We are Neurodiagnostic Technologists. Neurodiagnostic Technologists impact the lives of the patients in our communities daily. Using cutting edge technology, we are able to help locate problems and assist physicians in monitoring therapy to improve the lives’ of patients.
We are
A Growing field- By the time most of you are graduating from high school, the US Department of Labor reports that the field of Neurodiagnostic Technology will grow by more than 25%.

Helping patients’ get better- We stand beside nurses and physicians in the ICU, monitoring critically ill patients to assist in choosing medications for conditions such as continuous seizures. We hunker down in corners of the operating suite meticulously monitoring nerve and brain function to aid neurosurgeons, vascular surgeons and orthopedic surgeons to improve patient outcomes.

Fascinating and challenging- Even the “routine” tests are fascinating, knowing that you are monitoring brain and nerve functions. As we provide stimuli to nerves, we are able to elicit responses and assess the quality of messages from the nervous system.

A Team member with a unique skillset- We have a unique skillset that is critical to the health care team in the diagnosis of epilepsy, non-epileptic spells, autonomic nervous system dysfunction, vestibular disorders, comatose conditions, sleep disorders and spinal disease.

Experiencing career growth- As in many of the allied health careers, a neurodiagnostic technology career offers advancement from a student, to a trainee, to a basic technologist, credentialed technologist in one of five areas and up to a manager or supervisor of a bustling lab.

Full of Traveling possibilities- A career in Neurodiagnostic Technology moves with you, as the credentials are national credentials. There is no need to retest when you move.

We are able to make a positive impact on our community.
Neurodiagnostic Technologists record, stimulate, monitor and assist in therapy to the nervous system.
Neurodiagnostic Technologists use science to study the brain, spinal cord, nerves and other body systems that affect a patient.
Neurodiagnostic Technology is an alphabet soup of acronyms. It includes EEG, LTM, EP, IONM, NCS, PSG, Autonomics and more. These tests can be performed in clinics, hospitals, research facilities or in homes.
EEGs or electroencephalograms are brain wave recordings. Technologists use colored pencils, tape measures, facial cleanser, sticky paste and tiny metal sensors to record the brain waves from on top of the scalp. They color on the head to mark locations, part the hair, apply cleanser and a paste. They then stick the tiny sensors in the paste. It should not hurt, but some people find the scratchy facial cleanser a little uncomfortable.

The paste and sensors act as a special microphone and speaker to make the signal as big as possible.

Very special computers are used to hide all unwanted electrical activity from the room, the patient and extra equipment.

Tiny waveforms measured in millimeters are seen on the monitor and matched to known normal patients.

Everything you do changes your EEG recording, opening and closing your eyes, thinking or resting, being asleep or angry, breathing fast or watching a strobe light are just a few examples.
Hans Berger recorded the first human EEG, previously they had been done on animals. As you can see, EEGs in the 1950s were rather bulky. What you cannot tell by the image is that up until the early 90s, needle electrodes were employed routinely in outpatient EEG labs. Ouch!

Thankfully, as you can tell by the cute, smiling children on the right, EEGs don’t involve needles any longer. They are tiny metal discs, placed on the surface of the skin.

Glue or other adhesives help hold the sensors in place for extended periods but nothing that hurts.
LTM or long term monitoring is an application of EEG. It requires knowledge of video, and audio equipment, computer networking, data storage, archiving, as well as EEG.

The LTM technologist must employ their people skills to help patients handle being in one room for up to a week at a time. LTM technologists often have to be creative in entertaining young children to help keep little hands off of heads.

These studies are used to evaluate for spells, seizures, epilepsy, determining the focal area of seizure activity, and treatment of continuous seizures.

These tests can be performed in Intensive Care Units, Epilepsy Monitoring Units, Clinics or in homes.

Patients may have the electrodes applied and the recording set-up in their own homes. The technologist is able to monitor the EEG from a remote location.
Long Term monitoring involves daily review of the EEG, the video, patient notes, and button presses to determine the cause of the patient’s events. It involves communicating with monitoring technologists, nurses and other caregivers to determine if medications were changed or other changes were made to patient care.

