



A RANDOMISED, CROSSOVER STUDY OF A STANDARD LARYNGOSCOPE AND TWO VIDEOLARYNGOSCOPES (ACUTRONIC INFANT VIEW & C-MAC) FOR THE ENDOTRACHEAL INTUBATION OF NEWBORN MANNEQUINS

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Background

- Standard laryngoscopes (SL) are used to look directly into the mouth
- Videolaryngoscopes (VL) display the view of the larynx obtained with a camera on a screen (indirect laryngoscopy)
- Trainees who perform direct laryngoscopy with an Acutronic VL have greater first attempt success rate when a mentor views the screen¹
- Trainees acquire competence more quickly with C-MAC VL than SL²

Aim

- To compare the performance of intubators using SL, Acutronic and C-MAC VLs & their preferences of scope.

Methods

- Crossover study
- Participants intubated a preterm and term mannequin using
 - Standard Laryngoscope
 - Acutronic Infant View
 - C-MAC
- Recorded the number of attempts taken to intubate and the duration of attempts.



Standard Laryngoscope



Acutronic InfantView



C-MAC, Karl Storz



Newborn Anne (L) & Premie Hal (R)

Results

- 25 participants (6 senior doctors, 18 trainee doctors, 1 nurse practitioner)
- Success at first attempt and duration of successful attempt were similar for the SL and C-MAC for both mannequins
- The success rate was lower and the duration of attempts longer with the Acutronic in the term mannequin

| Attempts | 1 st attempt success n (%) | Successful attempt duration (s) Median (IQR) |
|------------------|---------------------------------------|--|
| Standard | | |
| Total (N = 50) | 43 (86) | 17 (13, 25) |
| Preterm (n=25) | 21 (84) | 24 (17, 31) |
| Term (n=25) | 22 (88) | 15 (11, 18) |
| Acutronic | | |
| Total (N = 50) | 38 (76) | 21 (16, 35) |
| Preterm (n=25) | 24 (96) | 18 (14, 22) |
| Term (n=25) | 14 (56) | 36 (20, 71) |
| C-MAC | | |
| Total (N = 50) | 47 (94) | 19 (15, 26) |
| Preterm (n=25) | 23 (92) | 21 (18, 27) |
| Term (n=25) | 24 (96) | 17 (13, 24) |

| | Preferred Device | |
|------------------|------------------|-------|
| | Initial | Final |
| Standard | 9 | 5 |
| Acutronic | 0 | 0 |
| C-MAC | 16 | 20 |

Conclusions

- Participants performed similarly using direct laryngoscopy or indirect laryngoscopy with the C-MAC when intubating mannequins
- The success rate was lower and the duration of attempts longer with the Acutronic VL in the term mannequin.
- Direct laryngoscopy and C-MAC for intubation of newborns merit comparison in a randomised trial

1. O'Shea JE, Thio M, Kamlin CO, et al. Videolaryngoscopy to Teach Neonatal Intubation: A Randomized Trial. *Pediatrics*. 2015;136:912-919

2. Moussa A, Luangxay Y, Tremblay S, et al. Videolaryngoscope for Teaching Neonatal Endotracheal Intubation: A Randomized Controlled Trial. *Pediatrics*. 2016;137:e20152156