



MEETING GIVITI 2025

La rete TIPNET: raccolta dati e progetti

Angela Amigoni

PICU - University Hospital of Padova









Content



- PICU Networks in the world
- TIPNET details
- TIPNET centers
- Database details
- TIPNET data
- TIPNET data quality
- Tipnet meetings
- Tipnet research



PICU Networks in the world











General Enquiries

picanet@leeds.ac.uk 0113 343 8125 PICU Networks in the world







AUSTRALIAN AND NEW ZEALAND PAEDIATRIC INTENSIVE CARE REGISTRY (ANZPICR)

Australian and New Zealand Paediatric Intensive Care Registry Activity Report 2018



- To obtain descriptive epidemiological data on children admitted to Pediatric Intensive Care Units.
- To monitor the quality of care in Pediatric Intensive Care Units in our country.
- To identify the best clinical practice.
- To define national standards of care in Pediatric Intensive Care.
- To establish national quality indicators for Pediatric Intensive Care.
- To provide updated and comparable data for national healthcare policy decisions.
- To design clinical studies.





One of the **Scientific Direction** of the Italian Pediatric Society of Neonatal & Pediatric Anesthesia and Critical Care – **Coordinator:** Angela Amigoni



Steering Committee:

Angela Amigoni; Dario Gregori (data coordinator); Paolo Biban; Rosanna Irene Comoretto; Francesca Izzo; Matteo Martinato; Maria Cristina Mondardini; Cinzia Papappicco; Andrea Wolfler

GiViTI

OSPEDALE DEI BAMBINI "VITTORE BUZZI" Via Castelvetro 32 20154 Milano

Sistema Socio Sanitario



S.C. Anestesia e Rianimazione

Direttore: D.ssa E. Zoia Direzione: tel 02.63635484

Segreteria: tel. 0263635335; fax: 0263635178 E-mail: anestesia.buzzi@asst-fbf-sacco.it

Institutional Ethics Committee approval





Titolo dello studio: Studio epidemiologico, osservazionale, prospettico multicentrico sulle Terapie Intensive Pediatriche in Italia

Versione: 1.0 del 17/11/2019

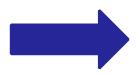
Promotore: Azienda Ospedaliera FBF Sacco – Ospedale dei Bambini Vittore Buzzi

Sperimentatore principale: Dott.ssa Francesca Izzo

GiViTI

2012- 2020: CINECA

2020 - actually:





Unità di Biostatistica, Epidemiologia, e Sanità Pubblica Dipartimento di Scienze Cardio-Toraco-Vascolari e Sanità Pubblica University of Padova







WEBSITE



TIPNET CLICCA PER VEDERE IL SITO » SOCIETÀ V SOCI V ATTIVITÀ V NEWS GALLERY LINKS

HOME LE PUBBLICAZIONI I GRANTS I MEETINGS NAZIONALI TIPNET CONTATTI



www.tipnet.org

TIPNET centers



ENROLLED

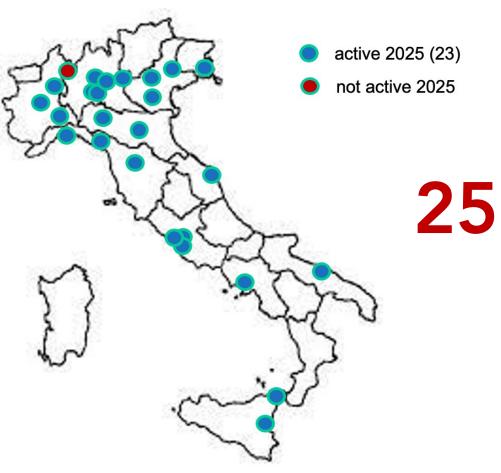
With GiViTi:

- Bergamo
- Brescia
- Massa Carrara

STARTED or RE-STARTED in 2025:

