



Glossary of Terms

For multiple sclerosis

This glossary provides definitions for terms used in the care and treatment of patients with multiple sclerosis (MS).

- **Activities of daily living (ADLs)** – Activities a person performs for self-care (feeding, grooming, bathing, dressing), work, homemaking, and leisure. The ability to perform ADLs is often used as a measure of ability/disability in MS.
- **Acute** – Having rapid onset, usually with recovery; not chronic or long-lasting.
- **ADLs** – *See* Activities of daily living.
- **Advance (medical) directive** – A legal form that preserves a person’s right to accept or reject a course of medical treatment. It is in effect after a person becomes mentally or physically unable to communicate their wishes. Advance directives come in two basic forms:
 - A living will, in which the person outlines treatment guidelines that are to be followed by health care providers.
 - A health care proxy (also called a power of attorney for health care decision-making), in which the person assigns a trusted person to make medical decisions in the event that he or she becomes unable to do so.
- **Affective release (also called pseudo-bulbar affect)** – When a person laughs or cries even though their actual mood may be unrelated to the emotion being expressed – thought to be caused by lesions in the limbic system.
- **AFO** – *See* Ankle-foot orthosis.

- **Ankle-foot orthosis (AFO)** (or-THOH-sis) – An ankle-foot orthosis is a brace, usually plastic, that is worn on the lower leg and foot to support the ankle and correct foot drop. By holding the foot and ankle in the correct position, the AFO promotes correct heel-toe walking. *See* Foot drop.
- **Antibodies** – Proteins of the immune system that are soluble (dissolved) in the blood serum or other body fluids and which are produced in response to bacteria, viruses, and other types of foreign antigens (a substance that triggers the immune system to produce an antibody). Antibodies provide protection against invading organisms.
- **Aspiration** (AS-per-AY-shun) – When food particles or fluids are inhaled into the lungs.
- **Aspiration pneumonia** – Inflammation of the lungs due to aspiration.
- **Assistive devices** – Any tool (cane, walker, bath bench) that is designed, fabricated, and/or adapted to assist a person doing a task.
- **Ataxia** – Results from the brain’s failure to regulate the body’s posture and the strength and direction of limb movements. Ataxia is most often caused by disease activity in the cerebellum (part of the brain) and may be seen as impaired coordination.
- **Atrophy** – A wasting or decrease in size of a part of the body (organ or tissue) because of disease or lack of use.
- **Autoimmune disease** – A process in which the body’s immune system causes illness by mistakenly attacking healthy cells, organs, or tissues that are needed for good health. MS is believed to be an autoimmune disease.

- **Autonomic nervous system** – The part of the nervous system that regulates involuntary vital functions such as the activity of the heart muscle, and smooth muscles of the gut and glands. The autonomic nervous system has two divisions. The sympathetic nervous system accelerates heart rate, constricts blood vessels, and raises blood pressure. The parasympathetic nervous system slows heart rate, increases intestinal and gland activity, and relaxes sphincter muscles.
- **Babinski reflex** – An abnormal neurological sign in MS in which stroking the outside sole of the foot with a pointed object causes an upward (extensor) movement of the big toe with the other toes spreading out rather than the normal and downward (flexor) movement of the toes. *See Sign.*
- **Bell's palsy** – A paralysis or weakness of the muscles supplied by the facial nerve (usually on one side of the face), which can occur from having MS, a viral infection, or other infections. It has a rapid onset and can be temporary or permanent.
- **Blood-brain barrier** – A semi-permeable cell layer around blood vessels in the brain and spinal cord. It prevents large molecules, immune cells, and potentially damaging substances and disease-causing organisms such as viruses from passing out of the blood stream into the central nervous system (brain and spinal cord). A break in the blood-brain barrier may underlie the disease process in MS.
- **Brainstem** – The part of the central nervous system that houses the nerve centers of the head as well as the centers for respiration and heart control. It extends from the base of the brain to the spinal cord.

- **Brainstem auditory evoked response (BAER)** – A test in which the brain’s electrical activity is measured. Clicking sounds are used to stimulate the brain. The brain’s responses are recorded then analyzed by a computer. This test is sometimes useful in the diagnosis of MS because it can confirm the presence of a suspected lesion or identify the presence of an unsuspected lesion that has produced no symptoms. BAERs have been shown to be less useful in the diagnosis of MS than either visual or somatosensory evoked potentials.
- **CAT scan** – *See* Computerized axial tomography.
- **Catheter** – A hollow, flexible tube made of plastic or rubber, which is inserted through the urinary opening into the bladder to drain urine.
- **Central nervous system** – The part of the nervous system that includes the brain, optic nerves, and spinal cord.
- **Cerebellum** – A part of the brain above the brainstem that controls balance and coordination of movement.
- **Cerebrospinal fluid (CSF)** – A watery, colorless, clear fluid that cushions and protects the brain and spinal cord from physical impact. This fluid can be altered by disease. A lumbar puncture (spinal tap) test can detect changes in CSF. Sometimes this test is used to help diagnose MS. *See* Lumbar puncture.
- **Cerebrum** – The large upper part of the brain, which acts as the master control system. This part of the brain controls thought and muscular activities.
- **Chronic** – Of long duration; not acute. Often describes a disease that shows gradual worsening.
- **Clinical finding** – An observation made during a medical exam that shows change or impairment in a physical or mental function.

