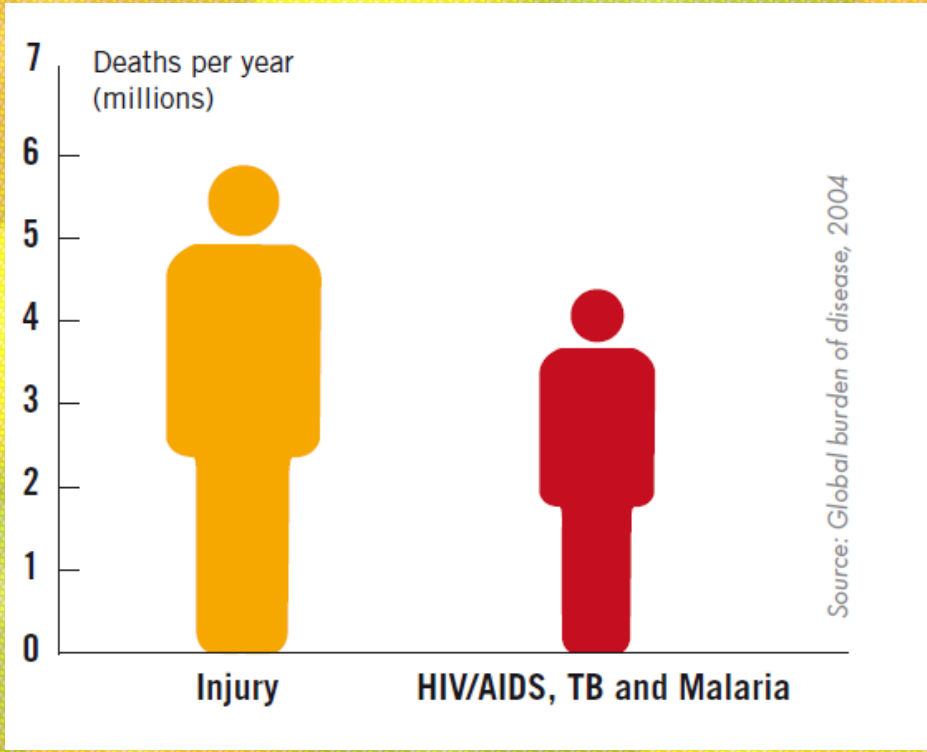
È possibile costruire un registro traumi con dati amministrativi?



Stefano Di Bartolomeo, Massimiliano Marino. Azienda Ospedaliero Universitaria di Udine / Agenzia Sanitaria Regionale dell'Emilia Romagna

20’

1. Importanza dei dati di popolazione nel trauma
2. Breve descrizione dei dati amministrativi/ di popolazione
3. Esempio dell’utilità di questo tipo di dati nel trauma grave

Trauma Registry of Emilia Romagna, Italy;
includes ISS>15 OR ICU admission.

Trauma cases with TMPM>0.2 (~ISS >15) years 2007-2010

From administrative data (population based)
22408

Di cui nel registro

From the Trauma Registry
2127

Expected number of major trauma cases admitted to hospital in Emilia Romagna (370/million/year) = ~ 6500 in 4 years

Geographic distribution of ...ured patients: Implications for traum...elopment

David J. Ciesla, MD, Etienne E. Pracht...MD, *and* Barbara Langland-Orban, PhD,

BACKGROUND: Despite decades of trauma system d...ed patients fail to reach a trauma center for definitive care. The purpose of this study was to define the regions served by Florida's designated trauma centers and define the geographic distribution of severely injured patients who do not access the state's trauma system.

METHODS: Severely injured patients discharged from Florida hospitals were identified using the 2009 Florida Agency for Health Care Administration database. The home zip codes of patients discharged from trauma and nontrauma center hospitals were used as a surrogate for injury location and plotted on a map. A radial distance containing 75% of trauma center discharges defined trauma center catchment area.

RESULTS: Only 52% of severely injured patients were discharged from trauma centers. The catchment areas varied from 204 square miles to 12,682 square miles and together encompassed 92% state's area. Although 93% of patients lived within a trauma center catchment area, the proportion treated at a trauma center in each catchment area varied from 13% to 58%. Mapping of patient residences identified regions of limited access to the trauma system despite proximity to trauma centers.

CONCLUSIONS: The distribution of severely injured patients who do not reach trauma centers presents an opportunity for trauma system improvement. Those in proximity to trauma centers may benefit from improved and secondary triage guidelines and interfacility transfer agreements, whereas those distant from trauma centers may suggest a need for additional trauma system resources. (*J Trauma.* 2012;XX: 000–000. Copyright © 2012 by Lippincott Williams & Wilkins)

LEVEL OF EVIDENCE: II, epidemiological study.

KEY WORDS: Trauma system; trauma service area; geocode.

