



Italian
Resuscitation
Council

CONGRESSO NAZIONALE IRC
2016
20 · 21 OTTOBRE

KIDS SAVE LIVES MASS TRAINING
22 OTTOBRE 2016
NH MILANO CONGRESS CENTER ASSAGO



Italian
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Council

Ultime novità in ambito di RCP pediatrica

Dott. Marco de Luca

AOU Meyer - Firenze

Responsabile SOSA Simulazione e Risk Management

www.meyer.it/simulazione



@marcodelucadoc

20 · 21 OTTOBRE

KIDS SAVE LIVES MASS TRAINING

22 OTTOBRE 2016

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- **Come è cambiata la rianimazione pediatrica dopo la pubblicazione LG 2015**
- **Quali riflessioni possiamo fare sulla base delle pubblicazioni del 2016**



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Outcomes After Pediatric Out-of-Hospital Cardiopulmonary Interventions

Jennifer Y. Lo, MD, Lloyd Y. Tani, MD,* Miles Christensen, BS,† Xiaoming Sheng, PhD,†
Jason Clawson, BS,† and Shaji C. Menon, MD**

Pediatr Emerg Care 2016 Jun

Methods

1. This was a **retrospective, observational, cohort study**.
2. The study took place **between the years 2000 and 2008** in an urban Community.
3. Primary Children's Hospital, which is a tertiary care, stand-alone pediatric hospital **in Salt Lake City, Utah**.
4. The cohort included patients **18 years or younger**.

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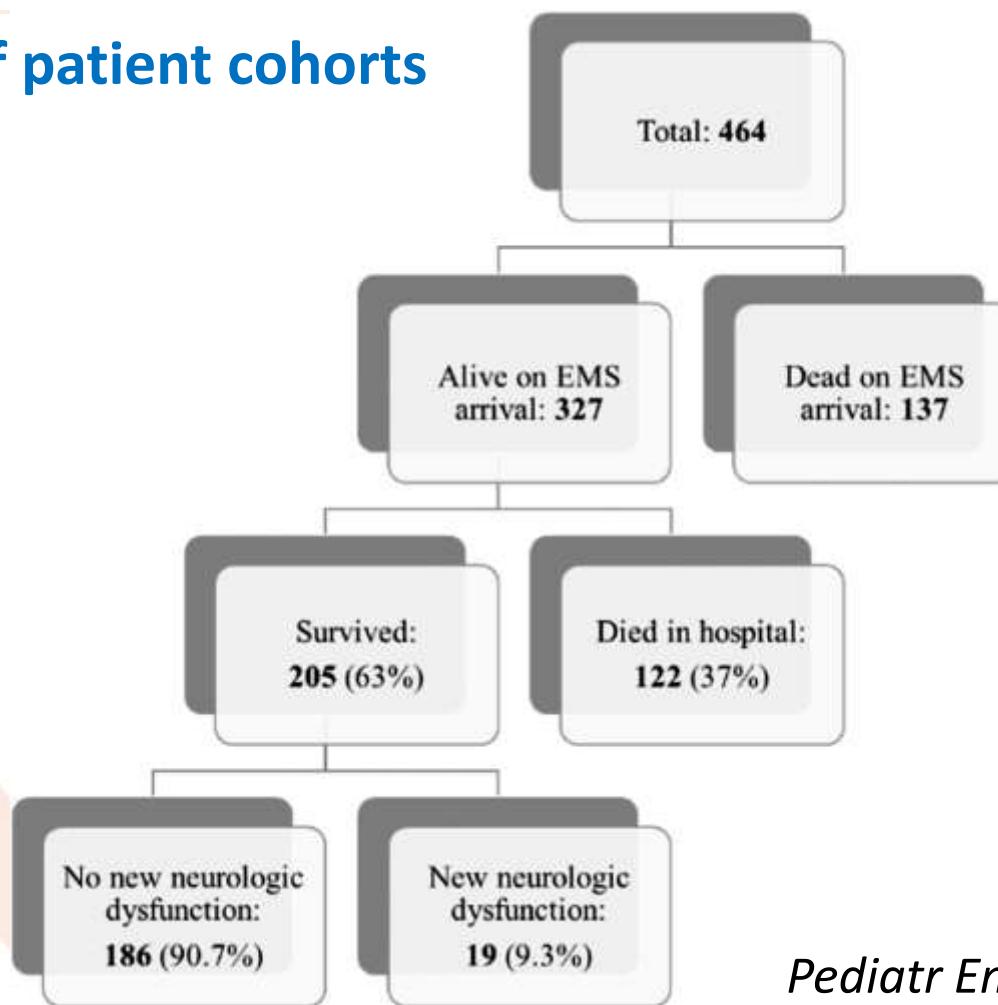
Pediatr Emerg Care 2016 Jun