- **Clinical trial** – A controlled study designed to provide data that will allow for valid evaluation of the safety and effectiveness of a treatment. *See* Double-blind clinical study; Placebo.
- **Cognition** – High-level functions carried out by the brain such as reasoning, judgment, intuition, and memory; the mental process by which knowledge is acquired.
- **Cognitive rehabilitation** – Techniques designed to improve the functioning of persons whose cognition is impaired because of physical trauma or disease. Rehabilitation strategies are designed to improve the impaired function via repetitive drills or practice. Other strategies compensate for impaired functions that are not likely to improve. Cognitive rehabilitation is provided by psychologists and neuropsychologists, speech/language pathologists, and occupational therapists. They may use different assessment tools and treatment strategies but they share the common goal of improving the person’s ability to function as independently and safely as possible in the home and work environment.
- **Computerized axial tomography (CAT) scan** – A test to examine the soft tissues of the body. A computer integrates X-ray scanned “slices” of the organ or body part being examined into a cross-sectional picture.
- **Condom catheter** – A tube connected to a thin, flexible sheath that is worn over the penis to allow drainage of urine into a collection bag. Used to manage male urinary incontinence.
- **Constipation** – A condition in which the bowel movements happen less often than is normal, or the stool is small, hard, and difficult or painful to pass.
- **Contraction (of a muscle)** – A shortening or tightening of muscle fibers that results in the movement of a joint.

- **Contracture** – A permanent shortening of the muscles and tendons near a joint. This can result from severe, untreated spasticity and interferes with normal movement around the affected joint. If left untreated, the affected joint can become frozen in a flexed (bent) position.
- **Coordination (of a muscle or muscle group)** – Muscles and groups of muscles working together to bring about purposeful movement such as walking or standing.
- **Corpus callosum** – The broad band of nerve fibers tissue that connects the two cerebral hemispheres of the brain.
- **Cortex (of the brain)** – The outer layer of brain tissue.
- **Corticosteroid**—Any of the natural or synthetic hormones linked with the adrenal cortex (which influences or controls many body processes). Corticosteroids include glucocorticoids, which have an anti-inflammatory and immunosuppressive role in the treatment of MS exacerbations. *See* Glucocorticoids; Immunosuppression; Exacerbations.
- **Cortisone** – A hormone, produced by the adrenal glands or synthetically, that has anti-inflammatory and immune-system suppressing properties. Prednisone and prednisolone also belong to this group of substances.
- **Cranial nerves** – Nerves originating in the brain that carry sensory, motor, or parasympathetic fibers to the face and neck. Included among this group of twelve nerves are the optic nerve (vision), trigeminal nerve (sensation along the face), and glossopharyngeal nerve (taste and swallowing). Checking cranial nerve function is part of the standard neurologic exam.
- **Cystoscopy** – A diagnostic procedure in which a special viewing device called a cystoscope is placed into the urethra (a tubular structure that drains urine from the bladder) to look at the inside of the urinary bladder.

- **Decubitus ulcer** (dee-CUE-bih-tuss) – An ulcer (sore) initially of the skin due to prolonged pressure often caused by a lack of movement. This may occur when a person is bed- or wheelchair-bound. The ulcers occur most often over bony areas directly under the skin, such as the elbows, hips, ankles, heels, or over the coccyx (tailbone). A decubitus ulcer may become infected and affect a person's health.
- **Deep tendon reflexes** – The involuntary jerks that are produced at certain spots on a limb when the tendons are tapped with a reflex hammer. Reflexes are tested as part of the standard neurologic exam.
- **Dementia** – A pathological process characterized by impairment of intellectual function. Dementia interferes with a person's everyday activities. Symptoms may consist of personality changes and impaired memory, judgment and abstract thinking.
- **Demyelination** – Destruction or loss of myelin in the white matter of the central nervous system (brain, spinal cord).
- **Detrusor muscle** – A muscle of the urinary bladder that contracts and causes the bladder to empty.
- **Detrusor-external sphincter dyssynergia (DESD)** – *See* Mixed (bladder) dysfunction.
- **Devic's disease** – Demyelinating disease of the spinal cord and the optic nerve.
- **Diplopia** – Double vision may occur when both eyes are used but not in focus.
- **Disability** – As defined by the World Health Organization, a disability (resulting from an impairment) is a restriction or lack of ability to perform an activity in the manner or within the range considered normal for a human being.

- **Double-blind clinical study** – A study in which none of the participants (subjects, doctors, nurses, or any other research staff) know who is taking the test drug and who is taking a control or placebo drug. The purpose of this research design is to avoid bias about the test results. In all studies, procedures are designed to “break the blind” if medical needs require it.
- **Durable medical power of attorney** – *See* Durable power of attorney.
- **Durable power of attorney** – A durable power of attorney allows you to select a trusted individual (like a spouse or child) to manage your affairs if you are unable to manage them yourself. This can be limited to specific things like bank accounts or medical decisions, or it can be unlimited. A medical power of attorney allows the person you select as your representative to make decisions on your behalf about the types of medical care that would be given to you if you are unable to state your wishes yourself. These can be for only a specific period of time (nondurable) or can last indefinitely (durable).
- **Dysarthria** – Difficult and defective speech resulting from dysfunction of the tongue or other muscles controlling speech. It is usually caused by damage to the central nervous system or a peripheral motor nerve.
- **Dysesthesia** – Distorted or unpleasant sensations on the skin such as tingling, burning and numbness. It is typically caused by abnormalities in the sensory pathways in the brain and spinal cord.
- **Dysmetria** – A disturbance of coordination, caused by lesions in the brain (cerebellum). A tendency to over- or underestimate the extent of motion needed to place an arm or leg in a certain position, for example, overreaching for an object.