Evidence for Trauma Systems

SPECIAL ARTICLE

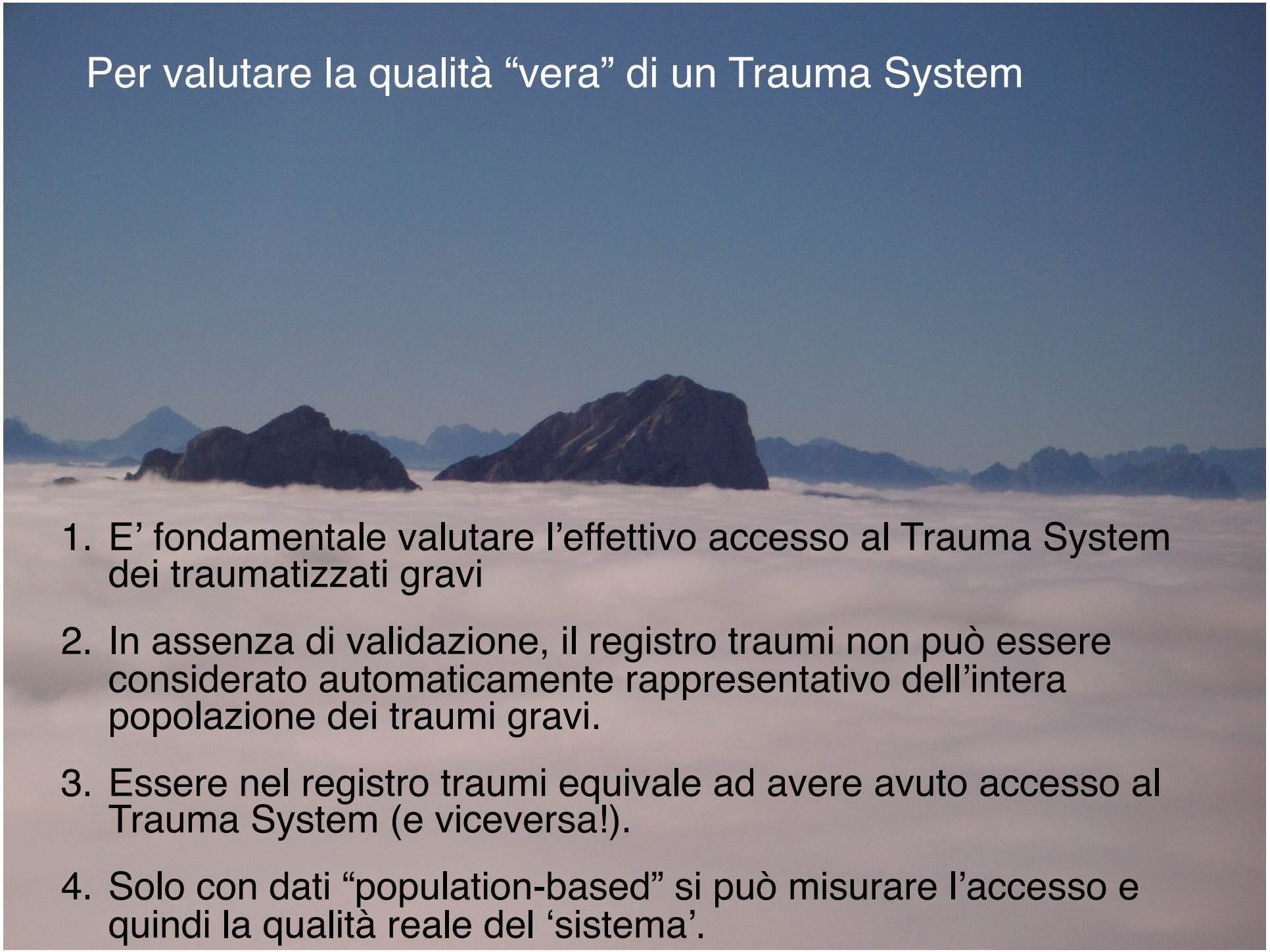
A National Evaluation of the Effect of Trauma-Center Care on Mortality

Ellen J. MacKenzie, Ph.D., Frederick P. Rivara, M.D., M.P.H., Gregory J. Jurkovich, M.D., Avery B. Nathens, M.D., Ph.D., Katherine P. Frey, M.P.H., Brian L. Egleston, M.P.P., David S. Salkever, Ph.D., and Daniel O. Scharfstein, Sc.D.

ABSTRACT

Table 4. Adjusted Case Fatality Rates and Relative Risks of Death after Treatment in a Trauma Center as Compared with Treatment in a Non–Trauma Center.*

Variable	Weighted No. of Patients	Death in Hospital	Death within 30 Days after Injury	Death within 90 Days after Injury	Death within 365 Days after Injury
Overall population	15,009				
Trauma center (%)		7.6	7.6	8.7	10.4
Non–trauma center (%)		9.5	10.0	11.4	13.8
Relative risk (95% CI)		0.80 (0.66–0.98)	0.76 (0.58–1.00)	0.77 (0.60–0.98)	0.75 (0.60–0.95)



Per valutare la qualità “vera” di un Trauma System

1. E’ fondamentale valutare l’effettivo accesso al Trauma System dei traumatizzati gravi
2. In assenza di validazione, il registro traumi non può essere considerato automaticamente rappresentativo dell’intera popolazione dei traumi gravi.
3. Essere nel registro traumi equivale ad avere avuto accesso al Trauma System (e viceversa!).
4. Solo con dati “population-based” si può misurare l’accesso e quindi la qualità reale del ‘sistema’.

