



CONGRESSO
NAZIONALE
IRC 2022

TRAUMA: NUOVE EVIDENZE E PERCORSI
AUDITORIUM DELLA TECNICA • ROMA • 14-15 OTTOBRE



Sistema Socio Sanitario



Ospedale Niguarda
Trauma Center



Regione
Lombardia



UNIVERSITÀ
DEGLI STUDI
DI MILANO

Rete Trauma: Attualita' e Prospettive



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Italian
Resuscitation
Council

Summary:

- ***History of Trauma Systems***
- ***The development of Trauma Systems in Italy***
- ***Which future***

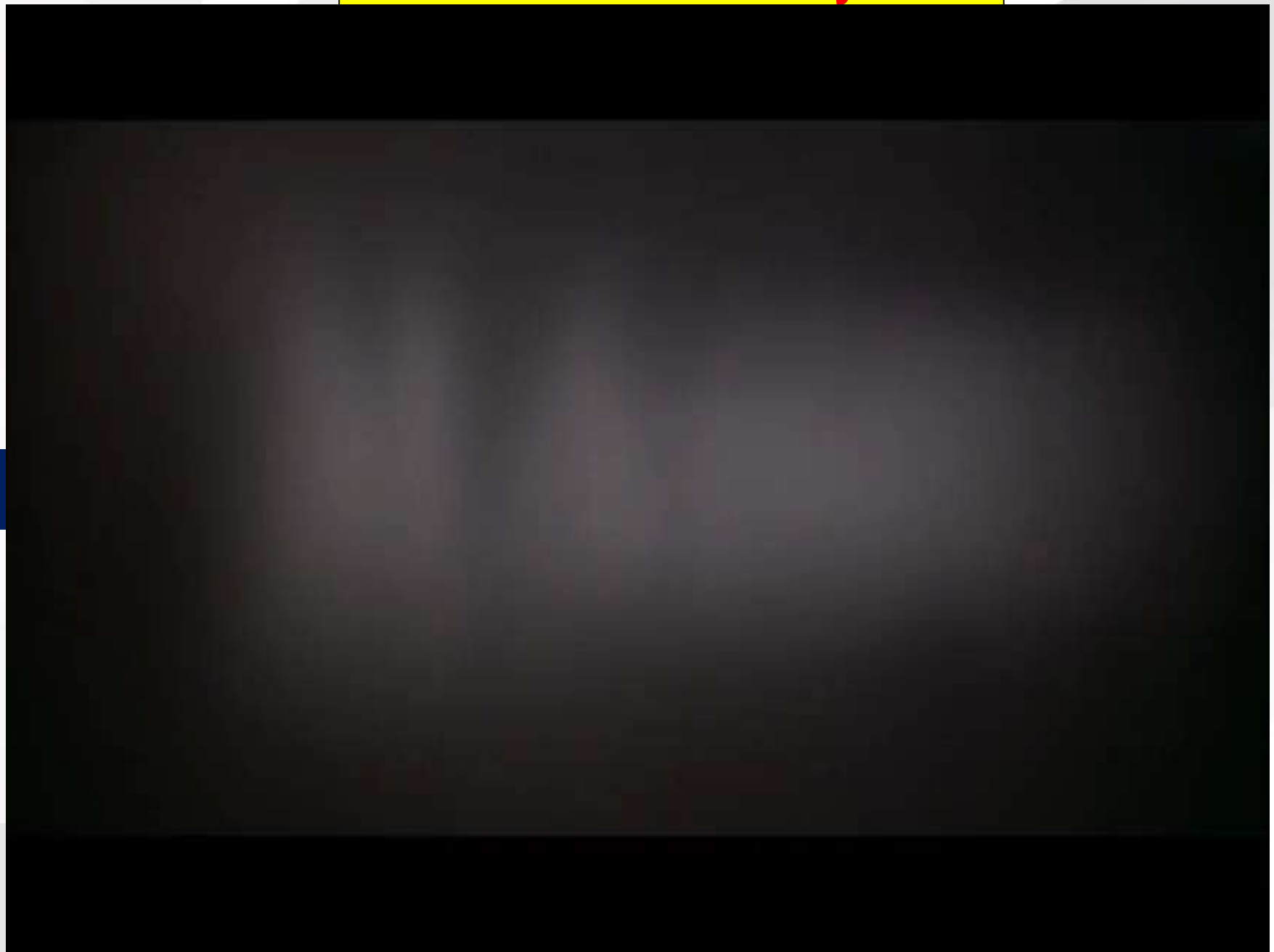
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The roots of trauma system:



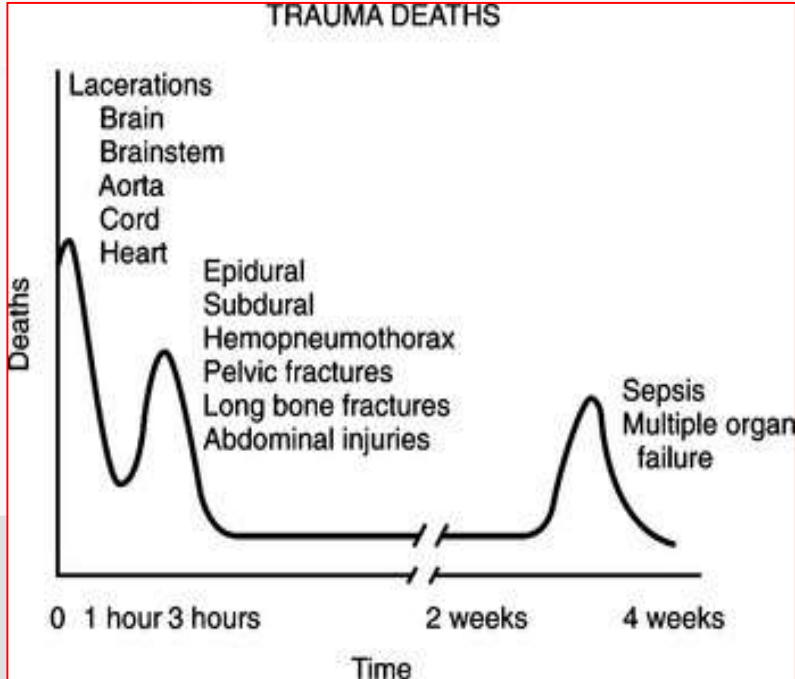
**Military Army Surgical Hospital
M. A. S. H (movie, by Robert Altman, 1970)**





DONALD D. TRUNKEY
1937-2019

“1979: Tri-modal distribution of trauma deaths and the concept of preventable trauma deaths”

