Progressive Disease

Four Disease Courses Have Been Identified in MS

- ***Relapsing-Remitting MS (RRMS)*** is the most common form of the disease. It is characterized by clearly defined acute attacks with full recovery (1a) or with residual deficit upon recovery (1b). Periods between disease relapses are characterized by a lack of disease progression. Approximately 85% of people with MS begin with a *relapsing-remitting* course.

Figure 1a

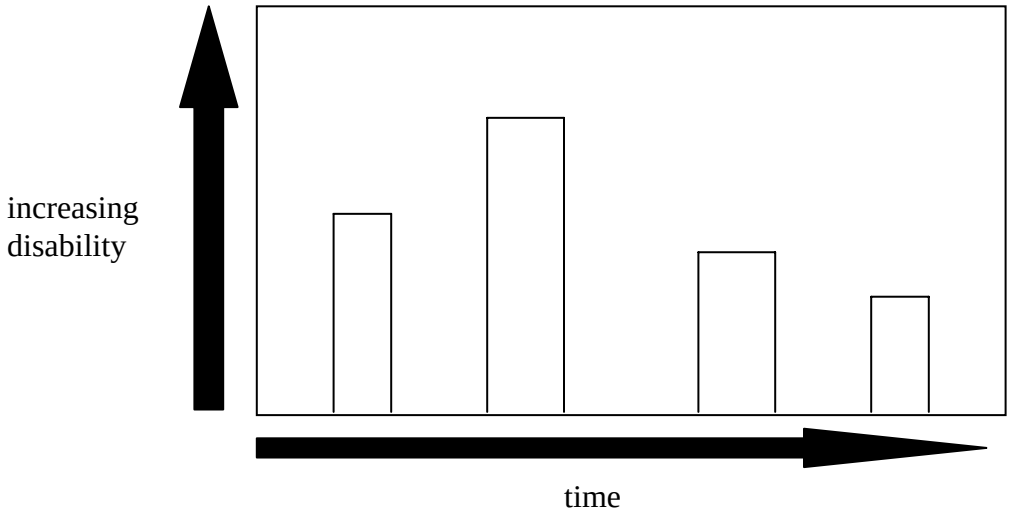
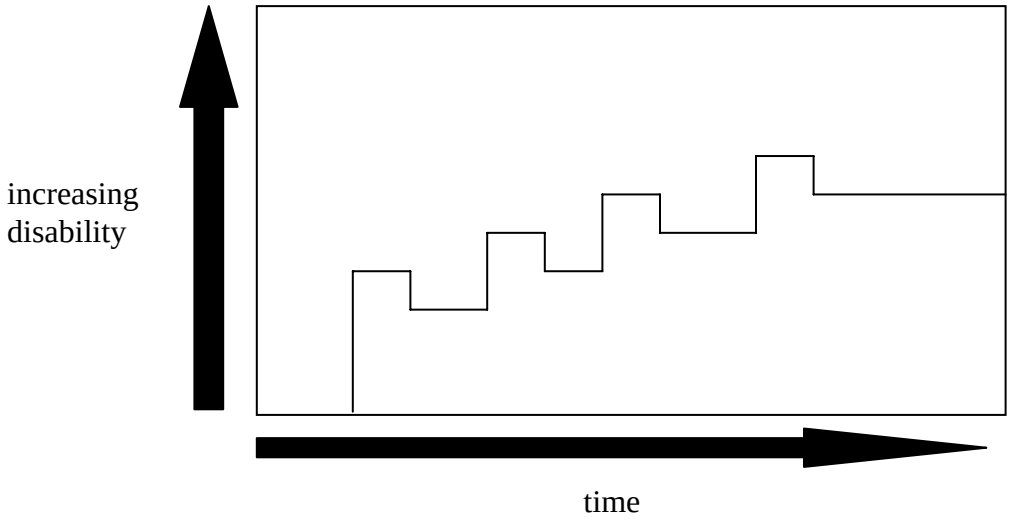


Figure 1b



- ***Primary Progressive MS*** **(PPMS)**
  PPMS is characterized by progression of disability from onset, without plateaus or remissions (2a) or with occasional plateaus and temporary minor improvements (2b). A person with PPMS, by definition, does not experience acute attacks. Of people with MS are diagnosed, only 10% have PPMS. In addition, the diagnostic criteria for PPMS are less secure than those for RRMS so that often the diagnosis is only made long after the onset of neurological symptoms and at a time when the person is already living with significant disability.