Dati amministrativi?

Dati che fanno parte della documentazione sanitaria di routine, vengono raccolti obbligatoriamente **per tutti i pazienti** e **in tutti gli ospedali** e vengono utilizzati prevalentemente a scopi amministrativi

Dati amministrativi = dati di popolazione (anche se non viceversa)

Quali sono?

1. Cartelle cliniche (cosiddette “SDO”)
2. Schede di morte (cosiddette ISTAT).
3. Dal 2010: flusso di 118 e Pronto Soccorso

Regione Lazio

Regione Liguria

Ministero della Salute

Progetto Mattoni SSN

Pronto Soccorso e sistema 118

Il flusso informativo per le prestazioni di emergenza-urgenza , dettagliato di seguito, fa riferimento alle seguenti informazioni:

per il sistema 118

- ✓ Identificazione della centrale operativa del 118
- ✓ Dati relativi alla chiamata telefonica al numero 118
- ✓ Dati relativi alla missione di soccorso attivata dalla C.O. del 118
- ✓ Identificazione dell'assistito
- ✓ Dati relativi alle prestazioni erogate nell'ambito della missione di soccorso
- ✓ Dati relativi all'esito dell'intervento

per il Pronto Soccorso

- ✓ Identificazione della struttura erogatrice
- ✓ Dati relativi all'accesso ed alla dimissione
- ✓ Identificazione dell'assistito
- ✓ Dati relativi alla diagnosi ed alle prestazioni erogate
- ✓ Dati relativi alla valorizzazione economica dell'accesso

✓ **TRAUMA posizione 79 – tabella B**

(livello di controllo SCARTANTE) OBB- in determinate circostanze

Da indicare solo se "problema principale"= 10 (trauma), 27(Ustione) o 30 (Violenza Altrui) o 31 (Autolesionismo)

01 = aggressione
02 = autolesionismo
03 = incidente sul lavoro
04 = incidente domestico
05= incidente scolastico
06 = incidente sportivo
07 = incidente in strada
09 = incidente in altri luoghi
10 = morso di animale
99 = altro

Limiti dei dati amministrativi:

Quantità di informazioni cliniche limitata, imprecisione, disomogeneità…

Accuracy of Administrative and Trauma Registry Databases

Alex Wynn, MD, Matthew Wise, MD, Mary Jo Wright, MD, Aml Rafaat, MD, Yi-Zarn Wang, MD, Glen Steeb, MD, Norman McSwain, MD, Kennan J. Beuchter, MD, and John P. Hunt, MD

Objective: Accurate data are needed to evaluate clinical outcomes, therapeutic modalities, and quality of care in trauma. Administrative data, usually used for billing, and trauma registries, have been used to perform these functions. This study compares data for trauma patients from administrative and trauma registry databases at a Level I trauma center.

Methods: Data from patients injured in 1998 were obtained from both the trauma registry and administrative database. These *International Classification of Diseases, Ninth Revision, Clinical Modification* codes signify an admitting diagnosis of trauma. Patients from each database were "matched" by admission date, medical record number, age, and name. The two matched data sets were compared for accuracy in recording data. χ^2 analysis was used to compare groups.

Results: There were 2,702 patients found in both databases. One hundred eighteen patients with significant trauma were recorded in the trauma registry, but not in the administrative database. Comparison of recorded data for "matched" patients is as follows. The underreporting of mechanism of injury, diagnoses, diagnostic interventions, surgical procedures, and complications was rampant throughout the administrative database. Statistical significance was seen in the comparison between the trauma registry and the administrative database with motor vehicle collisions (458 vs. 391), abdominal injuries (346 vs. 293), orthopedic injuries (1,243 vs. 1,101), and thoracic injuries (486 vs. 397). Diagnostic interventions such as diagnostic peritoneal lavage, head computed tomographic scans, and abdominal computed tomographic scans were all grossly underrecorded, with only 40%, 12%, and 9% captured by the administrative database, respectively. Analysis of surgical procedures revealed these same trends, with statistical significance seen in abdominal and orthopedic procedures. Complications such as acute respiratory distress syndrome and deep venous thrombosis showed statistically significant differences. Mortality was underreported in the administrative database, with 14 deaths omitted.

Conclusion: This study shows that administrative data have copious omissions of specific injuries, diagnostic and therapeutic interventions, as well as complications. The trauma registry recorded more of the diagnoses, diagnostics, procedures, and outcomes in the care of trauma patients. Trauma registries may be more useful than administrative databases in assessing quality of care and diagnostic and therapeutic interventions.

J Trauma. 2001;51:464–468.