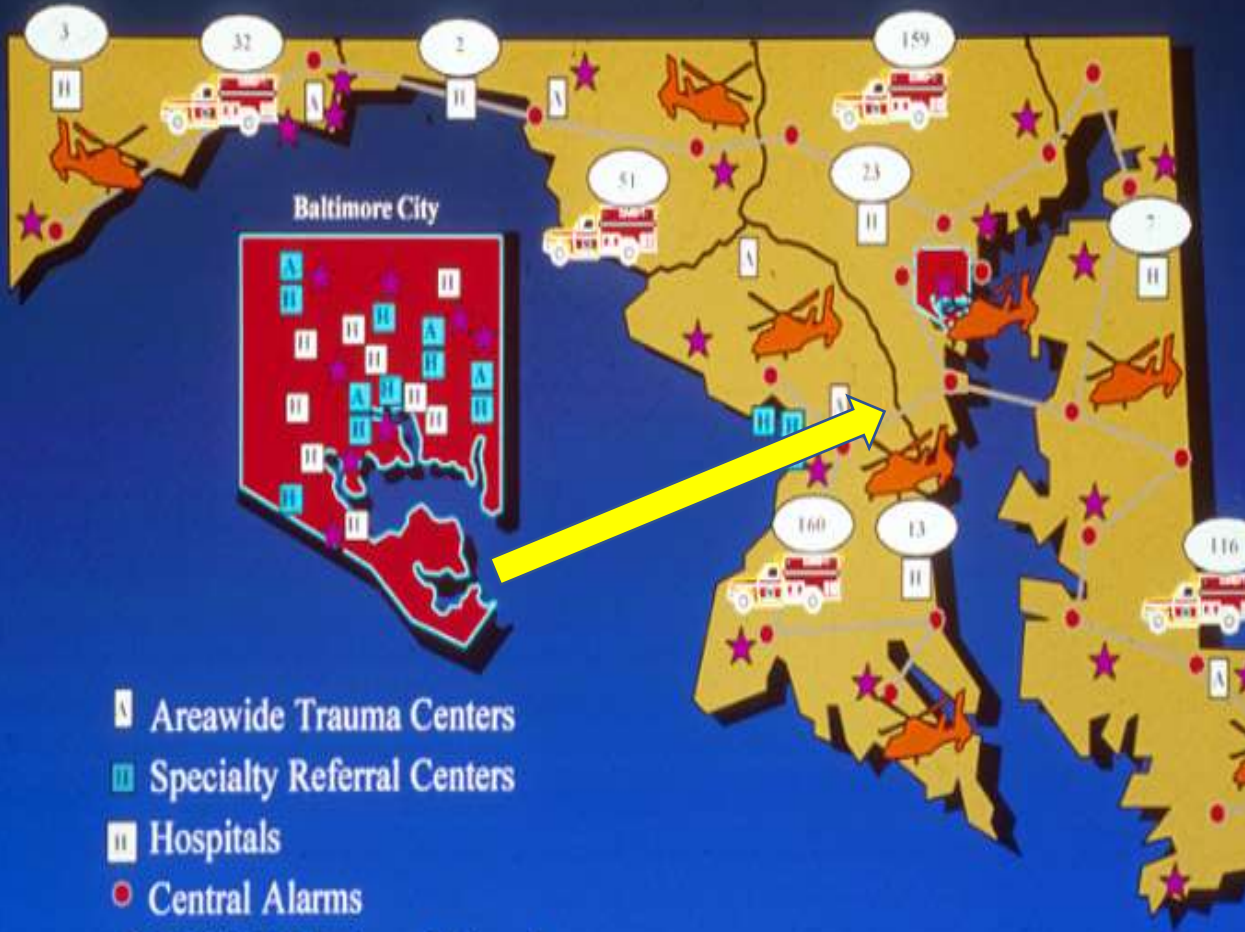


R. ADAMS COWLEY
1917-1991

“1980: There is a golden hour between life and death. If you are critically injured you have less than 60 minutes to survive”



Maryland EMS System



- Areawide Trauma Centers
- Specialty Referral Centers
- Hospitals
- Central Alarms
- EMSTel Telephone Network
- ★ Medical Command Consultation Centers

1973



SYSCOM





Exclusive Trauma System: focus on major trauma only with the identification of specialized hospitals for trauma care (Trauma Centers)

Inclusive Trauma System: all hospitals within a region are involved in the care of injured patients according to their resources

- Match individual patients' needs with the most appropriate facility
- Avoid saturation of referral centers with patients with minor injuries
- Avoid long transport times

Inclusive Trauma Systems: Do They Improve Triage or Outcomes of the Severely Injured?

Utter, Garth H. MD, MSc; Maier, Ronald V. MD; Rivara, Frederick P. MD, MPH; Mock, Charles N. MD, PhD; Jurkovich, Gregory J. MD; Nathens, Avery B. MD, PhD, MPH

[Author Information](#) The Journal of Trauma: Injury, Infection, and Critical Care: [March 2006 - Volume 60 - Issue 3 - p 529-537](#)

doi: 10.1097/01.ta.0000204022.36214.9e

Out of 61,496 patients, 40,706 (66.2%) were hospitalized at regional trauma centers. Inpatient mortality was 14.7%..... but were significantly lower in the most inclusive systems (odds ratio, 0.77; 95% confidence interval, 0.60–0.99).

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HISTORY IN ITALY

Bologna Soccorso 1990 Soccer World Championship

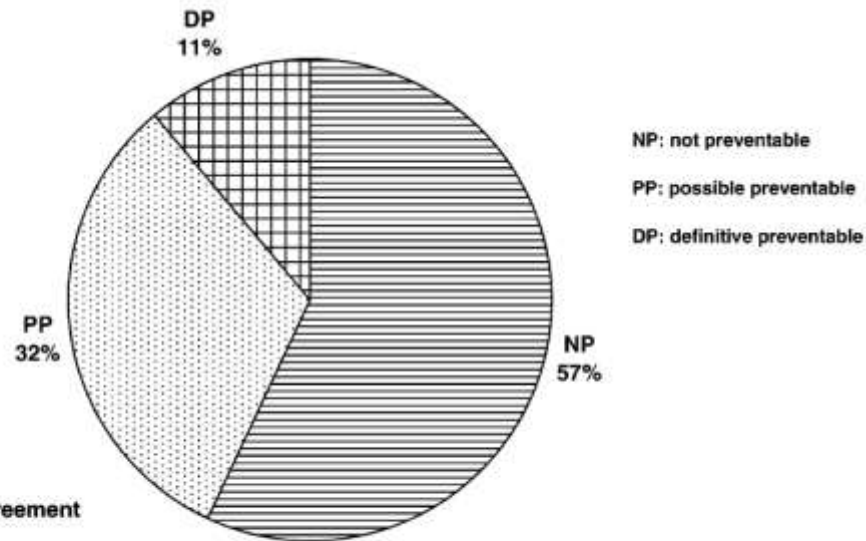
1991 FVG emergency call number in Gorizia