Cardiopulmonary Interventions

1. Chest compressions
2. Defibrillation
3. Epinephrine administered
4. Other vasoactive medications (atropine) administered
5. Other medications (naloxone) administered
6. Mechanical ventilation
7. Intravenous fluid resuscitation
8. Oxygen administered

Outcomes After Pediatric Out-of-Hospital Cardiopulmonary Interventions

Flow diagram of patient cohorts



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Factors associated with death before and during hospitalization:

- 1. Age younger than 1 year**
- 2. Shorter EMS transport times**
- 3. Longer EMS dispatch times**

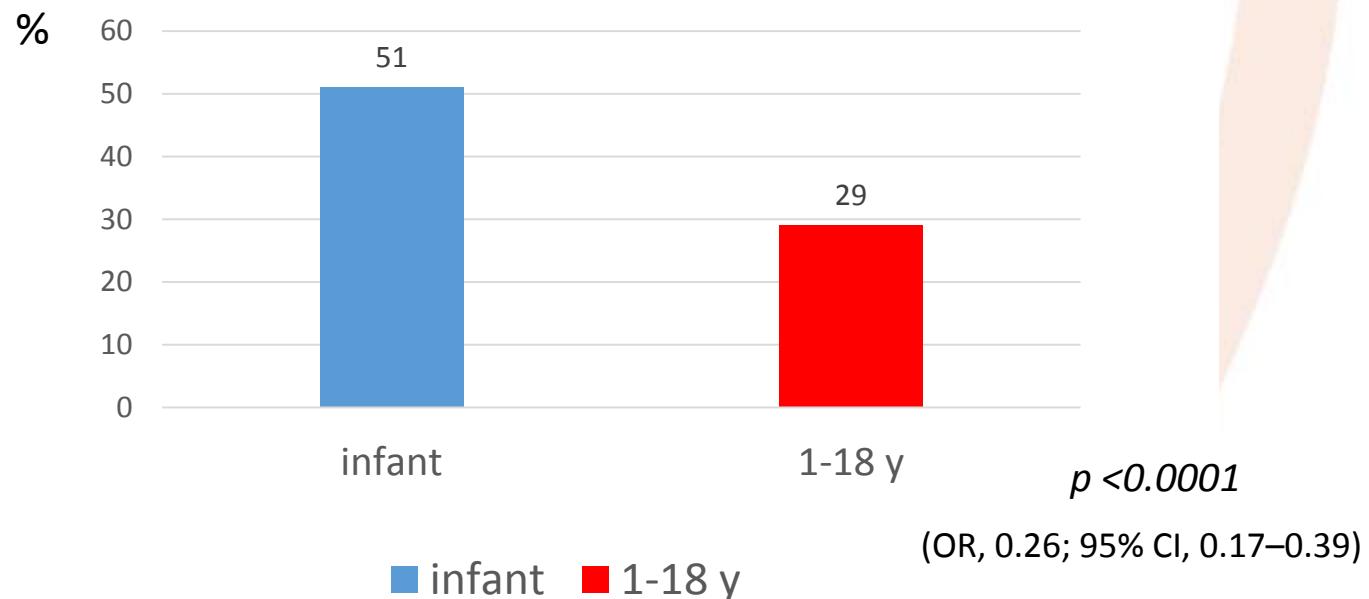
Multivariable Regression Analyses

Outcomes After Pediatric Out-of-Hospital Cardiopulmonary Interventions

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Factors associated with death before and during hospitalization: Age younger than 1 year



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Factors associated with death before and during hospitalization

- Shorter EMS transport time, min (OR, 0.94; 95% CI, 0.89–0.99) - p 0.018
- Longer EMS dispatch time, min (OR, 1.23; 95% CI, 1.08–1.40) - p 0.002

Multivariable Regression Analyses

A

B

C

CAB vs ABC

- Dal documento CoSTR di ILCOR sulla sequenza delle manovre da effettuare durante il BLS, è emersa una corrispondenza tra la sequenza CAB e ABC
- La sequenza ABC è diventata una procedura assodata e ben riconosciuta nella pratica della RCP pediatrica in Europa.
- Le precedenti linee guida 2010 sono state apprese da molte centinaia di migliaia di operatori sanitari e laici.

CAB vs ABC

Vantaggi di CAB

Tempo più breve per l'inizio delle CC
Da 18,0 a 24,3 sec per 1 soccorritore
9 sec per 2 soccorritori

Semplifica l'insegnamento per il provider del BLS adulto



Vantaggi di ABC

Tempo più breve per l'inizio delle prime ventilazioni (da 5,7 a 6,0 sec)

La causa asfittica è preponderante nell'arresto cardiaco pediatrico



Airway

Tubi endotracheali cuffiati



- Un tubo cuffiato della misura giusta è altrettanto sicuro di un tubo non cuffiato nei lattanti e nei bambini (non nei neonati).
- La pressione della cuffia dovrebbe essere mantenuta al di sotto di 25 cm H₂O
- Una pressione eccessiva, infatti, può determinare danni ischemici a carico della mucosa laringea e stenosi;

Intubation During Pediatric CPR Early, Late, or Not at All?