Figure 2a

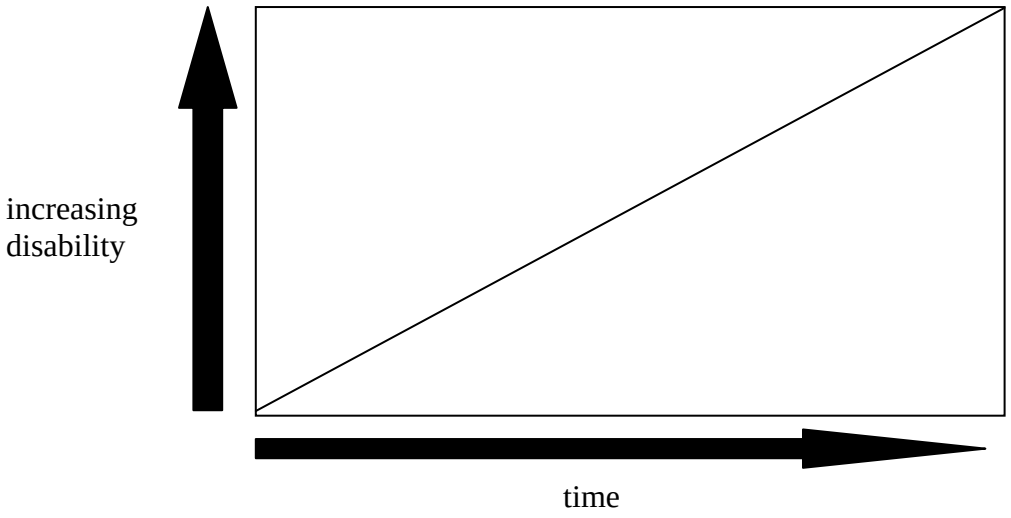
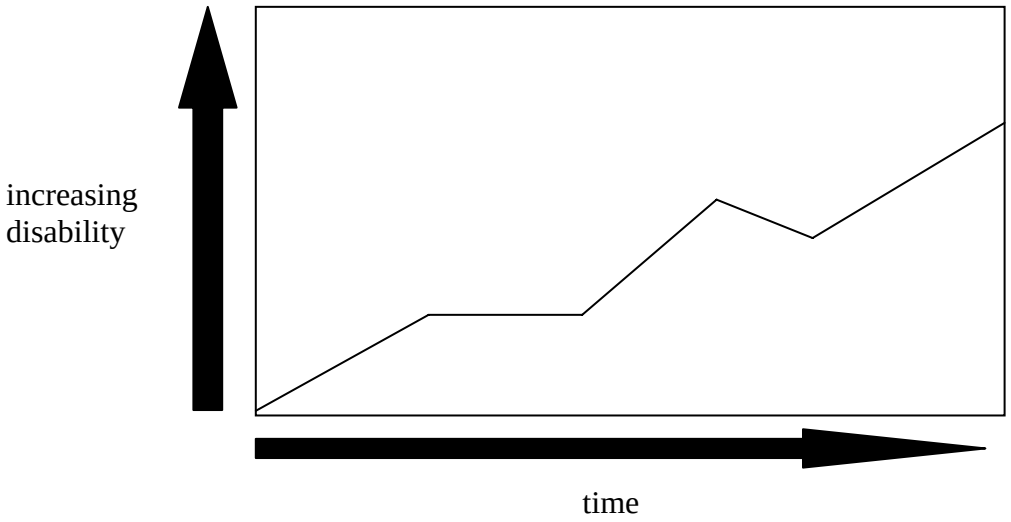


Figure 2b



- ***Secondary-Progressive MS* (SPMS)**
  SPMS begins with an initial relapsing-remitting disease course, followed by progression of disability (3a) that may include occasional relapses and minor remissions and plateaus (3b). Typically, secondary-progressive disease is characterized by: less recovery following attacks, persistently worsening functioning during *and between* attacks, and/or fewer and fewer attacks (or none at all) accompanied by progressive disability. According to some natural history studies, of the 85% who start with relapsing-remitting disease, more than 50% will develop SPMS within 10 years; 90% within 25 years. More recent natural history studies (perhaps because of the use of MRI to assist in the diagnosis) suggest a more benign outlook that these numbers suggest. Nevertheless, many patients with RRMS do develop SPMS ultimately.