DPR 27 03 1992 published on n.76 della GU

**August 2, 1980: 10.25 am
85 deaths, 200 wounded**

Trauma deaths in an Italian urban area: an audit of pre-hospital and in-hospital trauma care

Oswaldo Chiara^{a,*}, Jane D. Scott^b, Stefania Cimbanassi^a, Aldo Marini^a,
Riccardo Zoia^c, Aurelio Rodriguez^b, Thomas Scalea^b



Inter-panel agreement

	NP	PP	DP	All
K	0.87	0.84	0.97	0.88

TRAUMA CARE IN ITALY: EVIDENCE OF IN-HOSPITAL PREVENTABLE DEATHS

Nino Stocchetti, MD, Giovanni Pagliarini, MD, Maurizio Gennari, MD, Giorgio Baldi, MD, Ennio Banchini, MD, Michele Campari, MD, Marisa Bacchi, MD, and Paolo Zucconi, MD

The quality of a trauma system can be assessed by the rate of preventable deaths. A random selected sample of 110 trauma patients was examined using both clinical and autopsy data. The assessors were asked the following question: If this patient had sustained the accident in front of the hospital in a normal working day, might death have been prevented? Death was found to be unavoidable in 61 cases; in 25 cases death was classified potentially preventable; 11 cases were classified as clearly preventable death. The main failures of treatment were identified as errors and delays during the first phases of in-hospital assessment and care. An improvement in the pre-hospital phase will be almost useless if the quality of the definitive in-hospital management is not addressed.

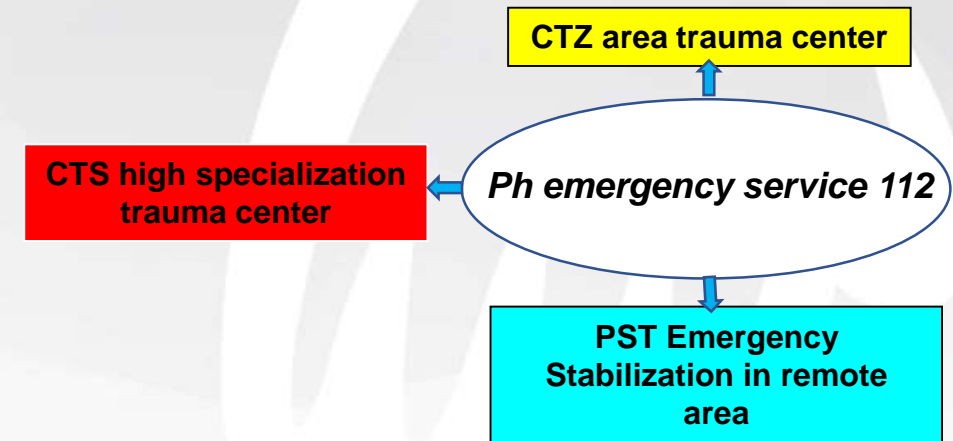
Normativa di riferimento:

Documento Sezione I del Consiglio Superiore di Sanita'
del 2005 in merito all'istituzione di un Sistema Integrato
per l'Assistenza al Trauma Maggiore (SIAT)

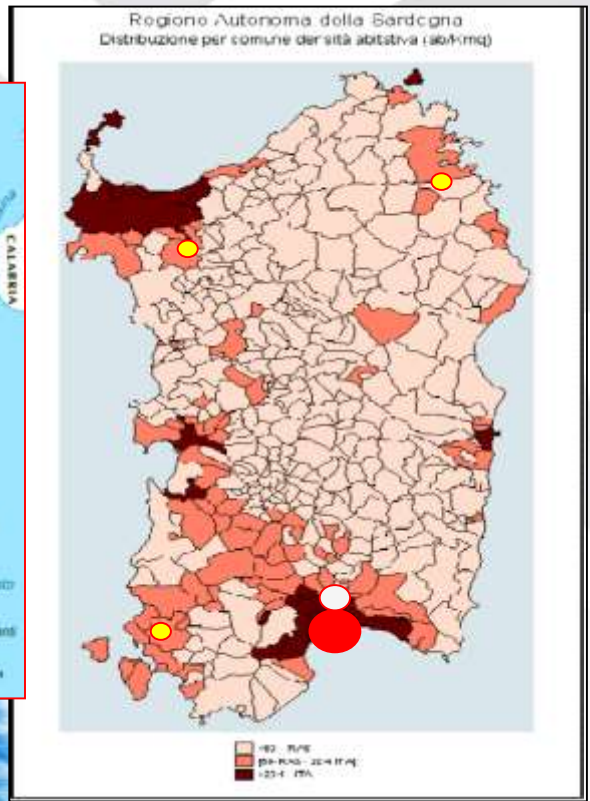
Documento Commissione Ministeriale per il riordino del
Sistema Urgenza-Emergenza in Italia del 2006

DM 70 9/07/2015 "Sugli standard qualitativi, strutturali,
tecnologici e quantitativi relativi all'assistenza
ospedaliera".

Conferenza Stato Regioni del 30/10/2017: Linee Guida
per la revisione delle reti cliniche-le reti tempo-
dipendenti e successivo **Accordo Stato Regioni 24**
gennaio 2018



1 CTS / 2.000.000-4.000.000 inhabitants.
At least **400-500 cases/y** (60% severe).
Definitive Care of every tipe of injury 24/24