Allan R. deCaen, MD; Gonzalo Garcia Guerra, MD, MSc; Ian Maconochie, PhD

JAMA. Published online October 4, 2016.

Association Between Tracheal Intubation During Pediatric In-Hospital Cardiac Arrest and Survival

Lars W. Andersen, MD, MPH; Tia T. Raymond, MD; Robert A. Berg, MD; et al.

Association Between Tracheal Intubation

During Pediatric In-Hospital Cardiac Arrest and Survival

Lars W. Andersen, MD, MPH; Tia T. Raymond, MD; Robert A. Berg, MD; et al.

JAMA. Published online October 4, 2016.

OBJECTIVE:

To determine if intubation during pediatric in-hospital cardiac arrest is associated with improved outcomes

DESIGN, SETTING, AND PARTICIPANTS:

Observational study. All pediatric (age <18 years) cardiopulmonary events occurring between 2000 and 2014 involving CPR durations of at least 10 minutes

RESULTS:

The study included 2294 patients; 1308 (57%) were male, and all age groups were represented (**median age, 7 months** [25th-75th percentiles, 21 days, 4 years]).

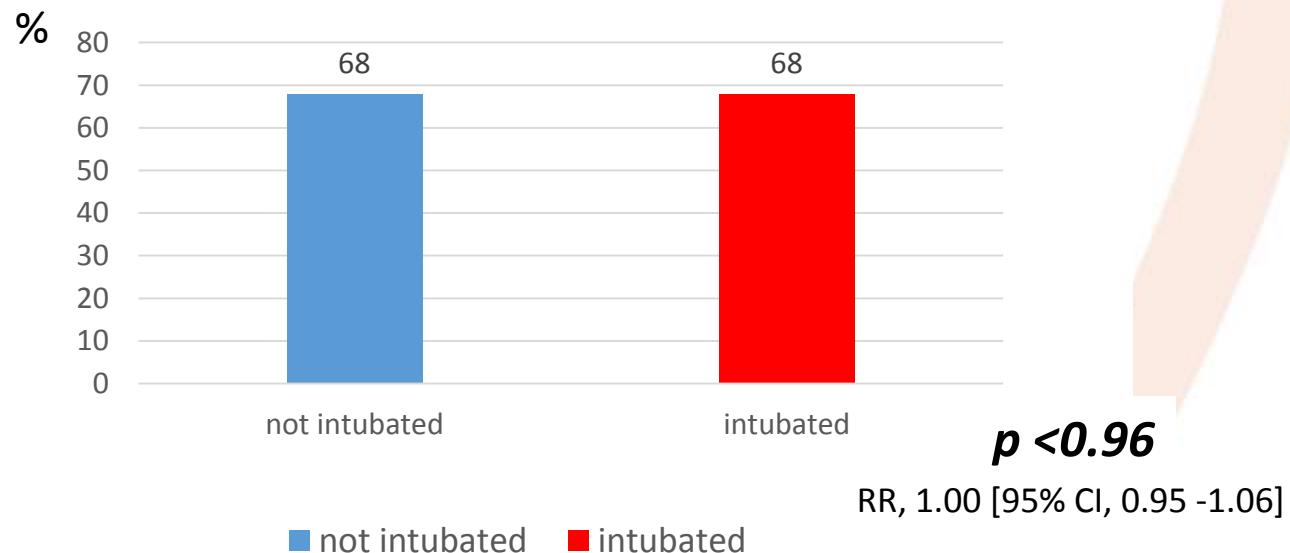
Association Between Tracheal Intubation

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Return of spontaneous circulation



