

# Intra-operative Neuromonitoring

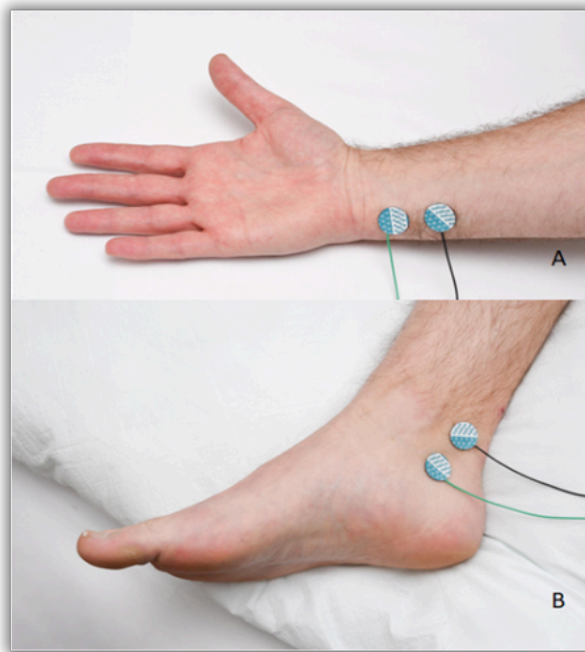
Patients undergoing surgery for spine deformity involving correction and/or instrumentation of the spine will have Intra-operative Monitoring (IOM) of the spinal cord performed during the operation. The purpose of IOM is to give an early warning of potential spinal cord or spinal nerve injury during spinal surgery with the aim of preventing or reducing the risk of permanent injury.

## What is IOM?

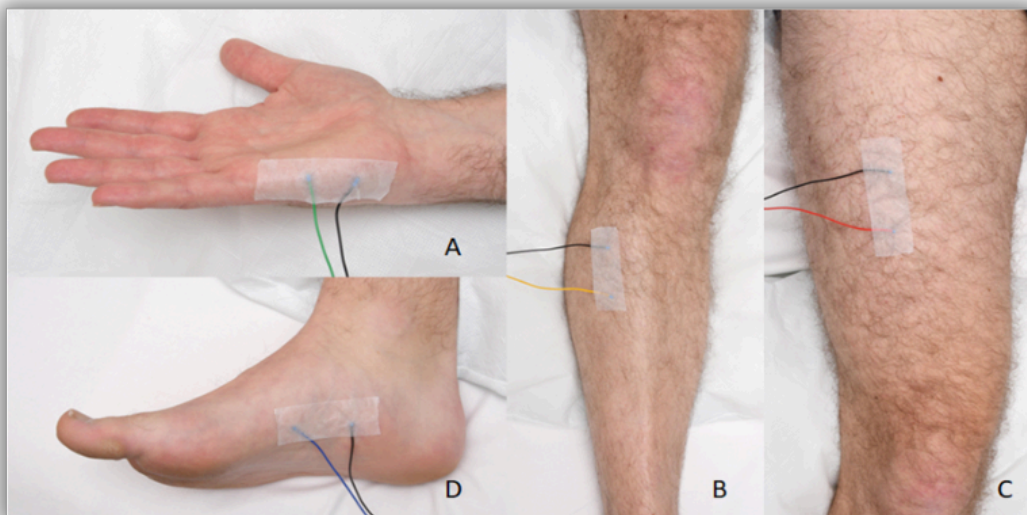
Intra-operative Monitoring refers to the stimulation of the patient's brain, spinal cord and nerves which results in electrical signals being sent and recorded across the length of the patients' body. The responses to the stimulation are recorded by a team of highly specialised Clinical Physiologists. The responses are continuously analysed throughout the operation.

## How is it performed?

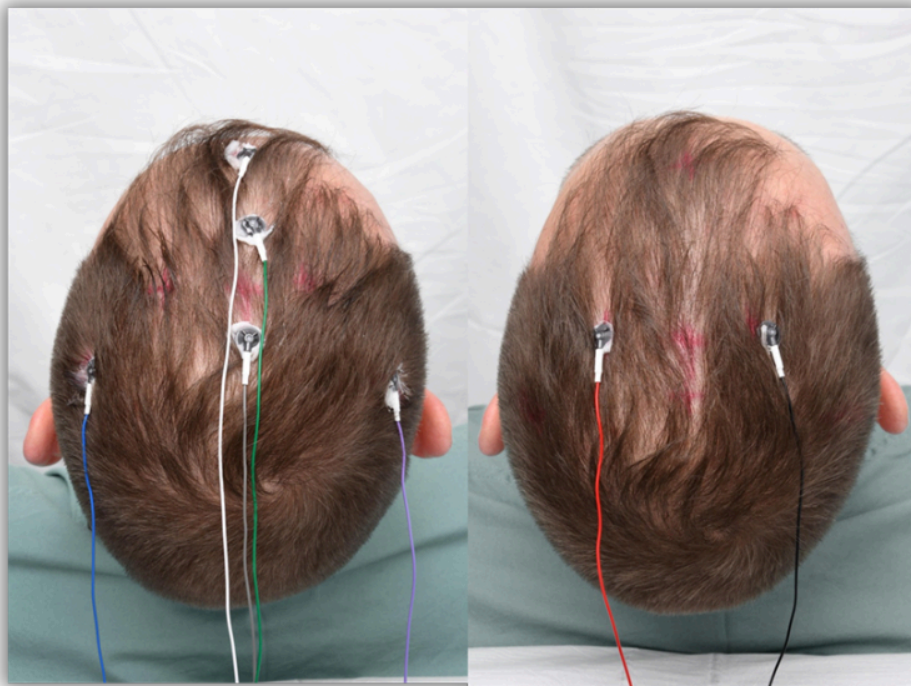
Once the patient is asleep under a general anaesthetic, small electrodes are attached to the top of the head (scalp) and in the hands and legs (see Images 1-3). The electrodes are attached by wires to a computer system running a recording programme. Small electrical signals are triggered in both directions, up and down the body, with recordings taken and measured. The responses to these electrical signals are seen on a computer screen as "waves" (See Image 4). A change in the waves alerts the physiologist that the nerve in the area could be at risk of damage. The surgeon can then take the appropriate action to prevent permanent damage.