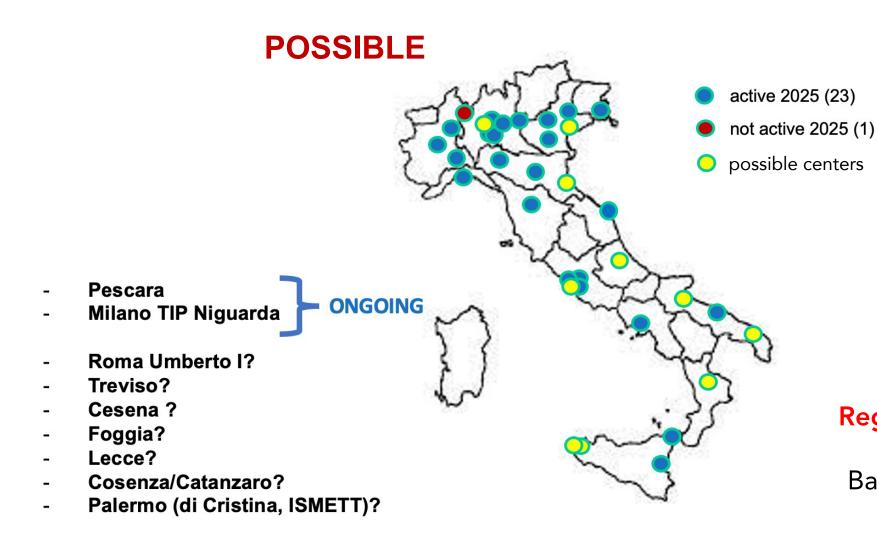
- Ancona
- Bari
- Roma OPBG (ARCO e DEA)





TIPNET centers







Regions without TIP:

Umbria, Molise, Basilicata, Sardegna

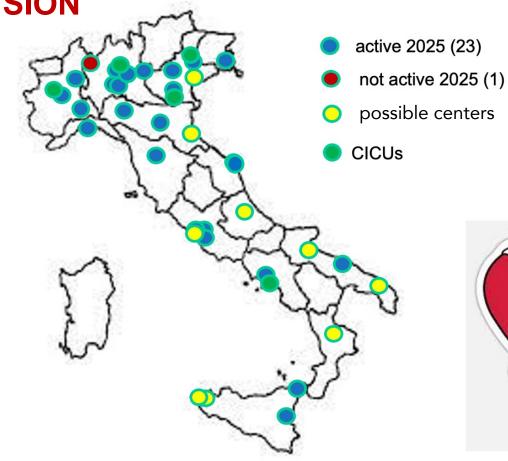
TIPNET centers



FUTURE EXTENSION

CICUs:

- Milano San Donato
- Torino CCH
- Napoli Monaldi
- TIPO CCH Padova
- TIPO CCH Verona
-







TIPNET CENTER

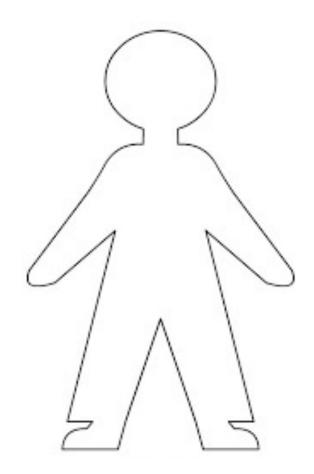
Data on center's characteristics
Human resources
Technologic resources
Procedures



GiViTI

TIPNET DATA

Name / last name DOB CF code





TIPNET DATA

	Anagrafica		
Codice paziente	Anagrafica	Accettazione	Ingresso



TIPNET DATA

	Ricovero									
		Punteggio Di Aristotle Da								
Pim	Pelod Scheda Facoltativa	Compilare Solo Per Pazie	Degenza	Procedure Di Ventilazione	Infezione	Sepsi Prima Infezione	Sepsi Seconda Infezione	Dimissione		

PRIORITY

PIM, PELOD & ARISTOTLE score

Pediatric index of mortality (PIM)

Si tratta di uno score che calcola la probabilità di morte (%) per i bambini di età inferiore a 16 ricoverati in terapia intensiva. Non si calcola per i neonati prematuri con meno di 36 settimane gestazionale.

Pediatric Logistic Organ Dysfunction score (PELOD)

Si tratta di uno score che descrive quantitativamente e obiettivamente il grado di disfunzior insufficienza d'organo all'ingresso e quotidianamente.