Limiti dei dati amministrativi:

Quantità di informazioni cliniche limitata, imprecisione, disomogeneità…

The Journal of TRAUMA® *Injury, Infection, and Critical Care*

Comparison
With Record
the Nationw

Bart Phillips, BS, Dav
and Andrew C. Freel,

Background: Adm
registry databases are use
ers given their availabili
their limitations for spec
remain undefined. We c
records from a large adm
base and the National Tra
(NTDB) with the goal of fu
derstanding of their respec
Methods: The study
submitted records to both
the Nationwide Inpatien
for patients admitted duri

Table 2 Comparison of Continuous and Categorical Variables

	Database	
	NTDB (N = 24,619)	NIS (N = 25,586)
Age at admission (yr)		
Unknown or missing	1678 (6.8%)	0 (0%)*
Mean (SD)	35.8 (20.8)	39.9 (23.6)†
Length of stay (d)		
Unknown or missing	713 (2.9%)	0 (0%)*
Mean (SD)	5.5 (9.8)	5.9 (10.0)†
Proportion with long LOS (2 or more days)	67.4%	75.1%*
Total charges		
Unknown or missing	7520 (30.5%)	33 (0.1%)*
Mean (SD)	30,738 (76,194)	38,340 (68,496)†
Number of diagnoses		
All diagnoses—mean (SD)	3.9 (3.1)	4.8 (3.2)†
Injury diagnoses—mean (SD)	2.8 (2.2)	2.4 (1.8)†
Comorbidities—mean (SD)	.18 (.57)	0.77 (1.1)†

pitals
nk and

ach, MS,

rd in the NIS (0.77 vs.
rude case fatality rate
. 5.2%).
The main differences
es reflected the differ-
ta collection and the
n criteria imposed by
These differences re-
when using either data-
jury-related questions.
ury, Trauma, Admin-
Clinical database, Fa-

J Trauma. 2008;64:768–780.

Principale limite per lo studio del Trauma Grave:

Mancanza del punteggio AIS che è fondamentale per l'aggiustamento di gravità (ISS, NISS, TRISS…)

TABLE 1. Abbreviated Injury Scale (AIS)

AIS score	Injury
1	Minor
2	Moderate
3	Serious
4	Severe
5	Critical
6	Probably lethal*

* Although a perfect linear correlation with an AIS of 6 and mortality does not exist, survivability is unlikely.

Ma nel 2009…

(*Ann Surg* 2009;249: 1032–1039)

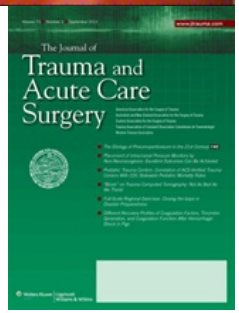
TMPM–ICD9

A Trauma Mortality Prediction Model Based on ICD-9-CM Codes

Laurent G. Glance, MD, Turner M. Osler, MD,† Dana B. Mukamel, PhD,‡ Wayne Meredith, MD,§ Jacob Wagner, MD, PhD,¶ and Andrew W. Dick, PhD‖*

Objective: To develop and validate a new ICD-9 injury model that uses regression modeling, as opposed to a simple ratio measurement, to estimate empiric injury severities for each of the injuries in the ICD-9-CM lexicon.

Should the IDC-9 Trauma Mortality Prediction Model become the new paradigm for benchmarking trauma outcomes?



Adil H. Haider, MD, MPH, Cassandra V. Villegas, MD, MPH, Taimur Saleem, MD, David T. Efron, MD, Kent A. Stevens, MD, MPH, Tolulope A. Oyetunji, MD, MPH, Edward E. Cornwell III, MD, Stephen Bowman, PhD, Sara Haack, BS, Susan P. Baker, MPH, *and* **Eric B. Schneider, PhD,** *Baltimore, Maryland*

CONCLUSION: The NISS and TMPM-ICD-9 are both superior predictors of mortality as compared with the ISS. The immediate adoption of NISS for evaluating trauma outcomes using trauma registry data is recommended. The TMPM-ICD-9 may be an even better measure of human injury, and its use in administrative or nonregistry data is suggested. Further research on its attributes is recommended because it has the potential to become the basis for benchmarking trauma outcomes. (*J Trauma Acute Care Surg*. 2012;72: 1695–1701. Copyright © 2012 by Lippincott Williams & Wilkins)

Contents lists available at ScienceDirect

Accident Analysis and Prevention

journal homepage: www.elsevier.com/locate/aap

Is the TMPM-ICD9 revolution in trauma risk-adjustment compatible with imperfect administrative coding?

Stefano Di Bartolomeo[a,*], Chiara Ventura[b], Massimiliano Marino[b], Arturo Chieregato[c], Giorgio Gambale[d], Andrea Fabbri[e], Annalisa Volpi[f], Rossana De Palma[b]

[a] Anaesthesia and ICU S.M.M. Hospital, Udine/Regional Health Agency of Emilia-Romagna, Viale Aldo Moro 21, 40127 Bologna, Italy
[b] Regional Health Agency of Emilia-Romagna, Bologna, Italy
[c] Anaesthesia and ICU, AUSL Cesena, Italy
[d] Anaesthesia and ICU, Ospedale "G.B. Morgagni–L. Pierantoni", AUSL di Forlì, Italy
[e] Emergency Medicine, Ospedale "G.B. Morgagni–L. Pierantoni", Italy
[f] Azienda Ospedaliero-Universitaria di Parma, Italy

Table 2
Model performance.