Figure 3a

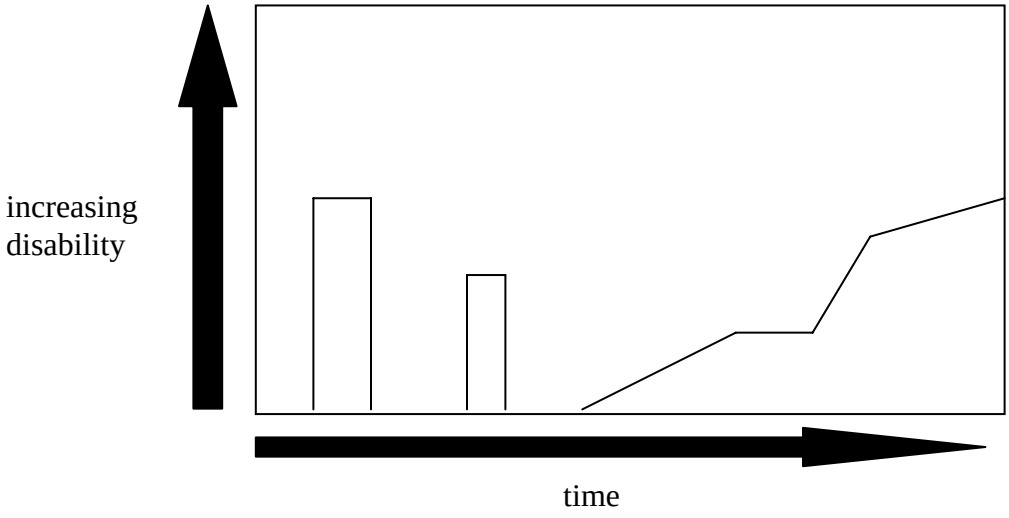
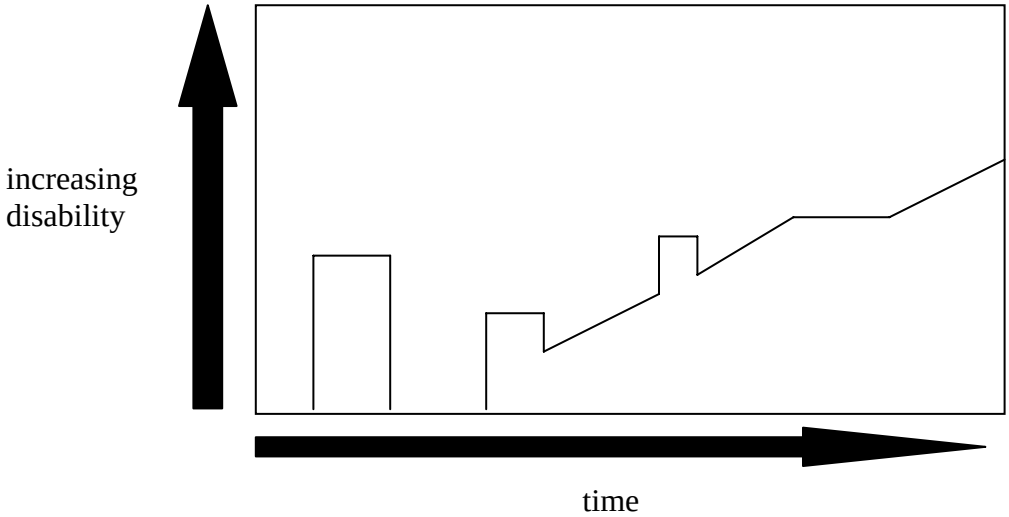


Figure 3b



- **Progressive-Relapsing MS (PRMS)**
  PRMS, which is the least common disease course, shows progression of disability from onset but with clear acute relapses, with (4a) or without (4b) full recovery. Approximately 5% of people with MS appear to have PRMS at diagnosis. Not infrequently a patient may be initially diagnosed as having PPMS and then will experience an acute attack, thereby establishing the diagnosis of PRMS.

