



CONGRESSO
NAZIONALE
IRC 2  22

TRAUMA: NUOVE EVIDENZE E PERCORSI

AUDITORIUM DELLA TECNICA • ROMA • 14-15 OTTOBRE



Italian
Resuscitation
Council

LA VIA AEREA IN EXTRAOSPEDALIERO

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Il Mito...



Intubare è «Figo»!

Il Mito...



... Si ma serve sempre?

PreH o ED Intubation?

Fevang *et al. Critical Care* (2017) 21:192
DOI 10.1186/s13054-017-1787-x


Critical Care

RESEARCH

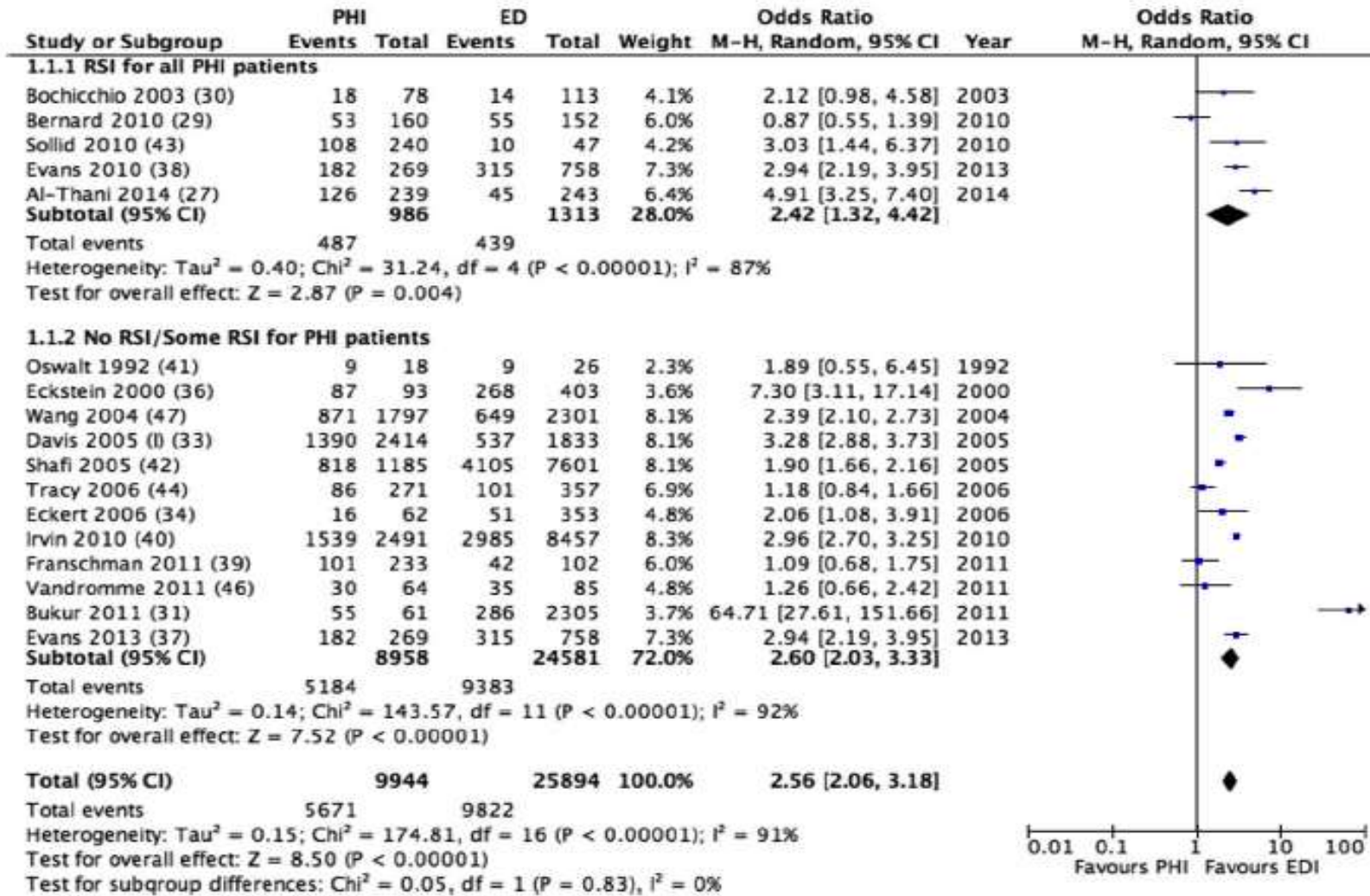
Open Access



A systematic review and meta-analysis comparing mortality in pre-hospital tracheal intubation to emergency department intubation in trauma patients

Espen Fevang^{1,2*} , Zane Perkins^{3,4}, David Lockety^{3,4,5}, Elisabeth Jeppesen^{1,5} and Hans Morten Lossius^{1,5}

- 21 studies (1970-2016)
- examining 35,838 patients
- compared mortality rates preH Vs ED



- pre-hospital intubation Vs ED : **higher mortality rate**
- 12 >, 7 =, 1 < (equipe medica elisoccorso)
- Solo 10% usa RSI (> complicanze, >tempo, < skills?)
- PreH IT: Medici Vs Non –medici > successo : 98,8% Vs 91,7%

Rischio di “bias”

Non contraddicono l'*importanza della IOT preH...*

“...but it does call for a thorough investigation by clinicians and researchers into *possible causes for this finding.*”