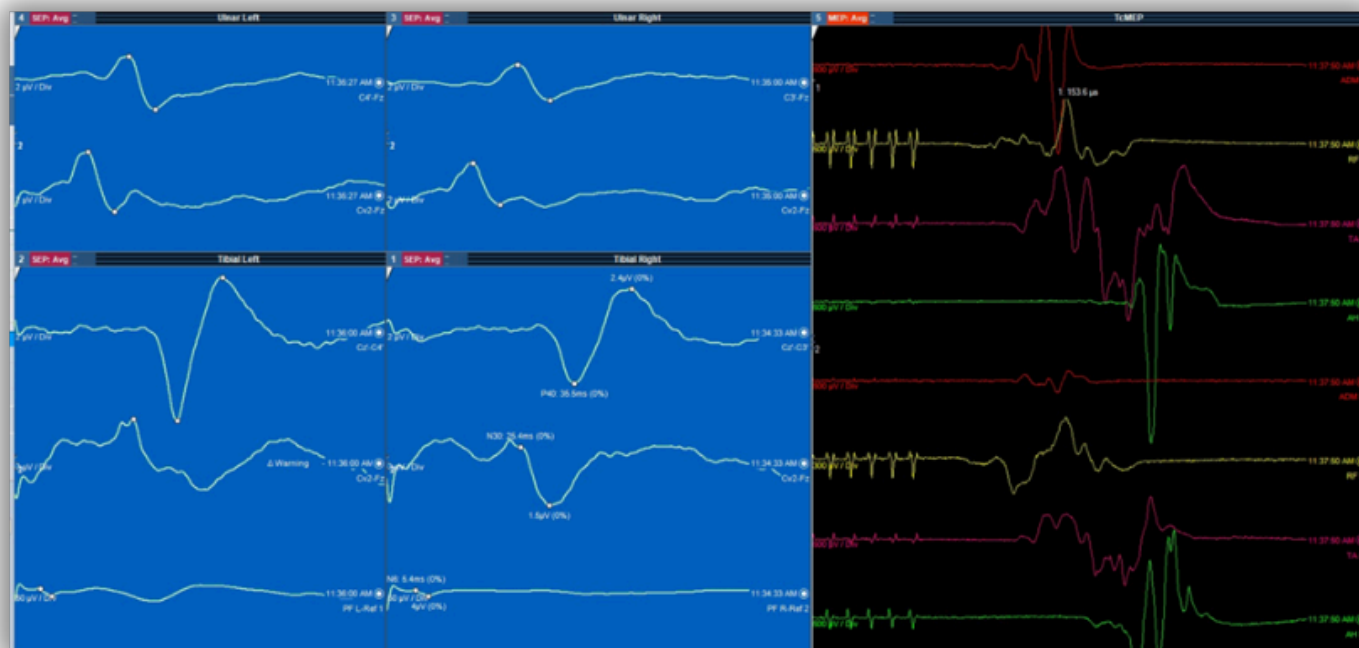
**Image 1 A- Stimulation of Median Nerve at wrist B- Stimulation of Tibial Nerve at ankle**



**Image 2 A – D Muscles of the Hand, Legs and Foot.**



**Image 3 Scalp Electrodes A- Recording Electrodes B- Stimulation Electrodes**



**Image 4 Intraoperative Monitoring responses.**

## **Who performs IOM?**

During surgery, highly qualified and experienced physiologists are in the operating theatre exclusively to monitor and analyze these electrical signals. If there is a change in these signals the surgeon will be notified and they can then modify the surgery, allowing them to achieve the surgical goal whilst avoiding any damage to the spinal cord or nerves.

## **Can IOM be performed on every patient?**

No. There are certain patients whose age or medical condition may prevent spinal cord monitoring from being performed. The clinical physiologist and surgeon will discuss each case to decide if it is appropriate for the surgery and what type of IOM is possible.

## **Are there any after-effects of IOM?**

There is an extremely small risk of the patient biting their tongue during spinal cord monitoring. Very rarely, a small amount of hair loss may occur around the electrode sites on the scalp. Tiny scabs and mild tenderness may be felt where they were placed. If you have any questions, then please do not hesitate to ask the Spinal Cord Monitoring Team.