Figure 4a

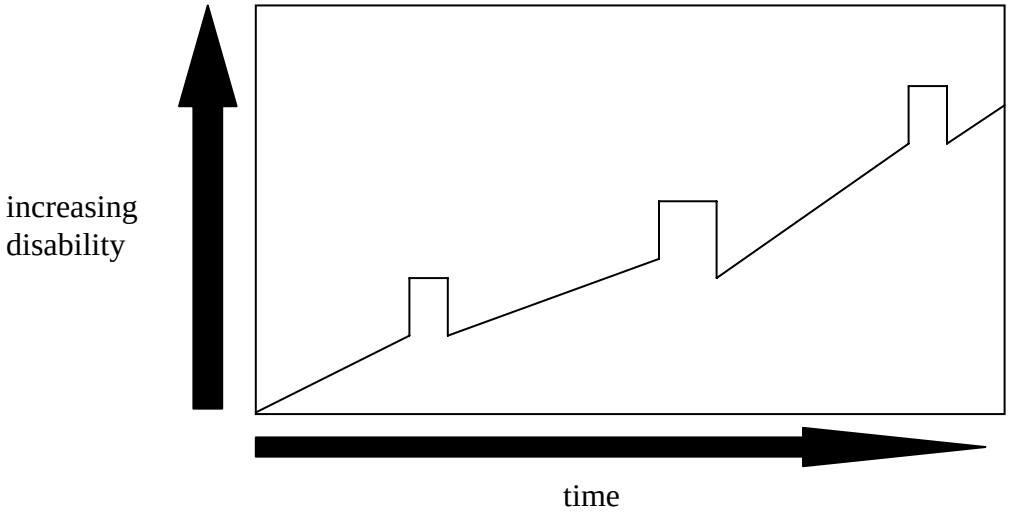
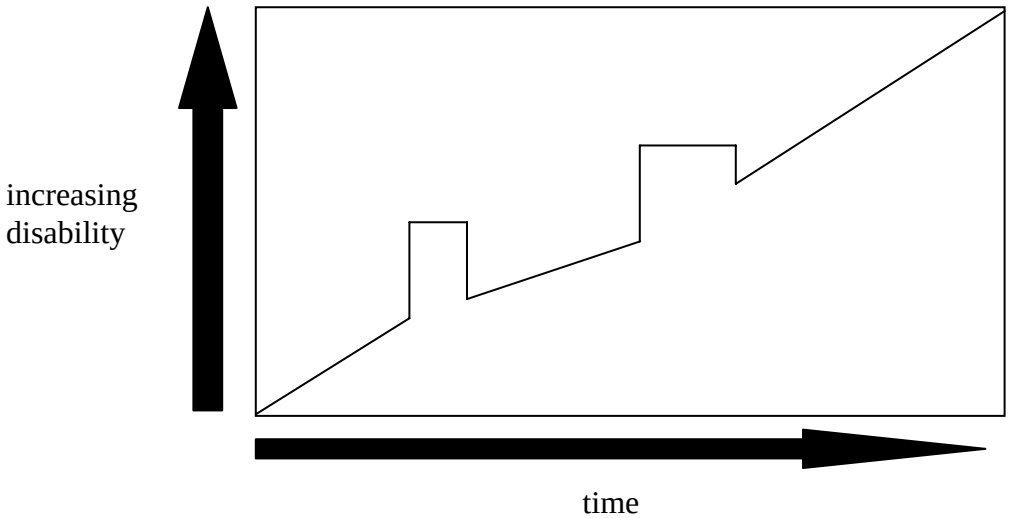


Figure 4b



The Assessment of Disease Progression
Physicians evaluate disease progression in three ways:

- Radiographically—by looking for new lesions, gadolinium-enhanced lesions, or an increased amount of disease on MRI
- Elecrophysiologically—by measuring changes in the sensory evoked potentials
- Neurologically—by measuring changes in function on the neurologic examination
- Functionally—by assessing the person's physical and cognitive abilities

The Treatment of Progressive Disease is divided into ***symptom management***, ***psychosocial*****,** and ***disease management*** strategies.

Symptom management and psychosocial strategies are particularly important during the progressive phase in order to maximize the person's comfort, maintain function, and prevent unnecessary complications *in spite of any progression that may occur*. These strategies include:

- *Medications and management strategies* (e.g., to manage fatigue, bladder/bowel symptoms, spasticity, and pain)

- *Rehabilitation*
    - **physical therapy**—to improve and/or maintain movement and function, with particular emphasis on physical mobility, balance, posture, and fatigue and pain management.
    - **occupational therapy**—to promote independence and enhance productivity at home and at work, with particular emphasis on upper body strength and coordination, the use of assistive technology, fatigue management, and compensatory strategies for impairments in intellectual functioning.
    - **speech/language therapy**—to promote effective communication and identify and address swallowing problems that can compromise a person's health, comfort, and safety.
    - **cognitive therapy** (by a neuropsychologist, occupational therapist, or speech/language pathologist) to identify and address changes in intellection functions.