- **Dysphagia** – Difficulty in swallowing. It is a symptom that may result in aspiration (when liquid, food or saliva enters the airway), slow swallowing (which can result in poor nutrition), or both.
- **Dysphonia** – Disorders of voice quality (hoarseness, breathiness, or hypernasality) caused by spasticity, weakness, and/or in coordination of muscles in the mouth and throat.
- **EEG** – *See* Electroencephalography.
- **Electroencephalography (EEG)** – A diagnostic procedure that records, via electrodes attached to parts of the person's head, electrical activity generated by the brain cells.
- **Electromyography (EMG)** – Electromyography is a diagnostic procedure that records muscle electrical potentials through a needle or electrodes as a result of electrical stimulation.
- **EMG** – *See* Electromyography.
- **Etiology** – The study of the causes of disease. This includes susceptibility, the nature of the disease-causing agent, and the way in which the person's body is invaded by the agent.
- **Euphoria** – Extreme cheerfulness and optimism. An exaggerated feeling of well-being or mild elation.
- **Evoked potentials (EPs)** – EPs are recordings of the nervous system's electrical response to the stimulation of sensory pathways (such as visual, auditory, general sensory). In tests of evoked potentials, a person's recorded responses are displayed and analyzed on a computer. This allows comparison with normal response times. Demyelination results in a slowing of response times. Evoked potential testing is useful to detect clinically silent lesions to help establish an MS diagnosis.

- **Exacerbation** – The appearance of new symptoms or the aggravation of old ones, lasting at least twenty-four hours. Exacerbations are often referred to as attacks (relapses, flare-ups, or worsening); they are usually linked with inflammation, swelling and demyelination in the brain or spinal cord.
- **Exacerbating-remitting MS** – *See* Relapsing-remitting MS.
- **Extensor spasm** – A symptom of spasticity in which the legs suddenly straighten into a stiff, extended position. These spasms often last for several minutes, and most commonly occur in bed at night or on rising from bed.
- **Failure to empty (bladder)** – A type of abnormal bladder function in MS resulting from demyelination in the voiding reflex center of the spinal cord. The bladder tends to overfill and become flaccid (relaxed). This may result in symptoms of urinary urgency, hesitancy, dribbling and incontinence (inability to retain urine).
- **Failure to store (bladder)** – A type of abnormal function in MS resulting from demyelination of the pathways between the spinal cord and brain. Often seen in a small, spastic bladder. Storage failure can cause symptoms of urinary urgency, frequency, incontinence, and nocturia (frequent urination during the night).
- **FDA** – *See* Food and Drug Administration.
- **Flaccid** – A decrease in muscle tone resulting in relaxed or weakened muscles and therefore loose, “floppy” limbs.
- **Flexor spasm** – Involuntary, sometimes painful contractions of the flexor muscles. For example, the legs pull upward into a clenched position. These movements may last two to three seconds and are symptoms of spasticity. They often occur during sleep, but can also occur when the person is sitting.

- **Foley catheter** – *See* Indwelling catheter.
- **Food and Drug Administration (FDA)** – The U.S. federal agency that enforces governmental regulations for the manufacture and sale of food, drugs, and cosmetics. Its role is to prevent the sale of impure or dangerous substances. Any new drug that is proposed for the treatment of MS must be approved by the FDA.
- **Foot drop** – Weakness or paralysis of the muscles of the foot and ankle. Ankle weakness interferes with a person's ability to lift up the foot and walk with a normal heel-toe pattern, causing the person to trip or lose balance.
- **Frontal lobes** – The largest lobes of the brain. The anterior (front) part of each of the cerebral hemispheres that make up the cerebrum. The back part of the frontal lobe is the motor cortex, which controls voluntary movement; the area of the frontal lobe that is further forward is concerned with learning, behavior, judgment, and personality.
- **Gadolinium** – A chemical compound that can be given to a person during a magnetic resonance imaging scan to help distinguish between new MS lesions and old lesions.
- **Gastrocolic reflex** – A mass peristaltic (coordinated, rhythmic, smooth muscle contraction that acts to force food through the digestive tract) movement of the colon that often occurs fifteen to thirty minutes after eating a meal.
- **Gastrostomy** – *See* Percutaneous endoscopic gastrostomy.
- **Glucocorticoid hormones** – Steroid hormones that are produced by the adrenal glands in response to stimulation by adrenocorticotrophic hormone (ACTH) from the pituitary. These hormones, which can also be manufactured synthetically (prednisone, prednisolone, methylprednisolone, betamethason, dexamethason), serve

both an immunosuppressive and an anti-inflammatory role in the treatment of MS exacerbations. They damage or destroy certain types of T-lymphocytes that are involved in the overactive immune response and interfere with the release of certain inflammation-producing enzymes.

