



NEURX DPS™ FACT SHEET

- THE DEVICE:** The NeuRx Diaphragm Pacing System (DPS)™ was developed through a joint effort of physicians and engineers at several institutions, including Case Western Reserve University, University Hospitals Case Medical Center, and Veterans Administration Medical Center. Initial funding was made possible by the Department of Veterans Affairs, who contributed more than \$1 million.
- HOW IT WORKS:** The NeuRx DPS™ RA/4 consists of four electrodes implanted in the diaphragm to stimulate the muscle, a fifth electrode under the skin to complete the electrical circuit, a connector holder, a cable and an external battery-powered pulse generator. The pulse generator provides the timing and control of stimulus to regulate movement of the diaphragm muscle, creating a vacuum-like effect in the chest cavity that allows air to enter the lungs. When this contraction eases, the air is expelled from the lungs. On average, this process is repeated 10-14 times per minute.
- THE SURGICAL PROCEDURE:** As a form of minimally invasive laparoscopic surgery, surgeons create four dime-size holes in the abdomen and insert a laparoscope to see the diaphragm muscle. The surgeon will then place small, 1/2mm thick, electrodes in areas near the phrenic nerves that control the diaphragm contractions. The electrodes are attached through wires under the skin to a small external battery powered pulse generator that stimulates the muscle and phrenic nerves to cause the contraction of the diaphragm.
- Because it can be done as an outpatient procedure, no hospital stay may be necessary. The rehabilitation period is not long. During the first one-to-two weeks following surgery, the electrodes stabilize in the diaphragm and skin wounds begin to heal. After this period is over, the implanted electrodes are individually evaluated to monitor the volume of air taken in during diaphragm contractions and then the patient will begin diaphragm strengthening exercises at home.
- ITS SUCCESS:** The NeuRx DPS™ has helped more than 50 patients with spinal cord injuries, including Christopher Reeve, who continued to use the DPS system to reduce his time on the ventilator. The system is now in a 100 patient clinical trials for ALS (Lou Gehrig's disease) with over 50 patients implanted to date.