Aristotle score

L'Aristotle score è uno strumento che misura la performance e non direttamente la mor calcolo dello score la complessità è una costante ed è data dalla somma di morte pote potenziale per la morbidità e la difficoltà tecnica. La performance viene valutata infine m la complessità con l'outcome.

Livello di priorità del ricovero

PRIORITA' 1

pazienti "critici", instabili con necessità di trattamento intensivo (ad esempio, ventilazione, amine) e monitoraggio che non possono essere forniti al di fuori della TIP. Per questi pazienti non sono generalmente previsti limiti per l'intensità di cure da attuare.

Es: insufficienza respiratoria acuta o post-operatoria con necessità di ventilazione meccanica, shock, ecc.

PRIORITA' 2

pazienti che necessitano di monitoraggio intensivo e, potenzialmente, di un trattamento immediato. Per essi non sono in genere previsti limiti per l'intensità delle cure da ricevere (es: paziente con comorbilità cronica con un evento acuto di tipo medico o chirurgico)

PRIORITA' 3

pazienti "critici" e instabili ma che hanno ridotte probabilità di ripresa a causa della malattia sottostante o della natura della loro malattia acuta. Questi pazienti possono ricevere trattamenti intensivi per superare una fase acuta ma possono avere dei limiti nel grado di intensità di cura (no intubazione, no manovre di RCP)

PRIORITA' 4

pazienti per i quali non è appropriato il ricovero in TIP.

4a) "troppo sani per il ricovero in TIP"

Pazienti che prevedibilmente non hanno o hanno poco beneficio dal ricovero in TIP e per i quali le cure possono essere effettuate in reparti diversi dalla TIP

4b) "troppo malati per il ricovero in TIP".

Pazienti con patologia terminale ed irreversibile che sono a imminente rischio di morte

* must provide value

Peso stimato in benessere (kg)

* must provide value

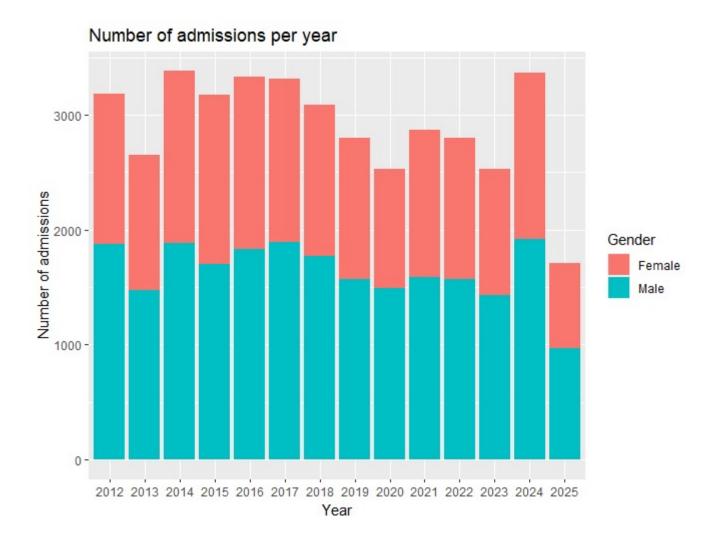
Ricovero programmato (ricovero programmato si intende il ricovero per intervento/procedura procastinabile di almeno 12 ore)