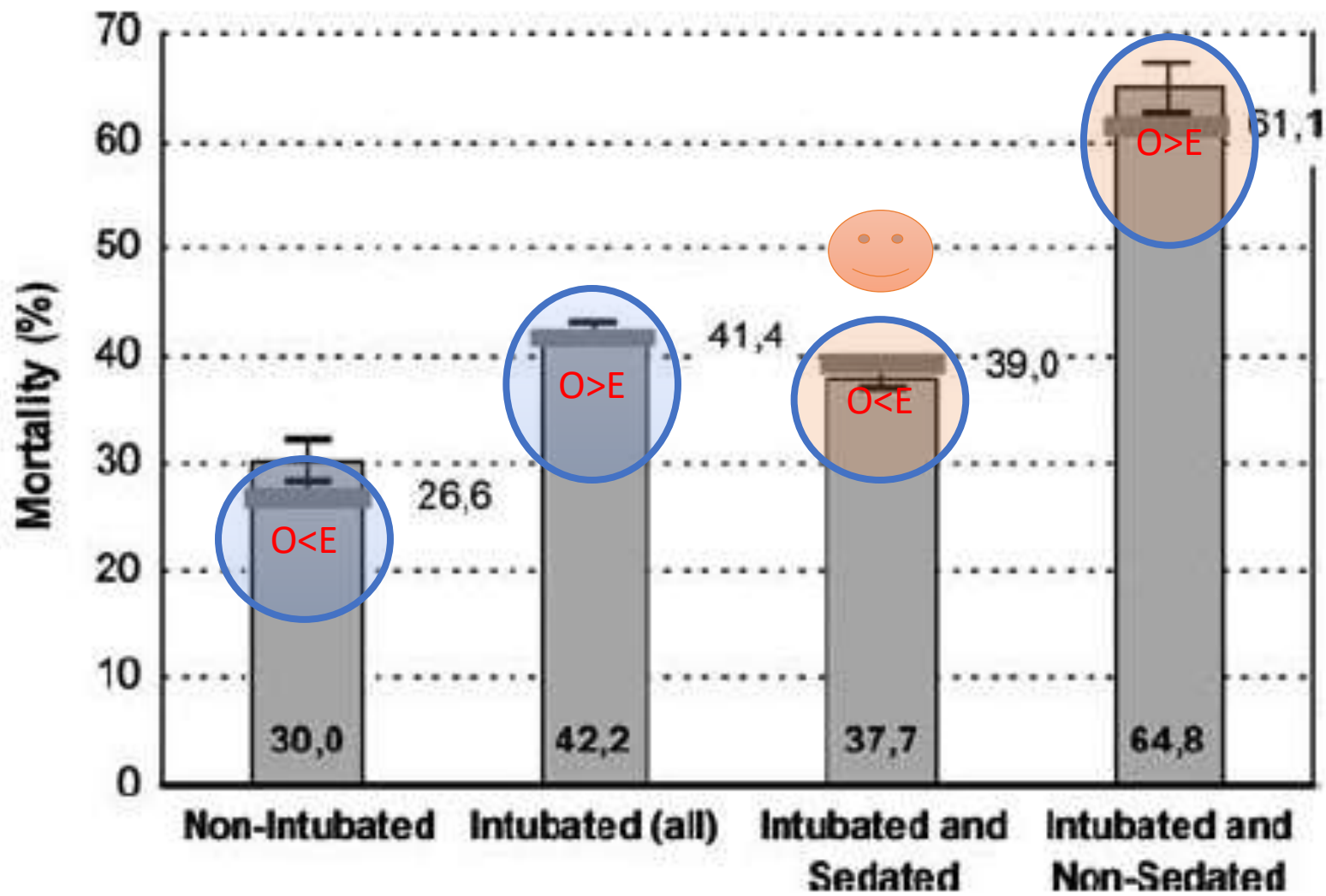
The Impact of Prehospital Intubation With and Without Sedation on Outcome in Trauma Patients With a GCS of 8 or Less

Michael Hoffmann, MD, Patrick Czorlich, MD,† Wolfgang Lehmann, MD,*
Alexander S. Spiro, MD,* Johannes M. Rueger, MD,* and Rolf Lefering, PhD,‡ on behalf of
TraumaRegister DGU of the German Trauma Society (DGU)*

- trauma patients with a GCS of 3 to 8 based on a large registry
- 2002-2013
- 18,975 patients (89.3%) received prehospital IT
- mortality and early neurological outcome
- **Observed** outcome was matched with the **expected** outcome deriving from the Revised Injury Severity Classification

(J Neurosurg Anesthesiol 2016;00:000–000)





