NUMBER: AW-007B

COVIDIEN
positive results for life™

Clinical Studies Quick Guide

CITATION

De Jong A, Clavieras N, Conseil M, et al. Implementation of a combo videolaryngoscope for intubation in critically ill patients: a before-after comparative study. *Intensive Care Med.* 2013;39(12):2144-2152.

PRODUCT CATEGORY

Airway Management

PRODUCT DISCUSSED

McGRATH® MAC enhanced direct laryngoscope

BACKGROUND/RATIONALE

The use of video laryngoscopy has been studied quite extensively in the operating room. However, there is little evidence about its use in the ICU, where intubation conditions are often worse than in the OR. Varied clinical situations can occur in the ICU, and for that reason it could be advantageous for clinicians to have different tactical options available for potentially difficult procedures such as intubation. The McGRATH® MAC enhanced direct laryngoscope can be used as a direct or indirect view laryngoscope, providing clinicians two options when performing an intubation in the ICU.

The aim of this study was to determine if the systematic use of the McGRATH® MAC enhanced direct laryngoscope, in accordance with an Airway Management algorithm, would decrease the incidence of difficult laryngoscopy or difficult intubation.

METHODS

- Adult ICU patients were intubated during two study phases:
  - Non-interventional phase (140 patients) – Intubations performed with standard Macintosh laryngoscope
    - A six-week inter-phase clinician training with the McGRATH® MAC enhanced direct laryngoscope separated the study phases
  - Interventional phase (70 patients) – Intubations performed with the McGRATH® MAC enhanced direct laryngoscope according to an airway management algorithm (See below)

Airway Management Algorithm for use of McGRATH® MAC device

	Secretions Present
1	• Aspirate fluid from airway • If unsuccessful, go to step 2 • If successful aspiration → use video laryngoscopy
2	• Perform **direct** laryngoscopy • If unsuccessful, go to Step 3 • If successful, ventilate patient as appropriate

3	• Perform difficult intubation procedures, as needed
	• Use Stylet
	  • Use LMA
	  • Attempt fiberoscopy
	  • Perform rescue surgical or percutaneous airway

	No Secretions Present
1	• Perform **video** laryngoscopy • If unsuccessful, go to Step 2 • If successful, ventilate patient as appropriate

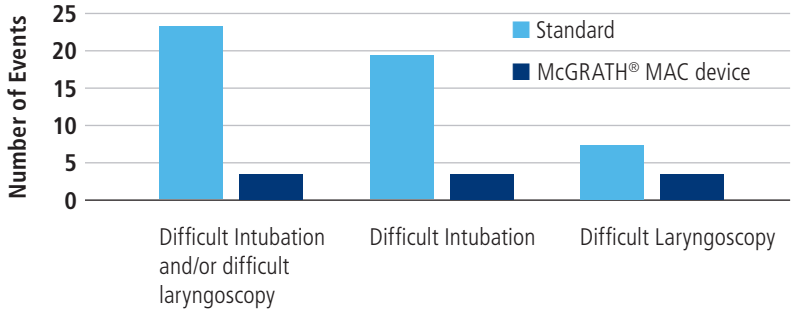
2	• Perform difficult intubation procedures, as needed
	• Use Stylet
	  • Use LMA
	  • Attempt fiberoscopy
	  • Perform rescue surgical or percutaneous airway

- Primary outcome variables include:
  - Difficult intubation: ≥ three laryngoscopy attempts
  - Difficult laryngoscopy: Cormack grade 3 or 4
- Secondary outcome variables include:
  - Rate of difficult intubation in cases of predicted difficult intubation (MACOCHA* score ≥ 3)

* MACOCHA score helps to identify patients who may present a difficult intubation and includes: Mallampati score, obstructive sleep Apnea, reduced mobility of Cervical spine, limited mouth Opening, Coma, severe Hypoxemia, non-Anesthesiologist

RESULTS

- The study was stopped after the intermediate analysis because of the significant decrease in difficult intubation and/or difficult laryngoscopy in the McGRATH® MAC device group compared to the standard laryngoscope group
  - The incidence of difficult intubation/laryngoscopy was 16% in standard laryngoscope group vs. 4% in McGRATH® MAC enhanced direct laryngoscope group.



- There were fewer expert operators in the McGRATH® MAC enhanced direct laryngoscope group compared to the standard group (15% vs. 30%).
- Median Cormack grade was significantly lower in the McGRATH® MAC enhanced direct laryngoscope group compared to the standard laryngoscope group.
- Among patients with predicted difficult intubation (MACOCHA score ≥ 3) significantly more experienced a difficult intubation in the standard laryngoscope group compared to the McGRATH® MAC enhanced direct laryngoscope group (57% vs. 0%).

AUTHOR CONCLUSIONS:

- The systematic use of the McGRATH® MAC enhanced direct laryngoscope for intubation significantly reduced the incidence of difficult intubation and/or difficult laryngoscopy.
  - Being in the standard laryngoscope group was an independent predictor of difficult laryngoscopy/intubation.
- In patients with predicted difficult intubation, the incidence of difficult intubation was much higher in the standard group than in the McGRATH® MAC enhanced direct laryngoscope group, demonstrating the effectiveness of the McGRATH® MAC device in difficult airway conditions.
- Despite the decreased percentage of expert operators, airway management as defined by the study algorithm was improved in the McGRATH® MAC device group.
- The authors believe the use of the McGRATH® MAC enhanced direct laryngoscope should be generalized from the ICU to the entire hospital given the positive study results.

EVALUATION

Pro

- First experimental evidence demonstrating the clinical benefits of using the McGRATH® MAC enhanced direct laryngoscope

Cons

- Single-center, observational, unblinded study
- The McGRATH® MAC enhanced direct laryngoscope was used in conjunction with an Airway Management Algorithm, which was not used during the non-interventional phase of the study. It is possible that this may have contributed to the superior airway management in this group.

Designed & manufactured by Aircraft Medical

Distributed by COVIDIEN

6135 Gunbarrel Avenue
Boulder, CO 80301
800-635-5267

covidien.com/rms