* must provide value



TREND

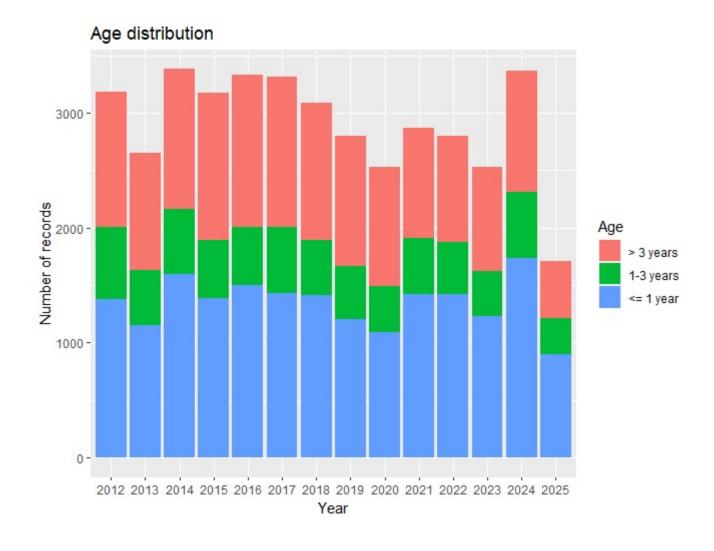




40733 admissions

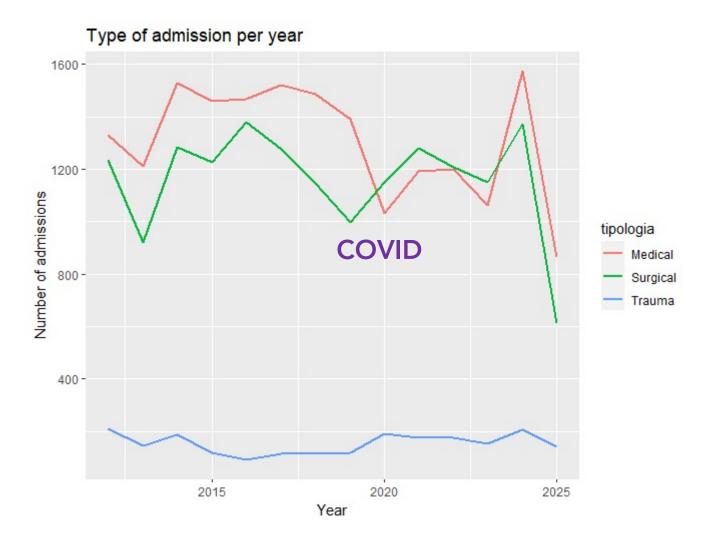
AGE





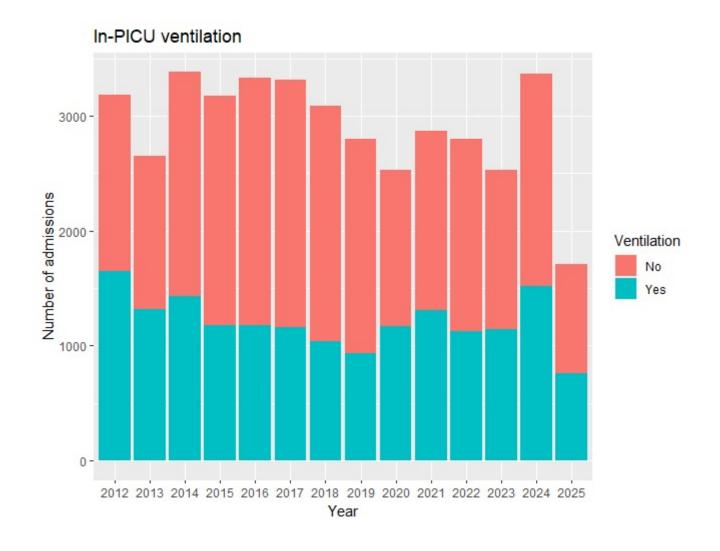
• TIPNET data TYPE OF ADMISSION





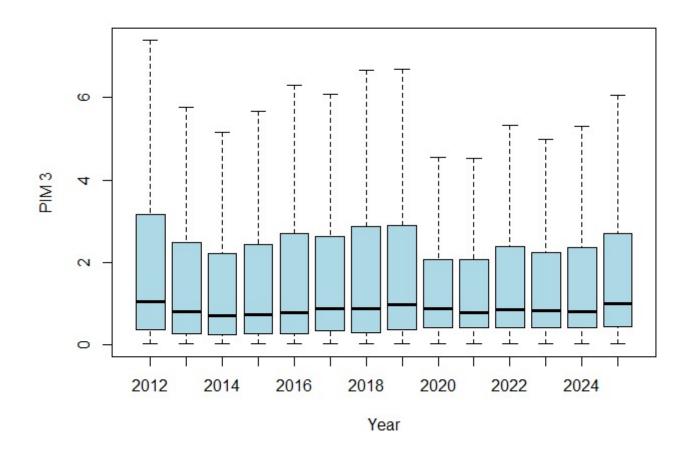
VENTILATION





MORTALITY

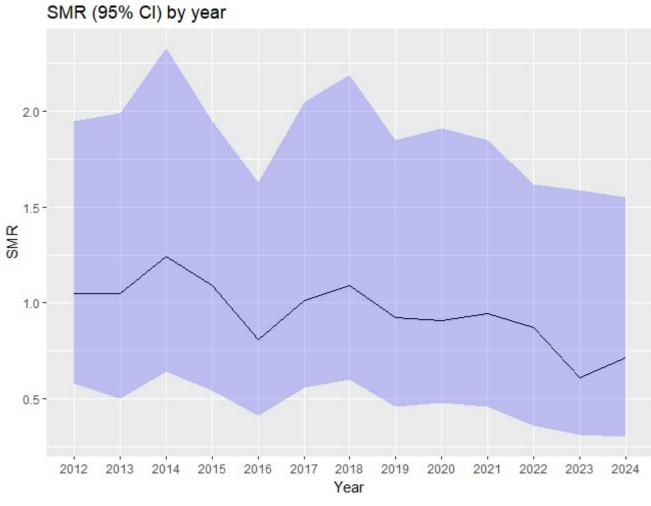




SMR









Three possible Reports:

- A report downloaded by REDCAP
- A STATIC report
- A DYNAMIC interactive report





Three possible Reports:

- A report downloaded by REDCAP
- A STATIC report
- A DYNAMIC interactive report
 - ✓ *Accettazione*: number of records
 - ✓ Descrittive: descriptive table for the most important information collected ✓ SMR



Every 6 months

- ✓ Fix layout
- ✓ General section
- ✓ Study Center specific sections



Three possible Reports:

- A report downloaded by REDCAP
- A STATIC report
- A DYNAMIC interactive report
 - ✓ Data quality section
 - ✓ Descriptive section
 - ✓ Admission
 - ✓ During the hospitalization
 - ✓ Discharge



Customizable

- Time-frame
- Specific characteristics
- ✓Zoom into a specific center
- ✓ Table with raw data

https://r-ubesp.dctv.unipd.it/shiny/TIPNet/





electronic case report form on REDCap using coded formats and validation rules to ensure data quality and consistency

Only permitted forms based on logical conditions are shown

Data Quality feature: a set of automatic and manual tools to check and improve data quality through predefined and custom rules. It is possible to flag corrections needed for users, add comments, and monitor the status of these corrections, facilitating a collaborative and transparent data review process.











