Outline

- Quality Measurement
- Methods
- Results
- Limitations
- Conclusions
- Implications

Quality Measurement

- Essential element of a public health system is quality assurance and close monitoring of patient outcomes
  - Mortality
  - Complications
  - Readmissions
  - Satisfaction

- Adverse event is an unwanted outcome caused by medical care
  - The risk of many adverse events can be <u>reduced</u> by altered steps, but not necessarily eliminate

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Adverse Events on Patient Outcomes

Outcomes Evaluation in Italy

- National Agency for Regional Healthcare Services (AGENAS)

  National Outcomes Project (PNE)

  → Annual results for a wide range of outcomes indicators by hospital/Local Health Authority/ province

  → Directly available to policy makers and health professionals

- Scuola Superiore Sant'Anna, Management and Healthcare Lab (MeS Lab)

  Evaluation of Regional Healthcare Systems (Network of Regions)

  → Performance evaluation system of Tuscany

  → Performance evaluation system of Network of 12 Regions and 2 Autonomous Provinces

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AHRQ Patient Safety Indicators (PSIs)

- Set of indicators to identify potential complications or adverse events

  ◦ Each indicator corresponds to specific & common adverse events

- One of AHRQ's Quality Indicators

  ◦ Developed by Stanford University, UC San Francisco, UC Davis

- Administrative inpatient data

  ◦ ICD-9-CM and DRG

- Each PSI has specific inclusion and exclusion criteria

- SAS programs

Patient Safety Indicators (PSIs)

PSI 02 Death in Low-mortality DRG

PSI 03 Pressure Ulcer

PSI 04 Failure to Rescue

PSI 05 Foreign Body Left Procedure

PSI 06 Iatrogenic Pneumothorax

PSI 07 Central Venous Catheter-related
Bloodstream Infections

PSI 08 Postoperative Hip Fracture

PSI 09 Postoperative Hemorrhage or Hematoma

PSI 10 Postoperative Physiologic and Metabolic
Derangement

PSI 11 Postoperative Respiratory Failure

PSI 12 Postoperative Pulmonary Embolism or
Deep Vein Thrombosis

PSI 13 Postoperative Sepsis

PSI 14 Postoperative Wound Dehiscence

PSI 15 Accidental Puncture or Laceration

PSI 16 Transfusion Reaction

PSI 17 Birth Trauma-Injury to Neonate

PSI 18 Obstetric Trauma-Vaginal Delivery with
Instrument

PSI 19 Obstetric Trauma-Vaginal Delivery without
Instrument

Risk management at Rizzoli Orthopedic Institute

- Program active since 2007

- Integration to the Quality system

- Systemic approach to safety

- Application of proactive and reactive methods and tools IR, RCA, SEA, FMEA

PATIENT SAFETY

TECHNOLOGY ASSESSMENT

ENVIROMENT'S AND WORKER'S SAFETY

ADMINISTRATIVE LITIGATION MANAGEMENT

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OUR STUDY

Evaluating Patient Safety Indicators in orthopedic surgery between Italy and the United States.

