

**Evidence Based Clinical Practice
Guidelines
for the use of
Tracheostomy in the Critically Ill
Patient: *Preliminary Results***



**Raimondi N, Rodríguez M, and Nates JL
for the
FEPIMCTI Tracheostomy Task Force**

FEPIMCTI Tracheostomy Task Force

- Raimondi N, Argentina
- Rodríguez M, USA
- Calleja J, Venezuela
- Quintero A, Colombia
- Cortés A, Chile
- Celis E, Colombia
- Pacheco C, Venezuela
- Ugarte H, Chile
- Ugarte S, Chile
- Añón JM, Spain
- Hernández G, Spain
- Vidal E, Mexico
- Chiappero G, Argentina

- Rios F, Argentina
- Castilleja F, Venezuela
- Matos A, Panama
- E. Rodriguez, Panama
- Antoniazzi P, Brazil
- Teles JM, Brazil
- Dueñas C, Colombia
- Sinclair J, Panama
- Martínez L, Venezuela
- Von der Osten I, Venezuela
- Vergara J, Ecuador
- Jiménez E, USA
- Arroyo M, Venezuela
- Nates JL, USA

Introduction - I

- Tracheostomy is one of the oldest surgical procedures known to man
 - References in the *Rigveda* written over 3,000 years ago
- It remains as one of the most frequent procedures performed in the ICU
 - Performed in 15-27% of ventilated patients
- However, no clinical practice guidelines are currently available

Introduction - II

- Therefore, The Pan-Americana and Iberian Federation of Critical Care Medicine (FEPIMCTI) decided to generate an evidence-based practice guidelines to help practitioners in their daily clinical activities
- The participating Federation Societies included:
 - USA, Mexico, Panama, Colombia, Venezuela, Ecuador, Chile, Argentina, Brazil, and Spain

Methods - I

- **Team:**

- 26 critical care specialists experts in tracheostomy from 10 FEPIMCTI Societies participated in the development of the guidelines
- A professional librarian and a methodologist/clinical epidemiologist developed the search strategy

- **Questions:**

- Each theme was assigned to two experts
- The experts developed the PICO questions

Methods - II

- **PICO questions focused on:**
 - **P**- population was adult critically ill patient in the ICU
 - **I** - intervention was tracheostomy (surgical and percutaneous)
 - **C** – comparator was endotracheal intubation and surgical versus percutaneous tracheostomy
 - **O** – outcomes were all metrics associated with **tracheostomy (LOS, complications, mortality)**
- **Grading of Evidence and Recommendations:**
 - We used the GRADE system
 - Strong (1) or Weak (2) recommendations
 - Level of evidence **A** - Good, **B** – Moderate, **C** – Poor, **D** – Very poor

Methods - III

- Search from 1988-2015:
 - MEDLINE through PUBMED
 - Cochrane Database of Systematic Reviews (CDSR)
 - Cochrane Central Register of Controlled Trials (CENTRAL)
 - Database of Abstracts of Reviews of Effects (DARE)
 - National Health Service Economic Evaluation Database (NHS EED)
 - Database of the Literatura Latinoamericana y del Caribe en Ciencias de la Salud (LILACS)
- We used 250 references out of 430 manuscripts found

Methods - IV

- **Limitations:**

- The comparison of the surgical and percutaneous techniques is limited because these are no unique techniques.
 - The percutaneous tracheostomies can be performed using:
 - The Ciaglia Techniques:
 - » Multiple dilatation
 - » Single dilatation
 - » Ballon dilatation
 - The Griggs Technique:
 - » Forceps dilatation
 - The Fantoni Technique:
 - » Translaryngeal technique
 - The Frova Technique:
 - » Rotational dilatation
 - Others such as the Ambesh technique, Schachner technique, etc.
- Quality of research published

Most Important Questions?