Define Business Goals

Define the business goals for data quality improvement

3 Levels of Evaluation

- 1 % Data Entry (TIPNET) compared to the number of admissions declared by each Center (TIPNET Centro) 2022-2023
- Database Completeness (on priority variables) October November 2023
- 3 Data Entry Concordance



% Data Entry (TIPNET) compared to the number of admissions declared by each Center (TIPNET Centro), 2022-2023) by each Center

redcap_data_access_group	anno di riferimento	n_ricoveri_anno	record tipnet	%
	2023	560	285	51%
	2023	291	289	99%
referent contacted	2023	400	101	25%
	2023	337	280	83%
	2023	264	242	92%
	2023	343	319	93%
	2023	211	207	98%
referent contacted	2023	259	111	43%
	2023	412	350	85%
	2023	350	330	94%
referent contacted	2023	400	10	3%
referent contacted	2023	89	24	27%
	2023	24	25	104%
referent contacted	2023	285	30	11%



2 Database Completeness (on priority variables) October – November 2023

Missing variables, by center

	Characteristic	Overall, N = 372¹												
V	POPC	22	6	0	7	0	0	3	0	0	5	0	1	0
V	Provenienza	22	6	0	7	0	0	3	0	0	5	0	1	0
V	insuff_organo_degenza	23	11	0	1	0	0	10	0	0	0	0	1	0
/	procedure_rico	23	11	0	1	0	0	10	0	0	0	0	1	0
	sedazione	29	11	0	3	0	2	10	1	1	0	0	1	0
	astin	180	15	^ .	15		59	12	20	11	9	1	34	2
	delirium	168	Disc	cussed v	vith the i	referents	5 59	12	14	11	9	1	33	2
✓	Specifiche della nutrizione	27	13	0	2	0	0	10	0	1	0	0	1	0
/	pim2	34	1	0	5	0	6	7	0	5	4	0	6	0
V	pim3	34	1	0	5	0	6	7	0	5	4	0	6	0
V	dimissione_dt	32	13	0	5	0	2	10	0	0	1	0	0	1
V	diagnosi	34	13	0	7	0	2	10	0	0	1	0	0	1
1	esito_tip	34	13	0	7	0	2	10	0	0	1	0	0	1