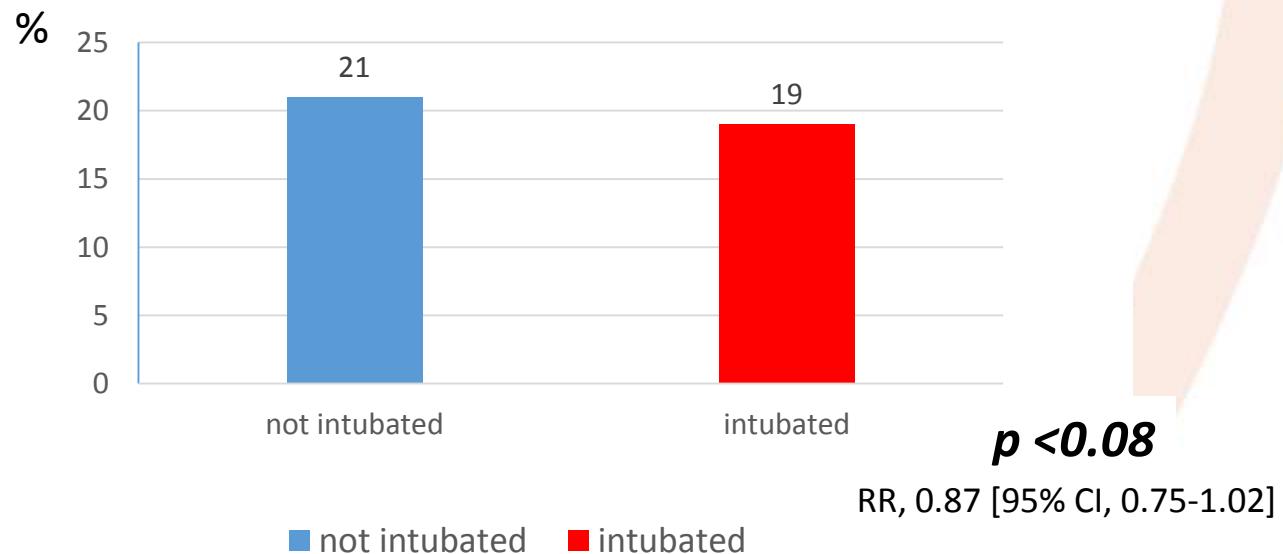
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Favorable neurologic outcome



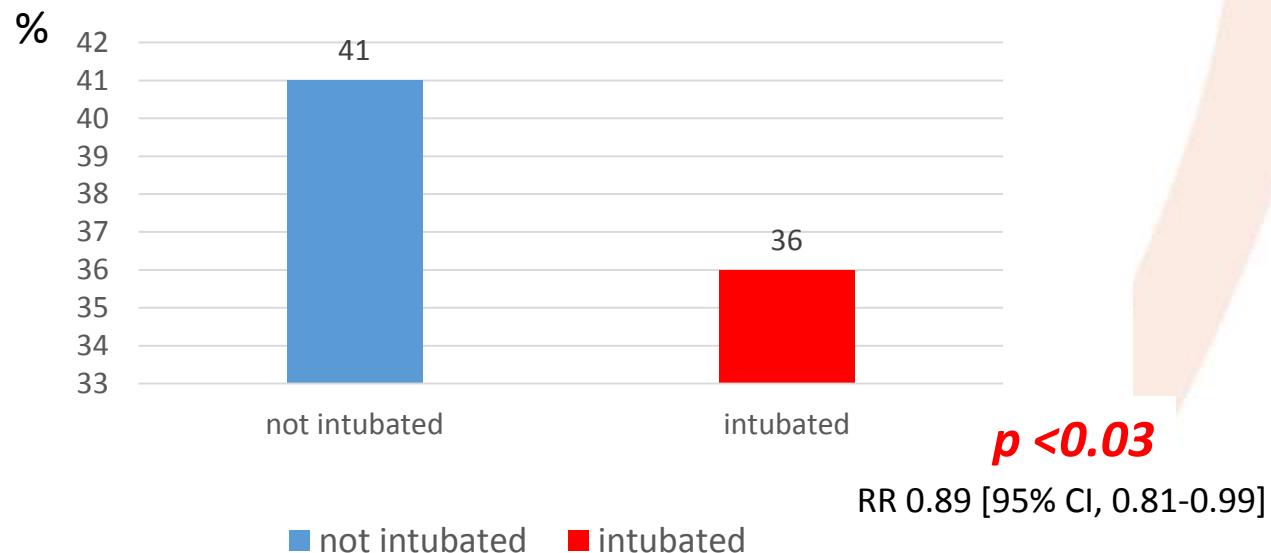
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JAMA. Published online October 4, 2016.

Survival to hospital discharge



Association of Prehospital Advanced Airway Management With Neurologic Outcome and Survival in Patients With Out-of-Hospital Cardiac Arrest