- **Handicap** – As defined by the World Health Organization, a handicap is a disadvantage, resulting from a disability, that interferes with a person's efforts to fulfill a role that is normal for that person. Handicap is therefore a social concept, representing the social and environmental effects of a person's impairments and disabilities.
- **Health care proxy** – *See* Advance (medical) directive.
- **Heel-shin test** – A test of coordination in which a person is asked to place the heel of one foot on the opposite knee and slide it up and down the shin.
- **Helper T-lymphocytes** – White blood cells that are a major contributor to the immune system's inflammatory response against myelin.
- **Hemiparesis** – Weakness of one side of the body, including one arm and one leg.
- **Immune system** – A complex system of cells that protects the body against disease-producing organisms and other foreign invaders.
- **Immunocompetent cells** – White blood cells (B- and T-lymphocytes and others) that defend against invading agents in the body.
- **Immunoglobulin** – *See* Antibody.

- **Immunosuppression** – In MS, a form of treatment that slows or inhibits the body’s natural immune responses, including those directed against the body’s own tissues. Immunosuppressive treatments in MS include such drugs as cyclosporine, methotrexate and azathioprine.
- **Impairment** – As defined by the World Health Organization, an impairment is any loss or abnormality of psychological, physiological, or anatomical structures. It represents a deviation from the person’s usual biomedical state and may result from a disease or injury.
- **Incidence** – The frequency of occurrence of any event or condition over a period of time and in relation to the population in which it occurs. For example, the number of new cases of MS in a specified population over a defined period of time.
- **Incontinence** – Also called spontaneous voiding; lack of ability to control passage of urine or bowel movements.
- **Indwelling catheter** – A type of catheter (*See* Catheter) that remains in the bladder on a temporary or permanent basis. It is used when intermittent catheterization is not possible or advised. The most common type of indwelling catheter is a Foley catheter, which consists of a flexible rubber tube that is inserted into the bladder to allow the urine to flow into an external drainage bag.
- **Inflammation** – A tissue’s response to injury. The main symptoms of inflammation are redness, heat, swelling and pain. Fever also commonly occurs.
- **Intention tremor** – Rhythmic shaking that occurs in the course of a purposeful movement, such as reaching to pick something up or bringing an outstretched finger in to touch one’s nose.

- **Interferon** – A group of immune system proteins, produced and released by cells infected by a virus. They inhibit viral multiplication and modify the body's immune response. Two of the interferons used to treat MS are interferon beta 1-b (Betaseron[®]) and interferon beta-1a (Avonex[®]).
- **Intermittent self-catheterization program (ICP)** – A procedure in which the person inserts a catheter into the urinary opening from time to time to drain urine from the bladder. ICP is used in the management of bladder dysfunction to drain urine that remains after urinating, to prevent the bladder from overfilling to prevent kidney damage, and to restore bladder function.
- **Internuclear ophthalmoplegia (INO)** – A disturbance of coordinated eye movements in which one eye fails to turn all the way inward. This neurological sign, of which the person is usually unaware, can be found during an exam.
- **Intrathecal space** – The space surrounding the brain and spinal cord that contains cerebrospinal fluid.
- **Intravenous** – Within a vein; often used in the context of an injection into a vein of medication dissolved in a liquid.
- **Leukocyte** – White blood cell.
- **L'hermitte's sign** – An abnormal sensation of electricity (electric shock feeling) or “pins and needles” usually going down the spine into the arms and legs that occurs when the neck is bent forward so that the chin touches the chest.
- **Living will** – *See* Advance (medical) directive.

- **Lumbar puncture** – A diagnostic procedure that uses a hollow needle (canula) to penetrate the spinal canal at the level of third-fourth or fourth-fifth lumbar vertebrae to remove cerebrospinal fluid. The fluid can show changes in composition that are linked with MS (such as elevated white cell count, elevated protein content, the presence of oligoclonal bands).
- **Lymphocyte** – The white cells found in the blood. These cells are important contributors to immune system reactions to bacteria, parasites and viruses. They also play a role in autoimmune diseases. There are several types of lymphocytes including B-cells (which make antibodies) and T-cells (which react without antibodies). T-cells are divided into different types according to which proteins are found on their surface.
- **Magnetic resonance imaging (MRI) scan** – A diagnostic procedure that produces visual images of different body parts without the use of X-rays. Nuclei of atoms are influenced by a high frequency electromagnetic impulse inside a strong magnetic field. The nuclei then give off signals that can produce pictures of parts of the body. The MRI scan makes it possible to visualize and count MS lesions in the white matter of the brain and spinal cord.
- **Mixed (bladder) dysfunction** – A type of neurogenic bladder dysfunction in MS (also called detrusor-external sphincter dyssynergia – DESD). Urine is trapped in the bladder, resulting in symptoms of urinary urgency, hesitancy, dribbling, and incontinence. This is caused by the bladder's detrusor muscle and the external sphincter contracting at the same time.
- **Monoclonal antibodies** – Antibodies produced in a lab that can be programmed to react against a specific antigen to suppress the immune response.

