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ALS Information and Research

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Common Questions about ALS

What is ALS?

ALS is the abbreviation for "Amyotrophic Lateral Sclerosis." "A" means no or negative. "Myo" refers to muscle, and "Trophic" means nutrition or stimulation. When a muscle has no stimulation, it "atrophies" or wastes away. "Lateral" identifies the area of the spinal cord where the pathways for motor nerves, those that innervate the muscles, are located. As this area degenerates it leads to scarring or hardening, "sclerosis," in the region.

Amyotrophic Lateral Sclerosis, also known as Lou Gehrig's disease, and Motor Neuron Disease, is a progressive neuromuscular disease. ALS was first identified by French neurologist Jean-Martin Charcot in 1869. This disease affects the brain's motor neuron pathways causing progressive muscle weakness and can cause loss of function for speech, swallowing, and movement.

What are the symptoms of ALS?

Initial symptoms may include tripping, stumbling and falling, or loss of strength or muscle control in hands and arms, called **limb-onset ALS**. For some it may show up as difficulty speaking, swallowing or breathing, called **bulbar-onset ALS**. Symptoms may include: muscle stiffness (spasticity), twitching (fasciculation's), muscle cramps, chronic fatigue or exaggerated reflexes. The voluntary muscles or skeletal muscles are affected by ALS, eventually leading to paralysis.

Involuntary movement, such as eye movement, bladder and bowel control, and sexual function are not "usually" affected, nor are the senses: touch, vision and hearing.

Pain is not specifically a symptom of ALS but can occur as a result of muscle cramps, loss of muscle strength and loss of mobility. Common pains as a result of ALS include pressure sores, muscle cramps, joint contractures, constipation, burning eyes, swelling feet, and muscle aches.

Some recent studies do show that a percentage of ALS patients have experienced dementia or Frontotemporal Dementia (FTD). FTD symptoms include cognitive and behavioral changes.

Who gets ALS?

ALS occurs in all races and all around the world. It is not contagious. Approximately 2 in 100,000 people get ALS.

In the United States, approximately 30,000 people are living with ALS. In Michigan, an estimated 1,000 people are living with ALS and 200 are newly diagnosed each year. Both men and women get ALS but statistics show that men are 20% more likely to get ALS. ALS can affect people at any age, and cases have been found in persons as young as 12 and as old as 98. Approximately 80% of

ALS cases begin between the ages of 40 and 70 with the average age of onset being age 55. There appears to be a trend of younger patients in their 20's and 30's being diagnosed with ALS.

ALS is classified as either **"sporadic**" ALS, meaning it occurs randomly, or **"familial"**, which means other family members have had ALS. Approximately 5-10 percent of the ALS population has familial ALS. In familial ALS there is a 50% chance each offspring will inherit the gene and could develop ALS.

What causes ALS?

The cause of ALS is unknown, and researchers have been unable to identify why this disease strikes some and not others. In searching for a cause, researchers have investigated several environmental factors such as exposure to toxic or infectious agents. Other research has examined the possible role of an individual's diet and or traumas they may have sustained at an earlier age. However, they have been unable to link these factors in causing ALS.

In 1993 scientists supported by the National Institute of Neurological Disorders and Stroke (NINDS) discovered that mutations in the gene that produces the SOD1 enzyme (superoxide dismutase) were associated with some cases of familial ALS. This enzyme is an antioxidant that protects the body from damage caused by free radicals. If not neutralized, free radicals can accumulate and cause damage to the DNA and proteins within cells. It is not yet clear how the SOD1 gene mutation leads to motor neuron degeneration, researchers have theorized that an accumulation of free radicals may result from the faulty functioning of this gene.

How is ALS diagnosed?

An experienced physician, usually a neurologist will complete a neurological exam. They will complete a medical history (including family history). The diagnosis is made by ruling out other diseases and by meeting specific criteria for ALS. There is no one test for ALS. Some of the diagnostics procedures might also include the following tests.

- Laboratory tests
- Muscle and/or nerve biopsy
- Magnetic resonance imaging (MRI)
- Electromyography also known as EMG. This procedure is used to evaluate and diagnose disorders of the muscles and motor neurons. Electrodes are inserted into the muscle, or placed on the skin overlying a muscle. Electrical activity and muscle response is then evaluated.
- Spinal Tap
- Blood and Urine Studies

What is the treatment for ALS?