Dario Tedesco, Tina Hernandez-Boussard, Elisa Carretta, Paola Rucci, Maurizia Rolli, Patrizio Di Denia, Kathryn McDonald, Maria Pia Fantini
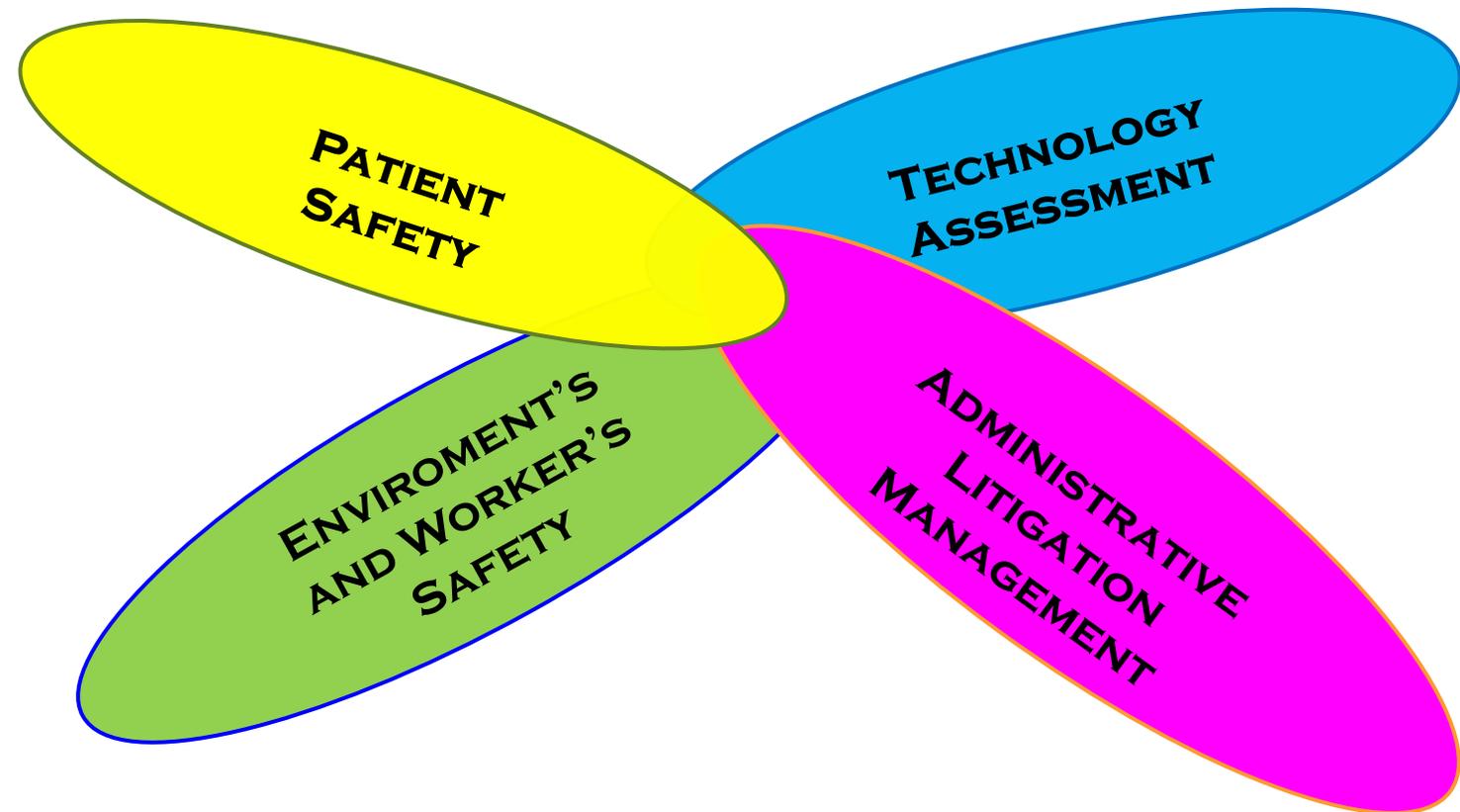
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Methods

Study Population and data sources

Patients ≥18 years who underwent one of 17 major orthopedic procedures, with an average length of stay ≥1 day, from 2011-2013. One Italian orthopedic hospital and 26 hospitals in Florida with ≥1,000 major orthopedic procedures per year.

US: ARHQ's HCUP Database, State Inpatient Database (SID), Florida

Italy: IOR's Hospital Discharge Records database

Statistical Analyses

o **Chi-Square test** for categorical variables and **Wilcoxon rank sum test** for continuous variables to compare patient characteristics between countries.

o **Wilcoxon rank sum test** to compare the length of stay and number of secondary diagnoses between US and Italian patients at risk for each PSI.

o AHRQ's PSI crude rates used as dependent variables of a set of **multivariable logistic models**. Independent covariates: demographic characteristics (gender and age), comorbidities (Elixhauser Index), length of stay and mean number of secondary diagnoses.
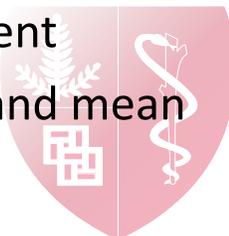
Methods: Procedures

| List of the most frequent orthopedic procedures selected for the study (ICD-9-CM codes)	
77.49	Biopsy of bone except facial bones
77.88	Other partial ostectomy of tarsal and metatarsal bones
78.65	Removal of implanted devices from femur
78.67	Removal of implanted devices from tibia and fibula
79.15	Closed reduction of fracture with internal fixation of femur
79.31	Open reduction of fracture with internal fixation of humerus
79.35	Open reduction of fracture with internal fixation of femur
79.36	Open reduction of fracture with internal fixation of tibia and fibula
81.05	Dorsal and dorso-lumbar fusion, posterior technique
81.08	Lumbar and lumbosacral fusion, posterior technique
81.47	Other repair of knee
81.51	Total hip replacement
81.52	Partial hip replacement
81.54	Total knee replacement
83.39	Excision of lesion of other soft tissue
83.63	Rotator cuff repair
86.22	Excisional debridement of wound, infection, or burn

