Sleep Apnea Implant Device: Freedom to sleep, No mask No hose

- **What is Sleep Apnea?**

Obstructive Sleep Apnea (OSA) is a very common and serious condition that affects millions of patients worldwide. It occurs when the muscles in the airway relax during sleep resulting in airway narrowing depriving the reach of oxygen to the brain.

It can result in high blood pressure, strokes, heart failure and heart attacks, poor performance in everyday activities and many more dangerous side effects.

- **Sleep Apnea Implant Device:**

The implant device provides therapy through the stimulation of neurons (neurostimulation) and is designed to deliver stimulation to tongue muscles by controlling the upper airway flow and therefore reducing and eliminating sleep apnea. It is surgically implanted with 2 to 3 incisions during an outpatient procedure performed by ENT surgeon.

- **Use Case:**

This fully implantable device is designed mainly to treat patients with moderate or severe OSA who are unable to have a continuous positive airway pressure. This means that no masks, hoses, or any other mouthpieces are connected to the patient while sleeping. The system is programmed to work only when the patient is asleep, but it can be also turned on and off through a remote control.

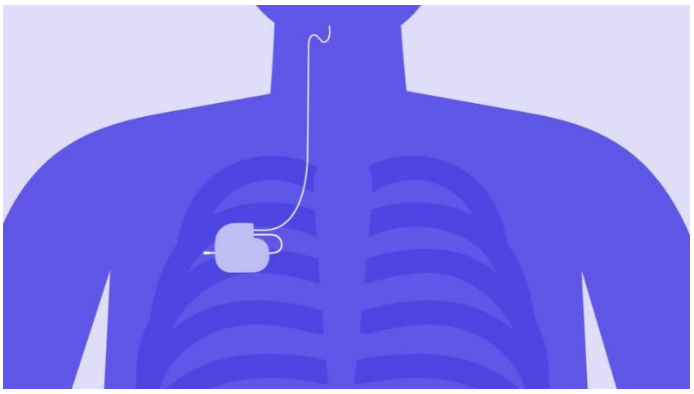
- **User Interface:**

The patient controls the implantable device using a remote control allowing the user to start, pause and stop the therapy. The device monitors the patient's breathing, and every time the patient takes a breath a gentle pulse moves the tongue out of the way ensuring an open airway.

- **Main Elements:**
    - OSA patients
    - Doctors and ENT surgeons

- **System Components (Hardware Components):**

Internal (Implanted):



- Stimulator: Rechargeable battery-powered computer that is responsible for generating neuro stimulation pulses.
- Bluetooth communication system linked to the remote control.
- Stimulation lead: a cable that carries those pulses to the hypoglossal nerve.
- Respiratory sensing lead: sensor that detects the breathing of the patient.

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External:

- A remote control that allows patients to start, stop or pause the therapy (neurostimulation)

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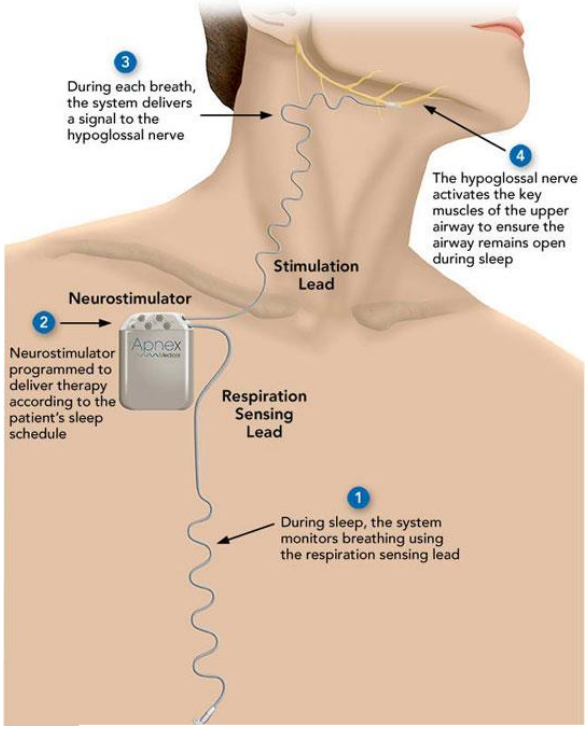
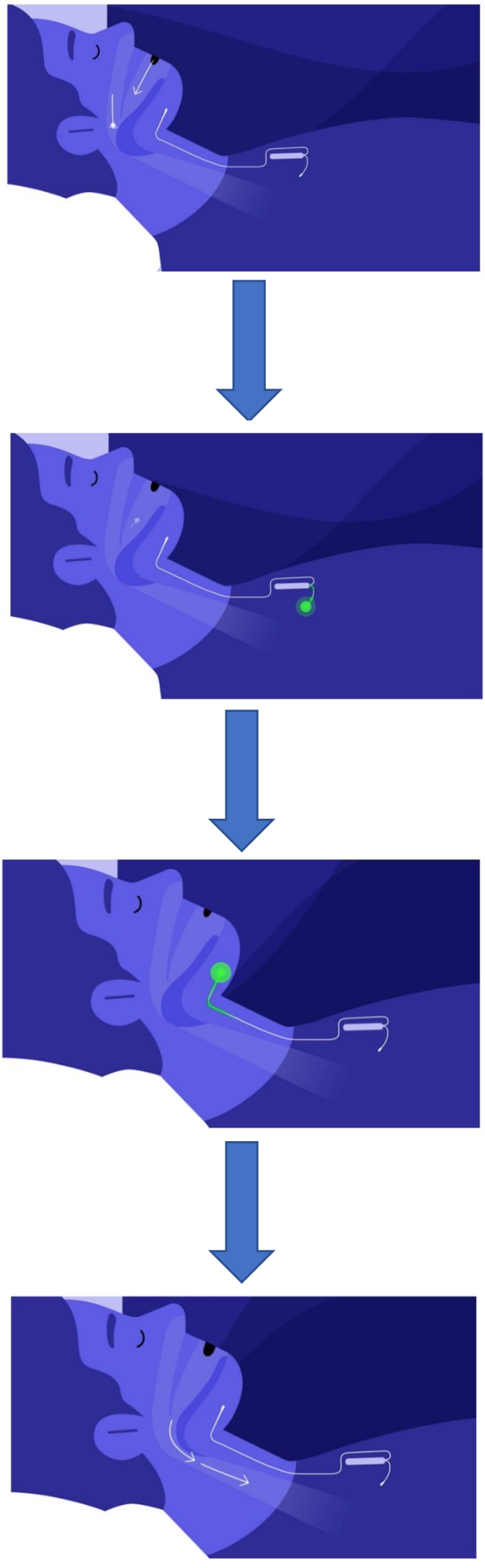


https://www.medgadget.com/2011/10/hypoglossal-nerve-stimulation-system-for-obstructive-sleep-apnea-receives-ce-approval.html

This system looks and operates much like a cardiac pacemaker but however it doesn't have action on the heart but to the hypoglossal nerve in the neck, we can call it "pacemaker for the tongue" with the goal of keeping the airway wide and open during sleep.



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References:

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