There is no cure for ALS but the physician or Neurologist; preferably one experienced with ALS will work with the patient and family to manage ALS symptoms. The US Food and Drug Administration (FDA) approved the drug Rilutek®, the first drug that has shown to prolong the survival of persons with ALS.

There are medications to relieve muscle cramping, excessive saliva, depression, and anxiety. Physical Therapy and Range of Motion exercises can be done (see treatment section of this manual for these exercises) to ease any stiffness or cramps.

Dieticians are able to show ways to promote good eating habits and what to do if swallowing becomes an issue. Meeting with a speech pathologist about techniques that will allow them to continue to speak or use devices to communicate are available. Durable medical equipment (DME) such as bath equipment, eating utensils, walkers, and wheelchairs are forms of DME and can be used when mobility becomes an issue.

Emotional support and counseling can be provided by social workers and psychologists to help deal with the many changes.

What is the future of a person with ALS?

ALS progresses at different rates in each individual. Statistics show the average survival for someone affected by ALS is three to five years. A small percentage of people have a very slow progression and live 10-20 years. Again, each patient is different and it is hard to predict how the disease will impact each person. Each patient chooses different treatment plans and this could impact their future. Improved treatment is allowing ALS patients to live longer than ever before. Patients who stay involved in their treatment and treat their symptoms seem to do better then those who choose to not follow up with regular medical appointments. Patients with a positive attitude and good emotional health tend to do better than patients who are severely depressed. Being educated about the latest treatments and being open to what is available to ALS patients will benefit both the patient and family and will have a significant outcome on how one progresses.

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Recommended Steps after Diagnosis

- If you suspect you have ALS but are not diagnosed yet, look into the possibility of getting additional term life insurance and/or long-term disability insurance.

- ALS is difficult to diagnose. If you were not diagnosed by a neurologist who specializes in neuromuscular diseases, request a referral to one who specializes in ALS for a confirmation of the diagnosis.

- Register with ALS of Michigan, Inc. (800) 882-5764. Request information about available services.

- If you served in the military, contact the Department of Veteran Affairs (800-827-1000) about eligibility for health, vocational rehabilitation and disability programs and services. For local contact please contact ALS of Michigan.

- Contact an attorney who specializes in elder care law and make an appointment to discuss legal and financial planning recommendations. Complete a Durable Power of Attorney or living will that lists your medical wishes.

- Consider attending a support group or if you are a family member attend a caregiver conference.

- If you are employed, contact Michigan Rehabilitation Services at (800) 605-6722 or www.michigan.gov/mdcd and request information about available services.

- When the time comes, be open to the medical equipment and treatment plans that are offered. These options will protect you and may give you a better quality of life.

- Don't be afraid to ask for help. There are many services as well as individuals who do want to help you, allow them to.

- Talk with your physician or social worker about social security disability and how to apply.

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The Amyotrophic Lateral Sclerosis Functional Rating Scale (ALSFRS)

The ALS Functional Rating Scale is a commonly accepted standard for monitoring disease progression used in clinical trials and in the treatment of patients. It is a dysfunction scale used in assessing the activities of daily living of patients with ALS. The ALS Functional Rating Scale consists of 13 items in all. Patient responses (on a 5-point scale) are recorded in relation to the question. Each task is rated on a five-point scale from 0 = can't do, to 4 = normal ability.

Speech

	Normal speech processes
	Detectable speech disturbances
	Intelligible with repeating
	Speech combined with nonvocal communication
	Loss of useful speech

Salivation

	Normal
	Slight but definite excess of saliva; may have nighttime drooling
	Moderately excessive saliva; may have minimal drooling
	Marked excess of saliva with some drooling
	Marked drooling; requires constant tissue or handkerchief

Swallowing

	Normal eating habits
	Early eating problems - occasional choking
	Dietary consistency changes
	Needs supplemental tube feeding
	NPO (exclusively parenteral or enteral feeding)

Handwriting

	Normal
	Slow or sloppy; all words are legible
	Not all words are legible
	Able to grip pen but unable to write
	Unable to grip pen

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Cutting Food and Handling Utensils
(patients without gastrostomy)

	Normal
	Somewhat slow and clumsy, but no help needed
	Can cut most foods, although clumsy and slow; some help needed
	Food must be cut by someone, but can still feed slowly
	Needs to be fed

Cutting Food and Handling Utensils
(alternate scale for patients with gastrostomy)

	Normal
	Clumsy but able to perform all manipulations independently
	Some help needed with closures and fasteners
	Provides minimal assistance to caregiver
	Unable to perform any aspect of task