Results: Characteristics of the study population, stratified by country from 2011-2013

Characteristics of the study population, stratified by country from 2011-2013			
Patient characteristics	**Italy**	**United States**	**P**
Total Discharges	14,393	131,371	
Age	59.76 ± 18.31	65.45 ± 14.54	<0.0001
Males	6,420 (44.61%)	54,665 (41.61%)	<0.0001
Mean number of comorbidities	0.43 ± 0.77	2.09 ± 1.61	<0.0001
Mean number of Secondary diagnoses	1.26 ± 1.64	7.72 ± 5.51	<0.0001
Mean Length of Stay	7.33 ± 5.99	4.68 ± 6.25	<0.0001

Results
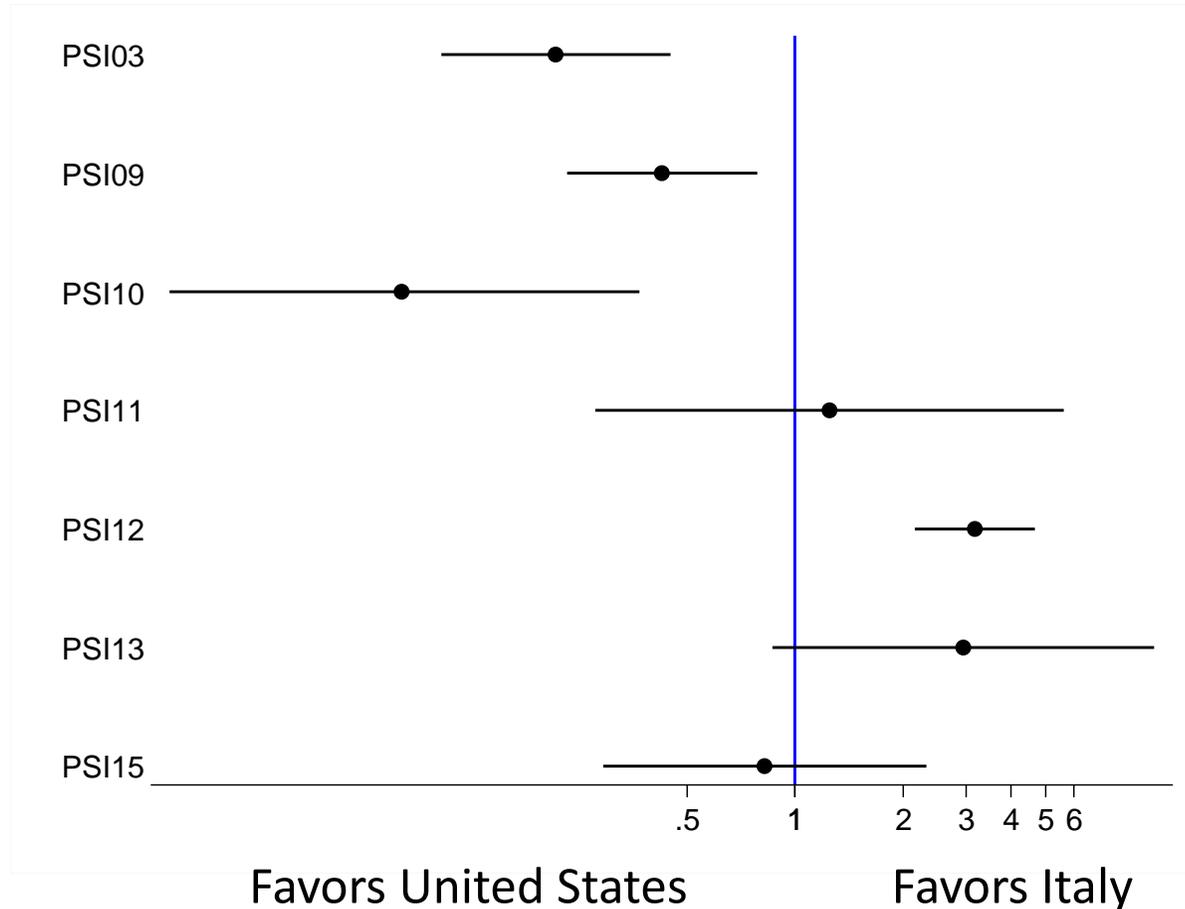
PSI 03 Pressure ulcer rate
PSI 09 Perioperative hemorrhage or hematoma rate
PSI 10 Postoperative physiologic and metabolic derangement rate
PSI 11 Postoperative respiratory failure rate
PSI 12 Perioperative pulmonary embolism or deep vein thrombosis
PSI 13 Postoperative sepsis rate
PSI 15 Accidental puncture or laceration rate.