CENTER - TBI

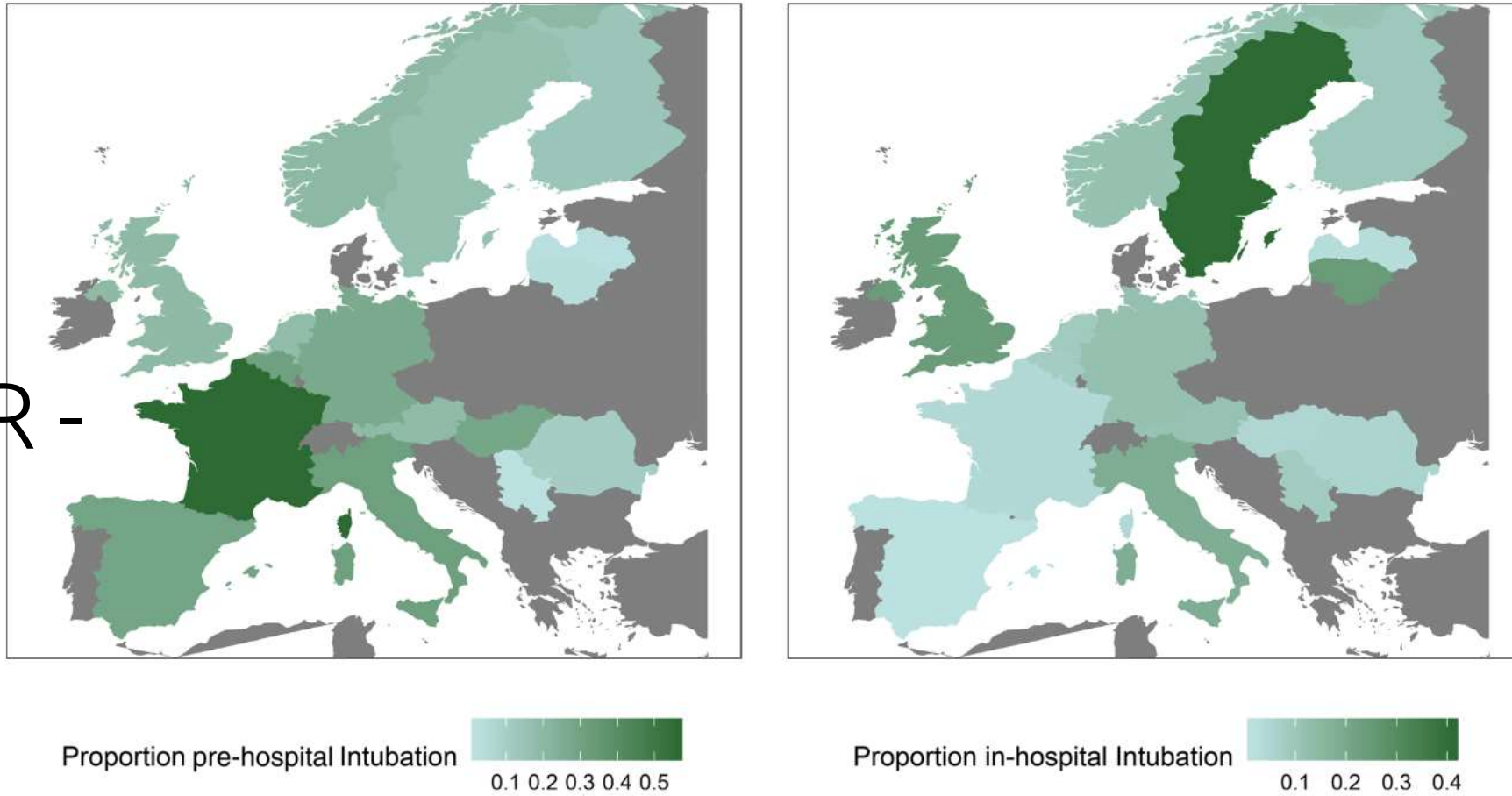


Figure 3 Proportion of pre-hospital and in-hospital patients who had their tracheas intubated across Europe.