Data Entry Concordance





Steps and Timeline

5 different clinical cases

- ✓ Select ideally 5 collaborators per center
- ✓ Send clinical cases: Early February 2025
- ✓ **Deadline**: 31.03.2025
- ✓ Data Analysis: To evaluate concordance and to identify critical issues
- **✓Improvement Actions**



TIPNET meetings



MEETINGS OF THE CENTERS

2021:

2022:

2023:

2024:

2025:

February
April
June
September

November

January April September January April July January May September January March September



TIPNET meetings



DEDICATED MEETINGS

Bari

Catania

Firenze

Varese

Brescia

Bari refresh

Novara refresh

Ancona

Trieste refresh

Parma

Pescara

Varese refresh



TIPNET meetings



MEETINGS OF THE STEERING COMMITTEE

2022:

2023:

2024:

2025:

November

January September November January March April July

January July October



TIPNET research

Ideation of a study



Presentation of the protocol to the SC



Approval by the SC



Statistical plan

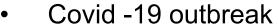


Presentation to the TIPNET Centers & authorship rules











- Bronchiolitis
- Non invasive ventilation
- Hemodynamics
- Sepsis *
- Oncology
- Vascular accesses *
- ICA *
- Mortality scores
- Palliative care
- Nurse research *
- Studies with GiViTi



* Work in progress



TIPNET ouput

Observational Study > Pediatr Crit Care Med. 2017 Feb;18(2):e86-e91. doi: 10.1097/PCC.00000000000001054.

Withdrawal Assessment Tool-1 Monitoring in PICU: A Multicenter Study on Iatrogenic Withdrawal Syndrome > Crit Care Med. 2022 Mar 1;50(3):e294-e303. doi: 10.1097/CCM.000000000005334

Neuromuscular Blocker Use in Critically Ill Children: Assessing Mortality Risk by Propensity Score-Weighted Analysis

Wolfler et al. BMC Pediatrics (2019) 19:203 https://doi.org/10.1186/s12887-019-1579-3

BMC Pediatrics





RESEARCH ARTICLE

Open Access

Articl

Predicting Hemodynamic Failure Development in PICU Using Machine Learning Techniques

A shared protocol for porcine surfactant use in pediatric acute respiratory distress syndrome: a feasibility study

Second prize is awarded to



Rosa

European Journal of Pediatrics https://doi.org/10.1007/s00431-020-03832-z

SHORT COMMUNICATION

Check for updates

Unplanned and medical admissions to pediatric intensive care units significantly decreased during COVID-19 outbreak in Northern Italy

Francesca Sperotto 1,2 • Andrea Wolfler 3 • Paolo Biban 4 • Luigi Montagn | International Internatio

Journal of Anesthesia, Analgesia and Critical Care

OF COVID-19 OUTBREAK ON RATES AND TYPES OF ADMISSION TO
IC INTENSIVE CARE UNITS IN NORTHERN ITALY
tical Care

espnic





The Importance of Mortality Risk Assessment: Validation of the Pediatric Index of Mortality 3 Score

Andrea Wolfler, MD¹; Raffaella Osello, MD²; Jenny Gualino, MD³; Edoardo Calderini, MD¹; Gianluca Vigna, MD³; Pierantonio Santuz, MD³; Angela Amigoni, MD³; Fabio Savron, MD³; Fabio Caramelli, MD³; Emanuele Rossetti, MD¹0; Corrado Cecchetti, MD¹0; Maurizio Corbari, MD¹0; Marco Piastra, MD¹¹; Raffaele Testa, MD¹²; Giancarlo Coffaro, MD¹³; Giusi Stancanelli, MD¹⁴; Eloisa Gitto, MD¹⁵; Roberta Amato, MSc¹6; Federica Prinelli, PhD¹¹; Ida Salvo, MD¹; on behalf of the Network delle Terapie Intensive Pediatriche (TIPNet) Study Group