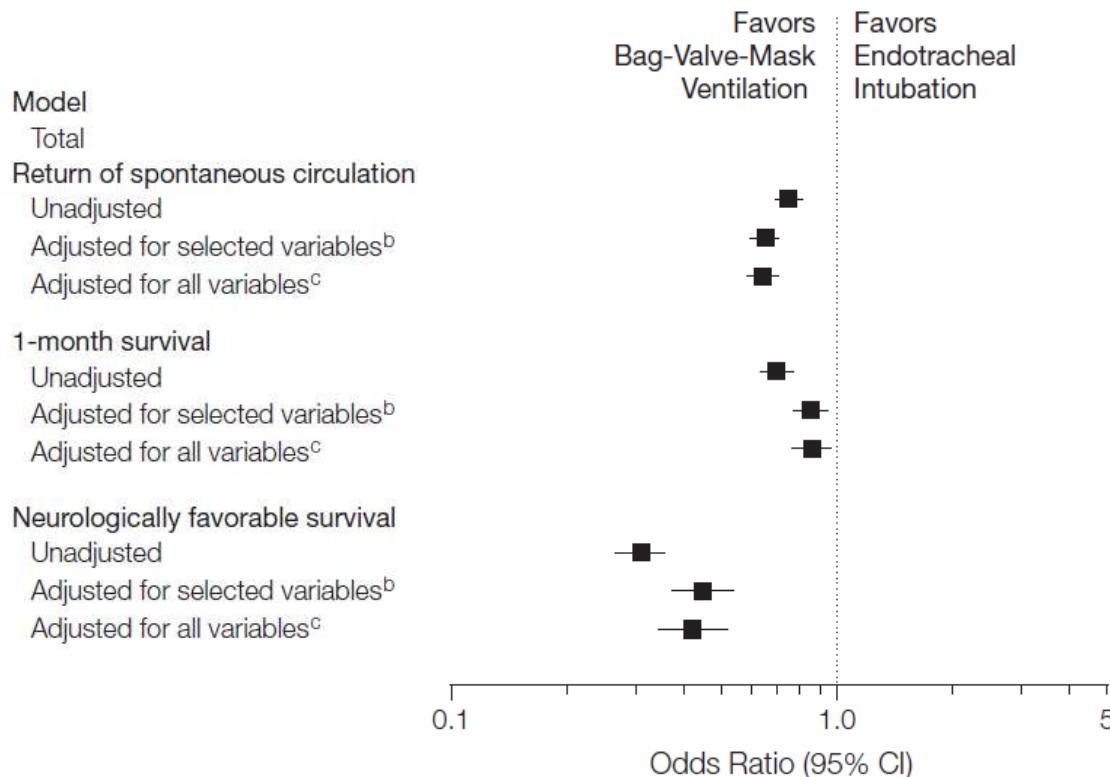
Kohei Hasegawa, MD, MPH

Atsushi Hiraide, MD, PhD

Yuchiao Chang, PhD

David F. M. Brown, MD

JAMA. 2013;309(3):257-266



Association Between Tracheal Intubation During Pediatric In-Hospital Cardiac Arrest and Survival

Lars W. Andersen, MD, MPH; Tia T. Raymond, MD; Robert A. Berg, MD; et al.

JAMA. Published online October 4, 2016.

Conclusions and relevance:

Although the study design does not eliminate the potential for confounding, these findings do not support the current emphasis on early tracheal intubation for pediatric in-hospital cardiac arrest.

Breathing

Durata delle Ventilazioni



- La **durata della ventilazione** è di circa **1 sec**, sufficiente per vedere il torace espandersi, come nell'adulto,
- (*LG 2010 – 1 - 1,5 secondi, verificando l'espansione del torace*).
- **Evidenze:** Non ci sono nuove evidenze rispetto al 2010
- **Razionale:** coincide con la pratica sull'adulto

Circulation



- Per le compressioni toraciche, la porzione inferiore dello sterno dovrebbe abbassarsi:
 - di almeno **1/3 del diametro antero-posteriore del torace o di 4 cm nel lattante.**
 - di almeno **1/3 del diametro antero-posteriore del torace o di 5 cm nel bambino.**