Odds Ratios and 95% Confidence Intervals from logistic models

Limitations

The Joint Commission Journal on Quality and Patient Safety

Performance Measures

How Often are Potential Patient Safety Events Present on Admission?

Robert L. Houchens, Ph.D.
Anne Elixhauser, Ph.D.
Patrick S. Romano, M.D., M.P.H.

International Comparability of Patient Safety Indicators in 15 OECD Member Countries: A Methodological Approach of Adjustment by Secondary Diagnoses

Saskia E. Drösler, Patrick S. Romano, Daniel J. Tancredi, and Niek S. Klazinga

Limitations

Differences in PSIs ⟷ **Differences among hospitals?**

•Italian data from a orthopedic high-specialized center, and teaching hospital
•US data come from a heterogeneous group of hospitals.

Hospital effect was included in the model as a random intercept and results were unchanged

International comparisons of hospital performance affected by coding bias?

In Italy information on Present-on-admission (POA) diagnoses is not available… → **This may have resulted in an overestimation of the PSIs.**

We excluded POA information also from the US data

Conclusions

- Lower risk of Perioperative Pulmonary Embolism/DVT in Italy
- Lower risk of Pressure Ulcers, Perioperative Hemorrhage/Hematoma, and Postoperative Derangements in the US.
- Lower risk of Postoperative sepsis in Italy, *but not statistically significant*.

- These findings can be related to **policies** adopted in the two countries focused on Patient Safety.

- Further steps: Other studies aimed at considering better the **different case-mix** and **coding practices**, extending analyses to **other regions** in Italy and the US, and considering **other clinical and organizational factors** that may influence patient safety outcomes.

Implications

- **Safety evaluation and assessment**
- **Safety improvement**
- **Provider benchmarking**
- **International comparison**
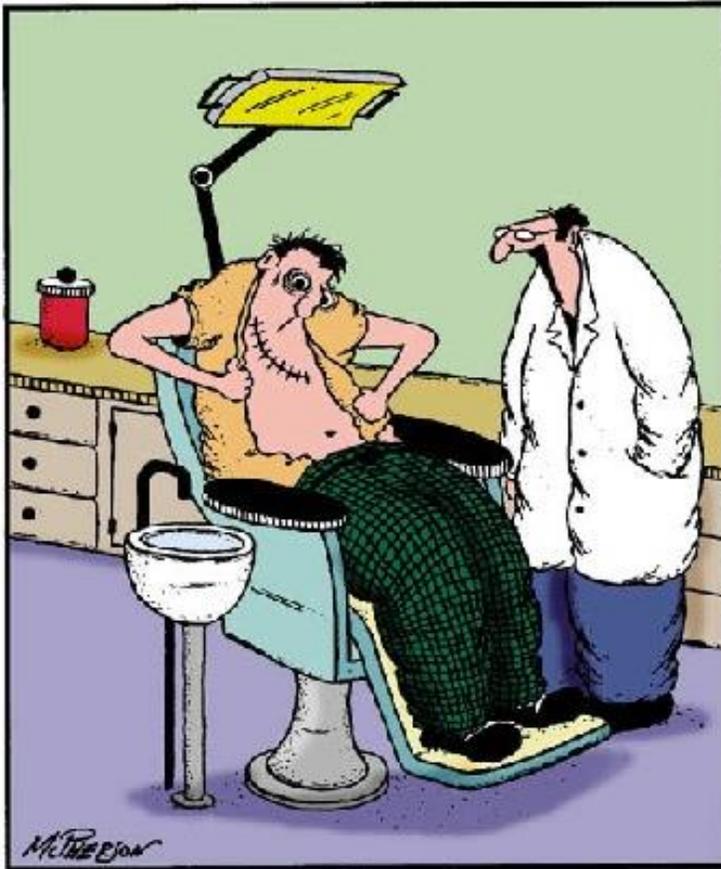
"That wisdom tooth on the right side was giving me a tough time, so I had to get at it from a different angle."

Thank you!

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