

# Lippincott Clinical Leaders: Neuro Terminology

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*Lisa Bonsall:* Hello, and welcome to the Lippincott Clinical Leaders Podcast. I'm Lisa Bonsall, Senior Clinical Editor for Lippincott NursingCenter. I'm joined today by Robin Coyne, the Content Editing Manager for Lippincott Procedures. Robin's background includes working as a neurology consult nurse practitioner at Penn Presbyterian Medical Center, as well as working as a research assistant, supporting students as a teaching assistant for advanced pathophysiology courses and lab faculty for physical assessment courses. Today, we're going to talk about neuro terminology. Thank you for joining me, Robin.

*Robin Coyne:* Thanks for having me, Lisa.

*Lisa Bonsall:* So why is it so important for nurses to get the words right? Neuro terminology can be really confusing.

*Robin Coyne:* It can be really confusing. So whenever I tell someone that I worked in neuro, they always say, "Oh, better you than me, neuro terrifies me. I can never do that." And, you know, I've spent a lot of years thinking about this and why that's everyone's gut reaction. And I think one of the things is that there's just so much terminology and it can feel like it's just insurmountable. So the goal of this podcast is to break down some of that and talk about why it's important to be able to paint an accurate picture of your patient to whoever you're communicating with, whether it's the practitioner, a provider, or just another nurse giving shift report.

*Lisa Bonsall:* So what are the most important terms for nurses to be familiar with?

*Robin Coyne:* So this is not an exhaustive list. This is just the first section of terms that I thought might be helpful. Neuro does have a very, very large dictionary. So one of the first things that I like to talk about is arousal. And as with most things in neuro, it's not black and white. This is on a continuum. I like to think of it from normal to abnormal or right to really wrong. And so it's really important for nurses and providers alike to use the correct terminology when they're talking to other people on the health care team when you're describing your patient.

The most effective way to communicate what your patient's arousal level is, is to actually describe what you did or the stimulus that you applied and what response it elicited. That's going to tell someone way more than telling them they have a GCS of three or something like that. It's always better to give specifics because then I can repeat exactly what you did and see if I get the same result.

*Lisa Bonsall:* Good advice.

*Robin Coyne:* So on one end of the continuum, we have awake and alert. So obviously that means that the patient is awake, is responding to their environmental stimuli purposefully and just based on that, you know that both hemispheres and the brainstem are working together in some way. A patient can be alert but if you can wake them from sleep easily and they're able to talk to you because they're just asleep, they're not sedated or anything like that, then you can still consider them to be within that awake and alert category. Typically, people are oriented to person, place, time, and situation. And then next we have lethargy or a lethargic patient.

And we hear this a lot, especially with post-operative patients, things like that. This is going to be your patient who has a slowed motor response or slowed verbal responses. They might be disoriented to time. They will typically follow commands, but their response may be delayed. And again, there are not universal definitions for all of these things, which can make it a little bit tricky to interpret.

So if I'm giving a shift report to Lisa, if you're coming on after me, and I say, "Mr. Jones, he's lethargic", that doesn't tell you a whole lot. But if I'm saying, "Mr. Jones, if I shake his shoulder and call his name really loud, he wakes up. He'll take a second, but he'll answer your question. He has to think about it for a second first." That gives you a lot more understanding of what his mental status is than just saying "he's lethargic."

Stupor would be a patient who has very minimal spontaneous movement. They're responding slowly to painful stimuli. So that would be, you know, your supraorbital pressure, trapezius pressure and nailbed pressure. But they're out of it once that stimulus stops. If they're not being actively stimulated, they're not going to have motor response at that point and probably not going to carry on a conversation with you.

And then coma would be a sleep-like state: no response to any internal or environmental stimuli. They typically will not be following commands. They may make some sounds, but they're not going to really have any comprehensible speech. And then again, the coma, what they're able to do and what the motor response is, is going to depend on the depth of the coma and how sedated they are, what they have on board.

So that's the arousal states. Again, it's all a continuum. So describing what you're doing is always going to be the best. Speech and language is a little bit more concrete. So we have basically three terms that I encountered a lot that people or nurses can be confused about. So aphasia, dysarthria and speech apraxia. So aphasia is a disorder with either expressive language, receptive language or mixed.

