

January 15th, 2015

Information for Carers of Children with Implanted Vagus Nerve Stimulators for Epilepsy

Vagus nerve stimulation (VNS) is a treatment for uncontrolled epilepsy. VNS reduces the frequency and severity of epileptic seizures in some children. VNS involves insertion of a pulse generator, similar to a pacemaker, under the skin on the chest. The VNS pulse generator sends intermittent electrical signals to the brain via a wire attached to the left vagus nerve in the neck.

The VNS pulse generator is generally programmed to be on for 15-30 seconds every 1-3 mins, usually without any observable effects. Due to co-stimulation of the left recurrent laryngeal nerve, the left vocal cord contracts for the 15-30 seconds when the VNS pulse generator is stimulating. VNS may give rise to hoarseness of the voice during speech, and occasionally can exacerbate pre-existing problems with swallowing and snoring. In most children, these side effects are tolerable and no change to their VNS is necessary. However, the VNS can be temporarily disabled by the patient, parent or carer during speech or eating, if necessary.

The effect of VNS on the vocal cords can sometimes exacerbate breathing difficulties following seizures. Some parents and carers are advised to temporarily disable the VNS following a child's seizure, until the child's breathing has returned to normal.

The effect of VNS on the vocal cords can also interfere with emergency intubation during prolonged seizures and with elective intubation for surgical procedures. Ideally, the VNS should be disabled if ambulance officers, emergency physicians or anaesthetists need to intubate a child with a VNS. However, if this is not possible, one can just wait 15-30 seconds for the vocal cords to relax after the stimulation cycle ends; the VNS will remain off for the next 1-3 minutes.

The VNS can be temporarily disabled by parents and carers by holding or taping the patient's magnet over the pulse generator implanted under the skin on the left side of the chest. The chest scar will be visible and the pulse generator will be palpable. At hospital, the neurology staff can program off the VNS. To avoid vocal cord injury, VNS should be programmed off during prolonged periods of intubation eg. ventilation in ICU, long operations.

These recommendations are provided in addition to general safety advice regarding VNS eg. precautions with MRI and diathermy, avoiding neck injury, care with magnetic devices. Detailed safety information is available in the patient's handbook, online, and from the epilepsy nurse specialists at the RCH.

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