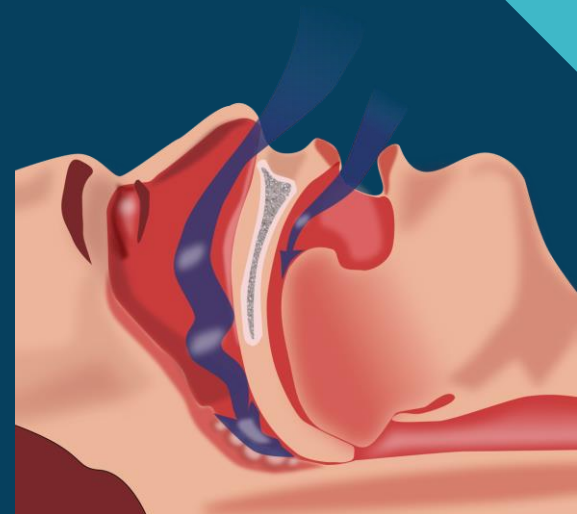


# Sleep Apnea Implant Device

Imad Char

# What is Sleep Apnea?

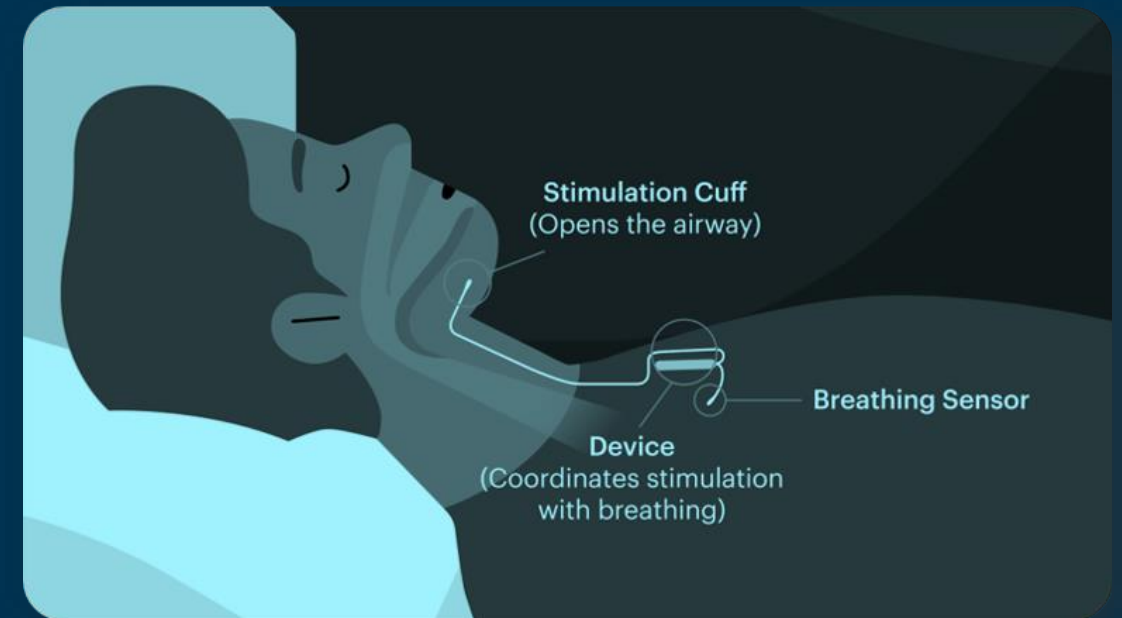
- Obstructive Sleep Apnea (OSA) is a very common and serious condition that affects millions of patients worldwide.
- It occurs when the muscles in the airway relax during sleep resulting in airway narrowing depriving the reach of oxygen to the brain.
- Results in high blood pressure, strokes, heart attacks, and many more dangerous side effects.



[https://en.wikipedia.org/wiki/Sleep\\_apnea](https://en.wikipedia.org/wiki/Sleep_apnea)

# Sleep Apnea Implant Device

- Provides therapy through neurostimulation of the hypoglossal nerve activating the tongue muscles ensuring an open airway during sleep.
- It is surgically implanted with 2 to 3 incisions during an outpatient procedure performed by ENT surgeon.



<https://professionals.inspiresleep.com/>

# System (Hardware) Components

- Internal (Implanted):
  - Battery-powered stimulator
  - Stimulation lead
  - Respiratory sensing lead
  - Bluetooth communication system
- External:
  - Remote control