Dysarthria is impaired movement of the speech musculature, which includes loss of articulation, phonation or breath control. And then speech apraxia, which is a disorder. So "praxis" meaning: ability to execute planned actions, and "speech apraxia" would be a disorder of the motor speech programming. So aphasia, we see this a lot in stroke patients. There are generally three different kinds that we talk about, though there are a number of others that we won't go into today.

But the most common things that you're likely to encounter in your clinical practice are expressive aphasia which is also termed Broca's aphasia, and that is patients who cannot get their words out. The

speech is non-fluent. They're not able to use the words that they want to use or the grammar that they want to use. Typically written is also impaired, and that may actually be more severe than their verbal response. And they know this is happening and they get very frustrated because they know the words that they want to say, but they cannot get them out.

And then we have receptive, or Wernicke's. Those patients have fluent speech, but that speech doesn't mean anything. They are paraphrasing. There's a lot of circumlocution where they're talking around a word because maybe they can't find that word or they don't know exactly what they're trying to say. So they're just kind of talking in circles. There's reduced comprehension so they're not able to understand what you're saying. So they might not be able to follow a command or to do something that you're asking them to do. And typically, these patients are not aware that they have any kind of deficit and they don't know that you're asking them to do something and they're not doing it. And you're probably getting frustrated that they're not doing what you're asking them to do.

And then global is a combination of expressive and receptive. And there's others out there like anomic, conduction, transcortical sensory, and transcortical motor. But we're not going to go into those today.

*Lisa Bonsall:* Thank you, Robin. How about dementia and delirium? What's the difference between them?

*Robin Coyne:* I get this question all the time, a very common question. And so I like to think of it kind of in the simplest terms. Delirium is a much more sudden onset. It's usually reversible and it is a change in multiple aspects of a mental status, whereas dementia is more slowly progressive, insidious and is an irreversible loss of cortical functions.

*Lisa Bonsall:* Can you talk about terminology that describes movement?

*Robin Coyne:* Yes. So the first broad category of movements that people ask about is typically tremors. There's a lot of different types of tremors and a lot of causes of tremors. And so the definition is a rhythmic oscillation of a body part. But it's important to note that a tremor is very different than a seizure.

They originate from different parts of the body, and tremors are non-epileptic, though a seizure can look like a tremor. So first we have essential tremors. That can happen either on someone's head or their extremities or both. It occurs with activity and it stops at rest. So if you've ever seen someone trying to write something with their hand shaking and then they stop and they're perfectly still, that's an essential tremor.

The inverse of that is a resting tremor or someone sitting still and they have a tremor, but then they go to write and their handwriting's perfect, rock solid. Intention tremor occurs with purposeful movement. So if you're washing the dishes and you're trying to put a glass away on the shelf you're holding it fine here, but then once you get up here, you're trembling. And that is also similar to the cerebellar which occurs with movement and is worse at the end of the activity.

We have the Parkinsonian tremor, which is the pill rolling tremor. I think most of us are probably familiar with that. And that is associated with increased muscle tone. And then there are toxic tremors. People who are uremic or have some type of drugs on board, usually some recreational drugs. And then a

physiologic. So I know I've experienced and I'm sure you have: stress, fatigue, too much caffeine, any of that stuff can make you have a tremor.

This isn't to teach you how to diagnose someone with tremors. It's to give you the information to understand what's important to document. So if you're talking to someone about a patient's tremor, you're documenting it. You're going to want to know, is it happening when they're at rest or is it happening when they're moving? How fast is it moving? Does it happen when their limb is outstretched? Does it happen close? In which part of their body is it one arm? Is it both? Is it their face is it their chin? Where is it happening? Those are going to be your most important parts.

Same thing with abnormal movements. So we see a lot of different movement disorders, both outpatient and inpatient and again, as a nurse, you're not going to be diagnosing anyone with a movement disorder, but it's important for you to be able to describe what you're seeing, to give someone else a clearer picture.

So a couple of different types of movements that you will be able to see and document. First one is clonus. So I think a lot of us have probably assessed reflexes, especially in the Achilles tendon. And if you push a patient's foot up, sometimes you feel it tapping on your hand, that's clonus. So that's a brief jerking of the muscle or a muscle group.