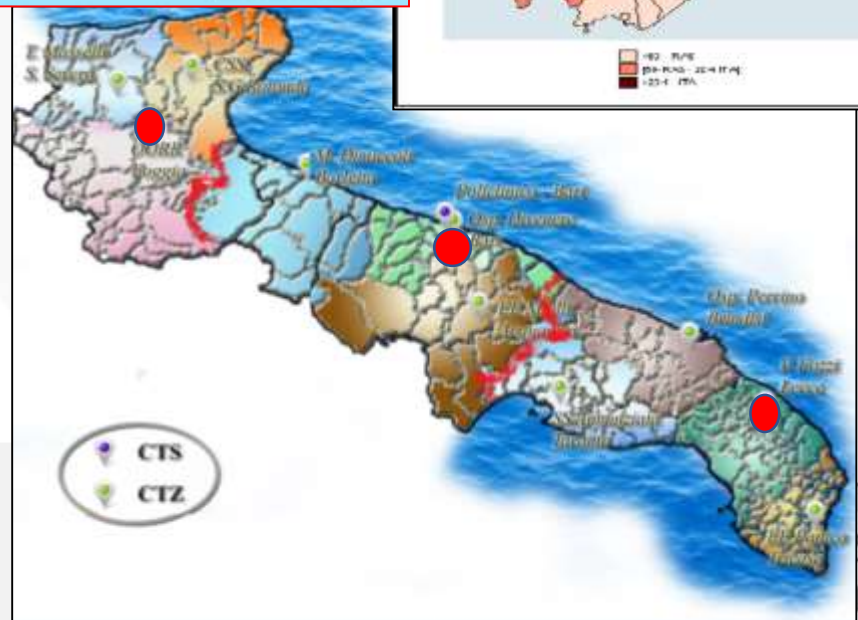
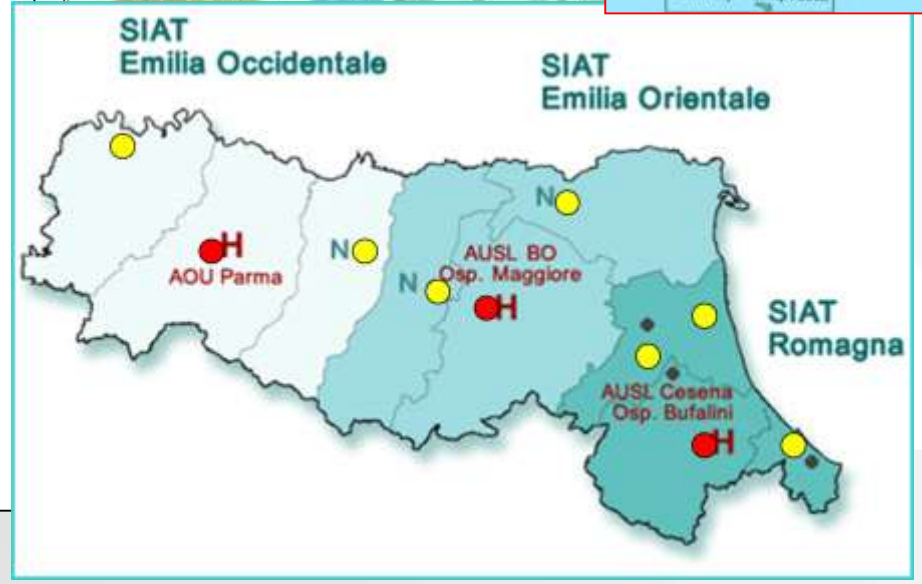
ARSURGURIA

Il D.S.S. di Medicina (periferica (A.O. S. Bartolomeo) e il Centro regionale per i Traumatismi d'organo (A.O. S. Martino).

per i Presidi di Pronto Soccorso per Traumi (PST):
 in risorse ospedaliere del Piano sanitario regionale per l'assistenza nella rete ospedaliera quale rete di DCA di I livello.

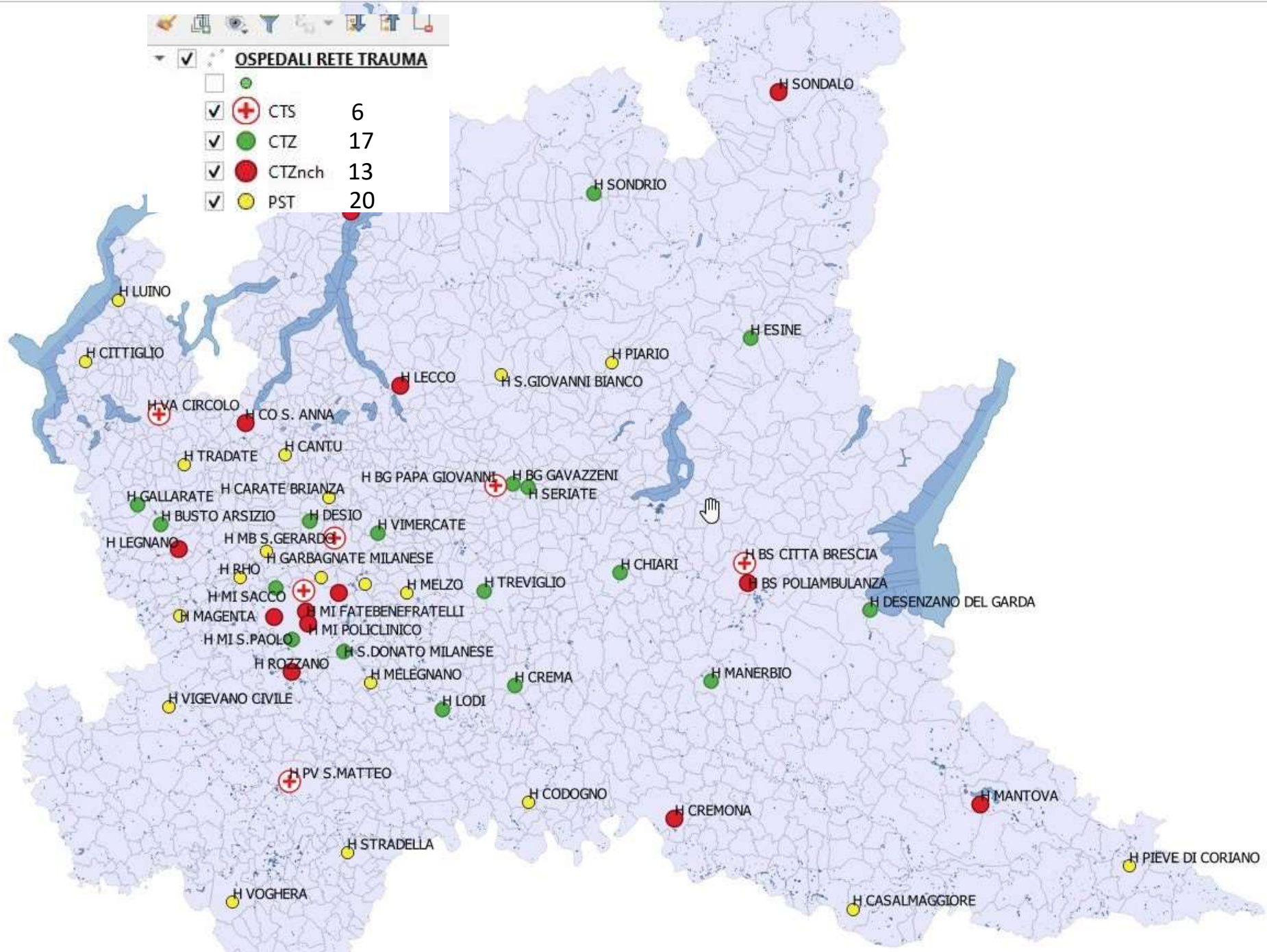
FUNZIONI DELLA RETE E RELAZIONI TRA I NODI

Fig. 1
 Vista schematizzata in Fig. 1 la configurazione geografica del sistema tutti in questo. Sono 6 nodi ospedalieri, per bacini di utenza, 1.175 post letto, e relativi regionali.