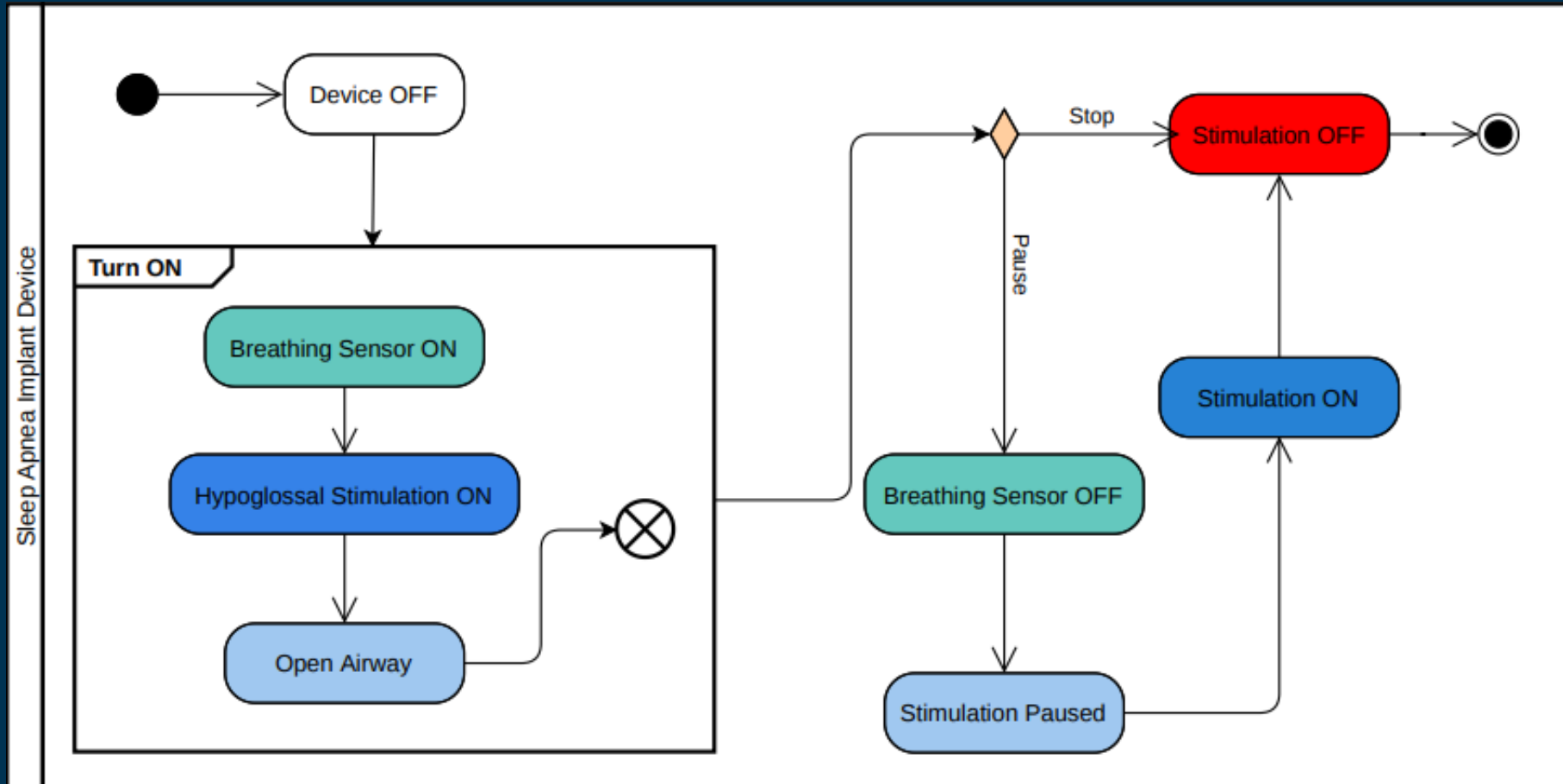
# Main Elements

- OSA Patients
- Doctors and ENT Surgeons



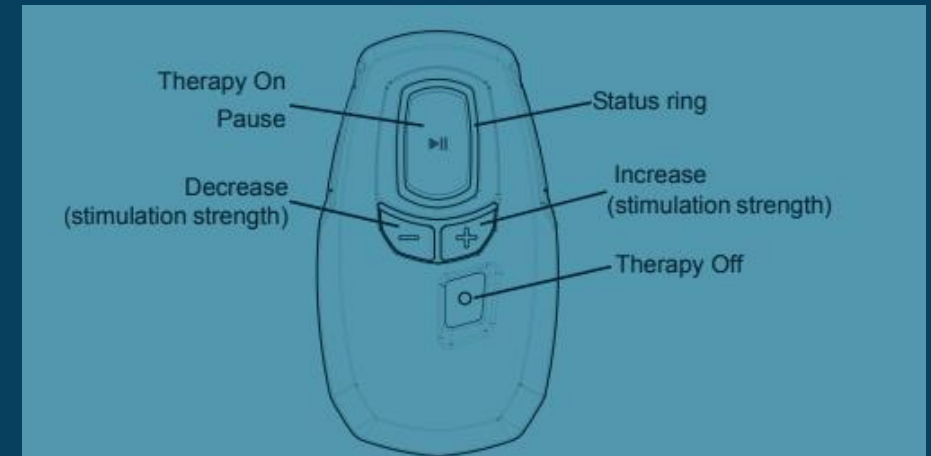
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# Activity Diagram

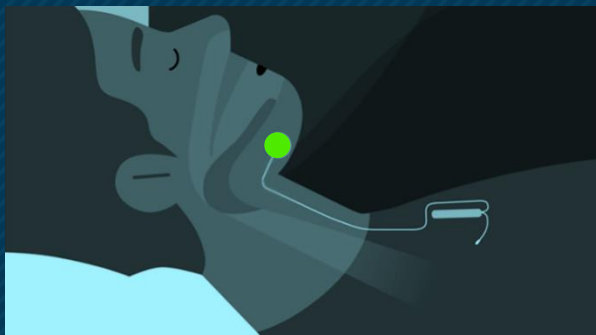
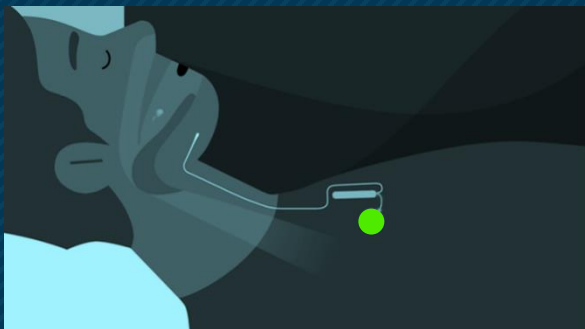


# User Interface

- 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.



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**Thank You for  
your Attention**