Family

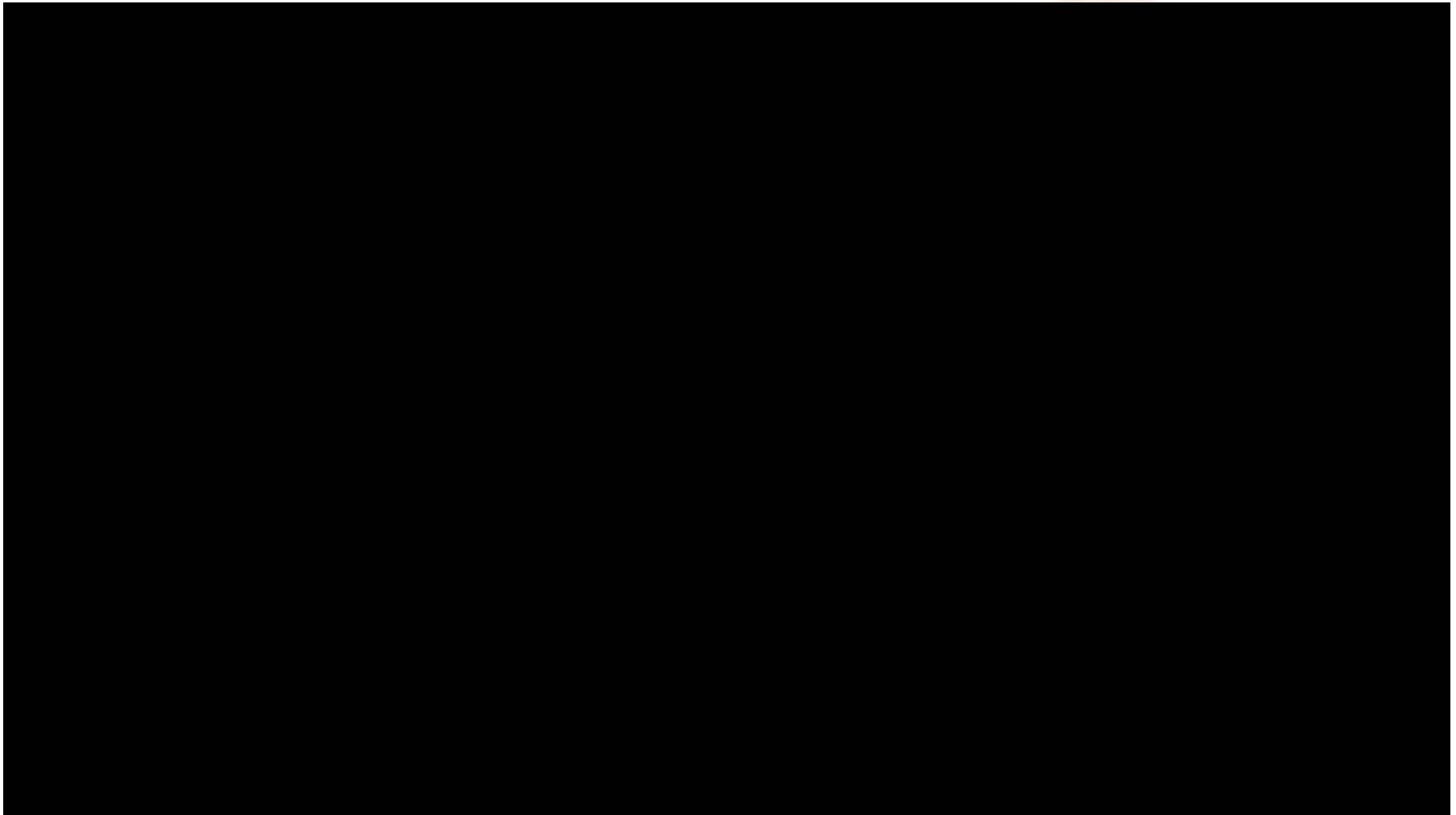


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Family



- **La presenza dei genitori può aiutare gli operatori sanitari a mantenere un comportamento professionale e a vedere il bambino come un essere umano e come membro di una famiglia.**
- Quando i genitori sono presenti nella stanza dove si sta effettuando la rianimazione, **un membro del team di rianimazione dovrebbe occuparsi di loro** per spiegare ciò che succede in modo empatico.

Family Presence During Pediatric Tracheal Intubations

Sanders RC Jr, Nett ST, Davis KF, Parker MM, Bysani GK, et al;
National Emergency Airway Registry for Children NEAR4KIDS Investigators;
Pediatric Acute Lung Injury and Sepsis Investigators Network.

JAMA Pediatr. 2016 Mar; 170 (3)

Main Outcomes And Measures:

The percentage of Family Presence (FP) during Tracheal Intubation (TI).

First attempt success rate, adverse TI-associated events, multiple attempts (≥ 3), oxygen desaturation (oxygen saturation as measured by pulse oximetry <80%), and self-reported team stress level.

Results:

A total of 4969 TI encounters were reported.

The average percentage of TIs with FP was **19%** and varied widely across sites (**0% - 43%**; $P < .001$).

Family Presence During Pediatric Tracheal Intubations

Sanders RC Jr, Nett ST, Davis KF, Parker MM, Bysani GK, et al;
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JAMA Pediatr. 2016 Mar; 170 (3)

Results:

Tracheal intubations with FP and without FP were **no different** in:

- first attempt success rate** (OR, 1.00; 95% CI, 0.85-1.18),
- adverse TI-associated events** (any events: OR, 1.06; 95% CI, 0.85-1.30 and severe events: OR, 1.04; 95% CI, 0.75-1.43),
- multiple attempts (≥ 3)** (OR, 1.03; 95% CI, 0.82-1.28),
- oxygen desaturation ($O_2 < 80\%$)** (OR, 0.97; 95% CI, 0.80-1.18)
- self-reported team stress level** (OR, 1.09; 95% CI, 0.92-1.31)

Family Presence During Pediatric Tracheal Intubations

Sanders RC Jr, Nett ST, Davis KF, Parker MM, Bysani GK, et al;
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JAMA Pediatr. 2016 Mar; 170 (3)

Conclusions and relevance:

1. **Wide variability exists in FP during TIs across PICUs.**
2. Family presence was not associated with first attempt success, adverse TI-associated events, oxygen desaturation (<80%), or higher team stress level.
3. Our data suggest that **FP during TI can safely be implemented** as part of a family-centered care model in the PICU.