OSPEDALI RETE TRAUMA

<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	CTS	6
<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	CTZ	17
<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	CTZnch	13
<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	PST	20



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PUGLIA 2016, 4,077,000
inhabitants:



1488 severe trauma
 468 hospital deaths (31%)
 283 prehospital deaths
 1771 total severe trauma
 751 total deaths (42%)
 434.38 cases/million/yr
 184 deceased/million/yr

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RESEARCH ARTICLE

Open Access

A population based study of hospitalised seriously injured in a region of Northern Italy

Oswaldo Chiara^{1*}, Cristina Mazzali³, Sofia Lelli², Anna Mariani¹ and Stefania Cimbanassi¹

	<i>n</i>	<i>%_lomb</i>	<i>n dec</i>	<i>%dec</i>	<i>% drgC</i>	<i>Mean LOS</i>	<i>Days LOS</i>	<i>Average reimbursement €</i>	<i>Total reimbursement €</i>
TOT.	11704	92.38	2829	24.17	55.64	18.53	216877	13'759	161'044'969
2008	3866	91.52	954	24.68	56.54	18.77	72571	13'684	52'904'800
2009	3960	93.21	961	24.27	55.58	18.48	73188	13'757	54'478'959
2010	3878	92.39	914	23.57	54.80	18.34	71118	13'837	53'661'210

<i>gender</i>	<i>n</i>	<i>% lomb</i>	<i>n dec</i>	<i>%dec</i>	<i>%drgC</i>	<i>Mean LOS</i>	<i>Days LOS</i>	<i>Average reimbursement €</i>	<i>Total reimbursement €</i>
Male (%)	7623 (65,13)	91.91	1588	20.83	59.57	19.35	147519	15'128.02	115'320'917
Female (%)	4081 (34,87)	93.26	1241	30.41	48.30	17.00	69358	11'204.13	45'724'052

CTS	N°pazienti	% modim 4	% m
1	313	14.05	
2	151	22.5	
3	198	29.31	
4	143	27.97	
5	314	14.33	
6	274	22.26	
totali	1393 (37.29%)	20.10	8.97
CTZnch	800 (21.41)	26.37	
CTZ	276 (7.38)	37.68	
PST	1019 (27.28%)	42.10	



N°	%M	% decessi
219	68.0	29.7
346	58.4	30.9



CTS	N° pazienti	% m
1	142	26.7
2	186	29.0
3	198	17.1



NORTHWEST LOMBARDIA 2019

Courtesy of Gabriele Bassi and Riccardo Giudici

Total trauma 4743

Discharged from ED: 1837 (38.7%)

Admitted to the hospital 2906 (61.3%)

ISS < 16
1985 (41.8%)

ISS ≥ 16
921 (19.4%)

94.3% (high energy mechanism)
5.4% (altered vital signs or anatomy)
two vs one OR 8.5 (CI 95% 7.4-10.3)

Total false positive 3822 (80.6%)
(OVERTRIAGE)
Total true positive 921 (19.4%)
(MAJOR TRAUMA)

Total false negative 93 (1.9%)
(UNDERTRIAGE)

High Sn

Low Sp

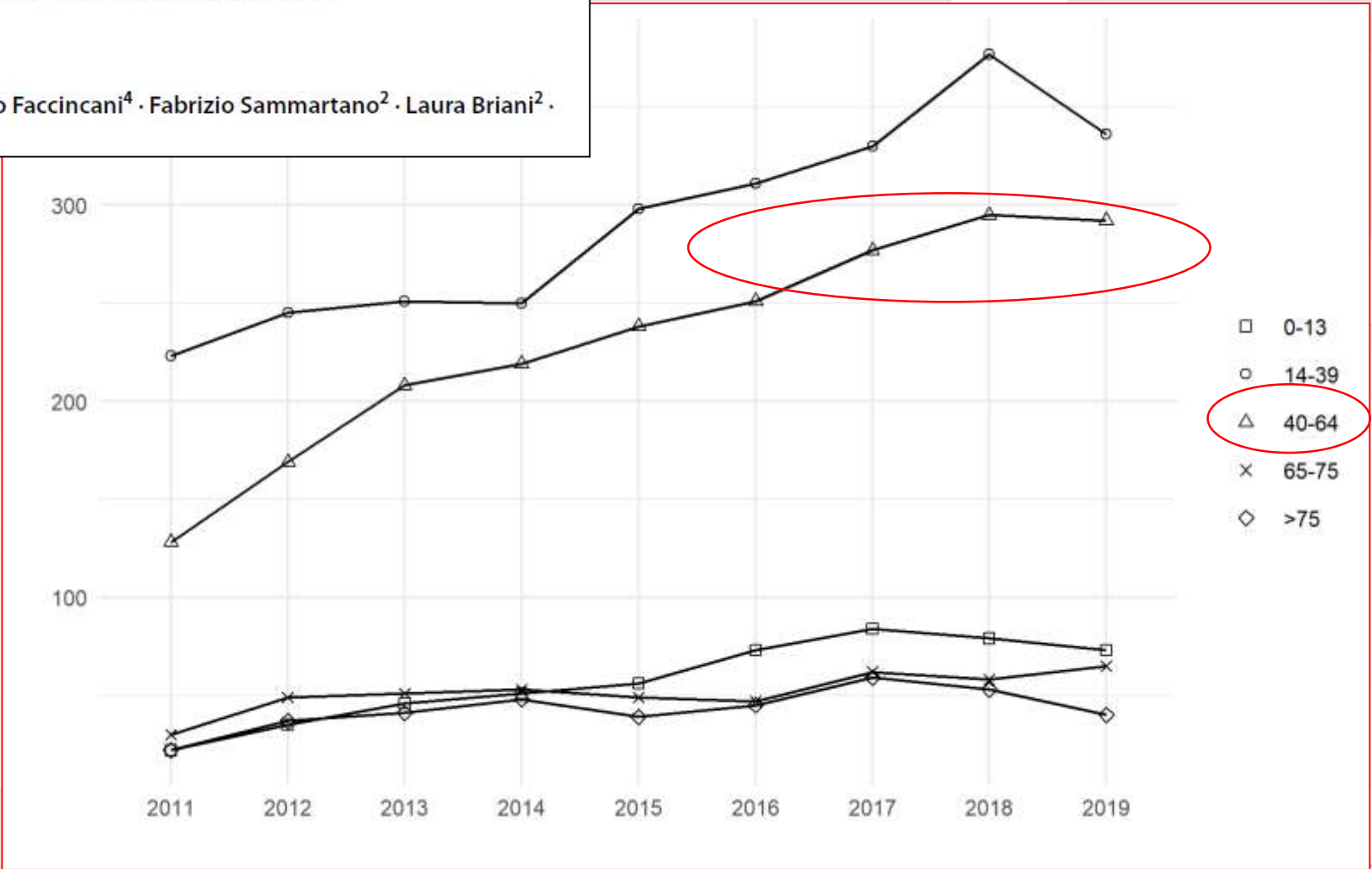
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Epidemiology of trauma admissions in a level 1 trauma center in Northern Italy: a nine-year study