Model	C statistics (95% CI)	Akaike's information criterion
ISS only	0.737 (0.712–0.763)	2181
TMPM only	0.736 (0.712–0.760)	2319
ISS complete	0.894 (0.879–0.910)	1622
TMPM complete	0.883 (0.867–0.900)	1670

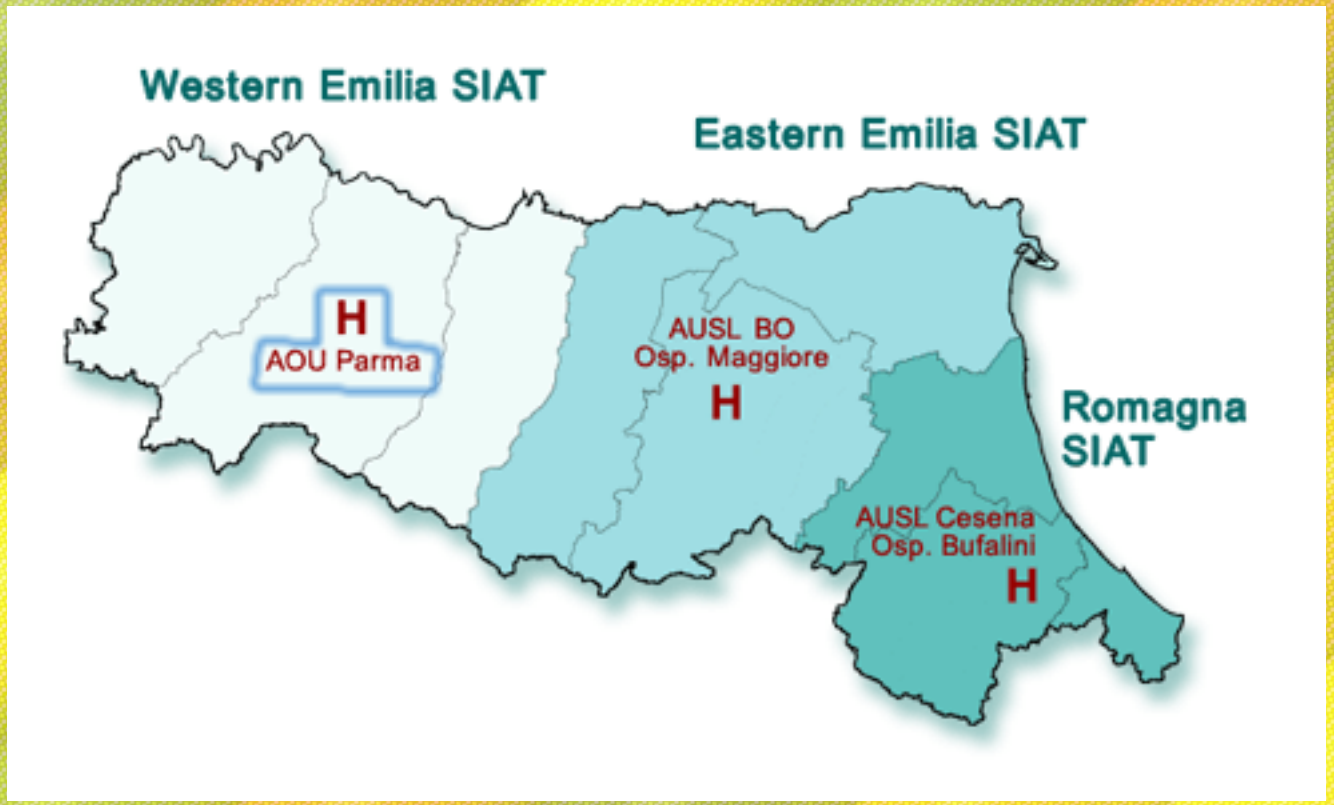
Il TMPM-ICD9 è quindi uno strumento che permette di

1) Identificare i traumi gravi dalle cartelle cliniche

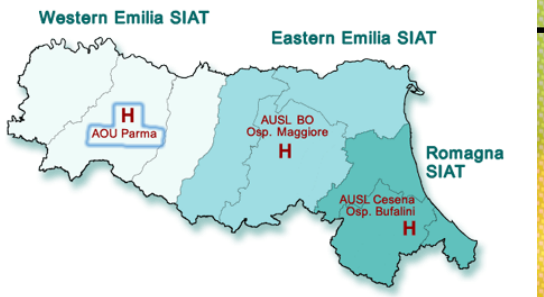
2) Effettuare ‘Risk Adjustment’ per gravità

indipendentemente dal calcolo dell’AIS/ISS

Emilia-Romagna region, Italy. ~4.5 million inhabitants.



Expected No. of major trauma cases admitted to hospital 370/million/ year = 1600



Trauma Registry data for 2011 (ISS>15 or ICU)

834 cases from 22 hospitals

Mortality = 11.49 %

ISS mean, median = 22, 23

TMPM- ICD9 mean, median = 0.14, 0.08

Tutti i pazienti >1a. dimessi nel 2011 da ospedali ER con diagnosi ICD9 traumatica (da 800.00 a 959.9, eccetto…) o deceduti in P.S. per causa traumatica

= 25858 pazienti

6893 non trasportati dal 118

58 giunti cadavere in P.S.