Airway Skills

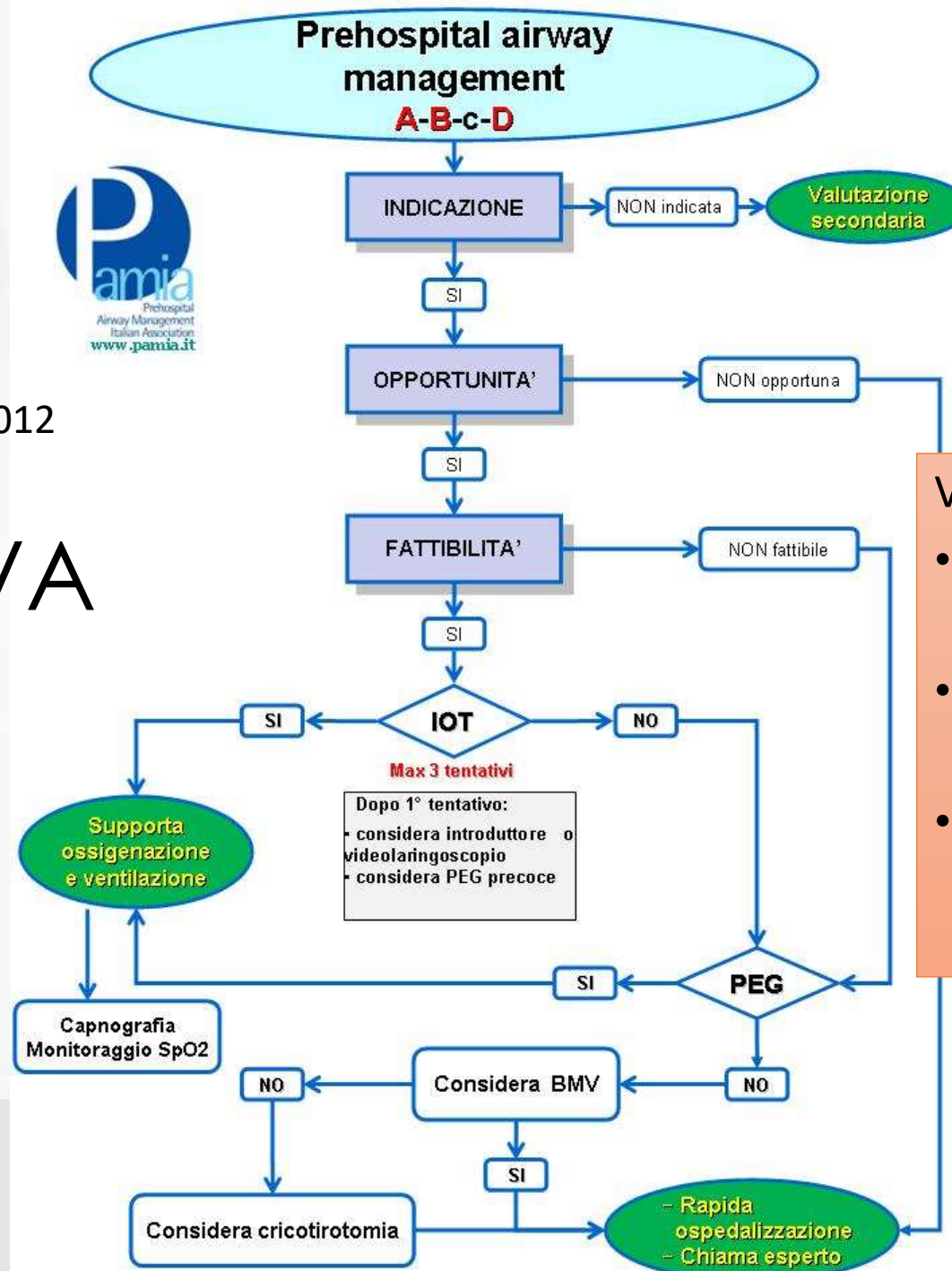
- “...Outside the operating theatre and in out-of-hospital settings, TI is challenging, with relatively **high complication rates** and limited resources for managing complications...”
- the **skill** of performing an intubation (or an alternative method of securing the airways) **cannot be learned or maintained just by working in an EMS**

British Journal of Anaesthesia 113 (2): 211–19
(2014)

Acta Anaesthesiol Scand 2012; 56: 164–171

LG SIAARTI 2012

Algoritmo VA



Variabili:

- Chi c'è?
 - Skill degli operatori
- Quale paziente?
 - case-mix
- Dov'è il paziente?
 - tempi "Urban Vs Rural"

Opportunità e Fattibilità

- luogo (urbano Vs rurale)
- distanza
- tempo
- possibilità di aiuto
- mezzo di trasporto
- possibilità di «sosta tecnica»
- ...

- competenze dell'operatore
- competenze del team
- teamwork e fattori umani (non technical skills)

IOT in PreH...Opportuna?



REVIEW ARTICLE

Scandinavian SSAI clinical practice guideline on pre-hospital airway management

M. Rehn^{1,2,3}, P. K. Hyldmo^{1,4}, V. Magnusson⁵, J. Kurola⁶, P. Kongstad⁷, L. Rognås^{8,9}, L. K. Juvet^{10,11} and M. Sandberg^{12,13}

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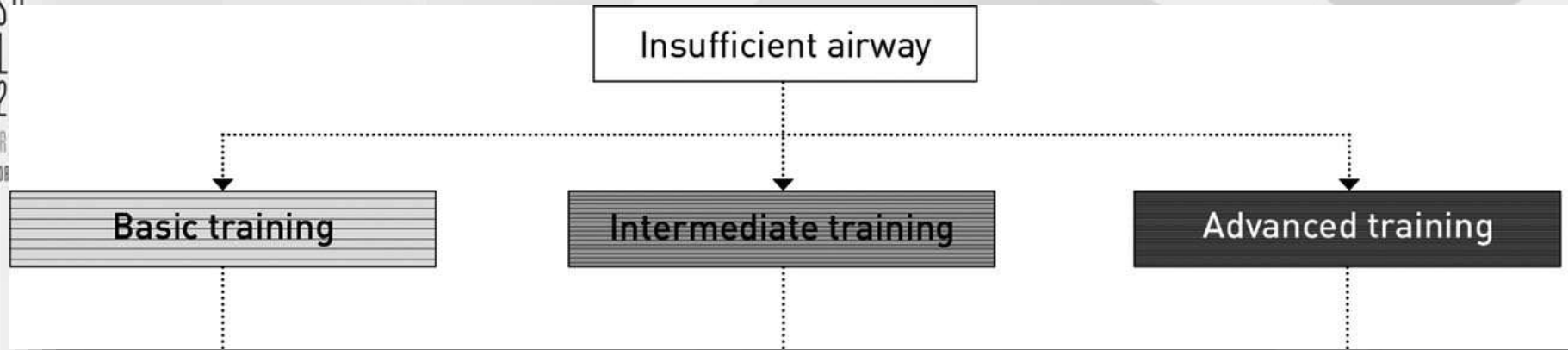
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Acta Anaesthesiologica Scandinavica 60 (2016) 852–864





- **Bronze:** gestione occasionale delle vie aeree

- **Silver:** meno esperienza

- **Gold:** anestesia-like, elevato volume e skills

- **Gold:** anestesia-like, elevato volume e skills

- **Silver:** meno esperienza

- **Bronze:** gestione occasionale delle vie aeree

- RSI, Drug Assisted Intubation

- Presidi alternativi: PEG/SGD

- Pallone- Maschera + strumenti di base

Scandinavian SSAI clinical practice guideline on pre-hospital airway management

SAD – Sovraglottic Airway Device .2

Indicazioni:

Intermediate Level

Training:

- 1° step

Advanced Level

- Alternativa a IT
- Rescue (Plan B)



Paradigm shift...