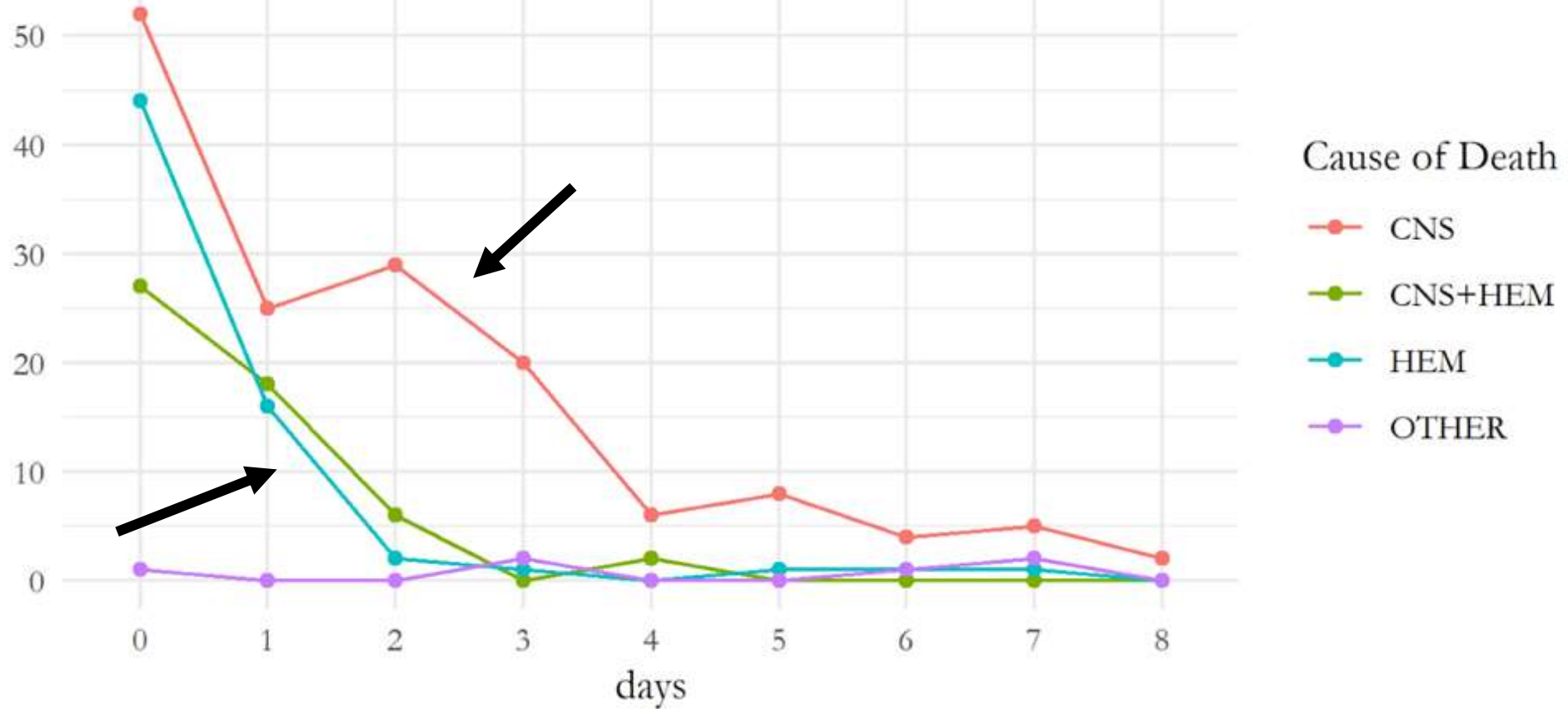
Margherita Difino^{1,2} · Roberto Bini² · Elisa Reitano^{2,3} · Roberto Faccincani⁴ · Fabrizio Sammartano² · Laura Briani² · Stefania Cimbanassi² · Osvaldo Chiara^{2,3}





Nine year in-hospital mortality trends in a high-flow level one trauma center in Italy

Elisa Reitano¹ · Roberto Bini² · Margherita Difino³ · Osvaldo Chiara⁴ · Stefania Cimbanassi⁴



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Italian Resuscitation Council

	ISS<16	ISS 16-24	ISS>24	blunt	pen
Obs Surv	98%	92.7%	65.3%	94.6%	92.6%
TRISS predicted	98%	81.4%	44.9%	81.7%	78.9%



Total deaths: 648 (12.7%)

Total DOS SOREU metro: 339 (53.3%)

DOA/DER 72 (11.1%)