- **Motor neurons** – Nerve cells of the brain and spinal cord that enable movement of parts of the body.
- **Motor point block** – *See* Nerve block.
- **MRI** – *See* Magnetic resonance imaging.
- **Muscle tone** – A characteristic of a muscle which describes its resistance to stretching. Abnormal muscle tone can be defined as hypertonus (increased muscle tone, as in spasticity); hypotonus (reduced muscle tone); flaccid (paralysis); and atony (loss of muscle tone). Muscle tone is evaluated as part of the standard neurologic exam in MS.
- **Myelin** – A soft, white coating of nerve fibers in the central nervous system, composed of lipids (fats) and protein. Myelin serves as insulation and as an aid to efficient nerve fiber conduction. When myelin is damaged in MS, nerve fiber conduction is faulty or absent. Impaired bodily functions or altered sensations linked with those demyelinated nerve fibers are identified as symptoms of MS in parts of the body.
- **Myelin basic protein** – A protein component of the central nervous system myelin. May be found in higher than normal concentrations in the cerebrospinal fluid of persons with MS and other diseases that damage myelin.
- **Myelitis** – An inflammatory disease of the spinal cord. In transverse myelitis, the inflammation spreads across the tissue of the spinal cord, resulting in a loss of its normal function to transmit nerve impulses up and down, as though the spinal cord had been severed.
- **Nerve** – A bundle of nerve fibers (axons). The fibers are either afferent (leading toward the brain and serving in the perception of sensory stimuli of the skin, joints, muscles, and inner organs) or efferent (leading away from the brain and mediating contractions of muscles or organs).

- **Nerve block** – An injection of medicine such as phenol around a nerve to block the nerve function. This may last for up to three months and may increase a person’s comfort and mobility. It can be used to relieve spasticity such as painful flexor spasms.
- **Nervous system** – Includes all of the neural structures in the body: the central nervous system consists of the brain, spinal cord, and optic nerves; the peripheral nervous system consists of the nerve roots, nerve plexi, and nerves throughout the body.
- **Neurogenic** – Related to activity of the nervous system, as in “neurogenic bladder.”
- **Neurogenic bladder** – Bladder dysfunction linked with neurologic malfunction in the spinal cord. Includes the bladder’s failure to empty, failure to store, or a combination of the two. Symptoms that result include urinary urgency, frequency, hesitancy, nocturia, and incontinence.
- **Neurologist** – Doctor who specializes in the diagnosis and treatment of conditions related to the nervous system.
- **Neurology** – Study of the central, peripheral, and autonomic nervous system.
- **Neuron** – The basic nerve cell of the nervous system. A neuron consists of a nucleus within a cell body and one or more processes (extensions) called dendrites and axons.
- **Neuropsychologist** – A psychologist with training in the evaluation of cognitive functions. Neuropsychologists use standardized tests to assess cognitive functions and identify areas of cognitive impairment. They also provide remediation for persons with MS-related cognitive impairment. *See* Cognition and Cognitive impairment.
- **Nocturia** (nawk-TUR-ee-uh) – The need to urinate frequently during the night.

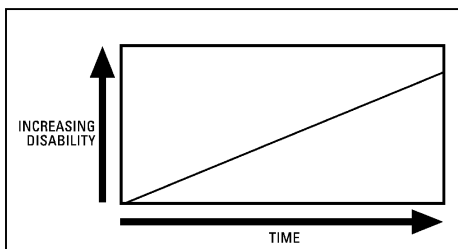
- **Nystagmus** (nis-TAG-mus) – Rapid involuntary movements of the eyes. The movements may be in any direction.
- **Occupational therapist (OT)** – Occupational therapists specialize in arm and hand dysfunction. They use a combination of exercise and practical skills training to improve independence, time management, and the safety and efficiency of performing daily tasks. Some of these services include:
 - **Strengthening programs** – to establish exercise programs to increase arm/hand strength.
 - **Equipment evaluations** – to determine what equipment is needed in the home to optimize safety. Many of these evaluations are done in the home.
 - **Equipment evaluations for specific tasks** – to determine what equipment is needed to complete specific tasks such as writing, eating, dressing, etc.
 - **Driving evaluation** – perform driving evaluations for safety and to assess the need for vehicle modifications for patients with disabilities.
- **Oligoclonal bands** (oh-lig-oh-CLON-al) – A diagnostic sign that shows abnormal levels of certain antibodies in the cerebrospinal fluid. Seen in about 90 percent of people with MS, but not specific to MS.
- **Oligodendrocyte** (oh-lig-oh-DEN-droh-site) – A type of cell in the central nervous system that makes and supports myelin.
- **Optic nerve** – Bundles of fibers made up of neurons through which sensory stimuli and motor impulses travel between the brain and the eyes, sending and receiving messages; one of the cranial nerves.

- **Optic neuritis** – Inflammation of the optic (visual) nerve. Sometimes it causes permanent vision problems and at other times it causes vision problems that come and go and eventually disappear. From time to time it causes eye pain, especially with movement.
- **Orthosis** (or-THOH-sis) – A mechanical appliance such as a leg brace or splint that is specially designed to control, correct, or compensate for impaired limb function, such as foot drop.
- **Orthotist** – A practitioner in the field of orthotics and skilled in making mechanical appliances (orthoses) such as leg braces or splints that help to support limb function. *See Orthosis.*
- **Oscillopsia** (aw-sill-AHP-see-ah) – Continuous, involuntary, and chaotic eye movements that result in a visual disturbance in which objects appear to be jumping or bouncing.
- **Osteoporosis** (os-tee-oh-pour-OH-sis) – Decalcification of the bones (bones lose calcium), which can result from the lack of mobility experienced by wheelchair-bound persons or frequent use of steroids for MS exacerbations.
- **Paralysis** – Inability to move a part of the body such as an arm and/or leg.
- **Paraparesis** – A weakness but not total paralysis of the legs.
- **Paraplegia** – Paralysis of both legs.
- **Paresis** – Partial or incomplete paralysis of a part of the body.
- **Paresthesia** (par-es-THEE-see-ah) – A sensation of burning, prickling, tingling, heightened sensitivity, or creeping on the skin that may or may not be linked with any physical findings on a neurologic examination.