Dalla DAI (Drug Assisted Intubation)... ... Alla DAAM

Prehospital Drug Assisted Airway Management: An NAEMSP Position Statement and Resource Document

Jeffrey L. Jarvis, John W. Lyng, Brian L. Miller, Michael C. Perlmutter, Heidi Abraham & Ritu Sahni

- iterative, individualized assessment that considers patient, clinician, and environmental factors
- goals of ***adequate oxygenation and ventilation*** rather than on specific interventions.
- Management of ***immediately life-threatening injuries should take priority over advanced airway insertion.***
- comprehensive ***algorithm*** incorporating
 - failed airway options
 - management of pain, agitation, and delirium.



naemsp.org

Prehospital EmergencyCare, 26:sup1, 64-71,
<https://doi.org/10.1080/10903127.2021.19940>



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Prehospital Supraglottic Airways: An NAEMSP Position Statement and Resource Document

John W. Lyng, Kimberly T. Baldino, Darren Braude, Christie Fritz, Juan A. March, Timothy D. Peterson & Allen Yee



ABSTRACT

Supraglottic airway (SGA) devices provide effective conduits for oxygenation and ventilation and may offer protection from gastric aspiration. While SGA insertion is a common procedure, it is often performed by non-physicians. The development of SGA devices has influenced clinical strategies of SGA insertion and use in prehospital airway management for patients of all ages. NAEMSP recommends:

- SGAs have utility in prehospital EMS airway interventions. Select SGA strategies should be based on resources and local protocols, and the nature of their use.
- EMS agencies that perform endotracheal intubation must also equip their clinicians with SGA devices and ensure adequate training and competence.

- In select situations, drug-assisted airway management may be used by properly credentialed EMS clinicians to facilitate SGA insertion.
- Initial and continuous SGA waveform capnography is recommended as a best practice.
- When it is functioning properly, EMS clinicians should refrain from converting an SGA to an endotracheal tube. The decision to convert an SGA to an endotracheal tube should be based on the patient's conditions, and the clinician's skill set. SGA insertion for prehospital use must be continuously evaluated by EMS agencies using focused quality management programs.

provide effective conduits for oxygenation and ventilation and may offer protection from gastric aspiration

In select situations, **drug-assisted airway management may be used** by properly credentialed EMS clinicians **to facilitate SGA insertion.**




 Published online: 10 Jan 2022.

Scandinavian SSAI clinical practice guideline on pre-hospital airway management

Posizione Laterale di Sicurezza nel Trauma

Indicazioni:

Paziente incosciente

Basic /Intermediate Level Training

Unconscious trauma patients and the use of the lateral position

Recommendation. In unconscious trauma patients, where advanced airway management is not immediately available, we recommend that all EMS providers **turn the patient into a lateral position while maintaining spinal alignment (strong recommendation, low quality of evidence)**. When spinal precautions are warranted, chin lift or jaw



Dopo la GVA... Quale “Ventilatory Management”?

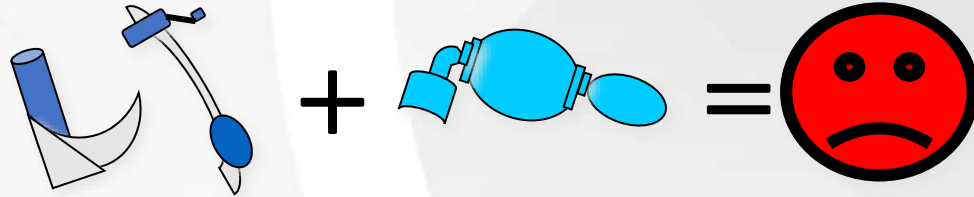


Vs



- Resp Spont Vs MV
- Sedazione, paralisi?
- Monitoraggio
- ETCO2

Iperventilazione...



- Hyperventilation with hypocapnea may worsen outcome in TBI patients
- Hyperventilation can further decrease the CBF, potentially to the point of cerebral ischemia or by
- converting ischemic areas into infarction

ETCO₂... Sempre!

IV. TREATMENT: AIRWAY, VENTILATION, AND OXYGENATION

I. RECOMMENDATIONS

Strength of Recommendations: Weak.
Quality of Evidence: Low, primarily from
Class III studies.

have severe traumatic brain injury (TBI) (Glasgow
Coma Scale [GCS] < 9), the inability to maintain
an adequate airway, or hypoxemia not corrected
by supplemental oxygen.

C. Emergency Medical Service (EMS) systems im-
plementing endotracheal intubation protocols in

D. When endotracheal intubation is used to establish an airway, confirmation of placement of the tube in the trachea should include lung auscultation and end-tidal CO₂ (ETCO₂) determination.

E. Patients should be maintained with normal breathing rates (ETCO₂ 35–40 mmHg), and hyperventilation (ETCO₂ < 35 mmHg) should be avoided unless the patient shows signs of cerebral herniation.¹



Obiettivo .2

«First Pass»

PREH Check List – Gestione Vie Aeree – First Pass!