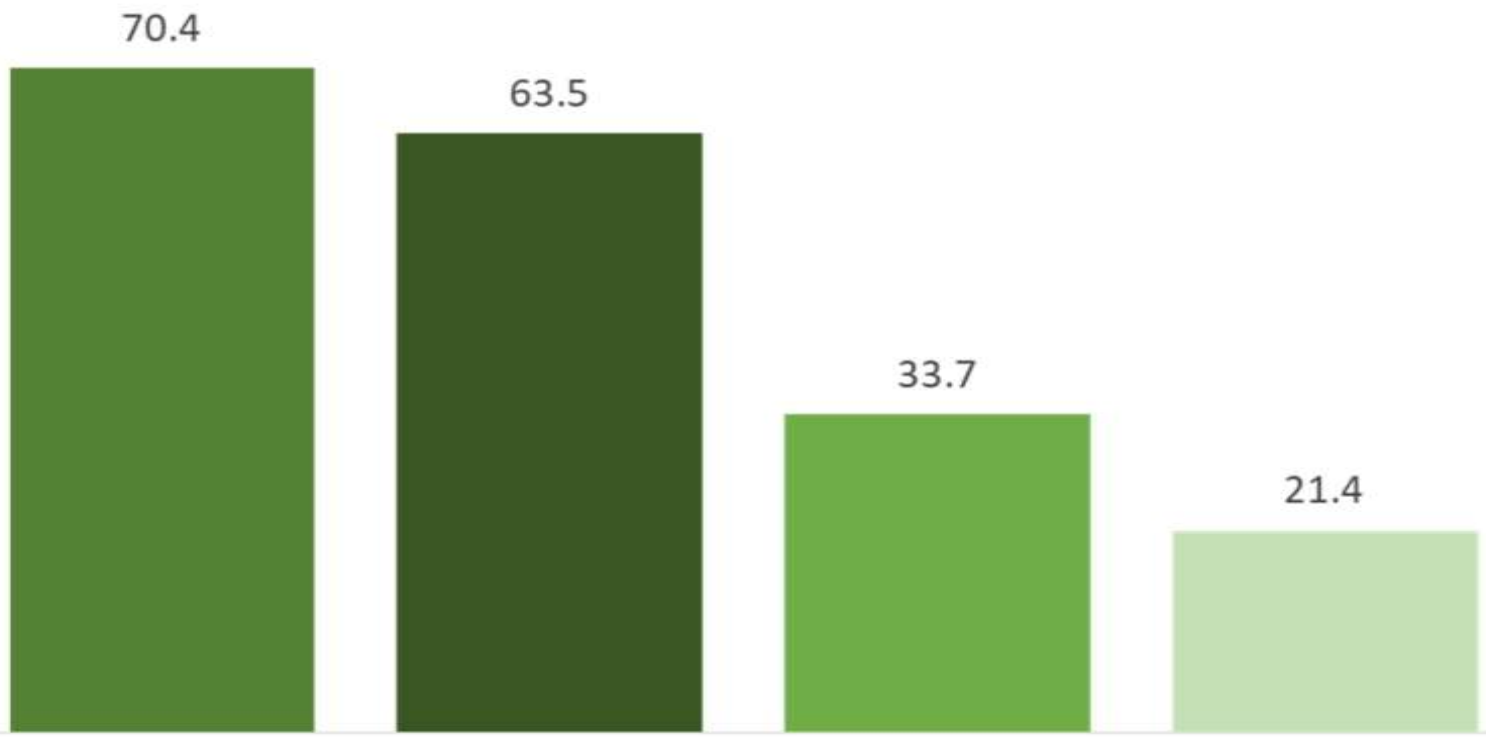
Deaths after adm. 237 (36.5%)

Damage Control Surgery



Cosa migliorare....trriage

% of Overtriage (% of patient with ISS < 16)

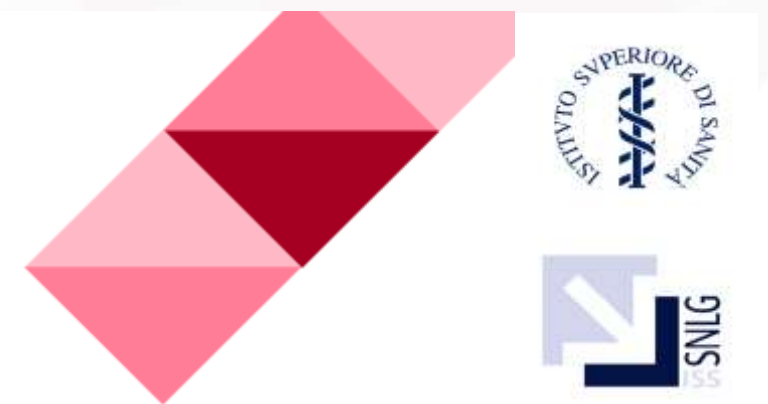
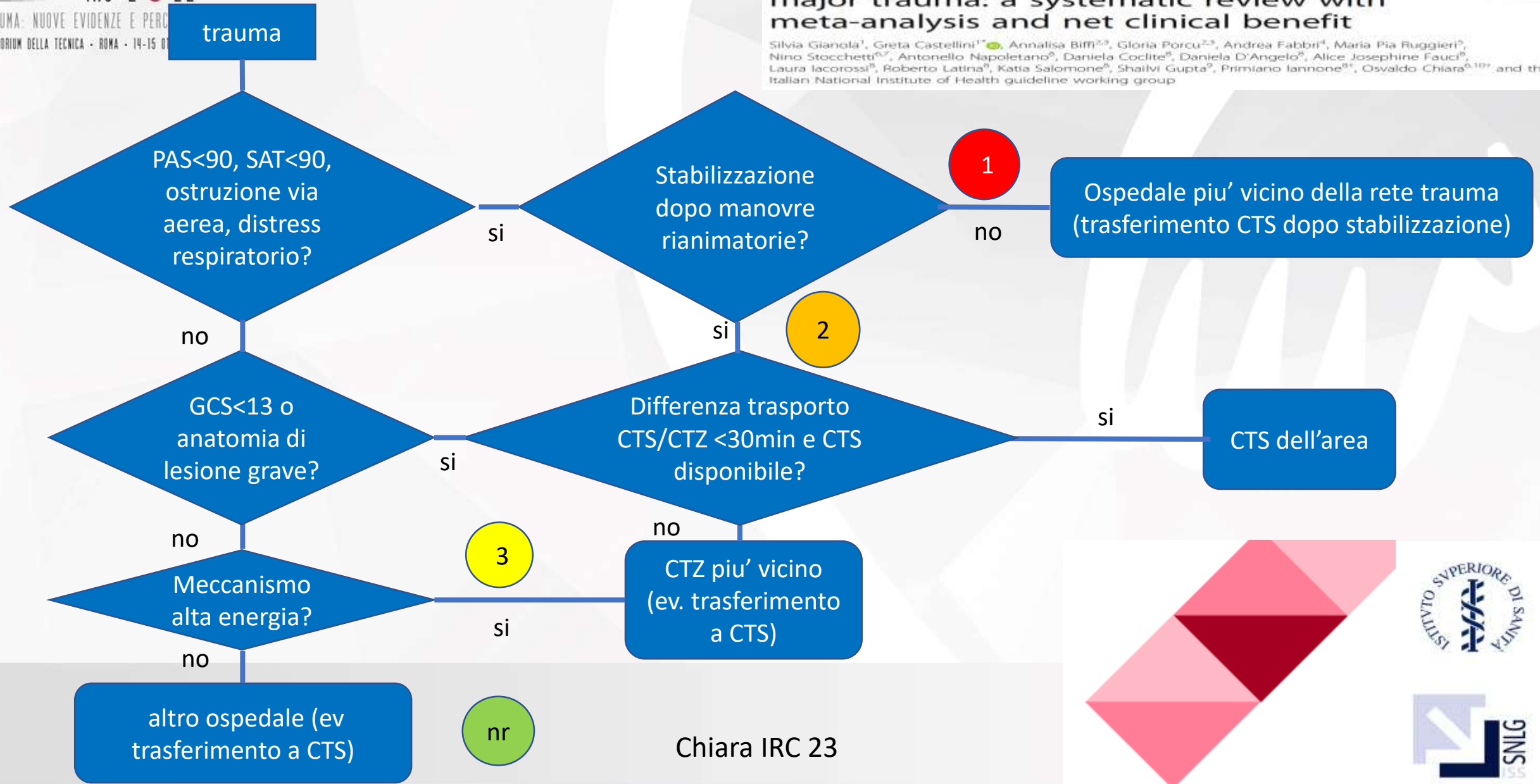