- **Paroxysmal spasm** (par-ox-ISS-mall) – A sudden, uncontrolled limb contraction that occurs intermittently, lasts for a few seconds, and then subsides.
- **Paroxysmal symptom** – Any one of several symptoms that have sudden onset, apparently in response to some kind of movement or sensory stimulation, lasts for a few seconds, and then subsides. Paroxysmal symptoms tend to occur often in those persons who have them, and follow a similar pattern from one episode to the next. Examples of paroxysmal symptoms include acute episodes of trigeminal neuralgia (sharp facial pain), tonic seizures (intense spasm of limb or limbs on one side of the body), dysarthria (slurred speech often accompanied by loss of balance and coordination), and various paresthesias (sensory disturbances ranging from tingling to severe pain).
- **Pathologist** – A specialist in diagnosing abnormal changes in disease.
- **PEG** – *See* Percutaneous endoscopic gastrostomy.
- **Percutaneous endoscopic gastrostomy (PEG)** (per-cue-TANE-ee-us en-doe-SKAW-pic gas-TROSS-tuh-mee) – A PEG is a tube inserted into the stomach through the abdominal wall to provide food or other nutrients when eating by mouth is not possible. The tube is inserted in a bedside procedure using an endoscope to guide the tube through a small abdominal incision. An endoscope is a lighted instrument that allows the doctor to see inside the stomach.
- **Periventricular region** (pair-ee-ven-TRIC-you-lar) – The area surrounding the four fluid-filled cavities (ventricles) within the brain. MS plaques are often found within this region.
- **Physiatrist** (fih-ZIGH-uh-trist) – Doctor who specializes in improving the function of patients with impairments and disabilities.

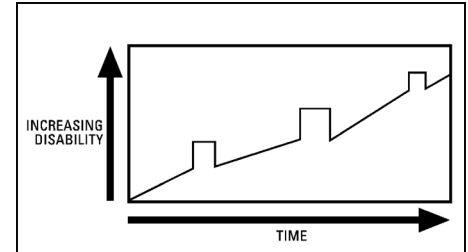
- **Physical therapist (PT)** – Physical therapists are trained to evaluate and improve movement and function of the body. They deal with physical mobility, balance, posture, fatigue, and pain. The physical therapy program typically involves:
 - Educating the person with MS about the physical problems caused by the disease;
 - Designing an individualized exercise program to address the problems;
 - Enhancing mobility and energy conservation through the use of mobility aids and adaptive equipment.
- **Placebo** – An inactive, non-drug compound that is designed to look just like the test drug. It is given to control group subjects in double-blind clinical trials (in which neither the researchers nor the subjects know who is getting the drug and who is getting the placebo) as a means of assessing the benefits and liabilities of the test drug taken by experimental group subjects.
- **Placebo effect** – An apparently beneficial result of therapy that occurs because of the person’s expectation that the therapy will help.
- **Plantar reflex** – A reflex response obtained by drawing a pointed object along the outer border of the sole of the foot. The normal flexor response is a bunching and downward movement of the toes. An upward movement of the big toe with fanning out of the other toes is called an extensor response, or Babinski reflex, which is a sensitive indicator of disease in the brain or spinal cord.
- **Plaque** – An area of inflamed, scarred, or demyelinated central nervous system tissue.
- **Plasma cell** – A lymphocyte-like cell found in the bone marrow, connective tissue, and blood that makes antibodies. *See* Lymphocyte; Antibodies.

- **Position sense** – The ability to tell, with one’s eyes closed, where one’s fingers and toes are in space. Position sense is evaluated during the standard neurologic exam in MS.
- **Post-void residual test (PVR)** – The PVR test involves passing a catheter into the bladder after urination to drain and measure any urine that is left in the bladder after urination is completed. The PVR may also be checked by noninvasive bladder ultrasound where a gel is placed onto the suprapubic area and the bladder is scanned. The PVR is a simple but effective technique for diagnosing bladder dysfunction in MS.
- **Postural tremor** – Rhythmic shaking that occurs when the muscles are tensed to hold an object or to stay in a given position.
- **Power grading** – A measurement of muscle strength used to evaluate weakness or paralysis, where five is normal and zero is “none.” Power is tested as part of the standard neurologic exam in MS.
- **Pressure sore** – *See* Decubitis ulcer.
- **Prevalence** – The number of all new and old cases of a disease in a defined population at a particular point in time.
- **Primary progressive MS** – A clinical course of MS characterized from the start by progressive disease, with no exacerbations (relapses) or remissions, or an occasional plateau and very short-lived, minor improvements.
- **Prognosis** – Prediction of the future course of a disease.

