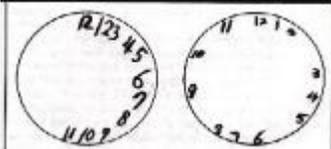


**What is unilateral spatial neglect?**

Unilateral spatial neglect (USN) is the inability to pay attention to people and things on the side that is affected by the stroke. For example, someone with left-sided paralysis may also have left-sided USN. This problem is sometimes called unilateral visual neglect.



Picture of the Clock Drawing Test of a normal individual (right) and a patient with left neglect (left)

Patients with severe USN have obvious symptoms in that they may:

- 1. Collide into their surroundings on one side (usually the left) when trying to wheel a wheelchair,
- 2. Ignore food on one side of the plate, usually the left half,
- 3. Ignore one side of their body, usually the left.

For example, you might notice that a person with USN shaves only one half of his face, typically the right, while ignoring the left.

Family members often become frustrated in the early days after the stroke because they do not understand why the patient is not looking at them when they stand on the side affected by the stroke. It is because the person is unaware of that side, not because they are ignoring you.

A patient can also have mild symptoms of USN that are not as obvious. For example, he may be able to notice food on both the left and right side, and may look at you if you are on his affected side, but may have difficulty with more complex daily tasks, such as driving a car or crossing a busy street.

Because USN can result in falls and other problems when doing daily activities, and because it is treatable, it is important that all patients who have had a stroke receive at least a quick assessment to test for USN.

**How frequent is USN after a stroke?**

About 30% of patients have either hemianopsia (blindness on one side of both eyes) or USN following stroke. USN is found more often in those who have had a stroke in

the right side of the brain. However, studies show that all patients with stroke should receive testing for USN. USN can occur in three ways:

- 1. A person may have USN that results in neglect of one side of their body. For example, you may notice a person whose hand is hanging over into the wheelchair spokes but he doesn't realize it.
- 2. A person may have USN in the space within reaching distance. For example, you may notice that the person does not know where the telephone is, even when it is fairly close by, because it is on the side affected by the stroke.
- 3. A person may have USN in the space beyond reaching distance. This type of USN is often missed while the patient is in the hospital, but it is serious because when walking and driving, the person is missing important visual information from one half of the environment.

Neglect can occur in all of these three ways or in a combination of these.

### **What are the potential consequences of having USN after a stroke?**

Those with USN are more at risk to fall and usually have lower functional ability than those without USN. USN can affect the ability to take care of basic skills such as bathing, dressing, and walking.

### **Can USN caused by a stroke be treated?**

There are four types of treatment for USN:

- **1. Visual Scanning:** During this treatment the person with USN is encouraged to explore the neglected visual field (usually the left side) by performing a task on that side. The treatment often includes a visual target that the patient uses as an anchor while scanning.
- **2. Sensory Stimulation:** The therapist uses different types of sensory stimulation to encourage the person to pay attention to their neglected side. These include:
  - **Visual/Verbal/Auditory Cues:** The use of a visual cue (i.e. use of red tape or flashing lights), verbal cue (i.e. the voice of the therapist or a family member) or auditory cue (i.e. horn or bell) on the neglected side to improve awareness of that space.

- **Limb Activation**: When doing this treatment the patient makes movements of the affected arm and hand on the neglected side to encourage scanning of that space (usually the left hand and arm towards the left). The person receiving treatment can do these movements alone or with help from the therapist.
- **Caloric Stimulation**: This treatment uses either cold or warm water that is put into the patient's ear (external ear canal) to encourage scanning of the neglected side. Cold water seems to encourage scanning toward the stimulated ear. Warm water encourages scanning of the field opposite to the stimulated ear.
- **Eye Patching/Hemiglasses**: This treatment uses standard eyeglass frames with half of both lenses blacked out on the same side (usually the right half). This forces the patient to look through the side of the lens that represents the side that he is ignoring (usually the left side).
- **Fresnel Prisms**: This treatment involves putting prisms over regular eyeglass frames. The prisms cause a shift of the visual field. So, if there is neglect on the right side, these prisms will cause what is seen to the right to be shifted farther to the right in order to encourage visual scanning of the right visual field. When first wearing these glasses, patients initially reach too far for objects on the right side because their vision is further deviated toward the right. After repeated treatments, clients can correct how far they reach and can accurately grasp the object, despite the distorted visual input they receive with their glasses.
- **Neck/Hand Vibration or Stimulation**: This intervention consists of the use of vibration or stimulation on the neck or hand of the side affected by the stroke to encourage the patient to look to that side.
- **Trunk Rotation**: This strategy involves twisting the trunk toward the side affected by USN to improve visual scanning of that space.
- **Visuo-motor Imagery**: Visual imagery involves mental imaging tasks where the patient is required to describe details of a familiar room, environment, or geographic area. Motor imagery consists of the patient imagining a body movement or posture and describing this sequence. This type of imagery treatment may stimulate areas of the brain that can activate those actual movements during daily activities in order to improve neglect symptoms.
- **Constraint-Induced Therapy**: This treatment involves restraining the arm that is not affected by the stroke (for example with a sling) to encourage use of the

arm affected by the stroke. While used primarily to encourage use of the arm, this intervention will also encourage visual scanning of the side being used.

- **Optokinetic Stimulation**: This is the observation of moving visual targets from left to right. This treatment is used to encourage visual scanning of the side that is neglected.
- **3. video Feedback**: This treatment involves filming the patient while he does specific activities. The therapist and patient then watch the video together. The therapist points out to the client how they are neglecting their body or the space on the side of their body. They then discuss strategies to encourage attention to the patient's body and the space he is neglecting.
- **4. Pharmacological Therapy**: This involves the use of specific medications (dopamine-agonist drugs) to improve visual attention skills. A physician must prescribe these medications.

### Which treatment for USN works?

The benefits of various interventions to treat USN symptoms have been carefully studied post-stroke. Research studies have reported that the use of visual scanning, limb activation, trunk rotation, as well as cueing (visual, verbal, auditory) during treatment has led to improvements in USN symptoms and in some cases, improvements in performing daily activities. Patients receiving eye patching and prism therapy have also shown some progress in attending to the neglected side, however, these benefits were only temporary, lasting a few hours after treatment. The other treatments described in the section above require further research before their effectiveness can be confirmed.

### Who provides the treatment?

Occupational therapists (OT) typically provide therapy for USN at an acute care hospital, rehabilitation centre, or private clinic.

*Information on this web site is provided for informational purposes only and is not a substitute for professional medical advice. If you have or suspect you have a medical problem, promptly contact your professional healthcare provider.*