Severe bronchiolitis before and after the COVID-19 pandemic: a retrospective database analysis by the Italian Network of PICU study group (TIPNet)

Francesca Izzo¹ ©, Rosanna I. Comoretto², Angela Amigoni³, Marco Daverio³, Elena Zola¹, Veronica Diotto¹, Francesco Sacco⁴, Claudio Nettuno⁵, Anna Tessari³, Erzo Picconi⁶, Maria Cristina Mondardini⁷, Galia Miliva Bregant⁸, Andrea Wolfler⁸, Dario Gregori¹⁰ and Anna Camporesi¹ Article

Non-Invasive Ventilation Failure in Pediatric ICU: A Machine Learning Driven Prediction

Young Investigators Award

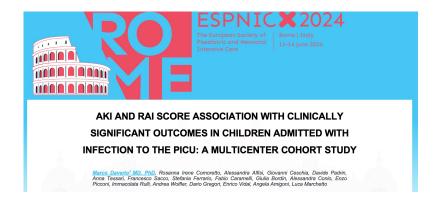
Francesca Sperotto
about the project

Maria Vittoria Chiaruttini ¹⁰, Giulia Lorenzoni ¹⁰, Marco Daverio ²⁰, Luca Marchetto ²⁰, Francesca Izzo ³⁰, Giovanna Chidini ⁴, Enzo Picconi ⁵⁰, Claudio Nettuno ⁶, Elisa Zanonato ⁷, Raffaella Sagredini ⁸, Emanuele Rossetti ⁹, Maria Cristina Mondardini ¹⁰, Corrado Cecchetti ¹¹, Pasquale Vitale ¹², Nicola Alaimo ¹³, Denise Colosimo ¹⁴, Francesco Sacco ¹⁵, Giulia Genoni ¹⁶, Daniela Perrotta ¹⁷, Camilla Micalizzi ¹⁸, Silvia Moggia ¹⁹, Giosuè Chisari ²⁰, Immacolata Rulli ²¹, Andrea Wolfler ²², Angela Amigoni ², and Dario Gregori ^{1,*6}

TIPNET in press



Marchetto Luca, Comoretto R.I., Zoppelletto F., Davide Padrin D., Biban P., Ferrario S., Mondardini M.C., Bordin G., Vitale P., Picconi E., Rulli I., Wolfler A., Gregori D., Amigoni A., Daverio M.





RISK FACTORS IN CANCER PATIENTS ADMITTED TO PAEDIATRIC INTENSIVE CARE UNIT: THE ONCOTIPNET STUDY

JND and AIM

markable progress in the field, 25-40% of cancer patients are still admitted to s outcome is probably due nature of the disease, apy complications or erventions.

the study was to describe eristics of paediatric cancer Imitted to Italian PICUs and risk-factors associated with ality and length-of-stay.

Solid Tumor		- ALL		= AML
■ N	HL	= HL		■ Others
	1. PICU po			
yo)	ALL= acute AML= ac			
een	NHL= no	n-Hodg	kin lympl	homa

nal multicentric study patients (age<18) o 14 Italian PICUs between and April-2022. Exclusion the secondary objective ere post-operative patients RESUITS

HL= Hodgkin lymphoma

	viol tality Fredictors	UK	CI	P-value
_	HSCT*	3.31	1.37 - 7.99	0.007
sion	PEWS score ¹	1.19	1.05 - 1.35	0.007
Prior to PICU admission	Priority level (1 and 2 vs 3 and 4b)	0.18	0.05 - 0.67	0.011
JC.	PIM 3 score ²	1.04	1.02 - 1.06	<0.001
10	Age	1.05	0.97 - 1.15	NS
Prior	Hematologic tumour	0.83	0.29 - 2.48	NS
_	POPC score ³	1.40	0.98 - 2.01	NS
	Multi-organ failure	4.59	1.42 - 17.83	0.018
U stay	Multi-organ failure Cardiac arrest	4.59 126.4	1.42 – 17.83 21.96 – 2447.83	0.018
ing PICU stay	-		21.96 -	
During PICU stay	Cardiac arrest Total Parental	126.4	21.96 – 2447.83	<0.001
During PICU stay	Cardiac arrest Total Parental Nutrition (TPN)	126.4 0.69	21.96 – 2447.83 0.25 – 1.87	<0.001 NS

