



# E-CARDIONET RETE DI EMERGENZA CARDIOLOGICA

*Kardiološko alarmno omrežje na obmejnem območju*

---

## BACKGROUND



# European Charter of Patients' Rights

## 2-Right of Access

*Every individual has the right of access to the health services that his or her health needs require. The health services must guarantee equal access to everyone, without discriminating on the basis of financial resources, place of residence, kind of illness or time of access to services.*

An individual requiring treatment, but unable to sustain the costs, has the right to be served free of charge.

Each individual has the right to adequate services, independently of whether he or she has been admitted to a small or large hospital or clinic.

Each individual, even without a required residence permit, has the right to urgent or essential outpatient and inpatient care.

An individual suffering from a rare disease has the same right to the necessary treatments and medication as someone with a more common disease.



World Health Organization

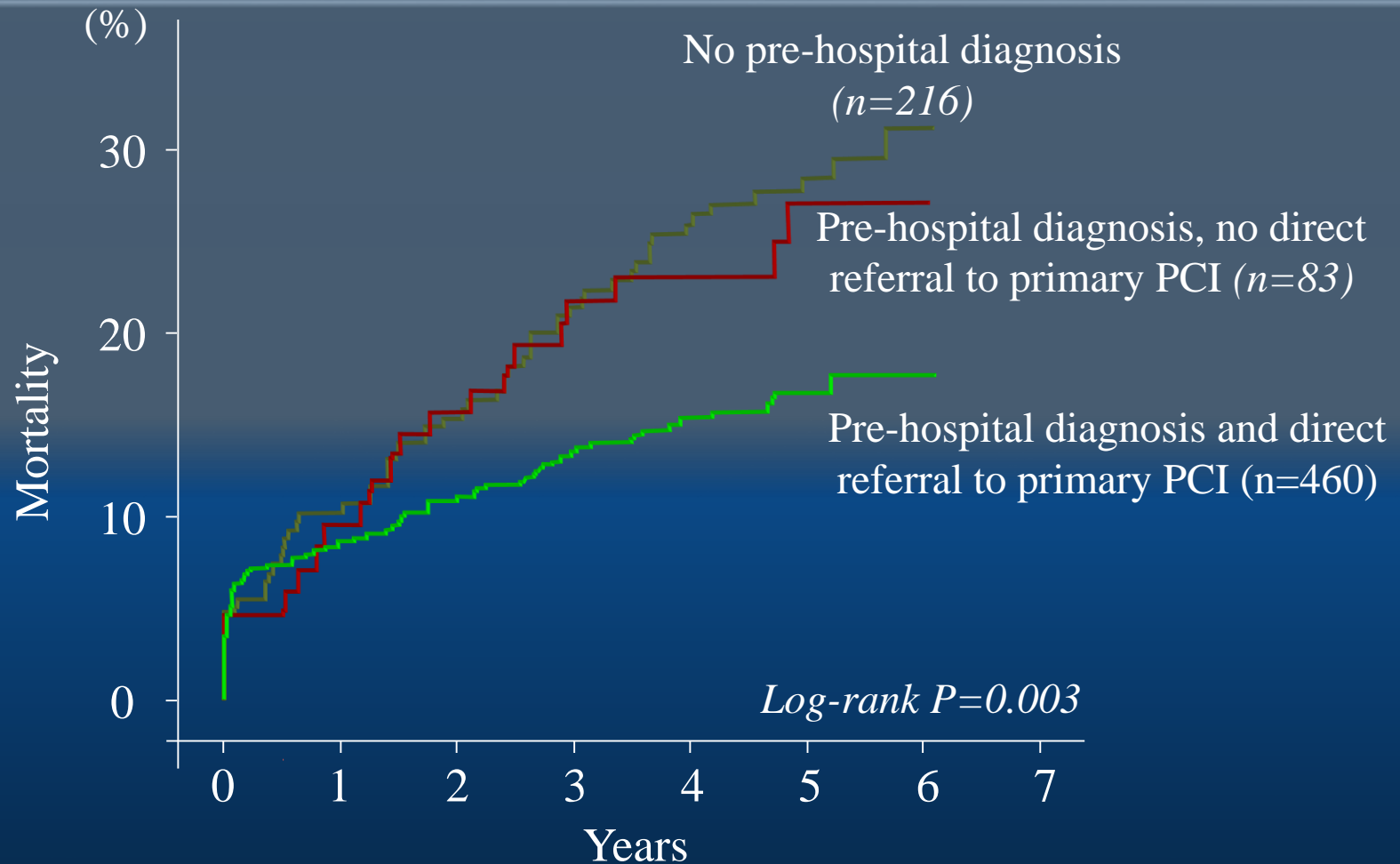
# **CARDIOVASCULAR DISEASES (CVDs)**

Fact sheet n.317, September 2011

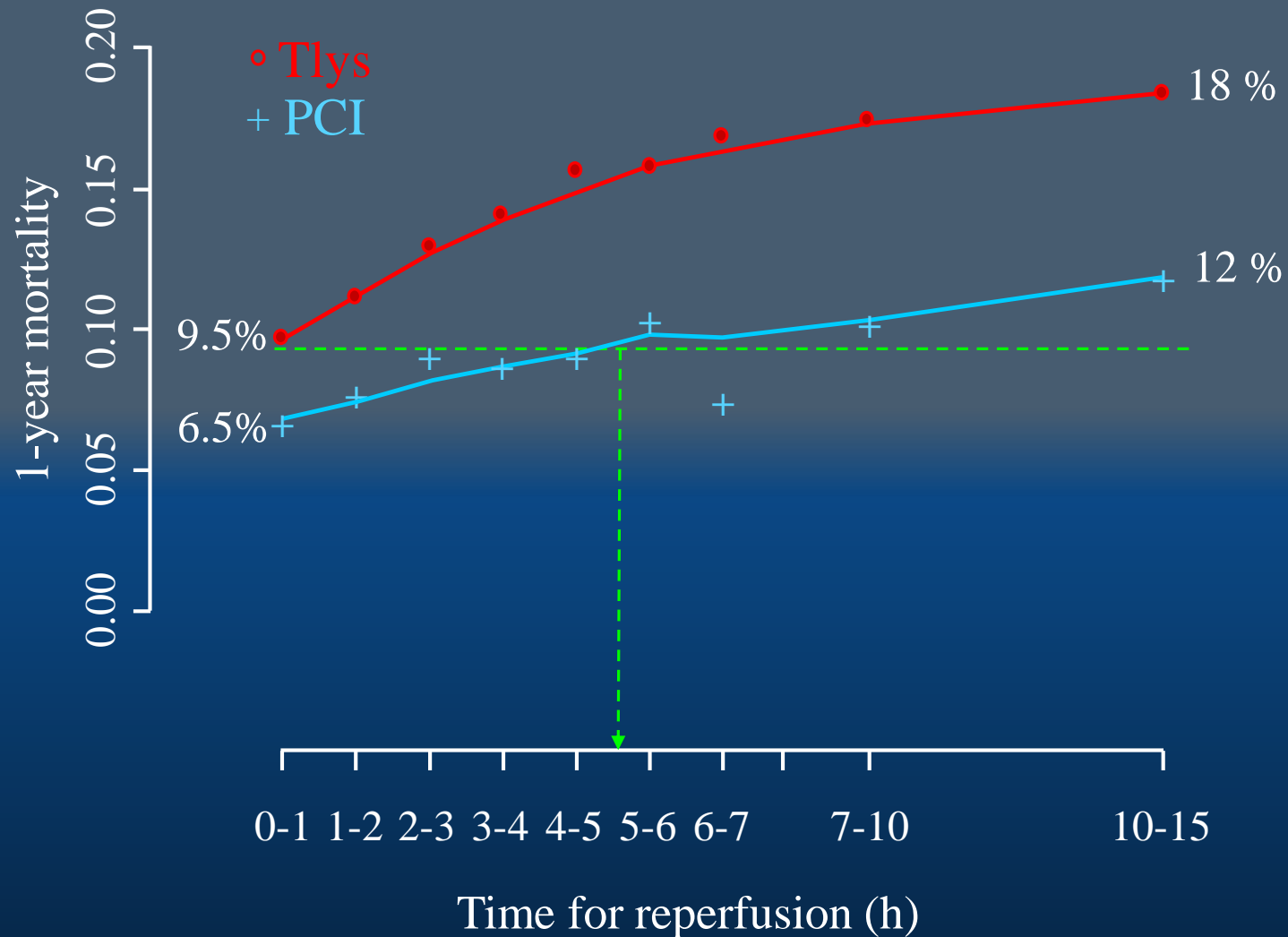
CVDs are the number one cause of death globally: more people die annually from CVDs than from any other cause.

An estimated 17.3 million people died from CVDs in 2008, representing 30% of all global deaths. Of these deaths, an estimated 7.3 million were due to coronary heart disease and 6.2 million were due to stroke

# MORTALITY ACCORDING TO PRE-HOSPITAL DIAGNOSIS AND REFERRAL



# AGE ADJUSTED 1-YEAR MORTALITY FOR PRIMARY PCI VS THROMBOLYSIS IN RELATION *DELAY TIME*

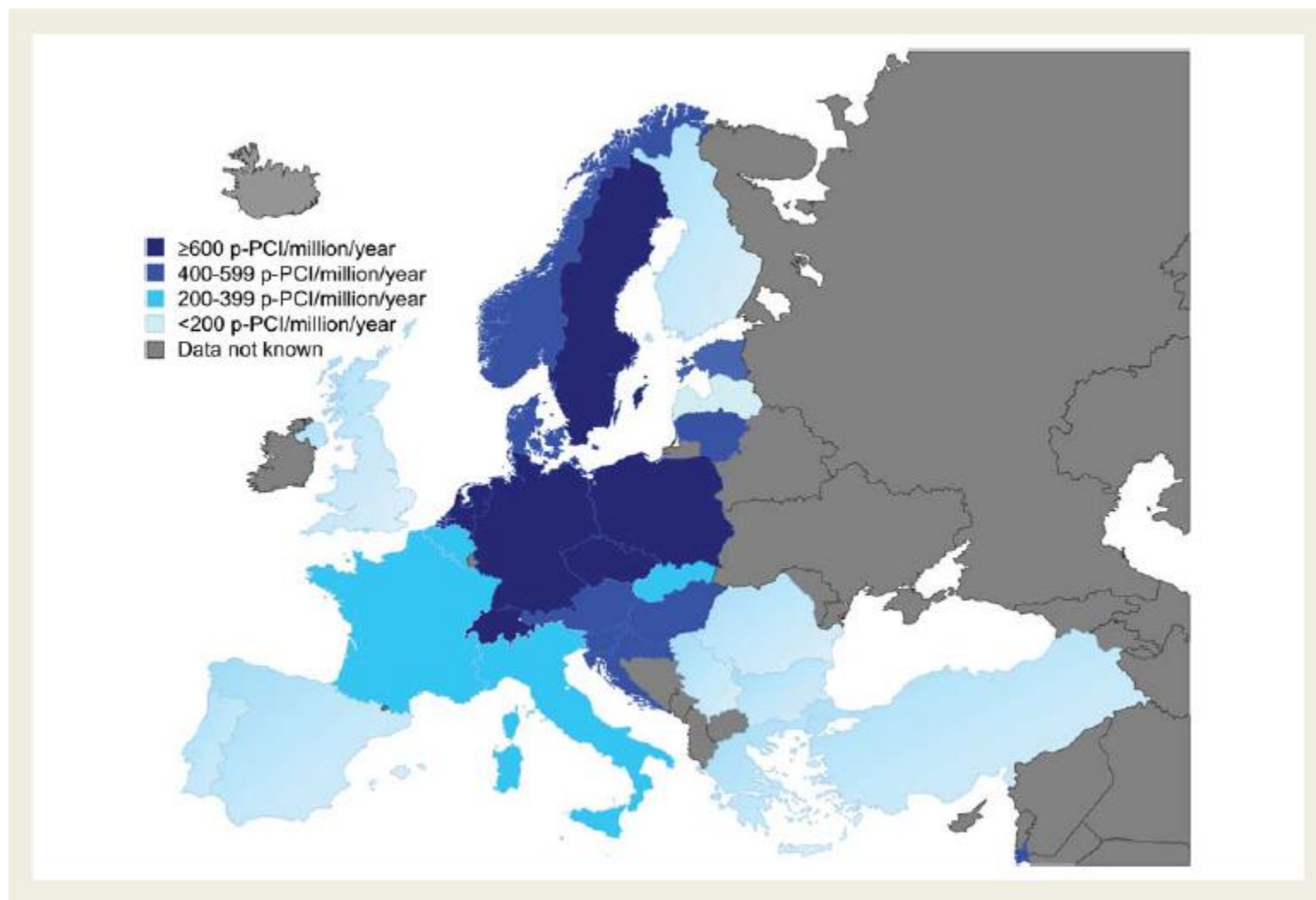




## Reperfusion therapy for ST elevation acute myocardial infarction in Europe: description of the current situation in 30 countries

Petr Widimsky\*, William Wijns, Jean Fajadet, Mark de Belder, Jiri Knot, Lars Aaberge, George Andrikopoulos, Jose Antonio Baz, Amadeo Betriu, Marc Claeys, Nicholas Danchin, Slaveyko Djambazov, Paul Erne, Juha Hartikainen, Kurt Huber, Petr Kala, Milka Klinčeva, Steen Dalby Kristensen, Peter Ludman, Josephina Mauri Ferre, Bela Merkely, Davor Miličić, Joao Morais, Marko Noč, Grzegorz Opolski, Miodrag Ostojić, Dragana Radovanović, Stefano De Servi, Ulf Stenestrand, Martin Studenčan, Marco Tubaro, Zorana Vasiljević, Franz Weidinger, Adam Witkowski, and Uwe Zeymer on behalf of the European Association for Percutaneous Cardiovascular Interventions†

Primary PCI per year per million inhabitants in European countries.