Dressing and Hygiene

	Normal function
	Independent and complete self-care with effort of decreased efficiency
	Intermittent assistance or substitute methods
	Needs attendant for self-care
	Total dependence

Turning in Bed and Adjusting Bed Clothes

	Normal
	Somewhat slow and clumsy, but no help needed
	Can turn alone or adjust sheets, but with great difficulty
	Can initiate, but not turn or adjust sheets alone
	Helpless

Walking

	Normal
	Early ambulation difficulties
	Walks with assistance
	Non-ambulatory functional movement
	No purposeful leg movement

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Climbing Stairs

	Normal
	Slow
	Mild unsteadiness or fatigue
	Needs assistance
	Cannot do

Dyspnea

	None
	Occurs when walking
	Occurs with one or more of the following: eating, bathing, dressing ADL
	Occurs at rest, difficulty breathing when either sitting or lying
	Significant difficulty, considering using mechanical respiratory support

Orthopnea

	None
	Some difficulty sleeping at night due to shortness of breath. Does not Routinely use more than two pillows
	Needs extra pillow in order to sleep (more than two)
	Can only sleep sitting up
	Unable to sleep

Respiratory Insufficiency

	None
	Intermittent use of BiPAP
	Continuous use of BiPAP
	Continuous use of BiPAP during the night and day
	Invasive mechanical ventilation by intubation or tracheostomy

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Clinical Trials

By participating in clinical trials each individual is not only actively trying to help themselves but, are helping others who are diagnosed with ALS. Many research projects and clinical trials are being conducted both at the local and national levels***. PALS and caregivers should speak to their neurologists or call ALS of Michigan to find out what clinical trials are being done in Michigan or visit http://www.Clinicaltrials.gov for more information.***

*The information found below is available through the U.S National Institutes of Health and can be found at http://clinicaltrials.gov. Visit the website for more information.

Understanding Clinical Trials

Choosing to participate in a clinical trial is an important personal decision. The following frequently asked questions provide detailed information about clinical trials. In addition, it is often helpful to talk to a physician, family members, or friends about deciding to join a trial. After identifying some trial options, the next step is to contact the study research staff and ask questions about specific trials.

What is a clinical trial?

Although there are many definitions of clinical trials, they are generally considered to be biomedical or health-related research studies in human beings that follow a pre-defined protocol. ClinicalTrials.gov includes both interventional and observational types of studies. Interventional studies are those in which the research subjects are assigned by the investigator to a treatment or other intervention, and their outcomes are measured. Observational studies are those in which individuals are observed and their outcomes are measured by the investigators.

Why participate in a clinical trial?

Participants in clinical trials can play a more active role in their own health care, gain access to new research treatments before they are widely available, and help others by contributing to medical research.

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Who can participate in a clinical trial?

All clinical trials have guidelines about who can participate. Using inclusion/exclusion criteria is an important principle of medical research that helps to produce reliable results. The factors that allow someone to participate in a clinical trial are called "inclusion criteria" and those that disallow someone from participating are called "exclusion criteria". These criteria are based on such factors as age, gender, the type and stage of a disease, previous treatment history, and other medical conditions. Before joining a clinical trial, a participant must qualify for the study. Some research studies seek participants with illnesses or conditions to be studied in the clinical trial, while others need healthy participants. It is important to note that inclusion and exclusion criteria are not used to reject people personally. Instead, the criteria are used to identify appropriate participants and keep them safe. The criteria help ensure that researchers will be able to answer the questions they plan to study.

What happens during a clinical trial?

The clinical trial process depends on the kind of trial being conducted (See What are the different types of clinical trials?) The clinical trial team includes doctors and nurses as well as social workers and other health care professionals. They check the health of the participant at the beginning of the trial, give specific instructions for participating in the trial, monitor the participant carefully during the trial, and stay in touch after the trial is completed.

Some clinical trials involve more tests and doctor visits than the participant would normally have for an illness or condition. For all types of trials, the participant works with a research team. Clinical trial participation is most successful when the protocol is carefully followed and there is frequent contact with the research staff.

What is informed consent?

Informed consent is the process of learning the key facts about a clinical trial before deciding whether or not to participate. It is also a continuing process throughout the study to provide information for participants. To help someone decide whether or not to participate, the doctors and nurses involved in the trial explain the details of the study. If the participant's native language is not English, translation assistance can be provided. Then the research team provides an informed consent document that includes details about the study, such as its purpose, duration, required procedures, and key contacts. Risks and potential benefits are explained in the informed consent document. The participant then decides whether or not to sign the document. Informed consent is not a contract, and the participant may withdraw from the trial at any time.