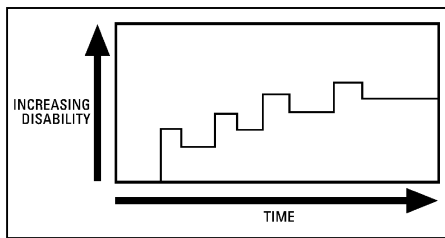


Primary progressive MS

- **Progressive-relapsing MS** – A clinical course of MS that shows disease progression from the start, but with superimposed, acute relapses, with or without full recovery from those relapses; periods between relapses are characterized by continuing progression.
- **Prospective memory** – The ability to remember an event or commitment scheduled for the future. Thus, a person who agrees to meet or call someone at a given time on the next day must be able to remember the appointment when the time comes. People with MS-related memory impairment often report problems with this type of memory for upcoming appointments.
- **Pseudo-bulbar affect** – *See* Affective release.
- **Pseudo-exacerbation** (SUE-doh ex-ass-er-BAY-shun) – A temporary flare-up of disease symptoms, resulting from a rise in body temperature or other stressor (such as an infection, severe fatigue, overheating from exercise) that disappears once the stressor is removed. A pseudo-exacerbation involves symptom flare-up rather than new disease activity or progression.
- **Pyramidal tracts** – Motor nerve pathways in the brain and spinal cord that connect nerve cells in the brain to the motor cells in the cervical, thoracic, and lumbar parts of the spinal cord. Damage to these tracts causes spastic paralysis or weakness.
- **Pyuria** – The presence of pus in the urine, causing it to appear cloudy; often indicates bacterial infection in the urinary tract.
- **Quadriplegia** – *See* Tetraplegia.



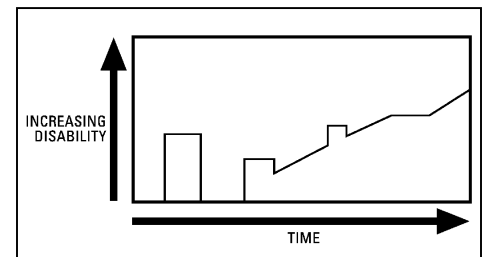
Progressive relapsing MS



Relapsing/remitting MS

- **Recent memory** – The ability to recall events, conversations, content of reading material or television programs from a short time ago (like an hour or two ago or last night). People with MS-related memory impairment often have the hardest time remembering these types of things from the recent past.
- **Reflex** – An involuntary response of the nervous system to a stimulus. For example, the stretch reflex occurs when a tendon is tapped with a reflex hammer and contracts. Increased, diminished, or absent reflexes can indicate neurologic damage, including MS, and are therefore tested as part of the standard neurologic exam.
- **Relapsing-remitting MS** – A clinical course of MS that is characterized by clearly defined disease relapses (attacks) with full or partial recovery and no disease progression between attacks.
- **Remission** – A lessening in the severity of symptoms or their temporary disappearance during the course of the illness.
- **Remote memory** – The ability to remember people or events from the distant past. People with MS tend to have few, if any, problems with their remote memory.
- **Remyelination** (REE-my-el-in-AY-shun) – The repair of damaged myelin. Myelin repair may occur spontaneously in MS as the inflammatory response subsides. Research is underway to find a way to speed the healing process.
- **Residual urine** – Urine that remains in the bladder after urination.
- **Retrobulbar neuritis** (RET-roh-bull-bar nur-EYE-tis) – *See* Optic neuritis.

- **Romberg's sign** – This sign is an assessment of joint position sense or balance. Romberg's sign is the inability to maintain balance in a standing position with feet and legs drawn together and eyes closed.
- **Sclerosis** – A hardening of tissue. In MS, sclerosis is the body's replacement of lost myelin around CNS nerve cells with scar tissue.
- **Scotoma** – A hole or blind spot in the visual field, described by its site (for example, central), and shape (for example, round).
- **Secondary-progressive MS** – A clinical course of MS that starts out as relapsing-remitting and then becomes progressive at a variable rate, possibly with an occasional relapse and minor remission.
- **Sensory** – Related to bodily sensations such as touch, temperature, pain and vibration.
- **Sepsis** – The spread of an infection from its initial site to the bloodstream.
- **Sign** – An objective physical problem or abnormality identified by the health care provider during the neurologic exam. Neurologic signs may differ significantly from the symptoms reported by the patient because they can only be identified with specific tests but cause no obvious symptoms. Common neurologic signs in multiple sclerosis include altered visual system reflexes, weakness, spasticity, and sensory changes.
- **Social worker** – Social workers assist patients in addressing their social needs. This includes help in obtaining funding through insurance, social agencies or disability funding sources. They help obtain funding for rehabilitation services including home health aides, equipment, treatments, etc., and help coordinate these services. They may perform counseling to help families adjust to the presence of multiple sclerosis.