Pediatric Resuscitation

Do We Maintain Adequate Skills?

*Mary Claire Avanis, MBBS, BSc, FRCA, Aishwarya Venkataraman, MBBS, DCH, MRCPCH,
Mamta Vaidya, MBBS, MD, MRCPCH, and Kalaimaran Sadasivam, MBBS, DCH, MRCPCH*

Pediatric Emergency Care • Volume 32, Number 3, March 2016

Methods

We collected data by a questionnaire given in person to the pediatric staff members at **the Royal London Hospital, London**.

The questionnaire contained 42 multiple choice questions.

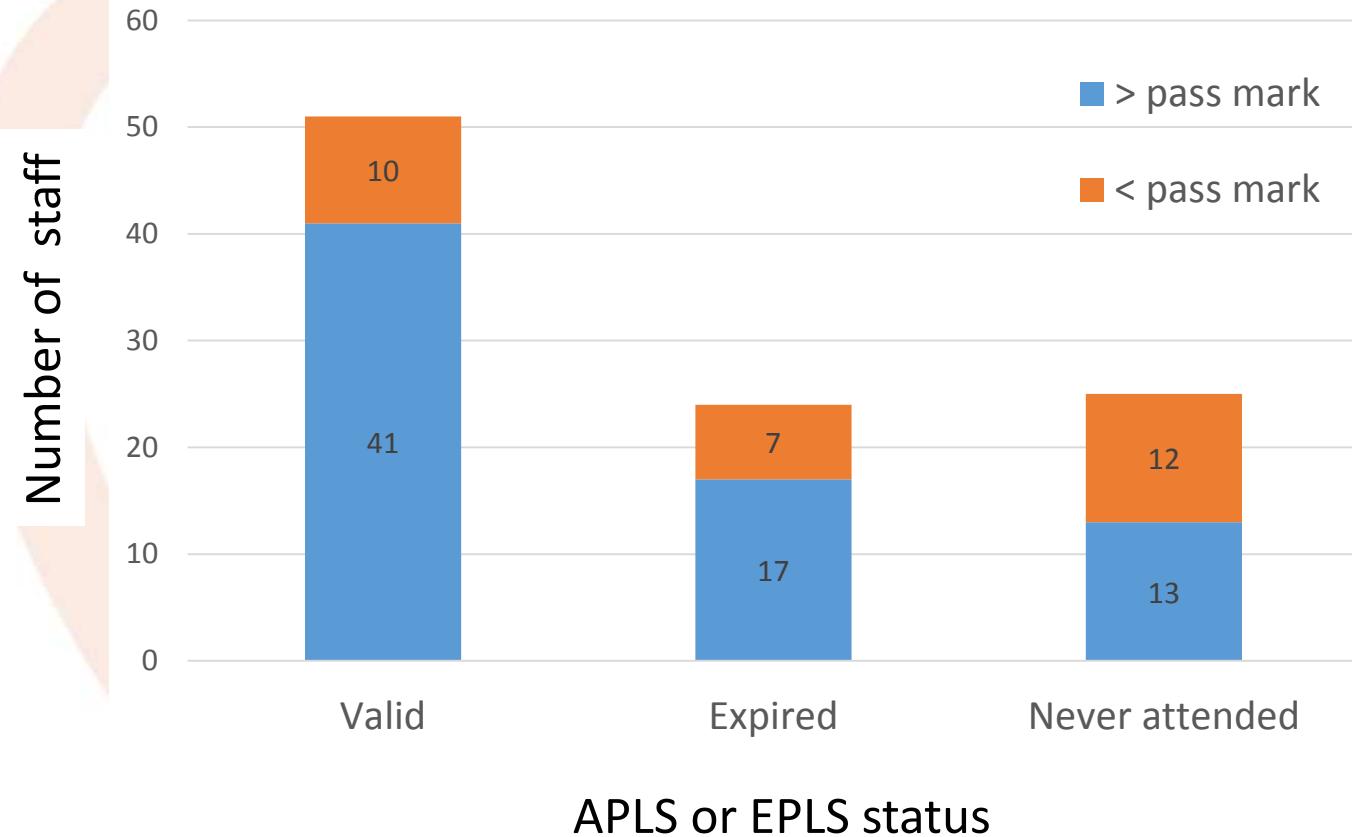
The participants were given 10 minutes to complete the questionnaire.

The pass mark was set at 80%. Participation was anonymous and voluntary.

Pediatric Resuscitation

Do We Maintain Adequate Skills?