# Reperfusion therapy for ST elevation acute myocardial infarction in Europe: description of the current situation in 30 countries

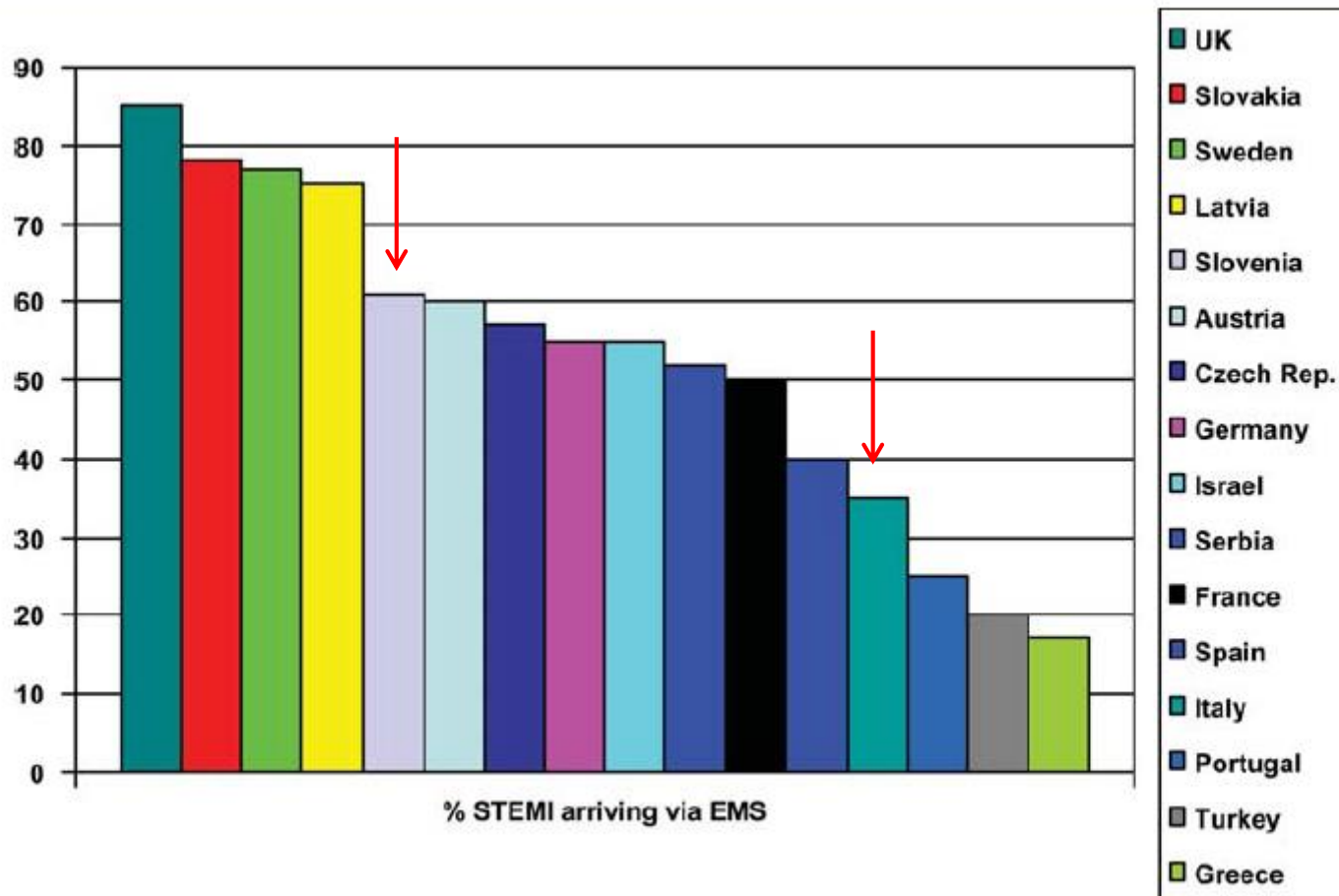
European Heart Journal

P. Widimsky *et al*

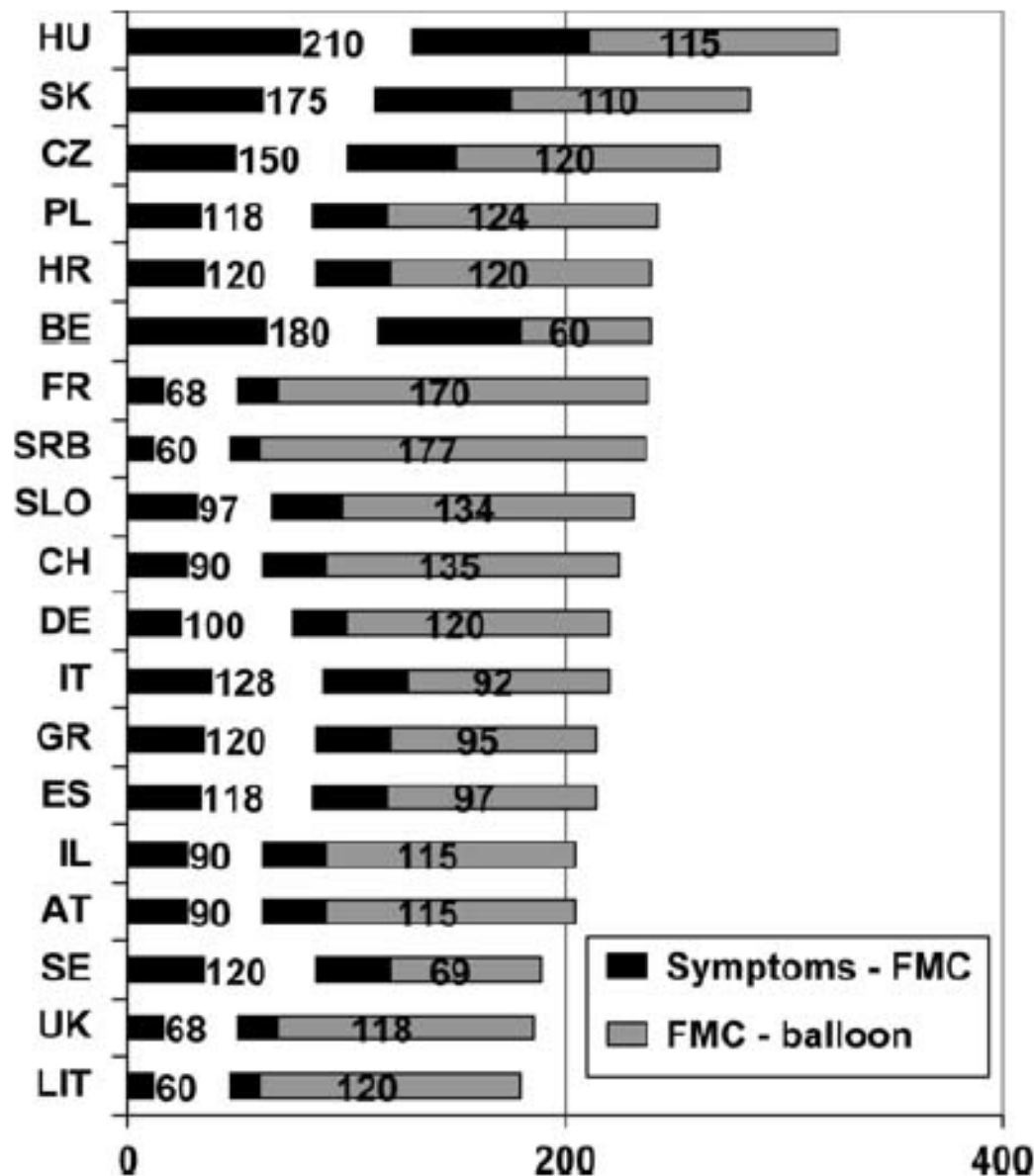
## Numbers of PCI centres and population per one centre

Country	All PCI centres	Population per any PCI centre	Primary PCI centres (non-stop, 24/7)	Population per primary PCI centre (24/7)
Italy	242	240 270	164	354 559
Slovenia	5	401 849	2	1 004 745

Percentage of STEMI patients arriving to the first hospital via EMS services.



# TIME DELAYS IN PPCI PATIENTS



**TRIESTE-**

- MONFALCONE** 38km
- GORIZIA** 51 km
- PALMANOVA** 62 km
- PORDENONE** 122 km

**TRIESTE -**

- KOŽINA** 12 km
- SEŽANA** 15 km
- KOPER** 21 km
- IZOLA** 26 km
- PIRAN** 37 km
- ILIRSKA B.** 43 km
- POSTOJNA** 47 km
- N.GORICA** 55 km
- LUBIANA** 96 km
- JESENICE** 156 km

**LUBIANA –**

- KOZINA** 84 km
- SEŽANA** 81 km
- KOPER** 107 km
- IZOLA** 112 km
- PIRAN** 123 km
- ILIRSKA B.** 78 km
- POSTOJNA** 54 km
- N.GORICA** 109 km
- JESENICE** 63 km



# **E-CARDIONET RETE DI EMERGENZA CARDIOLOGICA**

*Kardiološko alarmno omrežje na obmejnem območju*

---

## **TARGET**

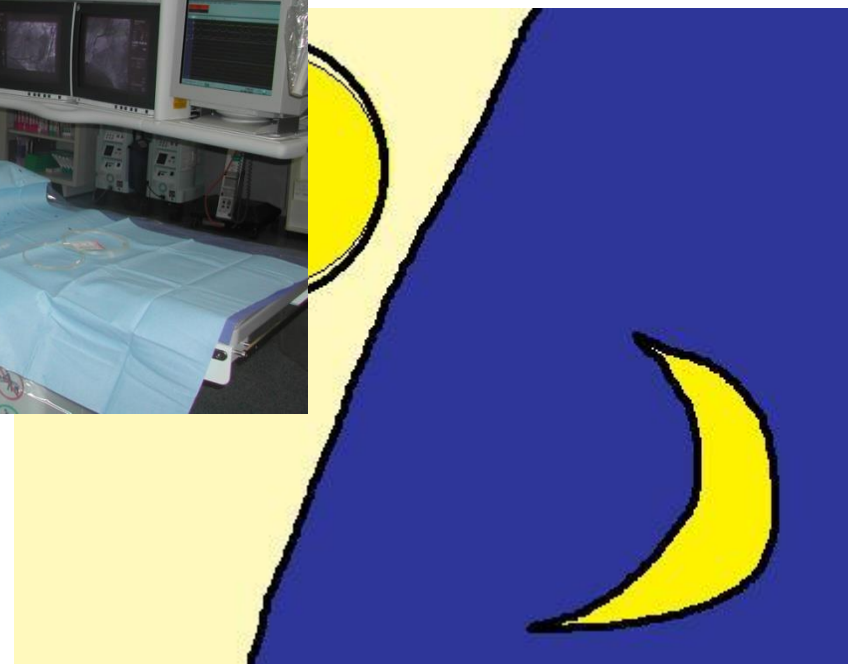
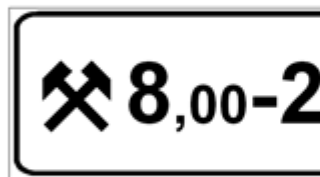