Secondary progressive MS

- **Somatosensory evoked potential (SEP)** – A test that measures the brain’s electrical activity in response to repeated (mild) electrical stimulation of different parts of the body. Demyelination results in a slowing or blocking of response. This test is useful in the diagnosis of MS because it can confirm the presence of a suspected lesion (area of demyelination), identify the presence of an unsuspected lesion that has produced no symptoms, and show conductive slowing – the hallmark of demyelination.
- **Spasticity** – Abnormal increase in muscle tone or contractions of muscles causing stiff and awkward movements.
- **Speech/language pathologist** – Speech/language pathologists specialize in the diagnosis and treatment of speech and swallowing disorders. A person with MS may be referred to a speech/language pathologist for help with either one or both of these problems. They also provide assistance for persons with mental impairment such as poor memory.
- **Sphincter** – A circular band of muscle fibers that tightens or closes a natural opening of the body. The external anal sphincter closes the anus, and the internal and external urinary sphincters close the entrance to the urinary bladder.
- **Spinal tap** – *See* Lumbar puncture.
- **Spirometer** – An instrument used to assess lung function. It measures the volume and flow rate of inhaled and exhaled air.
- **Spontaneous voiding** – *See* Incontinence.
- **Steroids** – *See* ACTH; Corticosteroid; Glucocorticoid hormones.

- **Suppressor T-lymphocytes** – White blood cells that act as part of the immune system and may be in short supply during an MS exacerbation.
- **Symptom** – A perceived problem or complaint reported by the patient. In MS, common symptoms include fatigue, sensory changes, spasticity, blurred vision, weakness or paralysis of limbs, tremor, lack of coordination, poor balance, bladder or bowel changes, and psychological changes.
- **T-cell** – A lymphocyte (white blood cell) that develops in the bone marrow, matures in the thymus gland, and works as part of the immune system in the body.
- **Tandem gait** – A test of balance and coordination that involves walking by placing the heel of one foot directly against the toes of the other foot and so on.
- **Tetraplegia** – The paralysis of both arms and both legs, and usually the trunk caused by injury to the spinal cord in the cervical spine.
- **Transcutaneous electric nerve stimulation (TENS)** (trans-cue-TAY-nee-us) – TENS is a method of pain control that applies mild electrical stimulation to the skin through electrodes placed over a painful area. The electric impulses cause interference with the transmission of pain signals to the brain.
- **Transverse myelitis** – An acute attack of inflammatory demyelination that involves both sides of the spinal cord. The spinal cord loses its ability to transmit nerve impulses up and down. Paralysis and numbness are experienced in the legs and trunk below the level of the inflammation.

- **Trigeminal neuralgia** (try-GEM-in-uhl NEW-rah-l-juh) – Lightning-like, or shock-like, acute pain in the face caused by demyelination of nerve fibers at the site where the sensory (trigeminal) nerve root for that part of the face enters the brainstem.
- **Urethra** – A canal or tube that drains the urine from the bladder.
- **Urinary frequency** – Feeling the urge to urinate frequently even when urination has occurred very recently.
- **Urinary hesitancy** – The inability to urinate spontaneously even though the urge to do so is present.
- **Urinary incontinence** – *See* Incontinence.
- **Urinary sphincter** – The muscle closing the urethra.
- **Urinary urgency** – The inability to postpone urination once the need to void has been felt.
- **Urine culture and sensitivity (C & S)** – A diagnostic procedure to test for urinary tract infection and identify the right treatment. Bacteria from a mid-stream urine sample is allowed to grow in a laboratory medium and then tested for sensitivity to antibiotics.
- **Urologist** – A doctor who specializes in the branch of medicine (urology) concerned with the anatomy, physiology, disorders, and care of the male and female urinary tract, as well as the male genital tract.
- **Urology** – A medical specialty that deals with disturbances of the urinary (male and female) and reproductive (male) organs.
- **Vertigo** – A dizzying sensation of moving around in space or having the environment spin, often accompanied by nausea and vomiting.

- **Vibration sense** – The ability to feel vibrations against various parts of the body. Vibration sense is tested (with a tuning fork) as part of the sensory portion of the neurologic exam.
- **Videofluoroscopy** – A radiographic study of a person’s swallowing mechanism that is recorded on videotape. Videofluoroscopy shows the physiology of the pharynx, the location of the swallowing difficulty, and confirms whether or not food particles or fluids are being inhaled into the airway.
- **Visual acuity** – Clarity of vision. Acuity is measured as a fraction of normal vision. 20/20 vision indicates an eye that sees at 20 feet what a normal eye should see at 20 feet; 20/400 vision indicates an eye that sees at 20 feet what a normal eye sees at 400 feet.
- **Visual evoked potential (VEP)** – A test in which the brain’s electrical activity, in response to visual stimuli (such as a flashing checkerboard pattern) is recorded by an electroencephalograph and analyzed by computer. Demyelination results in a slowing of response time. Because this test is sometimes able to confirm the presence of suspected lesions on the optic nerve as well as the presence of an unsuspected lesion that has produced no symptoms, it is useful in diagnosing MS.
- **Vocational rehabilitation (VR)** – A program of services designed to enable people with disabilities to become or remain employed (mandated by the Rehabilitation Act of 1973). VR programs are carried out by individually created state agencies. In order to be eligible for VR, a person must have a physical or mental disability that results in a substantial handicap to employment. VR programs typically involve evaluation of the disability and need for adaptive equipment or mobility aids, vocational guidance, training, job placement, and follow-up.

Questions?

Call 206-598-3344

Your questions are important. Call your doctor or health care provider if you have questions or concerns. UWMC Clinic staff are available to help during regular business hours.

**Western Multiple
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206-598-3344**

- **Void** – To empty, such as to empty the bladder, to urinate.
- **White matter** – The part of the brain that contains myelinated nerve fibers and appears white, in contrast to the cortex of the brain, which contains nerve cell bodies and appears gray.

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