



Invasive Electrode Techniques Position Statement

Electroneurodiagnostic (END) technologists are trained to apply recording and stimulating electrodes using a variety of techniques. Most electrodes are metal discs applied to the skin surface with adhesive materials such as paste, tapes, gels, sticky pads or collodion. The American Clinical Neurophysiology Society has recommended that needle electrodes not be used for recording routine EEGs (Guideline One, Section 2.2; 1994). However, there are some situations in clinical as well as surgical settings that make needle (subdermal) electrodes a desirable and reasonable option. In these situations, with proper training and diligence with regard to electrical safety and infection control, END technologists can become proficient in safe subdermal electrode insertion and subsequent recording.

Because they do penetrate the skin, subdermal electrodes can be considered *invasive* by strict definition. However, subdermal electrodes are simply placed under and parallel to the skin and are not inserted into nerves, bone or vessels. The placement of subcutaneous electrodes is considered an accepted practice for experienced END technologists. However, when the needle electrode is expected to penetrate a nerve, bone, or blood vessel, the insertion process IS considered invasive: these invasive insertions are not an accepted practice for END technologists. The use of needle electrodes to record muscle activity will be addressed separately:

Electromyography (EMG) is a medical diagnostic procedure that involves insertion of needle electrodes into muscle mass with exploration of the muscle as it contracts and relaxes and is considered an invasive procedure. The EMG testing session is conducted by an electrodiagnostic medical consultant who interprets the study as he/she actually performs the procedure. END technologists may assist this physician but, in keeping with the practice standards of the American Association of Electrodiagnostic Medicine, they would not be involved in the needle insertions or interpretation.

END technologists do record electrical activity of muscles as components of some surgical monitoring, but this recording is different than an EMG as described above. When subdermal EEG electrodes are used to record muscle activity, the needle may be close to or may even penetrate muscle mass because of the close proximity of the muscle to the skin surface. The END technologist can be trained to locate muscles and to insert these electrodes. In instances when the needle is purposefully inserted into muscle for monitoring purposes, the supervising neurophysiologist is responsible for overseeing the training of the technologist and ascertaining his/her technical competency.

Some surgical procedures require the placement of recording or stimulating electrodes within the incision site. These electrodes include cortical strips, grids or wicks, electrodes placed in the epidural space through the lamina, in interspinous ligaments or posterior spinous processes. Placement of these electrodes is the responsibility of a physician, not the END technologist. The technologist is responsible for ascertaining that the electrodes are sterile, in proper working condition and suitable for the intended use. He/she is responsible for connecting the electrodes to the recording instrument, for delivering correct and safe levels of current to stimulating devices, for monitoring the recording, and for documenting and reporting procedures in keeping with ASET's endorsed positions and guidelines.

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