- *Wellness interventions*
    - **healthy diet**—including foods that are low in fat and high in fiber, and adequate fluid intake.
    - **adequate exercise**—to maintain flexibility, enhance cardiovascular health and mood, and reduce fatigue.
    - **stress management**—to manage more comfortably and effectively the unavoidable stresses of everyday life.
    - **focus on general health and well-being**—to ensure that adequate attention is paid to overall health, appropriate prevention and health-maintenance strategies.

- *Psychosocial interventions*
    - **education**—to ensure adequate knowledge about the disease, available

treatment options, and valuable resources.
- **counseling**—to promote and support effective coping, problem-solving, and planning by people with MS and their family members.
- **empowerment strategies**—to enhance effective planning, problem-solving, and independence.
- **financial and life planning—**to increase preparedness for the uncertain future.

Disease management for progressive disease has recently become the focus of increased attention by MS researchers and clinicians:

- The interferons—interferon beta 1a (Avonex® and Rebif®) and interferon beta 1b (Betaseron®)—are approved for people with relapsing forms of MS, which include those with secondary-progressive disease who have clinical relapses, as well as those with relapsing-progressive disease.
- The FDA has also approved the chemotherapeutic agent Novantrone® (mitoxantrone) for reducing neurologic disability and/or the frequency of clinical relapses in patients with secondary-progressive, progressive-relapsing, or worsening relapsing-remitting MS. However, caution must be used when administering Novantrone® because of the potential for cardiac toxicity, especially at higher life-time doses and because of the potential causing for future malignancy. Therefore, this agent should only be used by those with normal heart function, and for no more than 2-3 years.
- Several other chemotherapy agents are also being used by physicians in an effort to slow disease progression. Although these are not specifically approved for MS, many are less toxic and may possibly have greater efficacy than mitoxantrone. These include:
    - Imuran® (azathioprine)
    - Cytoxan® (cyclophosphamide)
    - Methotrexate
- Trials for progressive disease are currently underway with many interventions, including the following:
    - Avonex® (interferon beta-1a)
    - Betaseron® (interferon beta-1b)
    - bone marrow/peripheral stem cell transplantation
    - Campath® (alemtuzumab)
    - cyclophosphamide
    - Immunoglobulin
    - Schwann cell transplantation
    - T cell vaccination
    - Various combination therapies

See also…

Sourcebook

- Chemotherapy
- Clinical Trial Participation
- Clinical Trials
- Interferons
- Occupational Therapy
- Physical Therapy
- Prognosis
- Rehabilitation
- Speech and Swallowing Disorders
- Symptoms

Society Web Resources

- Clinical Trials
  www.nationalmssociety.org/ClinicalTrials
- Spotlight: Rehabilitation in MS
  www.nationalmssociety.org/Rehab
- Spotlight: MS and Home Caregivers
  www.nationalmssociety.org/Caregiver
- Medications Used in MS
  www.nationalmssociety.org/Meds
- Progress in Research
  www.nationalmssociety.org/ResearchProgress
- Progressive MS
  www.nationalmssociety.org/ProgressiveMS
- Treatments
  www.nationalmssociety.org/Treatments

Books

Coyle P., Halper J. *Meeting the Challenge of Progressive Multiple Sclerosis* (3rd ed.). New York: Demos Medical Publishing, 2001.

Holland NJ, Halper J (eds.). *Multiple Sclerosis: A Self-Care Guide to Wellness* (2nd ed.). New York: Demos Medical Publishing, 2005.

Kalb R. (ed.) *Multiple Sclerosis: The Questions You Have; The Answers You Need* (3rd ed.). New York: Demos Medical Publishing, 2004.

Schapiro R. *Managing the Symptoms of Multiple Sclerosis* (4th ed.). New York: Demos Medical Publishing, 2003.

The National Multiple Sclerosis Society is proud to be a source of information about multiple sclerosis. Our comments are based on professional advice, published experience, and expert opinion, but do not represent individual therapeutic recommendations or prescription. For specific information and advice, consult your personal physician.

To contact your chapter, call **1-800-FIGHT-MS** (1-800-344-4867) or visit the National MS Society web site: www.nationalmssociety.org.

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