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What are the benefits and risks of participating in a clinical trial?

Benefits

Clinical trials that are well-designed and well-executed are the best approach for eligible participants to:

- Play an active role in ones own health care.
- Gain access to new research treatments before they are widely available.
- Obtain expert medical care at leading health care facilities during the trial.
- Help others by contributing to medical research.

Risks

There are risks to clinical trials.

- There may be unpleasant, serious or even life-threatening side effects to experimental treatment.
- The experimental treatment may not be effective for the participant.
- The protocol may require more of their time and attention than would a non-protocol treatment, including trips to the study site, more treatments, hospital stays or complex dosage requirements.

What are side effects and adverse reactions?

Side effects are any undesired actions or effects of the experimental drug or treatment. Negative or adverse effects may include headache, nausea, hair loss, skin irritation, or other physical problems. Experimental treatments must be evaluated for both immediate and long-term side effects.

How is the safety of the participant protected?

The ethical and legal codes that govern medical practice also apply to clinical trials. In addition, most clinical research is federally regulated with built in safeguards to protect the participants. The trial follows a carefully controlled protocol, a study plan which details what researchers will do in the study. As a clinical trial progresses, researchers report the results of the trial at scientific meetings, to medical journals, and to various government agencies. Individual participants' names will remain secret and will not be mentioned in these reports (See Confidentiality Regarding Trial Participants).

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What should people consider before participating in a trial?

People should know as much as possible about the clinical trial and feel comfortable asking the members of the health care team questions about it, the care expected while in a trial, and the cost of the trial. The following questions might be helpful for the participant to discuss with the health care team. Some of the answers to these questions are found in the informed consent document.

- What is the purpose of the study?
- Who is going to be in the study?
- Why do researchers believe the experimental treatment being tested may be effective? Has it been tested before?
- What kinds of tests and experimental treatments are involved?
- How do the possible risks, side effects, and benefits in the study compare with my current treatment?
- How might this trial affect my daily life?
- How long will the trial last?
- Will hospitalization be required?
- Who will pay for the experimental treatment?
- Will I be reimbursed for other expenses?
- What type of long-term follow up care is part of this study?
- How will I know that the experimental treatment is working? Will results of the trials be provided to me?
- Who will be in charge of my care?

What kind of preparation should a potential participant make for the meeting with the research coordinator or doctor?

- Plan ahead and write down possible questions to ask.
- Ask a friend or relative to come along for support and to hear the responses to the questions.
- Bring a tape recorder to record the discussion to replay later.

Every clinical trial in the U.S. must be approved and monitored by an Institutional Review Board (IRB) to make sure the risks are as low as possible and are worth any potential benefits. An IRB is an independent committee of physicians, statisticians, community advocates, and others that ensures that a clinical trial is ethical and the rights of study participants are protected. All institutions that conduct or support biomedical research involving people must, by federal regulation, have an IRB that initially approves and periodically reviews the research.

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Does a participant continue to work with a primary health care provider while in a trial?

Yes. Most clinical trials provide short-term treatments related to a designated illness or condition, but do not provide extended or complete primary health care. In addition, by having the health care provider work with the research team, the participant can ensure that other medications or treatments will not conflict with the protocol.

Can a participant leave a clinical trial after it has begun?

Yes. A participant can leave a clinical trial, at any time. When withdrawing from the trial, the participant should let the research team know about it, and the reasons for leaving the study.

Where do the ideas for trials come from?

Ideas for clinical trials usually come from researchers. After researchers test new therapies or procedures in the laboratory and in animal studies, the experimental treatments with the most promising laboratory results are moved into clinical trials. During a trial, more and more information is gained about an experimental treatment, its risks and how well it may or may not work.

Who sponsors clinical trials?

Clinical trials are sponsored or funded by a variety of organizations or individuals such as physicians, medical institutions, foundations, voluntary groups, and pharmaceutical companies, in addition to federal agencies such as the National Institutes of Health (NIH), the Department of Defense (DOD), and the Department of Veteran's Affairs (VA). Trials can take place in a variety of locations, such as hospitals, universities, doctors' offices, or community clinics.

What is a protocol?