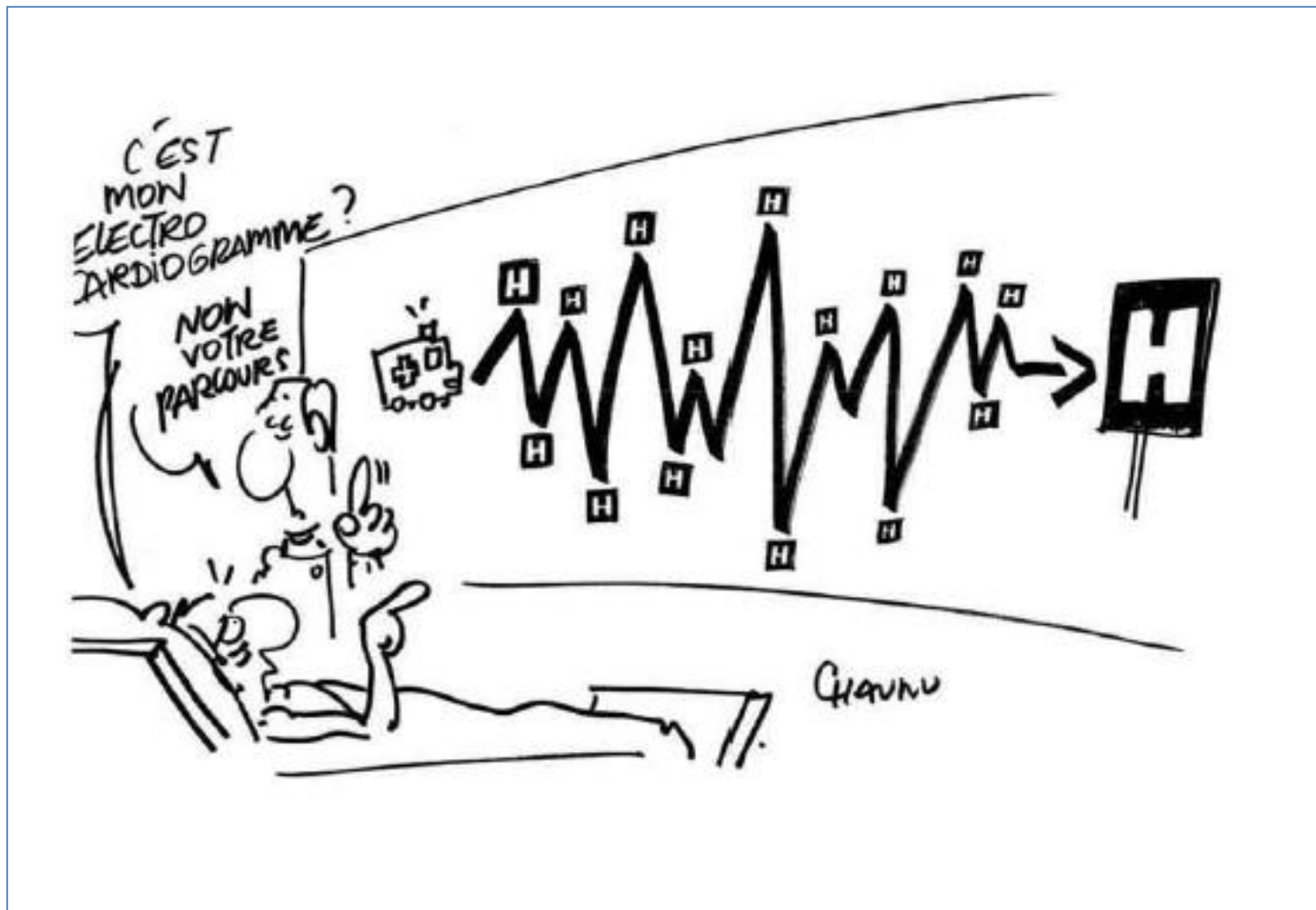
# **LIFE-THREATENING CV EVENTS: FAST and EASY ACCESS TO CARE**

To ensure fast access to life-saving interventional (PPCI, PCI, IABP, ECMO) or surgical (CABG, others) procedures to patients suffered an emergent cardiovascular event such as:

- complicated STEMI (shock, mechanical c., severe arrhythmias, severe HF)
- high risk STEMI (antero-lateral leads)
- ACS with haemodynamic or electric instability
- ROSC in OHCA + high suspicion of ACS + haemodynamic or electric instability
- electric storms
- refractory HF
- cardiac tamponade
- aortic dissection
- cardiogenic shock
- CV emergency in pregnancy









# E-CARDIONET RETE DI EMERGENZA CARDIOLOGICA

*Kardiološko alarmno omrežje na obmejnem območju*

---

## STRATEGIES

# CLINICAL ACTIONS

- PROTOCOL for CLINICAL MANAGEMENT of CV emergencies (pre- and in-hospital)
- PROTOCOL for CLINICAL IDENTIFICATION of CV patients who need emergent nearest tertiary care access
- PROTOCOL for CLINICAL IDENTIFICATION of CV patients who need emergent transboard transfer for local organizative reasons (cath unavailability, roads practicability)

# ORGANIZATIVE ACTIONS

- building/renforceing 24/7 NETWORK to cover cardiovascular emergency population need
- ROLES'DEFINITION
- CHECK/REVIEW of local technological equipment
- TELETRANSMISSION EKG PROTOCOL
- TRANSPORTATION PROTOCOL
- TEAM MOBILIZATION modality (eventually)
- DATA COLLECTION/REGISTRY to analyze application and progress
- LANGUAGE...



# UP-GRADING/ACQUISITION AND INTEGRATION OF TECHNOLOGICAL EQUIPMENTS

Transmission of  
A 12-lead ECG  
To hospital.



Call

Phone contact from  
hospital  
to patient and paramedic  
in  
the ambulance



# EDUCATIONAL ACTIONS

- promotion of BLSD and ACLS courses for cardiologist, EMS, nurses
- MEETINGS
- STAGES
- EDUCATION CAMPAIGN to population

**Angina**

**One number**

**EMS (car, helicopter)**

**12-lead ECG, Defibrillator**

**Basic and advanced life support**

**Cell phone (direct contact with cath lab)**

**Trained (emergency) physicians or paramedics**

**Automatic ECG diagnosis or ECG-telemetry (paramedics)**

**Pre-hospital treatment (pain relief, UFH, Enox, Bival, pre-h lysis)**

## **Network components**

## **Network organisation**

**Co-operation between EMS, PCI-hospitals, non-PCI hospitals**

**Lead by cardiologists or emergency physicians**

**Involvement of (local) health politicians**

**Public information campaigns**

**Insurance companies**

**Financial support**

**Education**

**Registry**

# **E-CARDIONET RETE DI EMERGENZA CARDIOLOGICA**

*Kardiološko alarmno omrežje na obmejnem območju*

---

## **RESULTS' INDICATORS**



- INCREASING POPULATION CALL TO LOCAL EMS
- INCREASING LOCAL EKG TELETRANSMISSION
- VOLUMES OF TRANSBOARD ACCESSES
- TIME TO ACCESS
- PATIENTS OUTCOME (30 dy, 1 yr)
- UTILIZATION OF TECHNOLOGY EQUIPMENT
- VOLUME S AND QUALITY OF EDUCATION

# RISULTATI ATTESI

1. LG bilaterali per gestire la mobilità dei medici e dei pazienti
2. protocolli di trattamento condivisi
3. diminuzione degli indici di mortalità per emergenza cardiovascolare
4. miglioramento dei livelli professionali delle equipe mediche e di operatori sanitari
5. aumento del benessere in salute dei cittadini
6. sviluppo di azioni virtuose tra le istituzioni pubbliche e private
7. creazione di nuove figure professionali

# **E-CARDIONET RETE DI EMERGENZA CARDIOLOGICA**

*Kardiološko alarmno omrežje na obmejnem območju*

---

## **GUARANTEES (for our part...)**

# AZIENDA OSPEDALIERO-UNIVERSITARIA “OSPEDALI RIUNITI DI TRIESTE”

Direttore dott. F. Cobello

Total beds 857; ICU 13 (currently MIH in OHCA)



## DIPARTIMENTO CARDIOVASCOLARE

Direttore prof. G. Sinagra

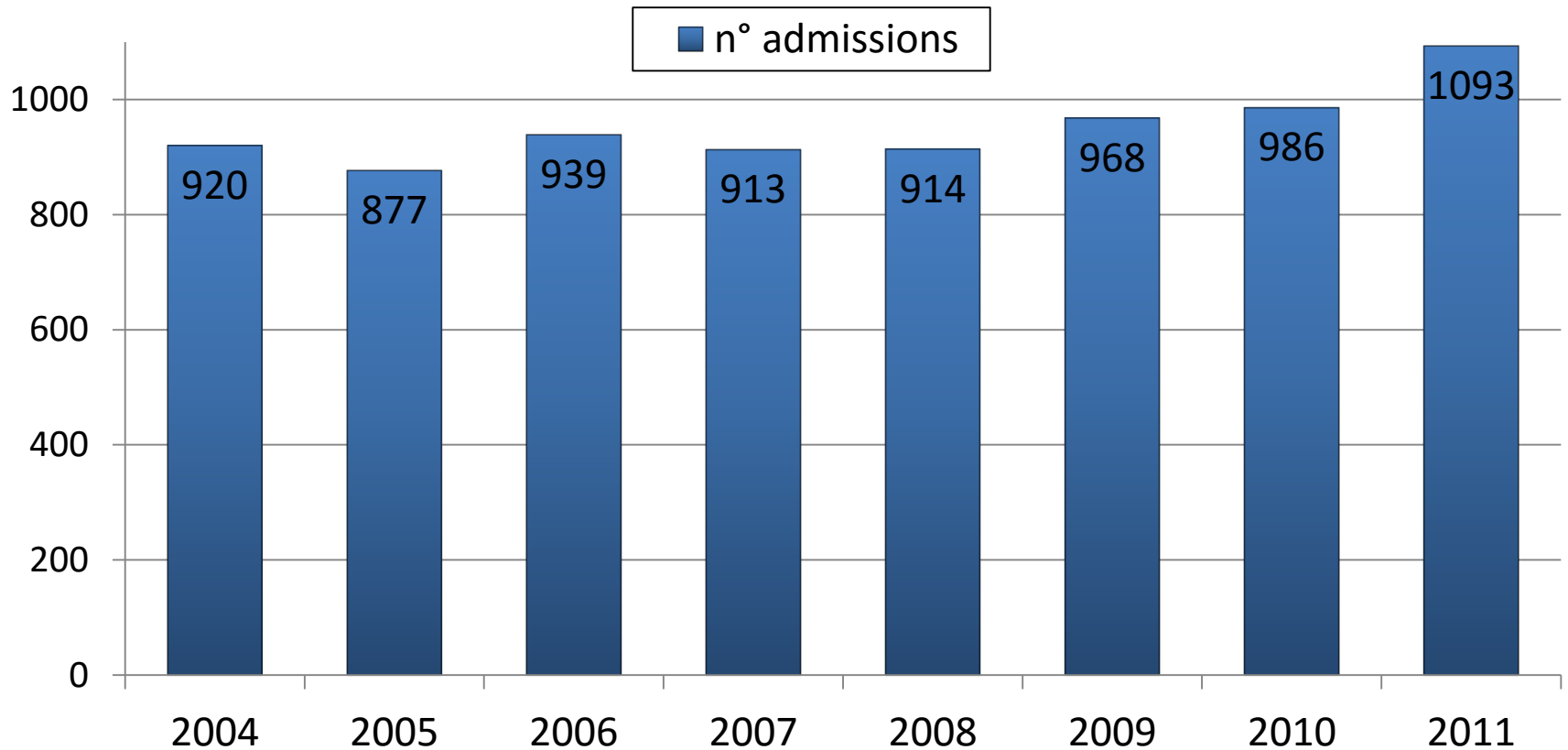
CCU 9 beds, post-intensive Cardiology 30, DH 2; 2 Cath lab;

Cardiac Surgery 10 intensive beds, 24

post-intensive; 2 OR

DAI CARDIOVASCOLARE – prof. G. Sinagra

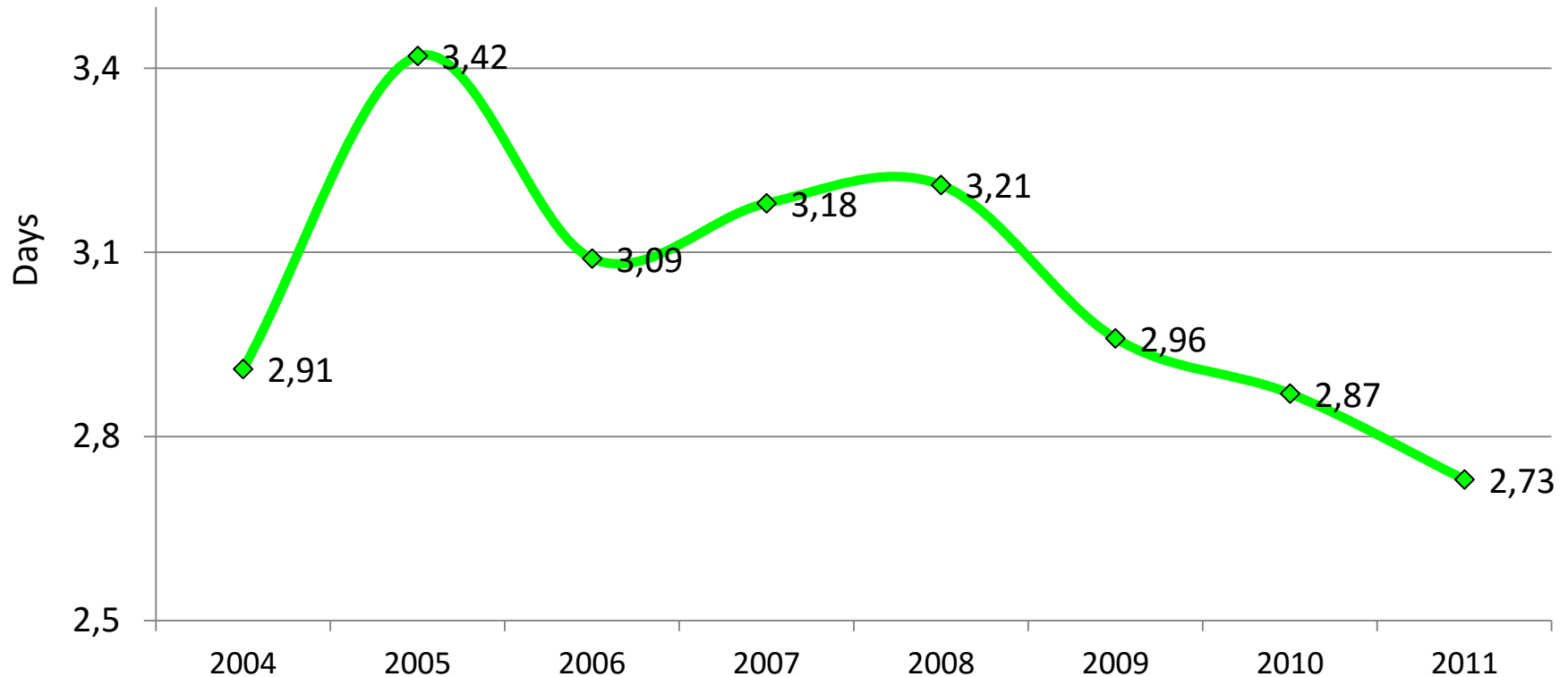
# CCU ADMISSIONS 2004-2009



Azienda Ospedaliero-Universitaria "Ospedali Riuniti"