Busy EMUs or epilepsy monitoring units, often require a single technologist to review multiple LTM studies concurrently. Multitasking is a must for the LTM technologist.

Some advanced EMUs can be involved in monitoring patients with grids and strips that are placed directly on the surface of the brain to determine exactly where the seizure is starting. Surgery is planned carefully to only remove the starting location of the seizure, known as the focus.
Evoked potentials, here is your chance to shock someone!

In Somatosensory Evoked Potentials, band-aid sized sensors deliver a small shock to the wrist or ankle and the toes or thumbs twitch; electrodes or sensors record the response from the nerves the limbs, nerves in the neck and from the brain. With Auditory Evoked Potentials, a loud clicking sound is delivered with headphones and small electrodes or sensors are placed on the head to record the brain’s response. In Visual Evoked Potentials, the patient stares at a flashing checking board screen and electrodes record the brain’s response.

In all of these tests, the sensors are measuring how long it takes for the body to react to the stimulus.
These pictures show two kids getting tests done. The girl on the left is having a visual evoked potential. It takes less than half a second to get the waveforms seen on the bottom screen.

The young man on the right is having an auditory evoked potential. The huge headphones are sometimes exchanged for tiny foam inserts.
Intraoperative Neuromonitoring (IONM) is only for those who can stand cold environments, play by play stories, multitasking, and blood and internal body structures. The IONM technologist must be willing to stand or sit for hours, climb under tables, contort their body in odd positions to reach electrodes and be confident in their skills enough to speak up in the OR.

IONM helps to protect the patient’s nervous system during neurological, vascular and orthopedic procedures. IONM involves a wide variety of neurophysiological testing procedures running concurrently.

The IONM technologist must be skilled at communicating with a wide variety of staff as they must keep in constant contact with surgeons, anesthesiologists, nurses, OR technologists and interpreting neurologists.

IONM is hands on, live protection to patients.

An IONM technologist can be employed by a hospital, private monitoring company or self employed.

Some IONM technologists have left the practical field to serve as educators, sales persons, trainers for equipment companies or medical school.
These technologists are demonstrating their viewpoint in the operating room. Typically we set patients up for the test in the pre-operative area while they are awake.

We sit behind our table in the corner watching the computer and listening to the surgeon and other staff. We speak up during critical moments to let the surgeon and other staff know how the nervous system is doing.
Nerve conduction studies look at nerve function in a similar way to somatosensory evoked potentials. However, nerve conduction studies look at the nerve activity as it travels away from the spinal column.

Nerve conduction studies can occur on limbs, chest walls, faces and other locations on the body. These studies can be used in the operating room to monitor neural pathways during surgery as well.

Lou Gehrig’s disease, carpal tunnel syndrome, neuropathies, and other nerve disorders are diagnosed through nerve conduction studies.
Nerve conduction technologists can perform these in a clinic setting, hospital or operating room. Typically these tests are performed in conjunction with the muscle tests known as EMG.

In the operating room, the neurophysiology technologist must do the set up and monitoring for both nerve conductions and EMG.
Polysomnography or PSG is a diagnostic test that employs EEG, EKG, respiratory monitoring, EMG monitoring (no needles), video and audio to determine the causes of sleep disorders.

Patients can be recorded at home or sent to a clinic, sleep lab or hospital. Reasons for referral to a sleep study include: snoring, difficulty staying awake during the day, falling asleep during conversations or while driving or insomnia.

Diagnoses that result from PSGs include: sleep apnea, REM behavior disorder, insomnia, narcolepsy, periodic limb movements during sleep and restless legs syndrome.

Some sleep labs have developed support groups for their patients.
Polysomnography technologists work overnight shifts, apply multiple types of physiologic monitors to the patient, review video, audio, EEG and many other physiological channels to assess their patient’s sleep.