Niguarda

■ Bergamo ■ Niguarda ■ Haifa ■ Calgary

Accuracy of pre-hospital triage tools for major trauma: a systematic review with meta-analysis and net clinical benefit

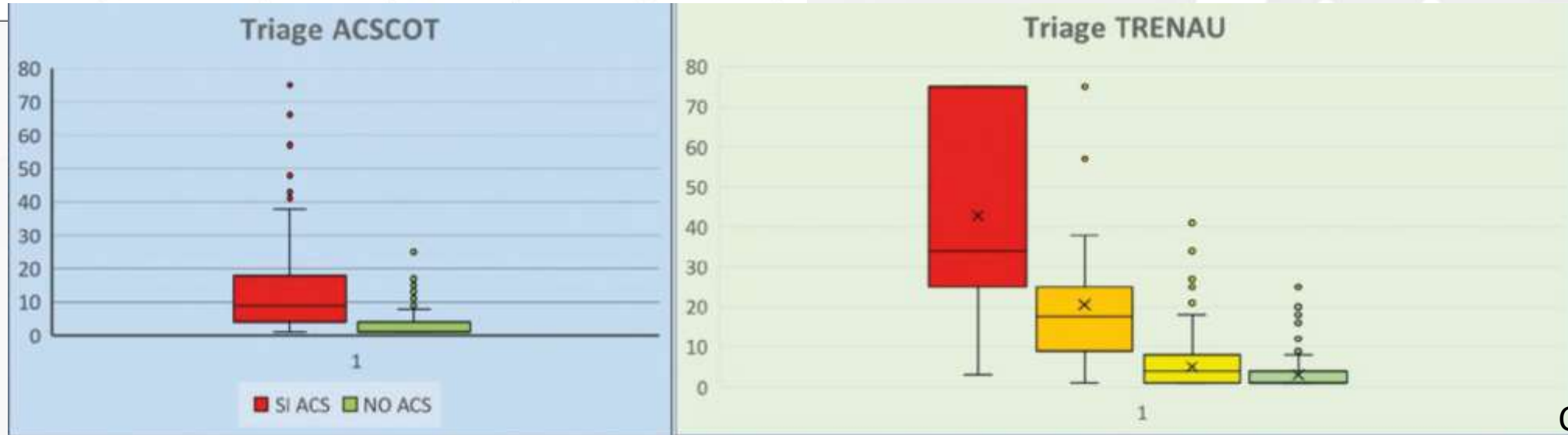
Silvia Gianola¹, Greta Castellini^{1*}, Annalisa Biffi^{2,3}, Gloria Porcu^{2,3}, Andrea Fabbri⁴, Maria Pia Ruggieri⁵, Nino Stocchetti^{6,7}, Antonello napoletano⁸, Daniela Cocilite⁸, Daniela D'Angelo⁸, Alice Josephine Fauci⁹, Laura Iacorossi⁹, Roberto Latina⁹, Kattia Salomone⁹, Shailvi Gupta⁹, Primiano Iannone^{9†}, Osvaldo Chiara^{6,10†} and the Italian National Institute of Health guideline working group



Studio prospettico comparativo tra due metodi di Triage Pre Ospedaliero del Trauma Maggiore

Comparative prospective study between two Pre Hospital Major Trauma - Triage Methods

■ KATYA RANZATO¹, CLARA BAGNATO², ANTONIO GIARRACCA³, PATRIZIA RESTELLI³, SIMONE SARONNI³, GIORGIO GADDA⁴, OSVALDO CHIARA⁵, STEFANIA CIMBANASSI⁵



	ACSCOT SI	ACSCOT NO	TRENAU 1 ■	TRENAU 2 ■	TRENAU 3 ■	NR ■
n.	324	1115	21	92	482	844
Mediana ISS	9	1	34	18	4	1
IQR	14	3	36.5	15	7	3

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ian
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Trauma Team



TRAUMA TEAM
PRIORITY

- A. Paziente con parametri vitali normali (**priorità 3**)
- B. Paziente con instabilità emodinamica con o senza segni di lato (**priorità 1-2**)
- C. Paziente con deterioramento neurologico (**priorità 2**)
- D. Paziente vittima di trauma penetrante o blast injury (**priorità 1-2**)
- E. Paziente pediatrico traumatizzato (**priorità 1-2-3**)
- F. Paziente gravida (**priorità 1-2-3**)

CORSO SULLA GESTIONE INTRAOSPEDALIERA
DEL TRAUMA MAGGIORE

THM.....

1. In Italia la rete trauma e' stata organizzata secondo il modello inclusivo
2. In tutte le Regioni i principali nodi della rete sono stati identificati; le performance dei sistemi regionali variano significativamente
3. E' auspicabile l'evoluzione delle tecniche di stabilizzazione in sede pre ed intra-ospedaliera ed il miglioramento della logistica negli ospedali
4. Le nuove regole di triage dovrebbero consentire una miglior distribuzione dei pazienti con riduzione dell'overtriage presso gli hub (registro regionale)



Grazie.....



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