A protocol is a study plan on which all clinical trials are based. The plan is carefully designed to safeguard the health of the participants as well as answer specific research questions. A protocol describes what types of people may participate in the trial; the schedule of tests, procedures, medications, and dosages; and the length of the study. While in a clinical trial, participants following a protocol are seen regularly by the research staff to monitor their health and to determine the safety and effectiveness of their treatment.

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What is a placebo?

A placebo is an inactive pill, liquid, or powder that has no treatment value. In clinical trials, experimental treatments are often compared with placebos to assess the experimental treatment's effectiveness. In some studies, the participants in the control group will receive a placebo instead of an active drug or experimental treatment.

What is a control or control group?

A control is the standard by which experimental observations are evaluated. In many clinical trials, one group of patients will be given an experimental drug or treatment, while the control group is given either a standard treatment for the illness or a placebo.

What are the different types of clinical trials?

Treatment trials test experimental treatments, new combinations of drugs, or new approaches to surgery or radiation therapy.

Prevention trials look for better ways to prevent disease in people who have never had the disease or to prevent a disease from returning. These approaches may include medicines, vaccines, vitamins, minerals, or lifestyle changes.

Diagnostic trials are conducted to find better tests or procedures for diagnosing a particular disease or condition.

Screening trials test the best way to detect certain diseases or health conditions.

Quality of Life trials (or Supportive Care trials) explore ways to improve comfort and the quality of life for individuals with a chronic illness.

What are the phases of clinical trials?

Clinical trials are conducted in phases. The trials at each phase have a different purpose and help scientists answer different questions:

In Phase I trials, researchers test an experimental drug or treatment in a small group of people (20-80) for the first time to evaluate its safety, determine a safe dosage range, and identify side effects.

In Phase II trials, the experimental study drug or treatment is given to a larger group of people (100-300) to see if it is effective and to further evaluate its safety.

In Phase III trials, the experimental study drug or treatment is given to large groups of people (1,000-3,000) to confirm its effectiveness, monitor side effects, compare it to commonly used treatments, and collect information that will allow the experimental drug or treatment to be used safely.

In Phase IV trials, post marketing studies delineate additional information including the drug's risks, benefits, and optimal use.

What is "expanded access"?

Expanded access is a means by which manufacturers make investigational new drugs available, under certain circumstances, to treat a patient(s) with a serious disease or condition who cannot participate in a controlled clinical trial.

Most human use of investigational new drugs takes place in controlled clinical trials conducted to assess the safety and efficacy of new drugs. Data from these trials are used to determine whether a drug is safe and effective, and serve as the basis for the drug marketing application. Sometimes, patients do not qualify for these controlled trials because of other health problems, age, or other factors, or are otherwise unable to enroll in such trials (e.g., a patient may not live sufficiently close to a clinical trial site).

For patients who cannot participate in a clinical trial of an investigational drug, but have a serious disease or condition that may benefit from treatment with the drug, FDA regulations enable manufacturers of such drugs to provide those patients access to the drug under certain situations, known as "expanded access." For example, the drug cannot expose patients to unreasonable risks given the severity of the disease to be treated and the patient does not have any other satisfactory therapeutic options (e.g., an approved drug that could be used to treat the patient's disease or condition). The manufacturer must be willing to make the drug available for expanded access use. The primary intent of expanded access is to provide treatment for a patient's disease or condition, rather than to collect data about the study drug.

Some investigational drugs are available for treatment use from pharmaceutical manufacturers through expanded access programs listed in ClinicalTrials.gov. If you or a loved one is interested in treatment with an investigational drug under an expanded access protocol listed in ClinicalTrials.gov, review the protocol eligibility criteria and inquire at the Contact Information number. If there is not an expanded access protocol listed in ClinicalTrials.gov, you or your health care provider may contact a manufacturer of an investigational drug directly to ask about expanded access programs.

*The information found below is available through the U.S National Institutes of Health and can be found at http://clinicaltrials.gov. Visit the website for more information.

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Clinical Trials and Research Sites

* ALS Hope Foundation

  www.alshopefoundation.org

* ALS Therapy Alliance

  www.alstherapyalliance.org

* ALS Therapy Development Institute

  www.als.net

* Les Turner ALS Foundation

  www.lesturnerals.org

* Muscular Dystrophy Association

  www.als-mda.org

* National ALS Association

  www.alsa.org

* National Institute of Health (NIH)

  www.clinicaltrials.gov

* NEALS (Northeast Amyotrophic Lateral Sclerosis Consortium)

  www.nealsconsortium.org

* The Robert Packard Center for ALS at Johns Hopkins

  www.alscenter.org

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