Seizures have been discovered through PSG studies.

PSG studies sometimes reveal lack of sleep due to poor sleep hygiene.
Your mechanic must be certified. Your physician must be a graduate of a medical school. Even your nurse must be registered.

Your technologist should be registered or working toward their registry. Who is taking care of your brain?

PLAY VIDEO
We are versatile.

We can be employed in clinics, hospitals, operating rooms, specialty labs, research, private offices, universities and colleges, equipment vendors, sales, development, legislation, management, self employed, monitoring from home, traveling companies for variety and the military.

As a hospital employee, you have daily variety but may have to take part in a call rotation and will have to work some holidays.

As an IONM technologist, you can work for a hospital or private monitoring company.

Equipment vendors need technologists to train technologists on their equipment, to test and help develop equipment and to sell their equipment.

Home based monitoring companies need technologists to monitor from home, to visit patients at home to set up the recording, to be online support and to process data.

Don’t forget, technologists can work for equipment manufacturers as tech support.
Susan emphatically shares what she enjoys most about being a neurodiagnostic technologist.

I can guarantee that Susan's feelings about this field are echoed by many others in the profession.
Our patients are everyone. Our patients range from premature babies to the centenarians. Neurological disorders do not discriminate against age, gender, social or economic status. They are reflected in famous personalities, movies and books, and affect us all.

Some of us have joined the field because we or a loved one suffers from a neurological disorder.
In every area of neurodiagnostics, we employ a wide variety of tools and specialized equipment. We use colored pencils, tape measures, cotton tip applicators, tongue depressors, gauze head wraps, alcohol prep pads, abrasive facial cleansers, sticky paste, electrodes, cables, video cameras, flashing lights and stimulators that deliver shocks.

We only use needles in sedated patients. We do not use catheters, IVs or bed pans. We provide tissues to grieving or scared patients and family members.
We use computers to record data, to stimulate nerves, and to monitor patients. We employ theories developed by the founders of neurophysiology to assess nervous system function.
We have a bright outlook, which means that job growth is expected to continue through 2020. There are more job openings, than people to fill them.

The average annual salary is $44,200 for a recent neurodiagnostic program graduate just entering the field to over $112,333 per year for full-time, self-employed neurodiagnostic professionals. The average annual salary for all neurodiagnostic technologists across the country is $65,226 based on data collected in 2011.

Depending on where you choose to attend school, programs are less than 2 years and the cost is less than 1 year at a major public university.
Neurodiagnostics takes a caring person. A person who employs curiosity of scientific methods and medical processes to solve problems. Only team players need apply as the neurodiagnostic technologist must work with others constantly, nurses, physicians, other technologists, aides, schedulers, billers, salesman and CEOs.

People who love the challenge of piecing together a puzzle are great at recognizing patterns and will make excellent neurodiagnostic technologists.

Neurodiagnostic technologists must maintain a learning attitude as the body is a constant learning process, that is why it is called “practicing medicine”.

ASET – The Neurodiagnostic Society
Jie entered the field of Neurodiagnostics because of her curiosity of the brain. Some of us came on board by having had the test performed on ourselves. Others joined the field by accident, just looking for a job and it was available.

So many ways to engage in this opportunity. Now is the time.
Neurodiagnostic schools are spread across our nation. Many of them have online programs. Most of them have affordable options and can work with motivated students to obtain a rewarding education.

Most schools offer a Certificate or Associate Degree program. Bachelor Degree programs for Neurodiagnostic Technology are being developed.

Schools are located in Arizona, California, Colorado, Florida, Illinois, Indiana, Iowa, Maryland, Massachusetts, Michigan, Minnesota, New Jersey, North Carolina, Ohio, Pennsylvania, South Dakota, Tennessee, Texas, Washington and Canada.

Maryland, Massachusetts, North Carolina and Pennsylvania offer online programs.
ASET – The Neurodiagnostic Society brings together technologists across the nation for education, legislation, empowerment and friendships.

Contact us to learn more about the profession.