous system is at risk.

As is the case with any form of emerging technology, while it proves beneficial, user-error risks can occur, and in the case of IONM use, this has opened the door to a novel wave of IONM-related malpractice claims.

When IONM is used, one or more physicians, typically a neurologist, oversees the system. As IONM professionals provide a support function in surgical procedures and do not perform procedures directly, special considerations apply to their conduct in health care malpractice cases.

The nature of IONM has led to plaintiffs developing theories of liability tailored to IONM professionals, including the failure to monitor, failure to communicate, and the failure to properly interpret IONM data. One theory of liability directed at surgeons and surgical facilities that recognizes the value of IONM is the failure of surgical decisionmakers to use IONM during a patient’s surgery, which allegedly would have prevented the harm precipitating the malpractice action.

Understanding the expanding body of IONM malpractice caselaw can aid IONM professionals, surgical teams, health facilities, and patients in navigating lawsuits involving the use of this relatively new medical technology.

## IONM theories of liability

Health care malpractice actions are a specialized type of negligence action, sharing the same elements to establish liability: (1) duty; (2) breach; (3) causation; and (4) harm, and this same baseline applies to matters arising from the use — or misuse — of IONM.

When IONM is utilized during surgery, the role of an IONM practitioner is, in essence, to: (1) monitor; (2) interpret; and

(3) communicate. They must monitor a patient’s internals for any deviations from baseline; interpret the patient’s results from the monitoring; and communicate any issues to the surgical staff.

Malpractice claims can arise when an IONM practitioner fails to adequately perform these functions; thus, plaintiffs in IONM malpractice cases have tailored their theories of liability and malpractice action to these three steps.

## 1. Failure to monitor

A practitioner’s failure to pay reasonable attention to a patient’s IONM data can result in liability. The 2023 Delaware Superior Court case, *Bristow v. Nemours Foundation*, provides a clear example of this theory. *Bristow* involved a minor patient who suffered paralysis following spinal surgery aided by IONM. Two physicians provided IONM services — one physician was present in the OR and the other monitored the patient, along with several other surgical patients, remotely.

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Through discovery, the patient discovered evidence that allegedly demonstrated the monitoring physicians were not paying proper attention to the IONM feedback data. The monitoring physicians allegedly failed to record noteworthy internal changes in the patient’s condition and were sending unrelated, non-urgent messages to co-workers throughout the surgery.

While the court held these allegations did not entitle the patient to an award of punitive damages, the case provides a clear example of the failure to monitor theory of liability. The case settled in early 2024 shortly before trial.

## 2. Failure to interpret

The next step in the IONM process — interpretation of IONM data — can result in liability if not performed reasonably. In *Aultman v. Maggio*, a 2017 case in the Western District Court of Appeals of Louisiana, a patient underwent spinal surgery with the aid of IONM. When the patient came out of surgery, he was unable to move his lower limbs and was found to be paralyzed from the waist down. The patient brought a malpractice action against the surgeon and the IONM practitioners.

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Specifically, the patient alleged that, although the IONM practitioners did provide the IONM data to the surgical team, they did nothing to interpret the significance of those results, rendering them meaningless to the surgeon. According to the patient, proper interpretation of the results would have enabled the surgeon to provide corrective action and prevent the injuries. While the patient's lawsuit was ultimately dismissed due to the patient's failure to offer an expert opinion that the defendants failed to meet their standard of care, the case does exemplify the failure to interpret cause of action.

## 3. Failure to communicate

The final step in the IONM process is communication of IONM results to the surgical team. Without communication, the surgical team cannot utilize the IONM data to prevent harm to patients.

The failure to communicate theory is exemplified in *Kent v. Nuvasive, Inc.*, a 2022 Superior Court of New Jersey case. In this case, the patient suffered paralysis following spinal surgery in which the surgeon utilized IONM. The patient sued the IONM physician, their assistant, as well as the surgeon, and surgical facility for medical malpractice.

With regard to the claims asserted against the IONM practitioners, the patient alleged that, during the surgery, the IONM feedback data indicated an issue to the practitioners, but they failed to report the issue to the surgical team. The practitioners disputed this point and claimed they did, in fact, communicate the data to the surgeon. The opinion ultimately turned on the merit of the parties' expert witnesses and demonstrates the IONM malpractice theory for failure to communicate.

## The failure to use neuromonitoring

The benefits of IONM as a tool to aid in surgery have resulted in demands for its use by surgeons and patients alike. In fact, its use is arguably becoming part of the standard of care for surgeons engaging in certain procedures believed to especially benefit from it. This is reflected in certain lawsuits filed by patients against their surgeons and surgical facilities for the failure to utilize IONM as part of their surgery.

The cause of action for failure to employ IONM was raised in several cases, including the 2017 Virginia Supreme Court case, *Chapple-Brooks v. Nguyen*; the 2011 Minnesota Court of Appeals case, *Kingsley v. Pinto*; and a 2011 District Court of Appeals for South Dakota case, *Nissen v. Johnson*. Patients raising this cause of action bear the burden of proving that had IONM been used in the procedure, complications would not have occurred.

It's worth noting, that in the *Nissen* case, the jury found no liability on the part of the defendant following a jury trial. In the *Kingsley* case, the court held that the failure to employ IONM cause of action is not available because in Minnesota, courts don't recognize claims based on which method of surgery practitioners choose as that is up to the surgeon's discretion, as long as it meets the standard of care. The Minnesota Court of Appeals affirmed the trial court's finding of no liability on this basis.

## Conclusion

The use of IONM has been on the rise for years, and with greater use of any procedure, lawsuits for malpractice often follow. Practitioners and patients should monitor court decisions related to IONM to understand how courts are viewing this emerging practice.

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## About the authors



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