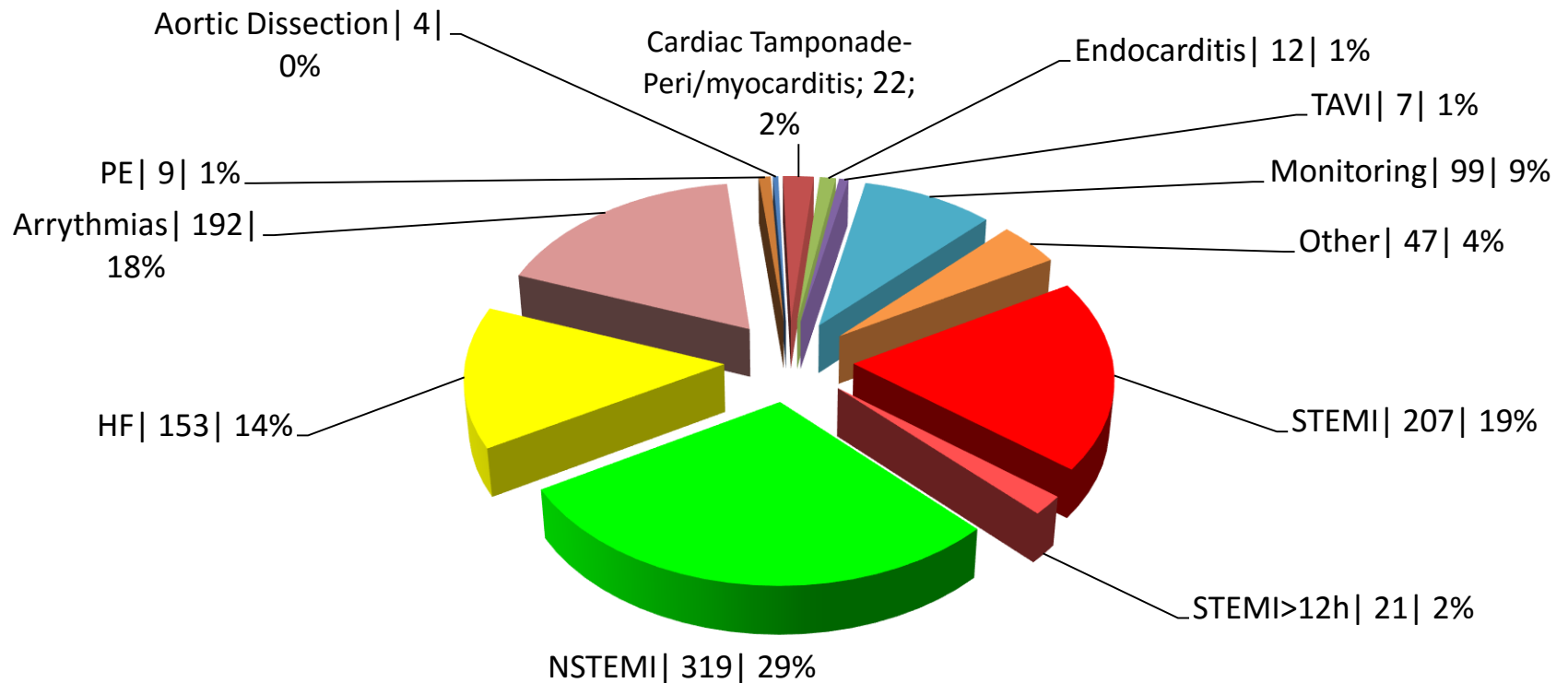
DAI CARDIOVASCOLARE – prof. G. Sinagra

# CCU AVERAGE STAY 2004-2009



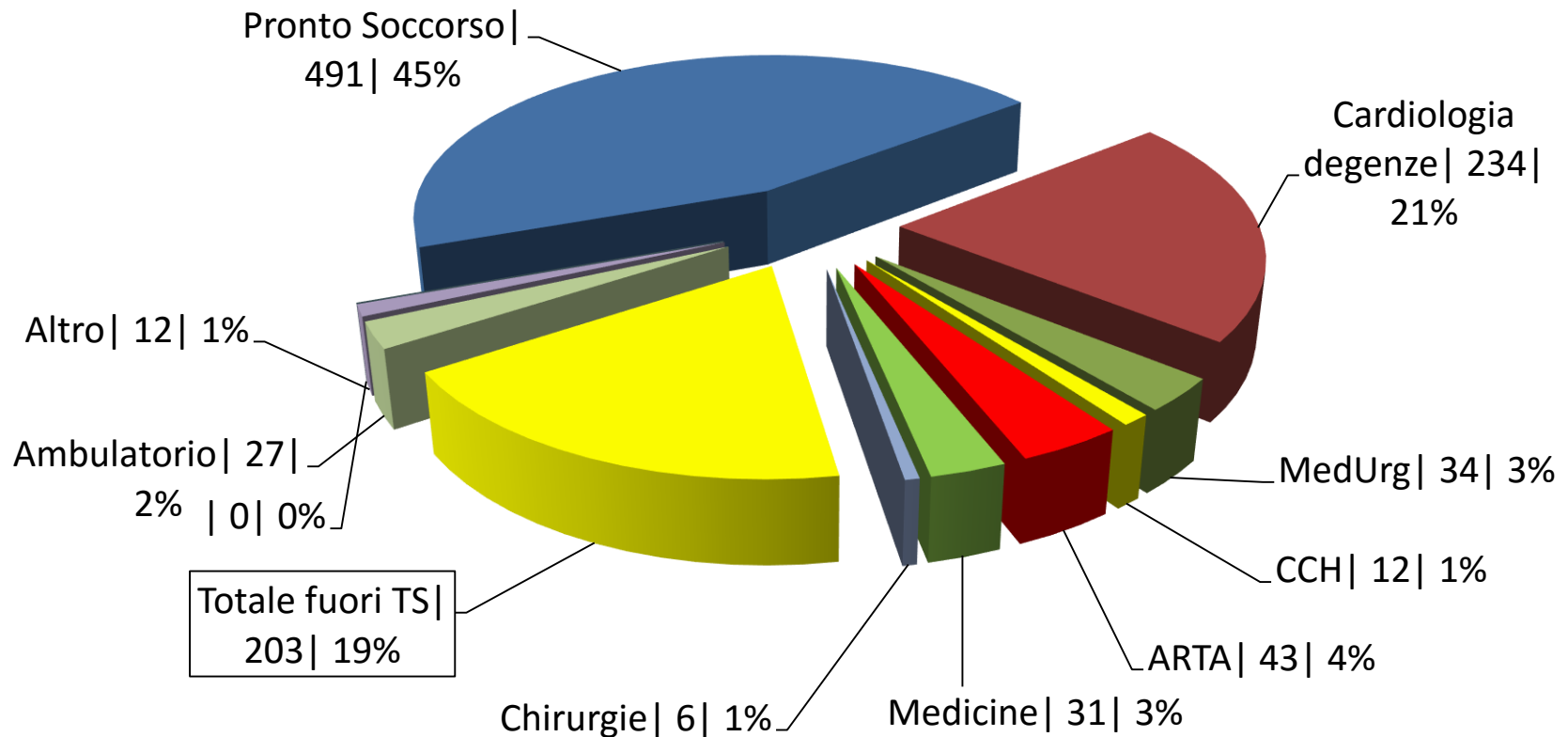
Azienda Ospedaliero-Universitaria "Ospedali Riuniti"

# CCU 2011: DIAGNOSIS AT ADMISSION (n 1093)



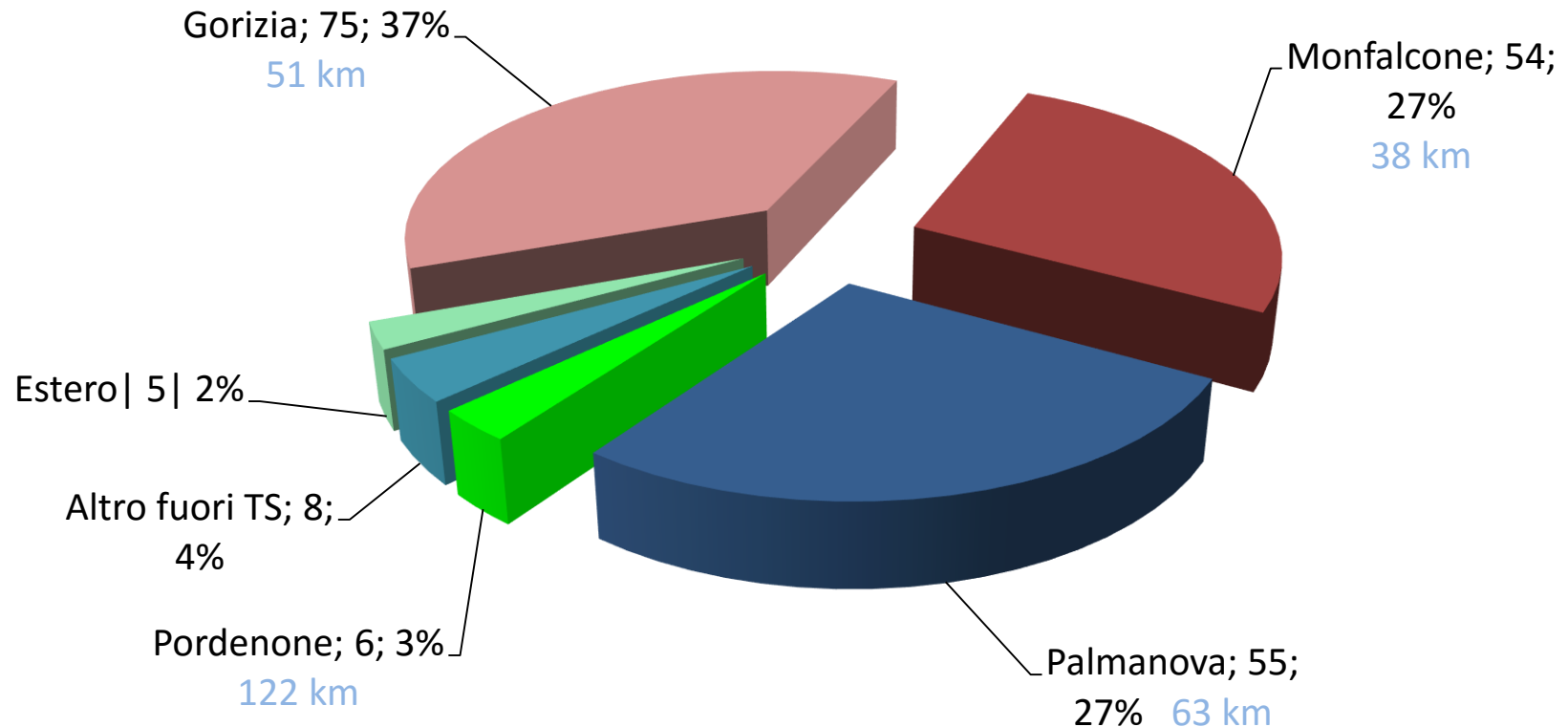
# CCU 2011: ADMISSION FROM...