Paziente

- **Preossigenazione**
 - O2 100%
 - Ossigenazione Apnoica
- **Posizione?**
 - Stabilizzazione Manuale (MILS)
 - Identifica membrana crico
- **Accesso Vascolare**
 - Venoso
 - Intraosseo
- **Previene e gestisci Ipotensione**
 - Fludi
 - Vasopressori
- **Sedazione & Gestione Post intubazione**

Team & CRM

- **Distribuisci i Ruoli**
 - Team Leader ?
 - “Intubatore”
 - Farmaci
 - Materiali
 - MILS
- Anticipa potenziali problemi**
- Dichiara il Piano** (il piano A è...)
- Considera Trasporto Protetto Vs RSI se Ossigenazione e Ventilazione ok**

Monitor & Materiale

- **Monitoraggio**
 - ETCO2
 - SpO2
 - ECG / PA
- **Materiali**
 - Pallone + Mask
 - Aspirazione
 - Laringo & VideoLaringo
 - Tubi x età
 - Bougie /Stiletto
 - PEG
 - SET Crico/FONA
- **Farmaci**
 - Peso pz & Dose
 - Keta/MDZ/Fenta...
 - Curaro

Piani In caso di Emergenza!

- **Se Piano A fallisce:**
 - Piano B1: PEG
 - Piano B2: Ventilazione in Mask
 - Piano C:** Crico & FONA
 - Allerta & Prepara l’H
- **Cerca Aiuto**
- **Considera Sosta Tecnica in Spoke se Hub >45-60’**



Posizione



Luogo



Farmaci

Neuromuscular Blocking Agents (Paralytics)

Sedazione (+) curaro

«...Multiple studies have shown that the use of any paralytic has been associated with higher first-pass success rates when compared with sedation-only intubation ...»

Rapid Sequence Airway

PEG (+) Farmaci

Sedation-Assisted Intubation

«solo» Sedazione (-) curaro

«associated with lower first-pass success rates and more complications when compared with the combined use of sedatives and paralytics ..»

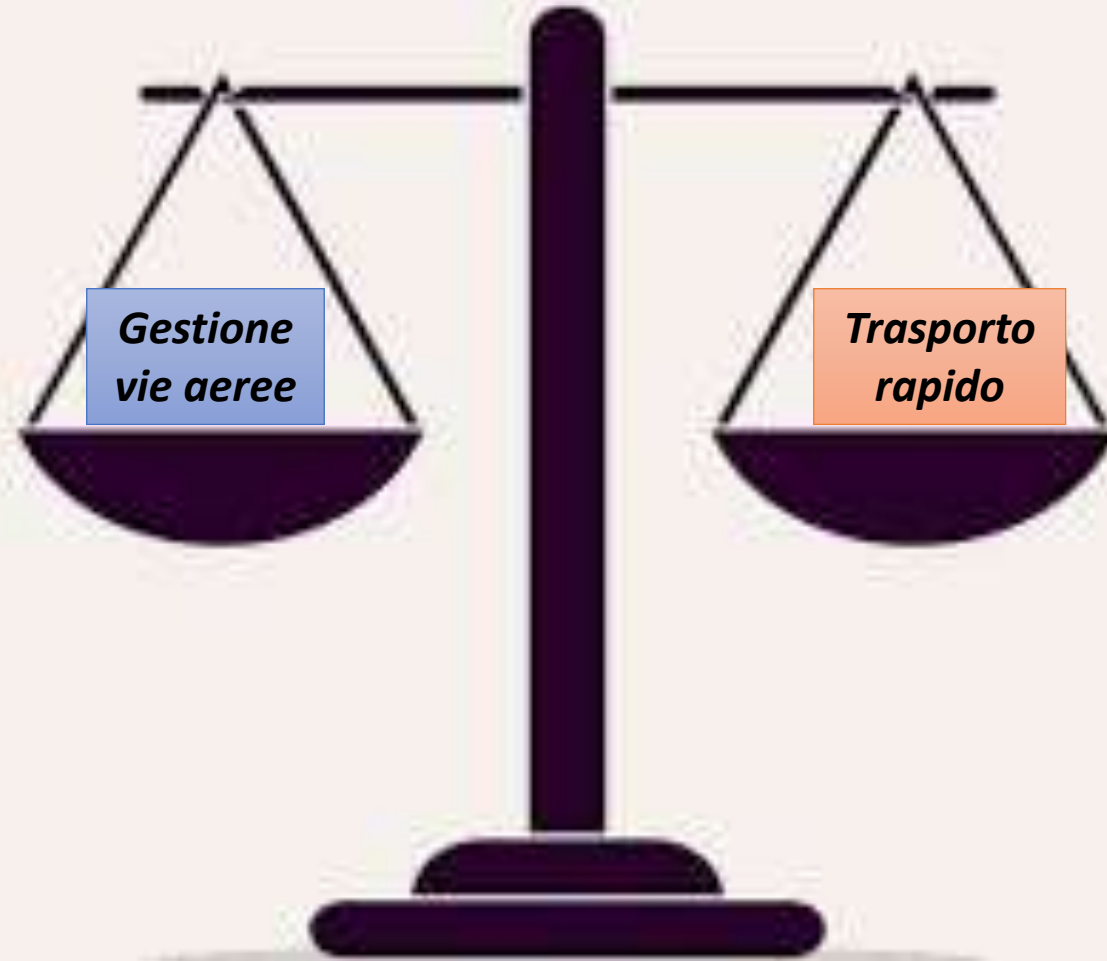
Delayed Sequence Intubation (DSI)

Sedazione, pre-ossigenazione, induzione...