5952 fx di collo femore & >65a.

12971 pazienti

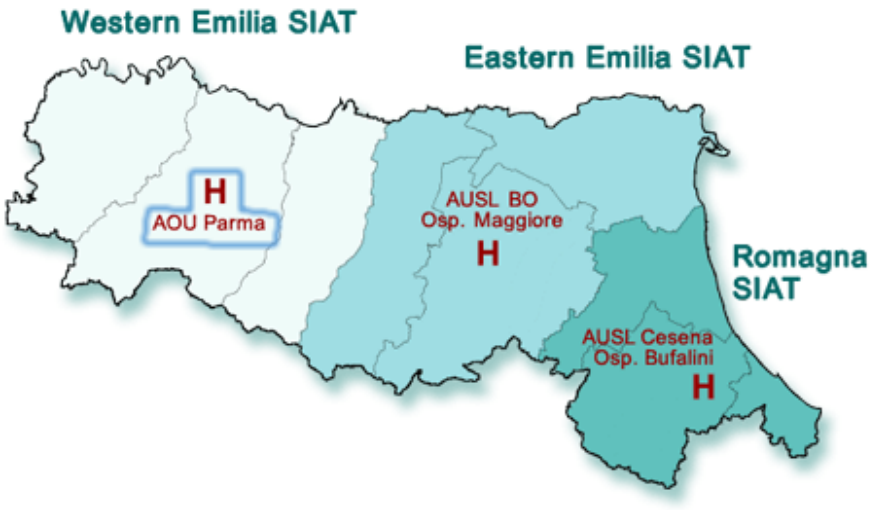
11257 TMPM<0.1 o NO Rianimaz.

1714 pazienti con trauma grave

1714 pazienti

Mortalità = 10.09

TMPM media, mediana = 0.17, 0.12



834 oppure 1714?

Mortalità = 11.49 %
TMPM-ICD9 media 0.14

Età media: 50.1
N. Ospedali: 22
Trattamento Hub: 52.8%

Mortalità = 10.9 %
TMPM-ICD9 media 0.17

Età media: 55
N. Ospedali: 58
Trattamento Hub: 41.5%

ORIGINAL ARTICLE

Undertriage of Elderly Trauma Patients to State-Designated Trauma Centers

David C. Chang, PhD, MPH, MBA; Robert R. Bass, MD; Edward E. Cornwell, MD; Ellen J. MacKenzie, PhD

Objective: To determine whether age bias is a factor in triage errors.

Design: Retrospective analysis of 10 years (1995-2004) of prospectively collected data in the statewide Maryland Ambulance Information System followed by surveys of emergency medical services (EMS) and trauma center personnel at regional EMS conferences and level I trauma centers, respectively.

Patients: Trauma patients were defined as those who met American College of Surgeons physiology, injury, and/or mechanism criteria and were subjectively declared priority I status by EMS personnel.

Main Outcome Measure: Undertriage, defined as when trauma patients were not transported to a state-designated trauma center.

Results: The registry analysis identified 26 565 trauma patients. The undertriage rate was significantly higher in patients aged 65 years or older than in younger patients (49.9% vs 17.8%, $P < .001$). On multivariate analysis, this decrease in trauma center transports was found to start at age 50 years (odds ratio, 0.67; 95% confidence interval, 0.57-0.77), with another decrease at age 70 years (odds ratio, 0.45; 95% confidence interval, 0.39-0.53) compared with patients younger than 50 years. A total of 166 respondents participated in the follow-up surveys and ranked the top 3 causal factors for this undertriage as inadequate training, unfamiliarity with protocol, and possible age bias.

Conclusions: Even when trauma is recognized and acknowledged by EMS, providers are consistently less likely to consider transporting elderly patients to a trauma center. Unconscious age bias, in both EMS in the field and receiving trauma center personnel, was identified as a possible cause.