## (n 1093)



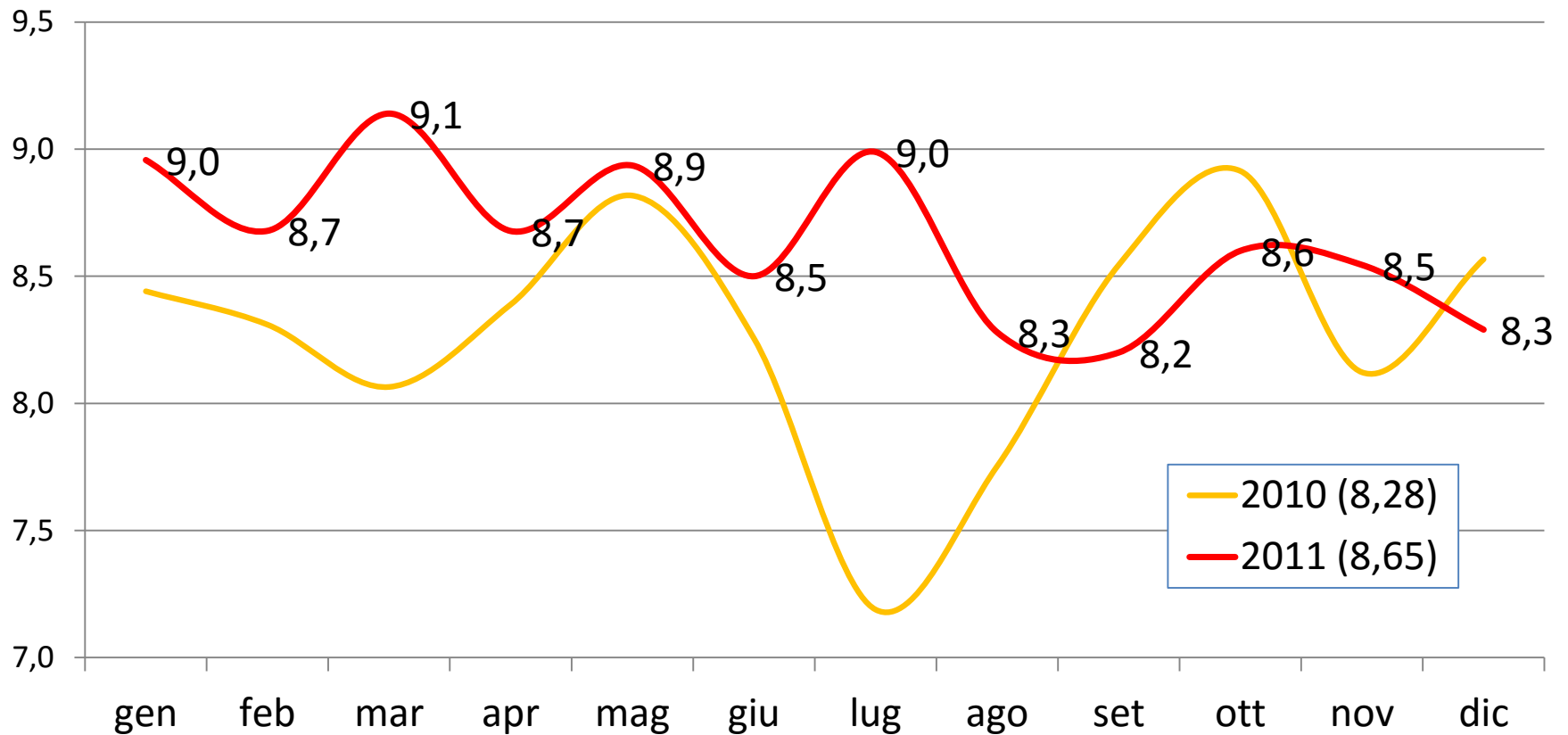


# CCU 2011: COMING FROM OUT OF TRIESTE (n 203)

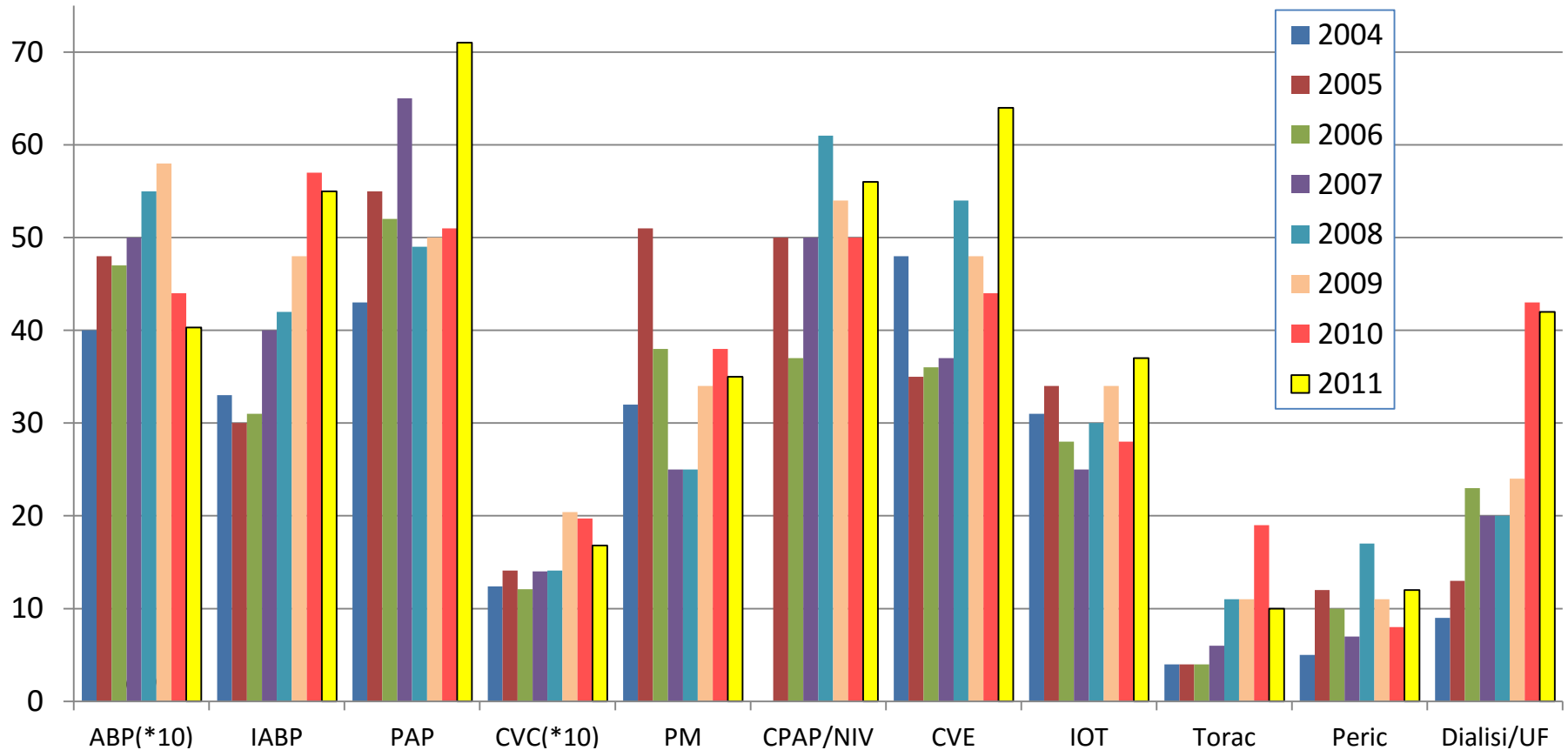


Azienda Ospedaliero-Universitaria "Ospedali Riuniti"

# CCU 2010-2011: AVERAGE BEDS OCCUPIED/DAY



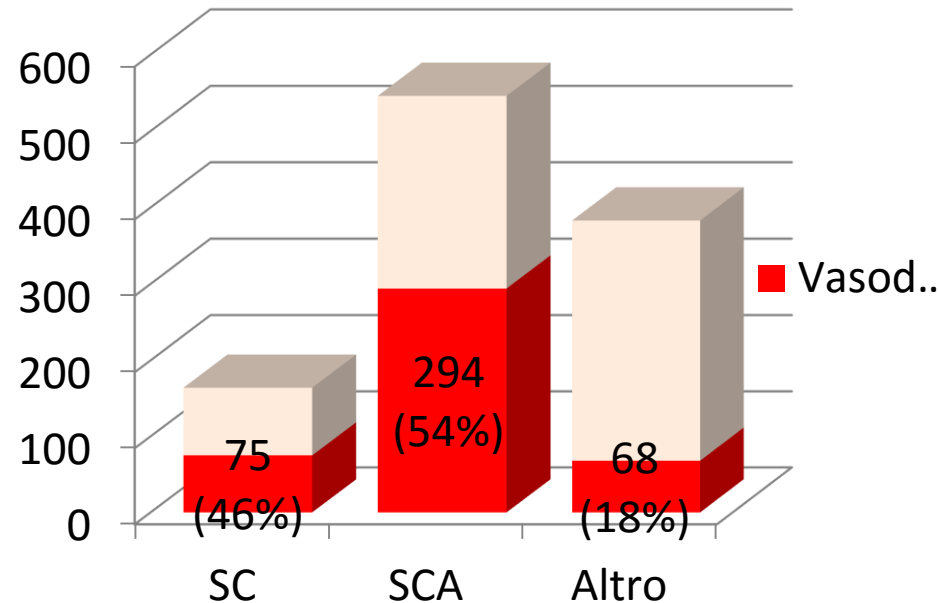
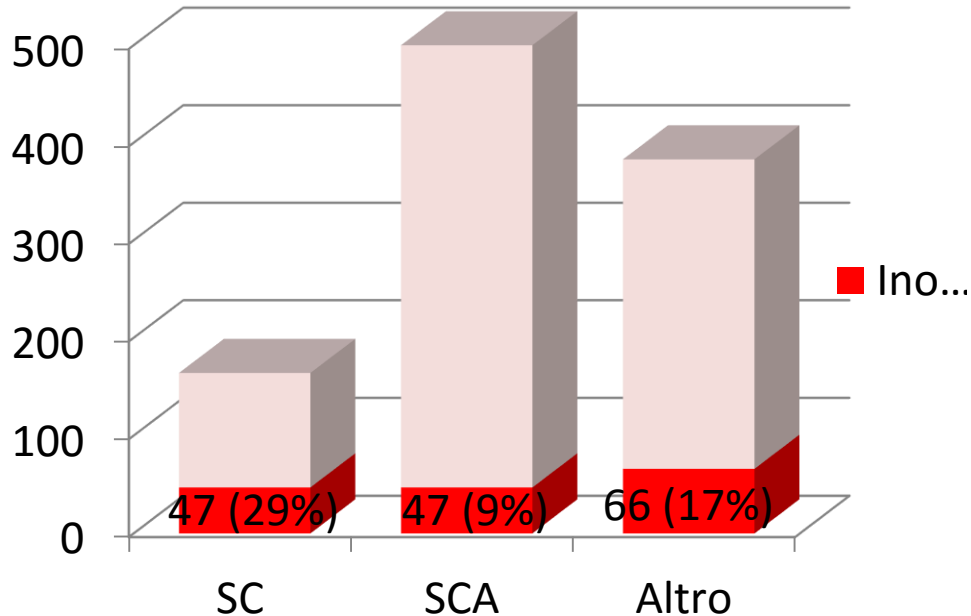
# CCU 2004-2011: INVASIVE PROCEDURES



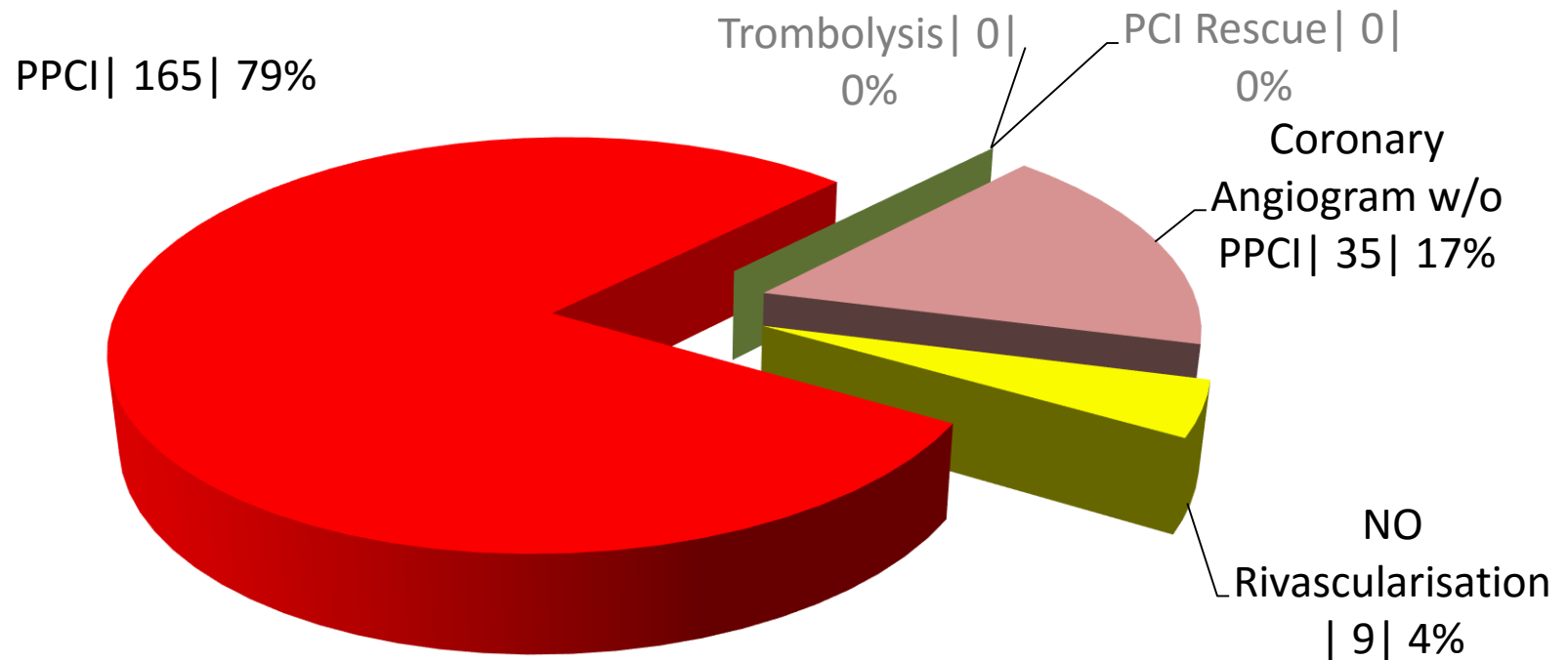
MIH peerformed in ICU

Azienda Ospedaliero-Universitaria "Ospedali Riuniti"

