

point to the first letter of each word as they speak. This technique is useful for individuals whose natural speech is difficult to understand but may still be functional for some types of communication, with some communication partners, or in particular communication settings. Augmentative communication systems may also include devices alerting systems (such as simple buzzers or devices such as baby monitors that transmit signals to distant locations within the house) or systems that handle telephone communication.¹² Many people with ALS use portable writing systems to augment natural speech. These systems are typically introduced as backup systems to resolve communication breakdowns when natural speech has not been understood. They can also be used to introduce communicative topics when natural speech is difficult to understand. As symptoms progress, computer-based multipurpose augmentative communication systems are currently commercially available. We will not review these systems in detail because technology is changing so rapidly that today's systems will no doubt be replaced by more efficient and effective ones in the near future. Rather, readers are referred to a comprehensive web site that provides links to vendors of AAC system, device tutorials and other current information (University of Nebraska, AAC Center: <http://aac.unl.edu/>).

Stage 5. Loss of Useful Speech

Symptoms

Individuals at this stage have lost natural speech as a functional means of communication. Therefore, they must rely entirely on alternative communication technology and techniques.

Intervention

In addition to the augmentative communication strategies just described for individuals in Stage 4, a non-fatiguing and reliable means of indicating yes or no is a mandatory element of communication management plans. Because eye gaze is usually preserved in individuals with ALS, eye pointing or eye gaze can fre-

quently be used as a selection technique when head and hand movement are no longer functional. Eye gaze systems can be quite complex and incorporate encoding strategies, so partner training is critical. More complete descriptions of selection techniques and encoding strategies are available.¹² The majority of individuals on ventilators also experience significant cranial nerve involvement. Because many of these individuals have poor oral movement, use of natural speech via a modified tracheostomy tube or electrolarynx is not possible. For these people, the eye-gaze augmentative communication system described earlier may be appropriate. ♦

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Is Poor Health Hardening Your Heart?

New evidence from Germany suggests that infections may contribute to the pathogenesis of atherosclerosis. Researchers studied a group of 572 patients and measured their IgG or IgA antibodies to eight different pathogens, including herpes simplex virus 1 and 2, cytomegalovirus, Epstein-Barr virus, *Hemophilus influenzae*, *Chlamydia pneumoniae*, *Mycoplasma pneumoniae* and *Helicobacter pylori*. Patients underwent coronary angiography, carotid duplex sonography and evaluation of the ankle-arm index, to determine the extent of atherosclerosis. What the researchers found was a correlation between infectious burden and the presence of advanced atherosclerosis. After a follow-up of three years, the mortality rate in patients with advanced atherosclerosis who were seropositive for up to three pathogens was only 7%, compared to a rate of 20% in those patients with between six and eight pathogens.

Further study will be required to determine whether the infections are actually causal for atherosclerosis, or whether they merely serve as a marker for poor health. ♦

Source

1. Espinola-Klein C, Rupprecht HJ, Blankenberg S, et al. Impact of infectious burden on extent and long-term prognosis of atherosclerosis. *Circulation*. 2002;105:15-21.