Pediatric Emergency Care • Volume 32, Number 3, March 2016



Questionario di Rilevazione sull'organizzazione e sulla formazione dei PS con presenza di personale pediatrico anno 2016 - Regione Toscana

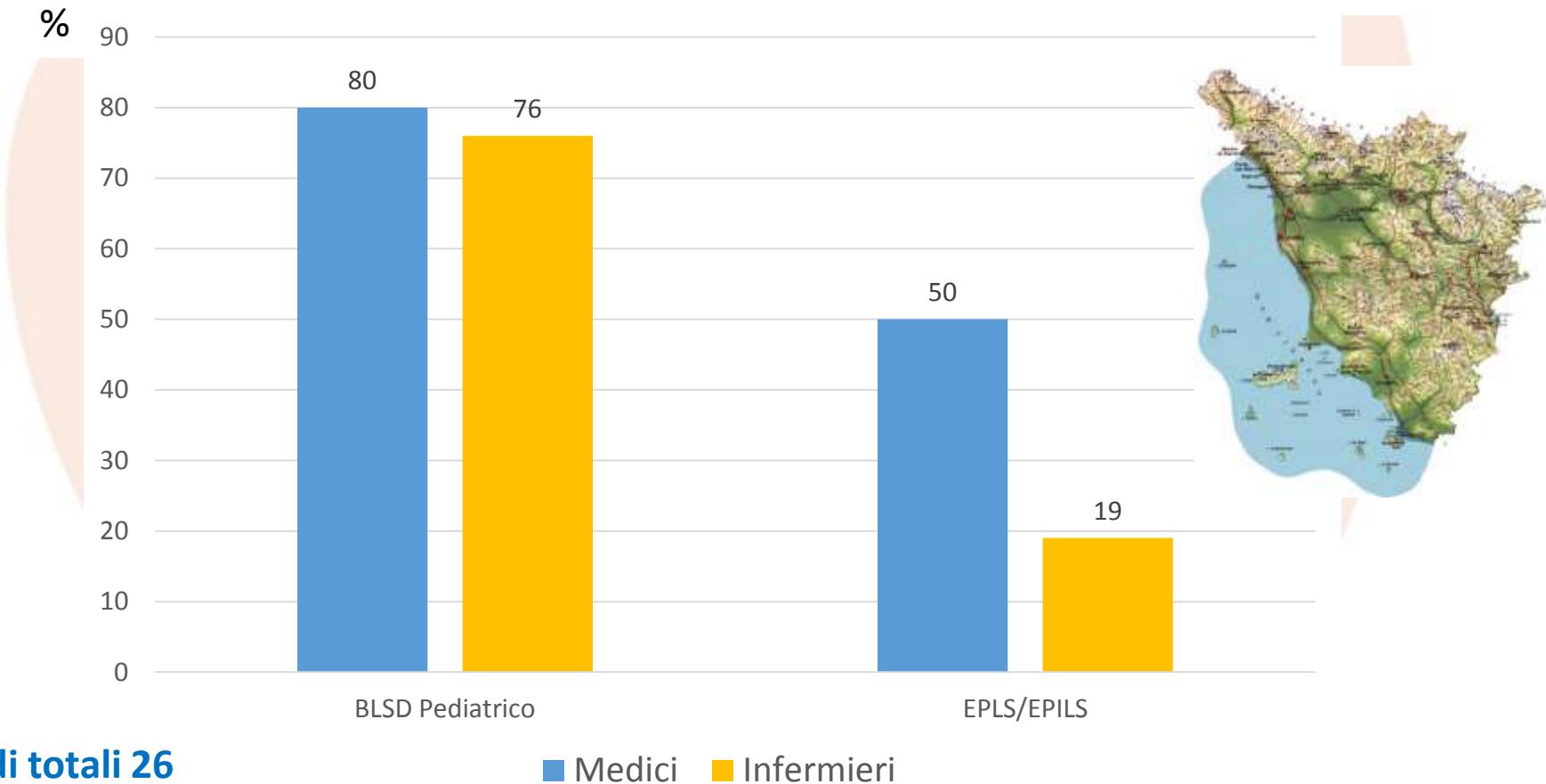
Il questionario

Obiettivo: rilevazione delle modalità di organizzazione e formazione nei presidi pediatrici della Toscana

Sottoposto a 20 Direttori di Unità di Pediatria responsabili di **26 presidi ospedalieri** ove operano medici pediatri e infermieri per attività di PS.



Presidi con percentuale > al 70% di personale con certificazioni valide per BLSD pediatrico e EPLS/EPILS



“Everyone in healthcare has two jobs when they come to work every day: to do their work and to improve it.”



Batalden PB, Davidoff F. - Qual Saf Health Care. 2007 Feb 16



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www.meyer.it/simulazione

Grazie per
l'attenzione