# CCU 2011: INOTROPES AND VASODILATORS i.v.

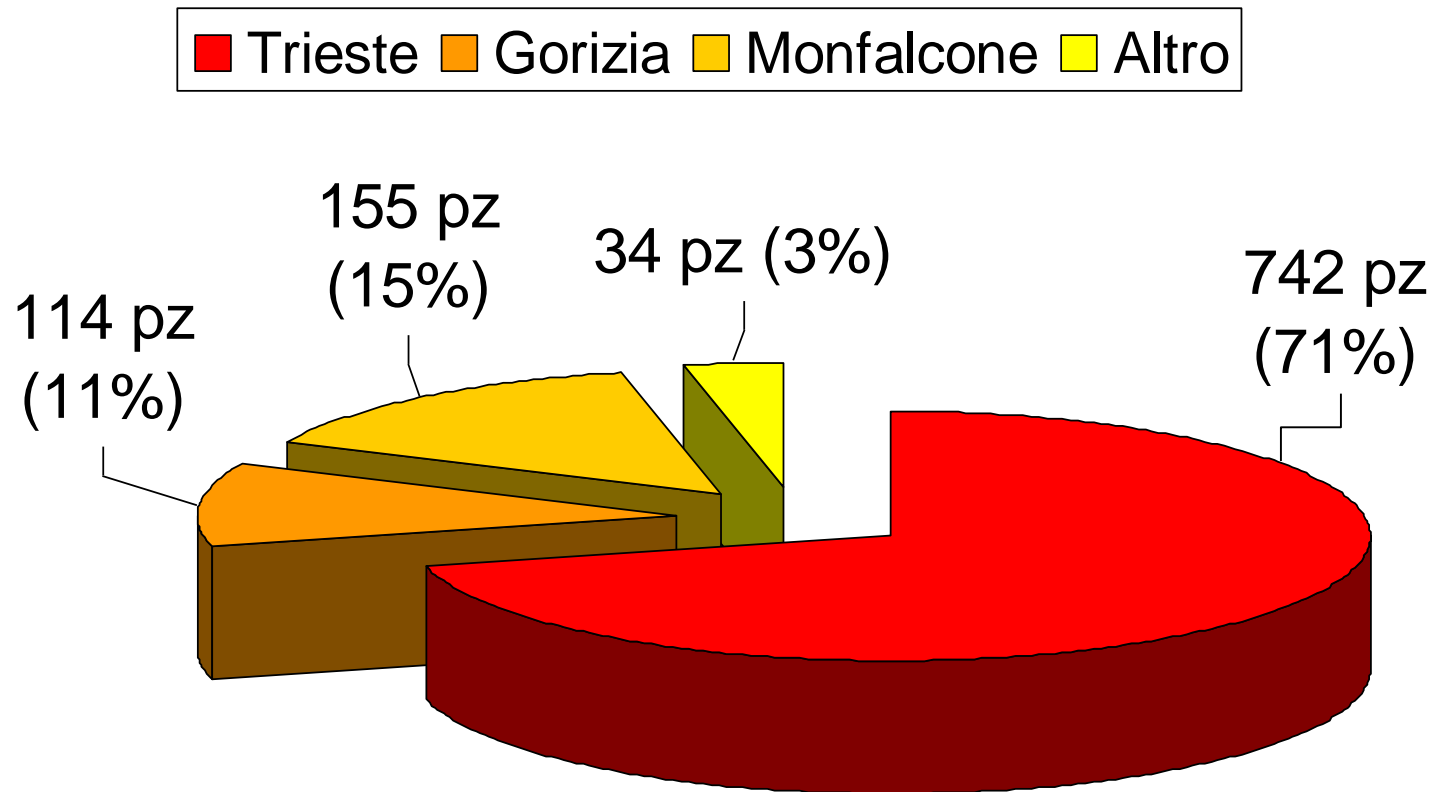


# STEMI TREATMENT 2011 (n=209)



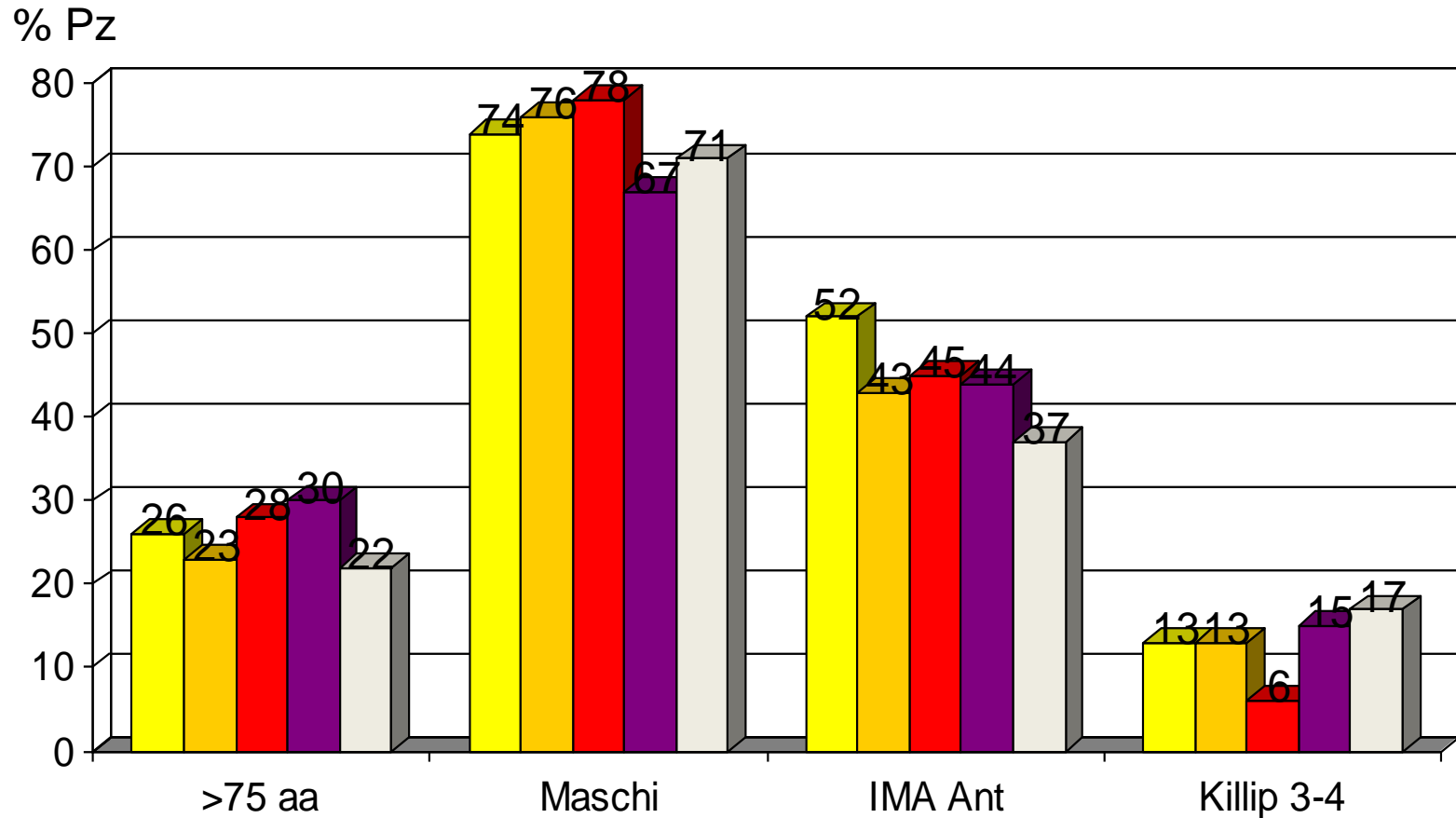
DAI CARDIOVASCOLARE – prof. G. Sinagra  
STEMI PPCI Registry 12/2003-6/2011

**PATIENTS FROM...**



DAI CARDIOVASCOLARE – prof. G. Sinagra  
STEMI PPCI Registry 12/2003-6/2011

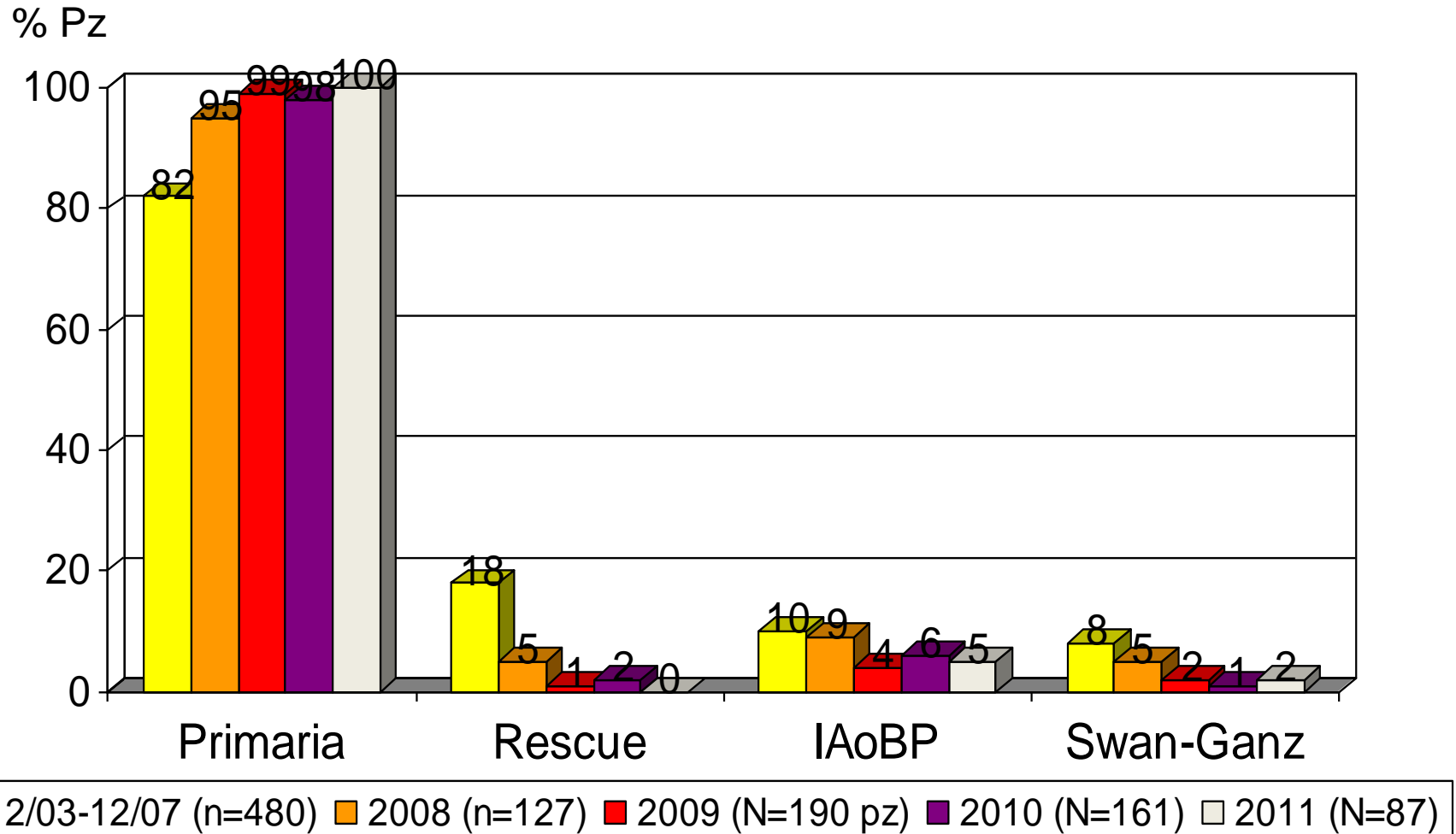
## POPULATION BASELINE (1045)



■ 12/03-12/07 (n=480) ■ 2008 (n=127) ■ 2009 (n=190) ■ 2010 (n=161) ■ 2011 (n=87)