«First Pass»

- Sempre Farmaci (analgesia – sedazione – bloccanti neuromuscolari)
- Pre-ossigenazione (... Apnoica)
- Gestione collare
- Accessibilità: Sposta se necessario il paziente in luogo più confortevole per l'equipe
- Monitorizza completamente il paziente (spO2, ETCO2, Fc, PA)
- Sempre tecnica con cui sei familiare
- Mandrino, Video Laringo
- Valuta le tue skills: Considera PEG come approccio iniziale

Strategia PreH



La miglior scelta dovrebbe essere valutata in base alle esigenze del paziente, alle nostre capacità e alla distanza dall'ospedale.

A... Ma quanto tempo ho?

Major trauma: assessment and initial management

Major trauma: assessment and management of major trauma

NICE Guideline NG39

Methods, evidence and recommendations

February 2016



Major trauma
Airway management

6 Airway management

6.1 Introduction

Due to the injuries trauma patients sustain they may require support pre-hospital to maintain their airway. This may include patients who stop breathing, those that are unable to maintain adequate ventilation, or those that require airway support for head and chest trauma management. A lack of oxygen pre-hospital can result in a higher risk of mortality, and can also cause brain injury, which can have long-term implications for function and patient quality of life. The effective airway management pre-hospital is therefore a critical clinical issue. There are a number of airway strategies currently used pre-hospital:

- Basic airway adjuncts (including bag valve mask, naso and oro-pharyngeal airway). Bag valve mask enables clinicians to provide adequate ventilation for patients requiring airway support and allows enough time to establish a more controlled approach to airway management, such as tracheal intubation. Oropharyngeal airways should be used in unconscious (unresponsive) patients as they are quite stimulating and generate a gag reflex. A nasopharyngeal airway is an adjunct for use in patients with potential or actual airway obstruction, particularly in circumstances where an oropharyngeal airway is inappropriate (e.g. patient has trismus or an intact gag reflex)

Major trauma: assessment and initial management

NICE guideline National Institute for Health and Care Excellence

Published: 17 February 2016

nice.org.uk/guidance/ng39

Airway preH: in quanto tempo?

Airway management in pre-hospital settings

1.2.3 Aim to perform **RSI as soon as possible and within 45 minutes** of the initial call to the emergency services, **preferably at the scene** of the incident.

***within 45 minutes...
preferably at the scene***

If RSI cannot be performed at the scene

Major trauma: assessment and initial management

NICE guideline

Published: 17 February 2016

nice.org.uk/guidance/ng39

Airway when & where?

If RSI cannot be performed at the scene

journey time is 60 minutes or less?

y

Trauma Center

n

Local Trauma Unit

transport the patient to a major trauma centre for RSI **provided the journey time is 60 minutes or less; only divert** to a trauma unit for RSI before onward transfer if a patent airway cannot be maintained or the journey time to a major trauma centre **is more than 60 minutes**.



Raccomandazioni 5-7 della Linea Guida per la gestione integrata del trauma maggiore dalla scena dell'evento alla cura definitiva

Raccomandazione 7. Se indicata, eseguire l'intubazione RSI, il prima possibile ed in ogni caso entro 45 minuti dalla chiamata alla centrale operativa, preferibilmente sulla scena [raccomandazione forte basata su una qualità moderata delle prove].

Note

Se l'intubazione non può essere effettuata:

- Considerare un dispositivo sovraglottico se i riflessi delle vie aeree sono assenti.
- Utilizzare le manovre di base per la gestione delle vie aeree e/o dei dispositivi specifici (aspirazione, cannule oro o naso faringee, bag valve /mask) se i riflessi sono presenti o non è possibile il posizionamento di un dispositivo sovraglottico.
- Trasportare il paziente ad un Trauma Center se il tempo di trasporto stimato non è superiore a 45 minuti.
- Trasportare il paziente nel punto di Pronto Soccorso più vicino per una intubazione - RSI se non possibile garantire vie aeree pervie con manovre di base o con dispositivi sopraglottici o se il tempo di trasporto stimato al trauma center sia, in condizioni ottimali, superiore a 45 minuti.