Arch Surg. 2008;143(8):776-781

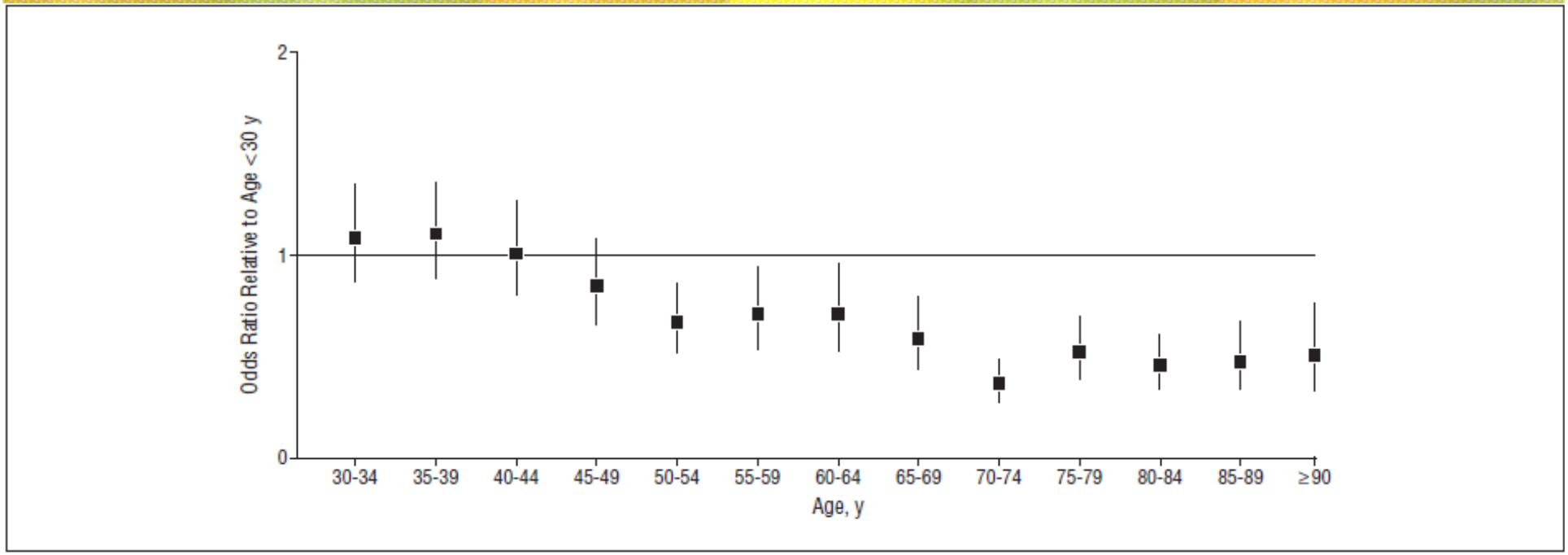


Figure. Multiple logistic regression analysis to examine the trends in emergency medical services transport of trauma patients to designated trauma centers by age. This is the same multiple logistic regression analysis as in Table 2, except the interaction variables with age were removed because of the total number of age categories in this analysis.

Gender-associated differences in access to trauma center care: A population-based analysis

David Gomez, MD, PhD,[a,b] Barbara Haas, MD, PhD,[a,b] Charles de Mestral, MD,[a,b] Sunjay Sharma, MD,[b] Marvin Hsiao, MD,[a,b] Brandon Zagorski, MS,[c] Gordon Rubenfeld, MD, MSc,[d] Joel Ray, MD, MSc,[b,c] *and* Avery B. Nathens, MD, PhD,[a,b,c] *Toronto, Ontario, Canada*

Background. *Disparities in access to services across genders have been reported in many healthcare settings. The extent to which this occurs in the case of emergency surgical care is unknown. We set out to evaluate whether gender is a determinant of access to trauma center care, particularly in the setting where trauma triage guidelines are strong facilitators to ensure that access is determined by physiologic status and injury characteristics.*

Methods. *Population-based retrospective cohort analysis of severely injured (Injury Severity Score >15) adults surviving to reach hospital. Differential in access to trauma center care was evaluated for females compared with males. Secondary analyses evaluated gender-based differences in direct transport from the scene and transfer from nontrauma centers. The adjusted odd of trauma center care was determined using logistic regression models. Separate models were used to stratify patients based on age, mechanism, and injury severity.*

Results. *We identified 26,861 severely injured patients; 35% were women. A smaller proportion of females received trauma center care compared with males (49% vs 62%; P < .0001), an association that persisted after adjustment for confounders (odds ratio [OR], 0.87; 95% confidence interval [CI], 0.79–0.96). Emergency medical service personnel were less likely to transport females from the field to a trauma center compared with males (OR, 0.88; 95% CI, 0.81–0.97). Similarly, physicians were less likely to transfer females to trauma centers compared with males (OR, 0.85; 95% CI, 0.73–0.99).*

Conclusion. *Severely injured women were less likely to be directed to a trauma center across 2 types of providers. The reasons for this differential in access might be related to perceived difference in injury severity, likelihood of benefiting from trauma center care, or subconscious gender bias. (Surgery 2012;152:179-85.)*

Vantaggi dei dati amministrativi/ popolazione:

1) Catturano tutti i traumi gravi, non solo quelli che accedono ai TC

2) Trasferimenti interospedalieri

Lossius et al. Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine 2010, 18:15
http://www.sjtrem.com/content/18/1/15

SCANDINAVIAN JOURNAL OF
trauma, resuscitation
& emergency medicine

COMMENTARY Open Access

Inter-hospital transfer: the crux of the trauma system, a curse for trauma registries

Hans Morten Lossius[1,2*], Thomas Kristiansen[1,3], Kjetil G Ringdal[1,3], Marius Rehn[1,3]

Abstract

The inter-hospital transfer of patients is crucial to a well functioning trauma system, and the transfer process may serve as a quality indicator for regional trauma care. However, the assessment of the transfer process requires high-quality data from various sources. Prospective studies and studies based on single-centre trauma registries may fail to capture an appropriate width and depth of data. Thus the creation of inclusive regional and national trauma registries that receive information from all of the services within a trauma system is a prerequisite for high quality inter-hospital transfer studies in the future.