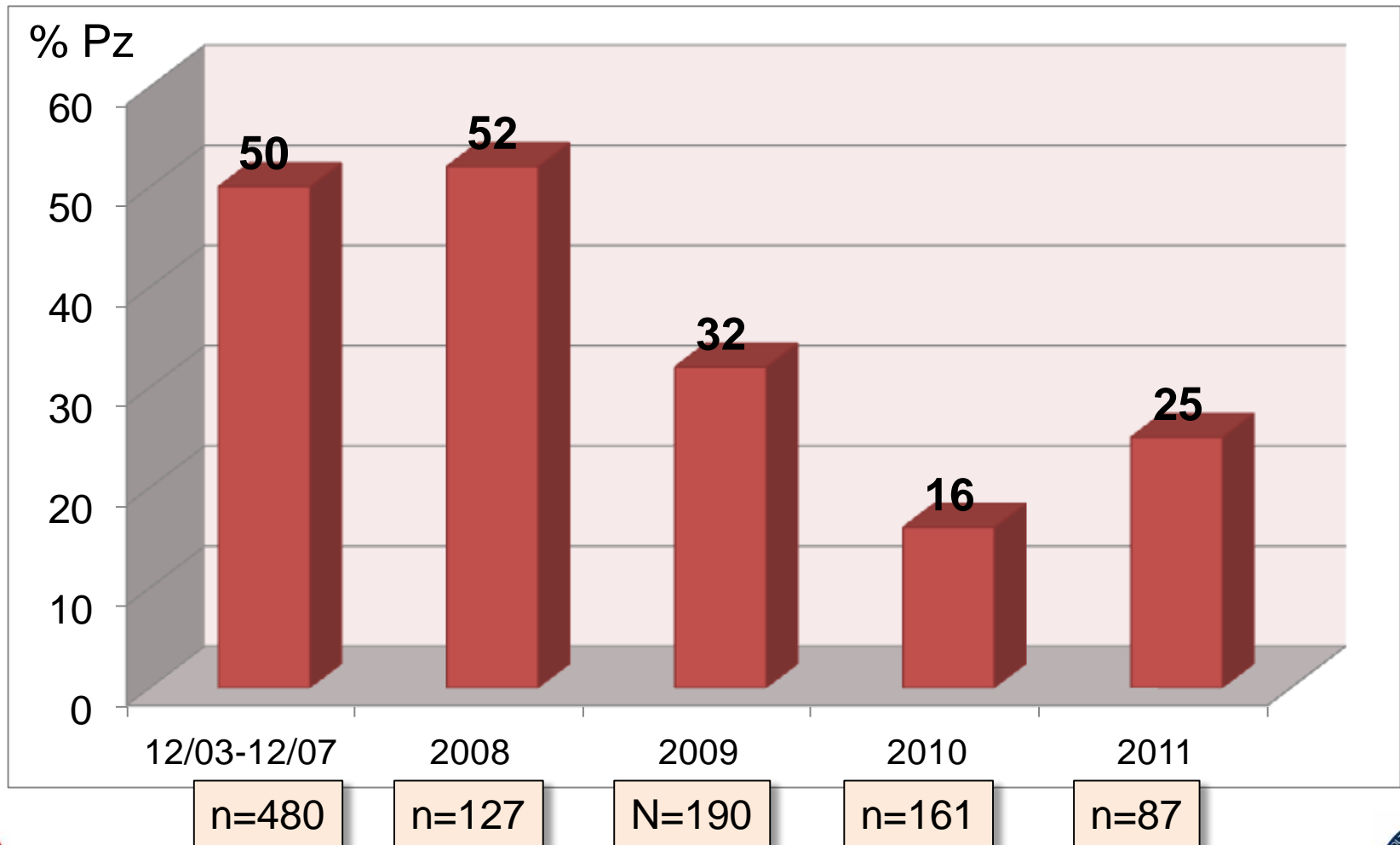


## PROCEDURAL FEATURES (1045)

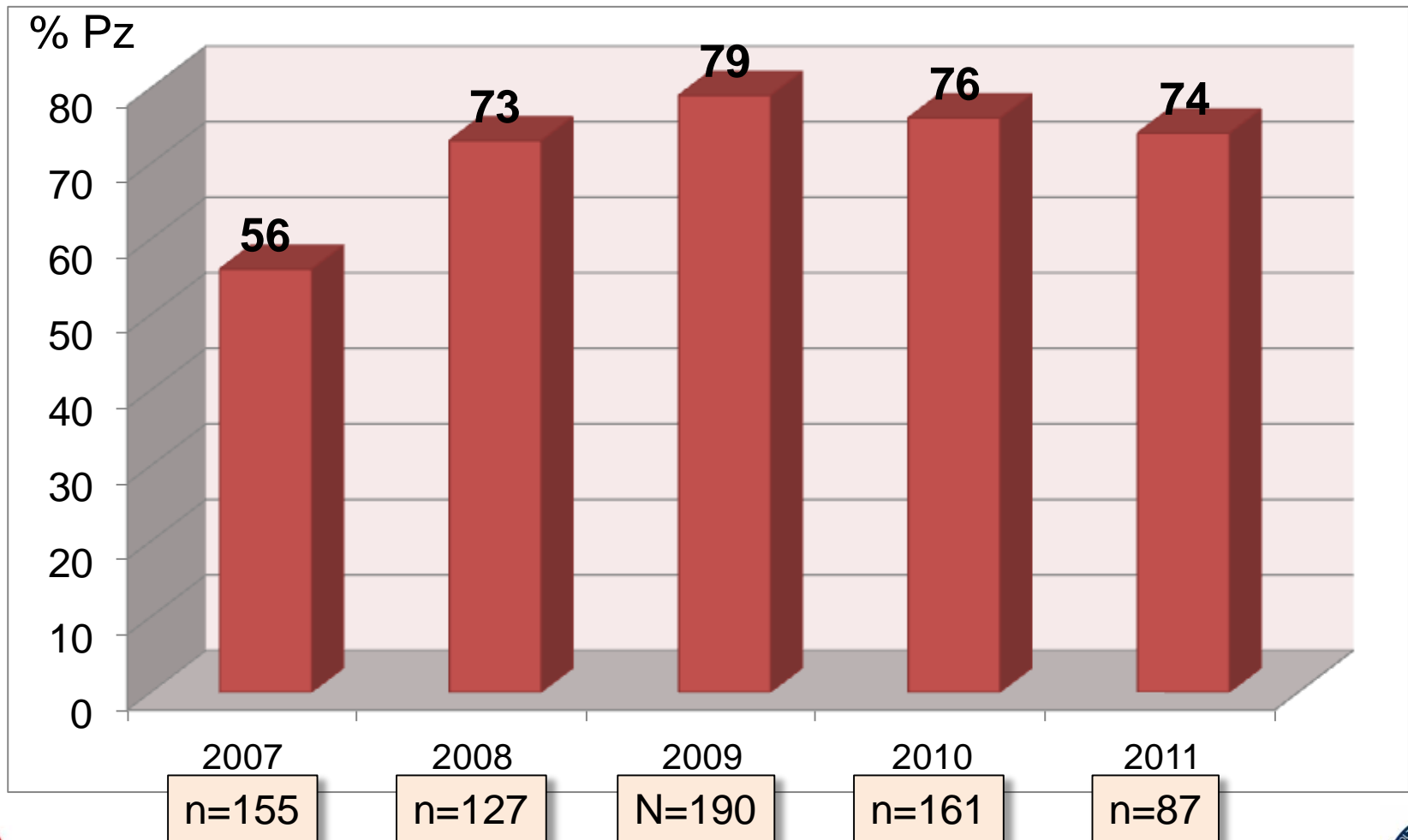




## USE OF GP IIb/IIIa INHIBITORS (1045)

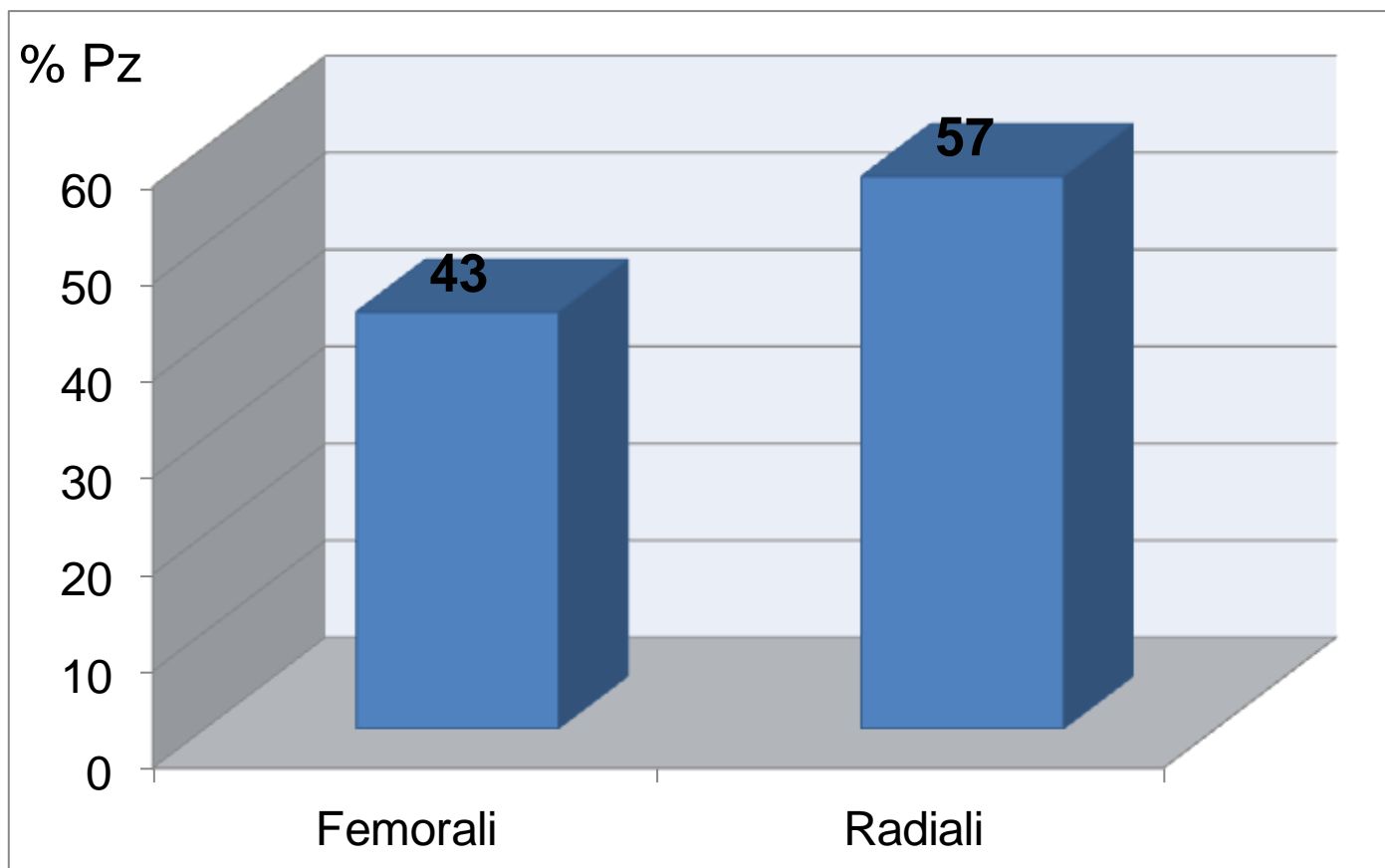


## TROMBECTOMY (1045)



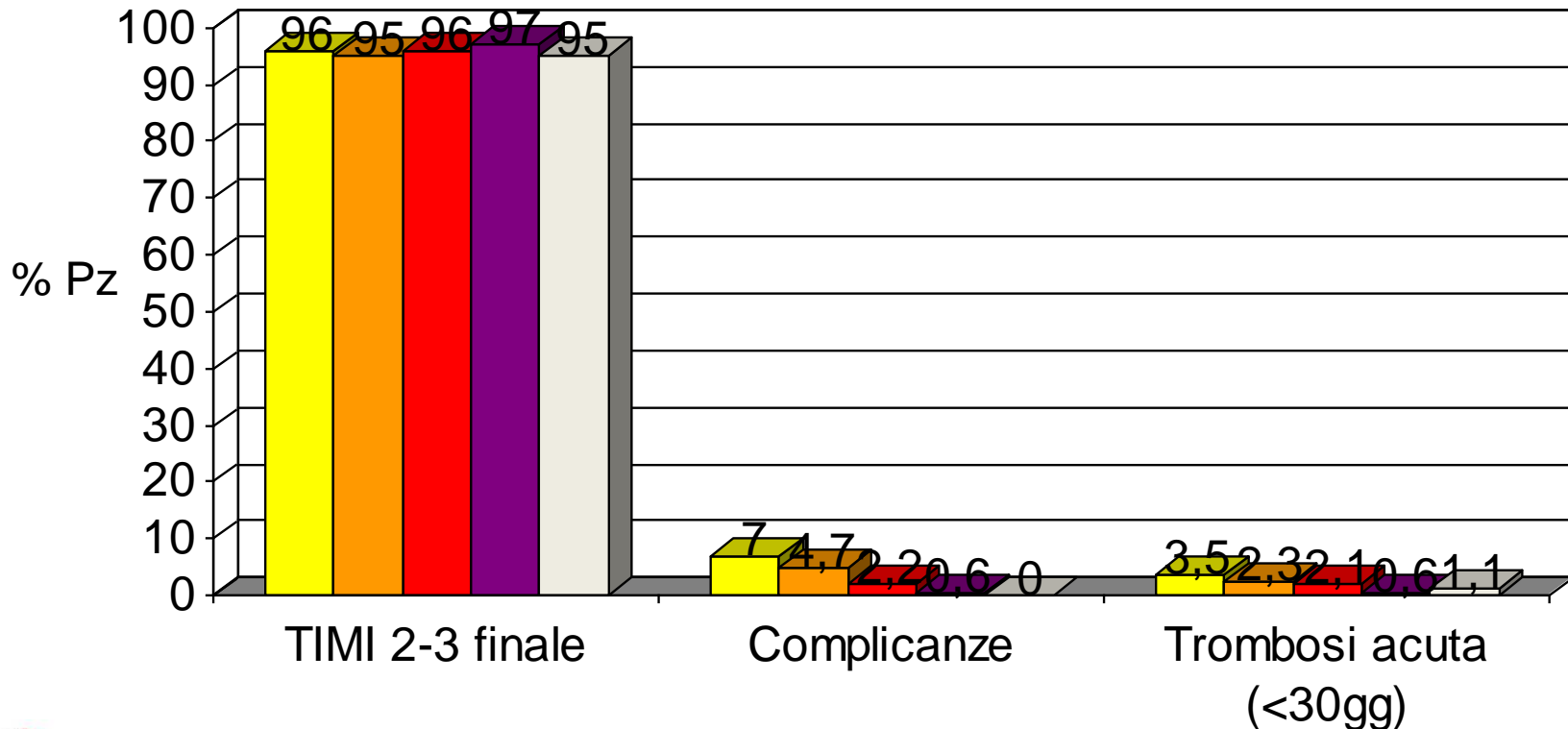
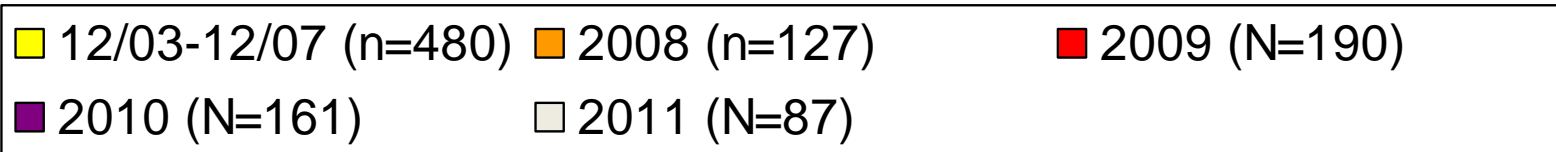
DAI CARDIOVASCOLARE – prof. G. Sinagra  
STEMI PPCI Registry 1-6/2011