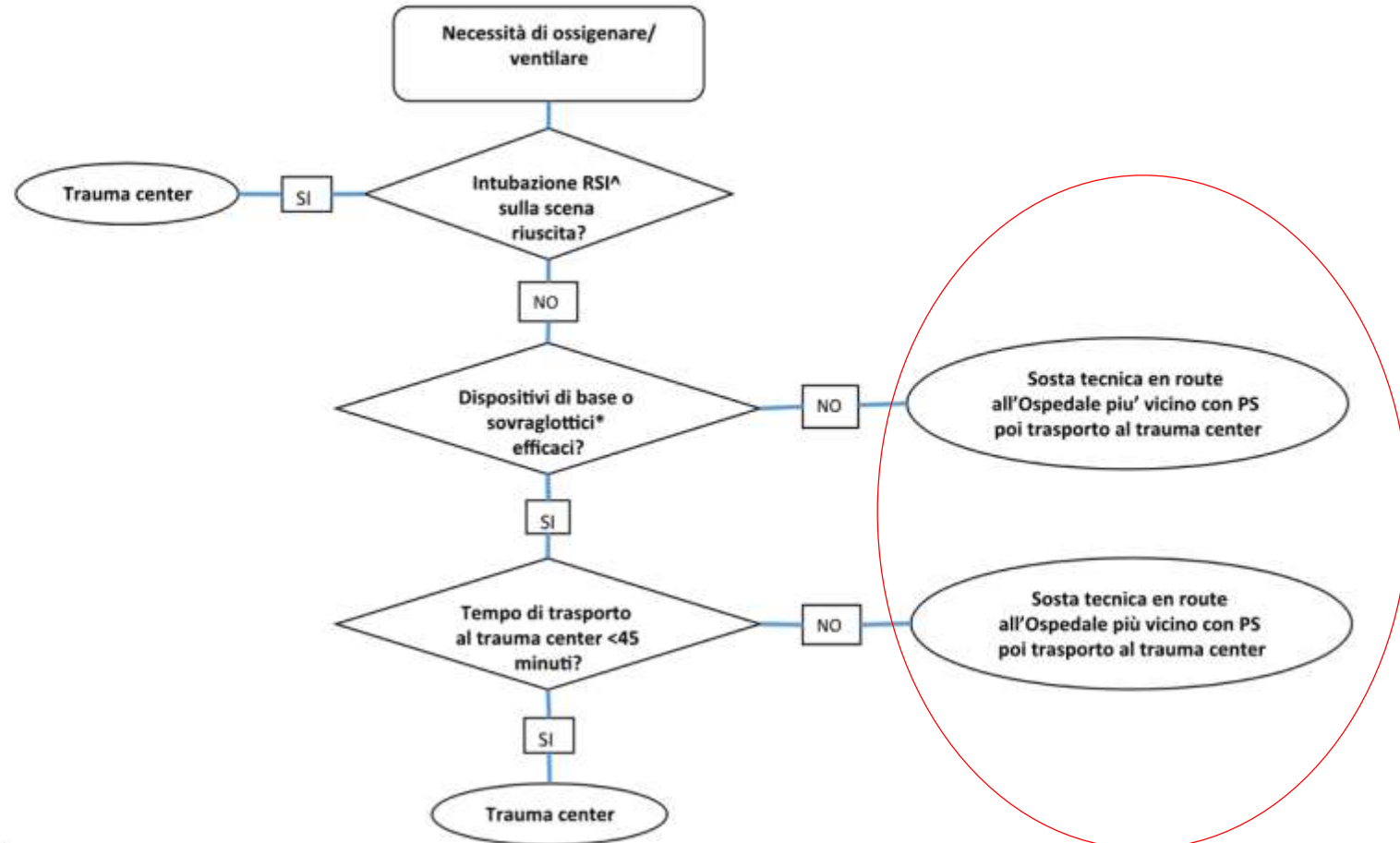
**Se T
Trasporto
<45'**

Trauma Center!

Raccomandazioni 5-7 della Linea Guida per la gestione integrata del trauma maggiore dalla scena dell'evento alla cura definitiva



Indicazione a Intubazione sulla scena
(da effettuare entro 45 minuti dalla chiamata)



^ Rapid Sequence Induction

* Aspirazione, Cannula naso/orofaringea, Bag valve mask, maschera laringea

Sosta Tecnica?

- **Pit Stop** in un centro traumi «SPOKE»
- Gestione A&B
- Gestione C (Blood?)
- Rapida Centralizzazione al TR Center «HUB»



Sosta Tecnica presso Pronto Soccorso della Rete

Quando la necessità di trasporto a lungo raggio presso un CTS sia presumibile sin dalle prime fasi della chiamata, con eventuale necessità di intervento di elisoccorso, la centrale operativa 118 può autorizzare un periodo necessario di stabilizzazione presso il primo PS individuato, che preveda di norma l'espletamento delle sole manovre di stabilizzazione in attesa del trasferimento. La valutazione clinica orienterà i successivi passi diagnostici che comunque non dovranno influenzare i tempi previsti dalla "sosta tecnica".

Algoritmo gestione vie aeree*

Valutazione ABCDE

A: PAO

Pervie

A Rischio

Ostruite

Indicazione

Opportunità

Fattibilità

Preparazione - Check List

(Paziente, Materiali, Farmaci, Team, Piani di emergenza)



Piano A

Piano B

Piano C
«CICO»

First pass

A: Laringoscopia

Max 3 tentativi
 +/- VideoLaringoscopia
 Bougie/Stiletto (es. Frova)
 MILS

B1: ventilazione
 pallone-maschera

B2: PEG

C: «FONA»

Cricotirotomia con ago
 Chirurgica (Scalpel-Bougie o al.)

Gestione Post IT

Ventilatore, target EtCO₂, sedazione

CICO: Cannot Intubate Cannot Oxygenate

PEG: Presidio ExtraGlottico

FONA: Front Of Neck Access

Concludendo...

- IT si! ... se è per il paziente... Non per il proprio «EGO»
- *#nonsoloTubo* ma «Gestione Avanzata delle Vie Aeree con Farmaci»
- Strategia: Piani A;B;C, Formazione, Team Work
- Airway Damage Control non «more damage»
 - First Pass
 - Sosta Tecnica per evitare «Airway & Ventilation Disasters»

ARE YOU ALWAYS THIS
BLISSFUL IN YOUR
IGNORANCE, BILL?



Bill Watterson ©

Grazie



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*Riva del Garda
020.21.22 settembre 2021*



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