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 MARCH 15, 2007 VOL. 356 NO. 11

Weekend versus Weekday Admission and Mortality from Myocardial Infarction

William J. Kostis, Ph.D., Kitaw Demissie, M.D., Ph.D., Stephen W. Marcella, M.D., M.P.H., Yu-Hsuan Shao, M.H.S., Alan C. Wilson, Ph.D., and Abel E. Moreyra, M.D., for the Myocardial Infarction Data Acquisition System (MIDAS 10) Study Group

ORIGINAL ARTICLE

ONLINE FIRST

Weekend and Night Outcomes in a Statewide Trauma System

Brendan G. Carr, MD, MS; Patrick M. Reilly, MD; C. William Schwab, MD; Charles C. Branas, PhD; Juliet Geiger, RN, MSN; Douglas J. Wiebe, PhD

Arch Surg. Published online March 21, 2011. doi:10.1001/archsurg.2011.60

We demonstrate no difference in adjusted survival for injured patients presenting to the trauma system at night

PATIENT POPULATION

We obtained data for all patients in the PTOS registry who were treated from January 1, 2004, to December 31, 2008. We then excluded children (aged <18 years), patients with a primary diagnosis of a burn, and patients transferred from another facility. The study was approved by the institutional review board at the University of Pennsylvania.

Trauma registry, no transferred pts

```
. xi:logistic trauma_death age gender TMPM_ICD9 night if rrtg==1 & sec==0

Logistic regression                               Number of obs   =        799
                                                  LR chi2(4)      =      87.27
                                                  Prob > chi2     =     0.0000
Log likelihood = -233.45825                       Pseudo R2       =     0.1575

------------------------------------------------------------------------------
trauma_death | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         age |   1.040049   .0067312     6.07   0.000     1.026939    1.053326
      gender |   1.052175   .2834818     0.19   0.850     .6205169    1.784114
   TMPM_ICD9 |   1.631618   .1358877     5.88   0.000     1.385885    1.920923
       night |   1.003578   .2832694     0.01   0.990     .5771532    1.745061
------------------------------------------------------------------------------
```

‘Administrative’ registry

```
Logistic regression                               Number of obs   =       1833
                                                  LR chi2(4)      =     109.75
                                                  Prob > chi2     =     0.0000
Log likelihood = -555.58925                       Pseudo R2       =     0.0899

------------------------------------------------------------------------------
trauma_death | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         age |   1.036388   .0045764     8.09   0.000     1.027457    1.045396
      gender |   1.224296   .2069936     1.20   0.231     .8789669    1.705299
   TMPM_ICD9 |   1.294758   .0871673     3.84   0.000     1.134705    1.477387
       night |   1.532535   .2667899     2.45   0.014     1.089507    2.155714
------------------------------------------------------------------------------
```

```
-------------------------
-> sec = 0

Logistic regression                                     Number of obs   =       1708
                                                        LR chi2(4)      =      91.94
                                                        Prob > chi2     =     0.0000
Log likelihood = -503.09492                             Pseudo R2       =     0.0837

------------------------------------------------------------------------------
trauma_death | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         age |   1.037151    .004913     7.70   0.000     1.027567    1.046826
      gender |   1.236791   .2204705     1.19   0.233     .8720896    1.754008
   TMPM_ICD9 |   1.227472   .0890884     2.82   0.005     1.064713    1.415112
       night |   1.310098   .2462356     1.44   0.151     .9063973    1.893602
------------------------------------------------------------------------------


-------------------------
-> sec = 1

Logistic regression                                     Number of obs   =        125
                                                        LR chi2(4)      =      29.83
                                                        Prob > chi2     =     0.0000
Log likelihood = -43.243915                             Pseudo R2       =     0.2565

------------------------------------------------------------------------------
trauma_death | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         age |   1.039181     .01472     2.71   0.007     1.010727    1.068436
      gender |   1.107037   .6843074     0.16   0.869     .3296081    3.718147
   TMPM_ICD9 |   1.950336   .4336599     3.00   0.003     1.261373     3.01561
       night |   6.945358   4.136191     3.25   0.001     2.161603    22.31585
------------------------------------------------------------------------------
```

```
. tabu  night sec, row

+----------------+
| Key            |
|----------------|
|   frequency    |
| row percentage |
+----------------+

           |          sec
     night |         0          1 |     Total
-----------+----------------------+----------
         0 |     1,238         90 |     1,328
           |     93.22       6.78 |    100.00
-----------+----------------------+----------
         1 |       470         35 |       505
           |     93.07       6.93 |    100.00
-----------+----------------------+----------
     Total |     1,708        125 |     1,833
           |     93.18       6.82 |    100.00
```

Conclusioni:

- Costruire un registro traumi dai dati amministrativi è possibile
- La sua qualità dipende in massima parte dalla qualità dei dati amministrativi, che però si possono migliorare solo USANDOLI
- Un registro traumi basato su dati amministrativi offre dei vantaggi nella valutazione di qualità di un Trauma System

Grazie