A lot of times that's a pathologic reflex, meaning that there's a there's pathology or something wrong that's causing that reflex. And that is different than a spasm, which would be an involuntary contraction of a large muscle group. And then we have tics which are stereotyped, brief, involuntary movements. Sometimes they appear to be a nervous habit. And those are the three that you'll probably see the most often.

And then we have some other less common movements like choreiform movements, which would be irregular jerky movements, grimacing, difficulty speaking, abnormal posturing, difficulty with swallowing. Those worsen with activity, typically. Athetosis, which is a slow snake-like involuntary movement, primarily involving the face and can also affect posture. So your patient is squirming, can't get comfortable, but they're not able to really stop it and they don't seem to be doing it on purpose.

And then ballismus or hemiballismus, is involuntary, violent flailing of the extremities or trunk, and that is basically they're throwing their arms over their head every couple minutes or seconds and they can't control it.

Along with that, we have muscle tone. So the rigidity of a patient's muscle group is going to be the amount of resistance they have to passive range of motion. So someone who has more rigidity, maybe someone who has Parkinson's, just to pull something that we're probably familiar with, it's going to be much harder for you to move their extremities through range of motion exercises because those muscles are so rigid. Flaccidity or hypotonia, which is low muscle tone, myoclonus, which is sudden muscle jerks.

This is what happens when most of us fall asleep and you jerk yourself back awake, or whoever you're sleeping with hits you in the face or something. And this also is pretty commonly seen in the hospital with a global ischemic hypoxic injury. And then dystonia, which is a distorted or twisting movement of a body part, and that is typically related to a degenerative disease or toxicity.

And then along with muscle tone, we get a lot of questions about posturing. So posturing is only seen in patients who are in a coma. If you're seeing posturing on a patient who's awake, that's not posturing. It's a contraction, it's spasticity, or it's purposeful movement, and this is just how they're comfortable sleeping. Posturing is only in patients in a coma.

So we have flexion posturing, which is an interruption of the corticospinal pathways through the brainstem. So that's arm adduction or "ad" -uction, flexion of the arms and hands and plantar flexion. Extension is a lesion in the midbrain or the pons. And that may also be associated with arching of the back and extreme extension and rotation of the arms and leg extension.

And then we have triple flexion, which is a flexion at the hip, knee and ankle. This is actually a reflexive response that happens after a pontine or a lower brainstem injury or an acute spinal cord injury, and that can be easily confused with the flexion posture. So just be aware of that.

*Lisa Bonsall:* Robin, how about terminology related to your pupillary assessment?

*Robin Coyne:* So one term that you'll probably hear in clinical practice is APD and afferent pupillary defects. And that is when there's an issue somewhere between the retina for the optic nerve tract and then the midbrain. So somewhere along there, there's an issue on one side. So the way that you assess for that is with the swinging flashlight test.

So what you're going to do is shine a light into the unaffected eyes. My right eye is unaffected, both of my pupils are going to constrict which is the normal response. I'm going to take the flashlight and shine it into my left eye, which is my affected eye. That is going to cause both pupils to dilate because there's some disconnect going on in there. And then if I shine a light back in my right eye or my unaffected eye, both pupils will constrict. So the thing to remember with an APD is that when you shine a light, you'll see the pupil dilate. And that is the issue.

*Lisa Bonsall:* How about when you're doing a pupillary assessment for a patient who's in a coma?

*Robin Coyne:* Yes, very important. So pupils are typically resistant to a metabolic insult. Usually there's some type of physical insult that's causing a difference. So the first one that we think of is dilated and fixed pupils, non-reactive pupils, and that typically signals transtentorial herniation, which is an emergency that is not good. And then you can also see different pupils with different locations of damage in the brain. So for example, the hypothalamus, you'll have small pupils, but they'll still be reactive.

But they might be, hard to see because they're so small. If there is damage in the midbrain, you'll have midline and fixed pupils with no reaction to light. They may have something called hippus, which is when the pupils kind of get bigger and smaller and just kind of wiggle. And then with damage in the pons pinpoint pupils and then with anoxia or like a global ischemia, you'll have small non-reactive pupils.

*Lisa Bonsall:* Thank you so much, Robin. This has been really helpful.

*Robin Coyne:* Thanks for having me, Lisa.

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