Table 1. Factors associated with PICU mortality

	Le	ngth of Stay Predictors	OR	CI	P-value
		Kidney failure	7.61	1.91-13.32	0.009
	L C	Age	-0.07	-0.51 - 0.36	NS
	issic	Hematologic tumour	-1.88	-7.01 – 3.26	NS
	adm	HSCT	5.61	0.26 - 10.96	0.04
	Prior to PICU admission	PEWS score	-0.15	-0.86 - 0.55	NS
	to PI	PIM 3 score	0.03	-0.11 - 0.17	NS
	ior	POPC score	0.64	-1.51 – 2.78	NS
	P	Priority level	7.14	-0.84 - 15.12	NS
		pARDS	8.32	2.10-14.53	0.009
		Duration of ventilation (NIV/HFOV/MV)	0.67	0.53 - 0.81	<0.001
	CU stay	Total Parental Nutrition (TPN)	3.83	1.25 - 6.40	0.004
	During PICU	Infections	2.01	-0.58 - 4.60	NS
	urin	Respiratory failure	-0.27	-2.84 - 2.29	NS
	٥	Cardiac failure	-1.73	-4.74 - 1.27	NS
		Kidney failure	1.93	-1.64 - 5.51	NS

	DINASTIVENTO S
ESPNIC	% 2024

INDIVIDUAL ORGAN DYSFUNCTIONS IN CHILDREN

ADMITTED TO THE PICU WITH INFECTION:

A MULTI-CENTER ITALIAN STUDY

Padrin D., ¹ Comoretto R., Scaravetti S., Di Michele L., Tessari A., Sacco F., Ferrario S., Eusebi G., Bordin G., Vitale P., Picconi E., Rulli I., Wolfler A., Gregori D., Daverio M., Marchetto L.

CITTA'	CENTRO (Ospedale)	REFERENTE	RESPONSABILE TIP
Alessandria	SS Biagio e Arrigo	Claudio Nettuno	Elisabetta Lampugnani
Ancona	Salesi	Roberta Pallotto	Alessandro Simonini
Bari	Giovanni XXXIII	Fabiana Cito	TBD
Bergamo	Giovanni XXXIII	Manuela Corno	Ezio Bonanomi
Brescia	Spedali Civili	Gianluca Vigna	Alberto Giannini
Bologna	S.Orsola Malpighi	Maria Cristina Mondardini	Fabio Caramelli
Catania	Garibaldi Nesima	Giosuè Chisari	Giusy Stancanelli
Firenze	Meyer	Denise Colosimo Manuela L'Erario;	Zaccaria Ricci
Genova	Gaslini	Camilla Micalizzi; Alessia Montaguti	Andrea Moscatelli
Milano	Buzzi	Francesca Izzo, Stefania Ferrario	Elena Zoia
Milano	Policlinico De Marchi	Virginia Figgiaconi	Giovanna Chidini
Messina	Policlinico TIN TIP	Imma Rulli	Eloisa Gitto
Napoli	Santobono	Silvia Moggia	Geremia Zito
Novara	Maggiore della carità	Giulia Genoni	Marco Binotti
Padova	Azienda Ospedaliera Università	Marco Daverio; Anna Tessari	Angela Amigoni
Parma	AOU Parma	Alessandra Oppici	Clelia Zanaboni
Roma	Gemelli	Picconi Enzo	Giorgio Conti
Roma OPBG	ARCO	Fabrizio Chiusolo	Corrado Cecchetti
Roma OPBG	DEA	Gabriella Bottari	Corrado Cecchetti
Torino	Regina Margherita TIP	Pasquale Vitale	Simona Quaglia
Trieste	Burlo Garofalo	Gaia Bregant; Giacomo Paluzzano	Raffaella Sagredini
Varese	ASST dei 7 laghi	Serena Azzari	Andrea Ambrosoli
Verona	Universitario	Francesco Sacco	Paolo Biban
Vicenza	San Bortolo	Elisa Zanonato	Massimo Bellettato

Thank you!





Contact: angela.amigoni@aopd.veneto.it