Question/Recommendation - 1

- Is tracheostomy better than prolonged intubation in the general critically ill ventilated patient?
 - There is not enough evidence to make a recommendation regarding the use of tracheostomy in this group of patients
 - **Recommendation:**
 - No recommendation

Question/Recommendation - 2

- Is the open surgical tracheostomy technique better than the percutaneous tracheostomy?
 - There is no difference in complications and mortality between surgical and percutaneous tracheostomies.
 - Although there is significant advantage of the percutaneous technique regarding infections with the multi-dilatation technique, this is not seen in the most recent studies and the multi-dilator technique has been replaced by the single dilation approach
 - **Recommendation:**
 - We do not recommend a specific technique (open versus percutaneous) with the objective of reducing mortality or complications (Grade -1B)
 - We suggest that the technique (open versus percutaneous) be chosen based on the training and skills of the operator, best clinical judgment and local practice (Grade 2D)

Question/Recommendation - 3

- Which is the best percutaneous tracheostomy technique?
 - There is no evidence of the superiority of any particular technique in multiple studies and meta-analysis
 - **Recommendation:**
 - We do not recommend a specific percutaneous tracheostomy technique (Grade -1B)
 - We suggest that the percutaneous technique be chosen based on the training and skills of the operator, best clinical judgment and local practice (Grade 2D)

Question/Recommendation - 4

- Does bedside percutaneous tracheostomy have lower complication rate than tracheostomy in the operating room?
 - There is evidence of a higher number of complications when the procedure is performed in the operating room
 - It has been suggested that this is associated with the need for transportation outside the ICU
 - **Recommendations:**
 - We suggest to perform percutaneous tracheostomy at bedside (Grade 2D)

Question/Recommendation - 5

- Does percutaneous tracheostomy reduce LOS compared to surgical surgical tracheostomy?
 - There is no evidence of LOS reduction when PDT is performed
 - **Recommendation:**
 - No recommendation

Question/Recommendation - 6

- Is percutaneous tracheostomy less expensive than surgical tracheostomy?
 - There is moderate to low quality evidence that the PDT is a less expensive procedure compared to surgical tracheostomy performed in the operating room
 - **Recommendation:**
 - We suggest to perform PT at bedside in order to reduce costs (2-C)

Question/Recommendation - 7

- When is the ideal time to perform a tracheostomy?
 - Early tracheostomy reduces ventilators days but does not reduce mortality
 - **Recommendations:**
 - We recommend to perform early tracheostomy to reduce ventilator days in the ICU (Grade 1B)

Question/Recommendation - 8

- What is the minimal requirement to consider an operator “expert” or “independent”?
 - There is no evidence to determine what is an “expert” operator.
 - Only one randomized single center study has shown no complication differences between “experienced” (>6 procedures) and “inexperienced” operators (<6 procedures) (Nates et al. 2000)
 - It is clear that the number of procedures is not the only variable that should determine competency.
 - Several societies have provided a minimal number of procedures as benchmark to be considered competent
 - The ATS and the ERS between 5 to 10; CHEST >20 (expert opinion)
 - **Recommendation:**
 - No recommendation of a number cutoff

Question/Recommendation - 9

- Who should do the percutaneous tracheostomies?
 - There is no evidence of better performance of one group of specialists over others (e.g., head and neck surgeons, general surgeons, intensivists)
 - **Recommendation:**
 - We suggest that the specialist that performs a PT has received previous formal training (2D)

Question/Recommendation - 10

- Does the use of U/S or bronchoscopy during the tracheostomy procedure reduce complication rates?
 - There is no evidence that these tools reduce complications rates or significantly improve the procedure
 - **Recommendations:**
 - No recommendation

Question/Recommendation - 11

- Which is the ideal tracheostomy technique?
 - There is no evidence of complication or mortality advantage of one over another technique among the different tracheostomies currently available
 - PT has been shown to have a lower cost than ST in the operating room, it is performed earlier,
 - **Recommendation:**
 - We suggest to give preference to the percutaneous approach given its cost-effectiveness and logistical advantages (Grade 2D).

Preliminary Conclusions

- There is no current significant evidence to endorse one technique, whether surgical or percutaneous, over another
- However, given the logistical differences and cost-effectiveness advantages (lower cost with same complication rate than surgical), we concluded that PT should be the procedure of preference in the ICU until new evidence supports the contrary

