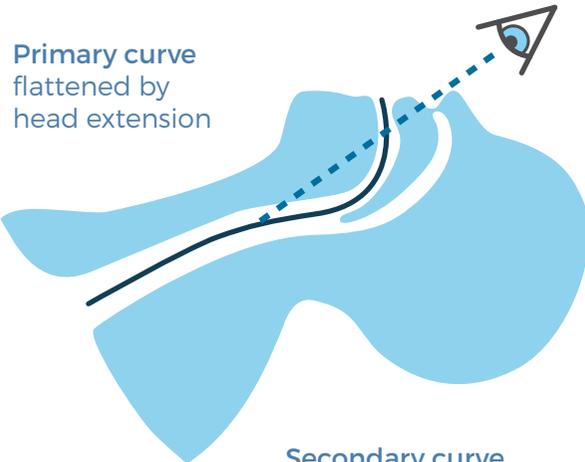


Two Curve Theory

Greenland's two curve theory identifies a primary and secondary curve. Straightening the curves improves views. The secondary curve is controllable by the HiSpy Intubation Positioning Device.



“Optimisation of laryngoscopy is not achieved at the same head height for everyone. Direct laryngoscopy should be seen as a dynamic process”

Murphy 2003

The HiSpy Intubation Positioning Device allows incremental, reversible variation of head height while performing laryngoscopy. The device is portable, robust, and easily cleaned.

It allows single handed use and is not reliant on electrical or pneumatic power sources. It is designed for many years of trouble free use any time intubation is required. The device is compatible to use with current laryngoscopes and video-laryngoscopes.

The HiSpy is able to elevate the heads of morbidly obese patients, minimising the need to apply a lifting force to the laryngoscope if additional height is needed. The HiSpy is able to be used with the RAMPED position when achieved by adjusting the head of the bed 15 degrees.

Ref: MF Murphy, "Bringing the larynx into view: a piece of the puzzle"
Ann Emerg Med. 2003;41pp338-341



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HiSPY[®]

The Intubation Positioning Device





Intubation Positioning Device

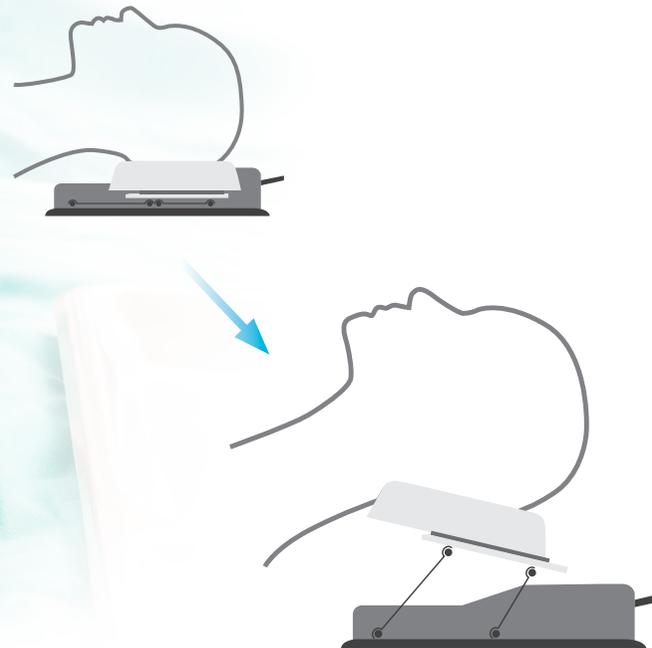
HiSpy is an Australian invention. It allows variation of head height with single handed operation during endotracheal intubation.

The device consists of an elevating platform, attached to a base by paired arms. Initially horizontal in the neutral (low) position, but progressively moving the head counter clockwise to the neck with head elevation.

The sliding motion of a cushion on the elevating platform acts to extend the head, allowing the face to remain in the coronal plane, facilitating visualisation of the vocal cords for endotracheal intubation.

Features of HiSpy:

- Adjustable head height with one handed operation
- Lockable mechanism when released
- Elevating platform imitates trajectory of the head rotating around the torso
- Horse-shoe pillow limits lateral head movement
- 'Head extension on the neck' with 'neck flexion on the torso' maintains face in the coronal plane
- Easily lowers to the neutral position after securing the airway.



Why HiSpy is vital

With 26 million endotracheal tubes sold annually in the USA³, laryngoscopy is a well practiced skill. 8% of the population have poor views⁴ on laryngoscopy correlating to Cormack-Lehane grades of [2b to 4]. These poor views have been contributed to by obesity and out of hospital intubation⁵, which relate to poor head elevation.

Head positioning is critical for successful endotracheal intubation. Clinical research has shown that predicting the exact head elevation (to optimise views at laryngoscopy) is not easy⁶. The wide range of human variation meant that a single pillow of fixed height would not suit everyone.

The consequences of delayed or failed intubation include:

- 1 Death (28% of all anaesthetic causes)¹
- 2 Hypoxaemia and regurgitation
- 3 Excessive Sympathetic Stimulation from prolonged laryngoscope use
- 4 Pharyngeal and dental trauma.²

1. "Management of the difficult airway including failed intubation" Powerpoint Presentation by Dr TE Allan Palmer. www.palmer.net.au/talks/default.htm

2. "Data Analysis: Dental damage and the increasing cost of claims". Avant Information Resource reviewing seven years of claims. May 2011.

3. 26 mill endotracheal tubes sold annually in USA (2003) www.researchandmarkets/frost&sullivan/report

4. 8% of laryngoscopies have poor views Cooper "Laryngoscopy: its past and future". Can J Anesth. 2004;51:6ppR1-R5

5. Wang H, Yealy D. Annals of Emergency Medicine. 2006;47(6):532-541
Rocke DA, Murray WB, Rout CC, Gouws E. "Relative risk analysis of factors associated with difficult intubation in obstetric anaesthesia." Anaesthesiology. 1992;77:67-73

6. Schmitt HJ, Mang H. "Head and Neck elevation beyond the sniffing position improves laryngeal views in cases of difficult direct laryngoscopy". J Clin Anaesth 2002.(14):335-338