## **RADIAL APPROACH (87)**



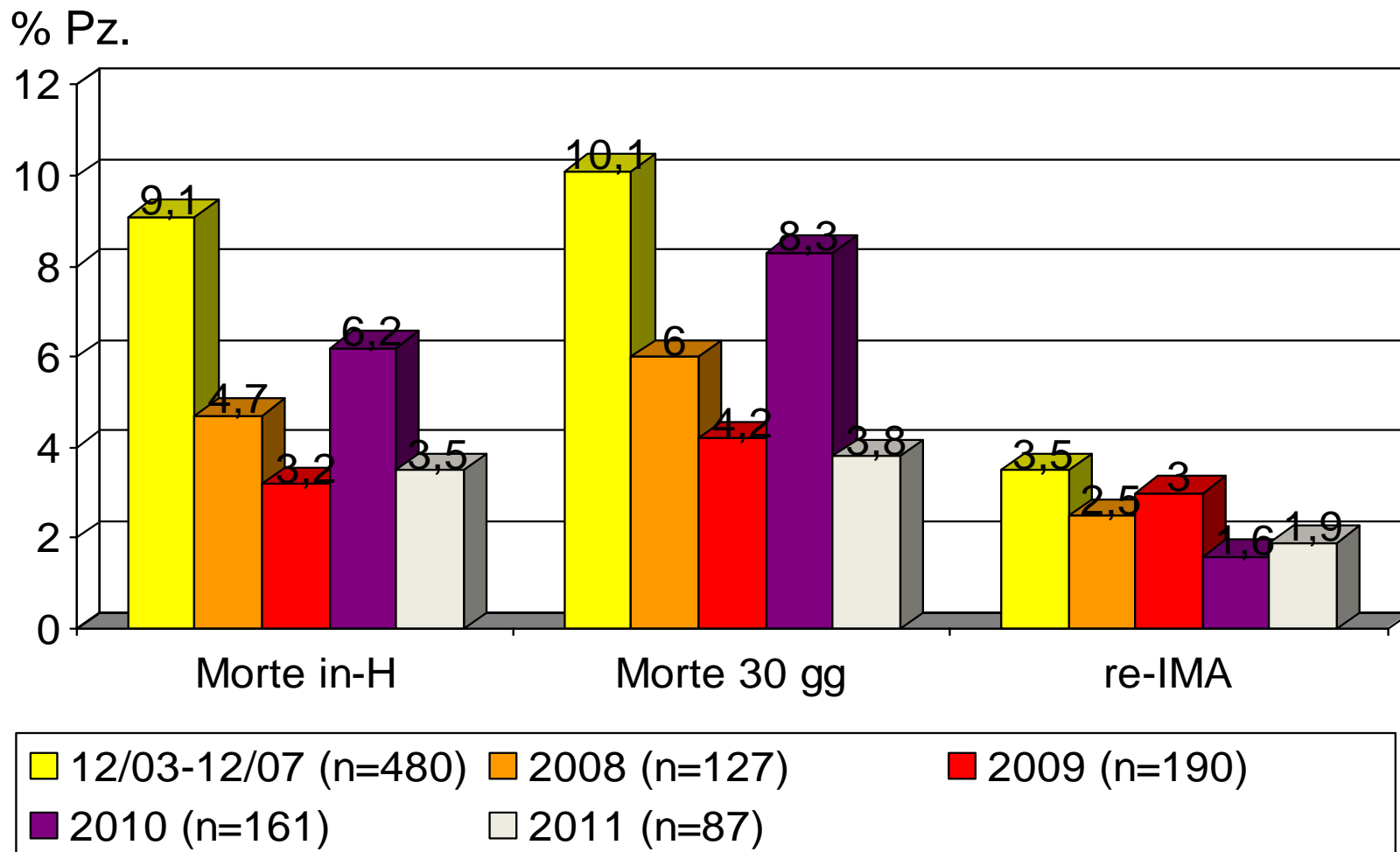
DAI CARDIOVASCOLARE – prof. G. Sinagra  
STEMI PPCI Registry 12/2003-6/2011

## RESULTS (1045)

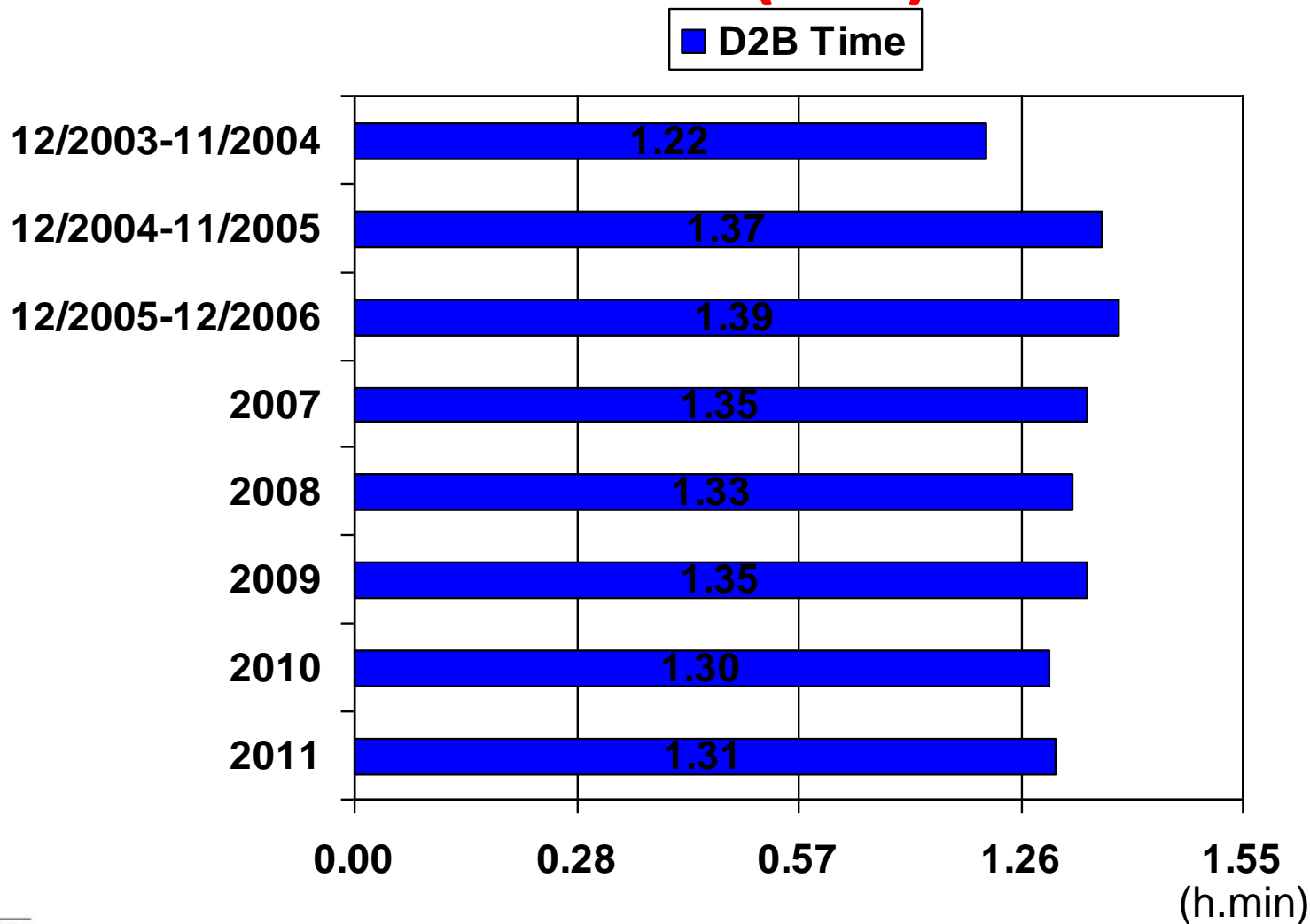


DAI CARDIOVASCOLARE – prof. G. Sinagra  
STEMI PPCI Registry 12/2003-6/2011

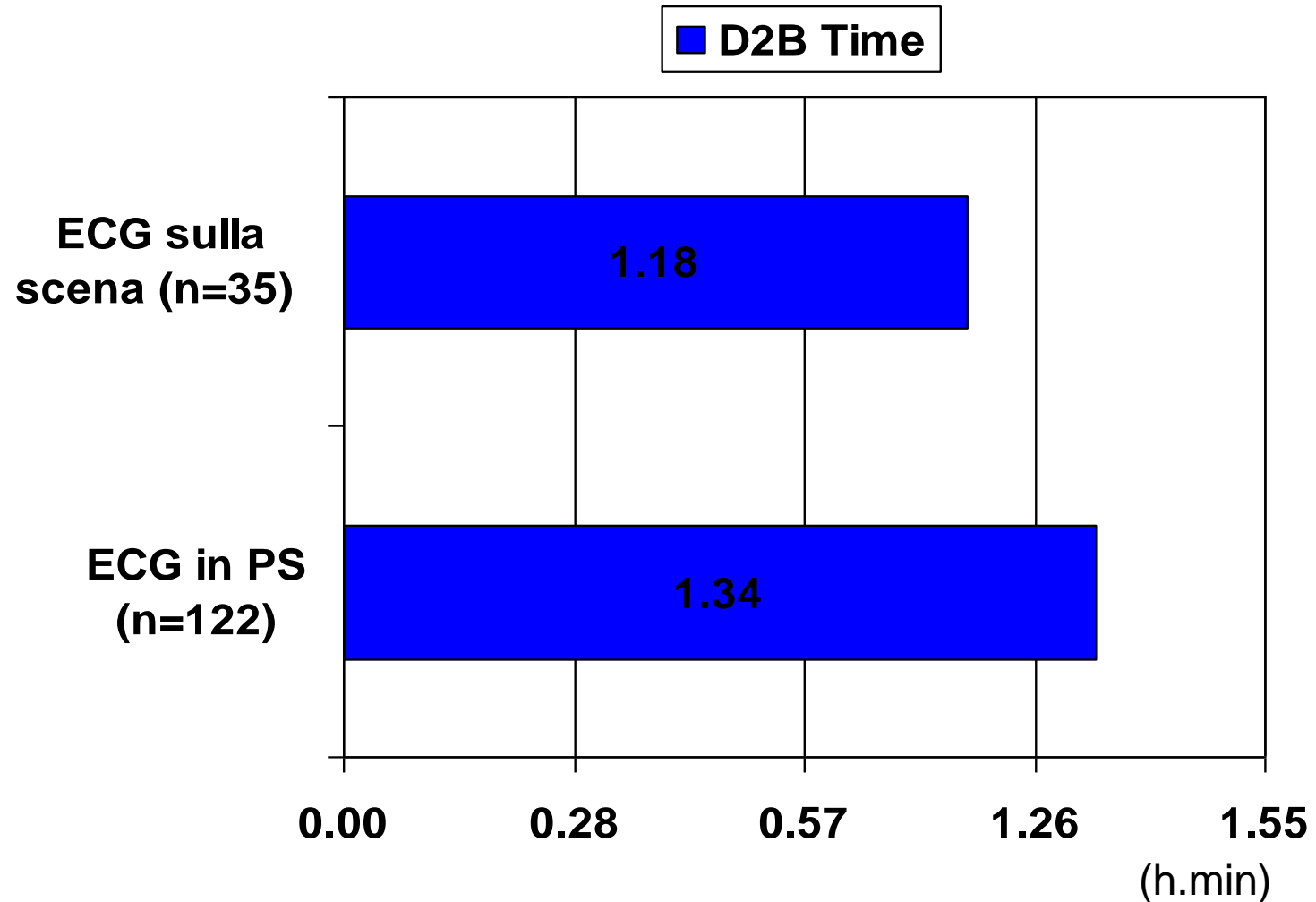
**OUTCOME  $\leq$  30 DAYS (1045)**



## D2B TIME IN PTS WITH DIRECT ACCESS TO OUR ER (742)

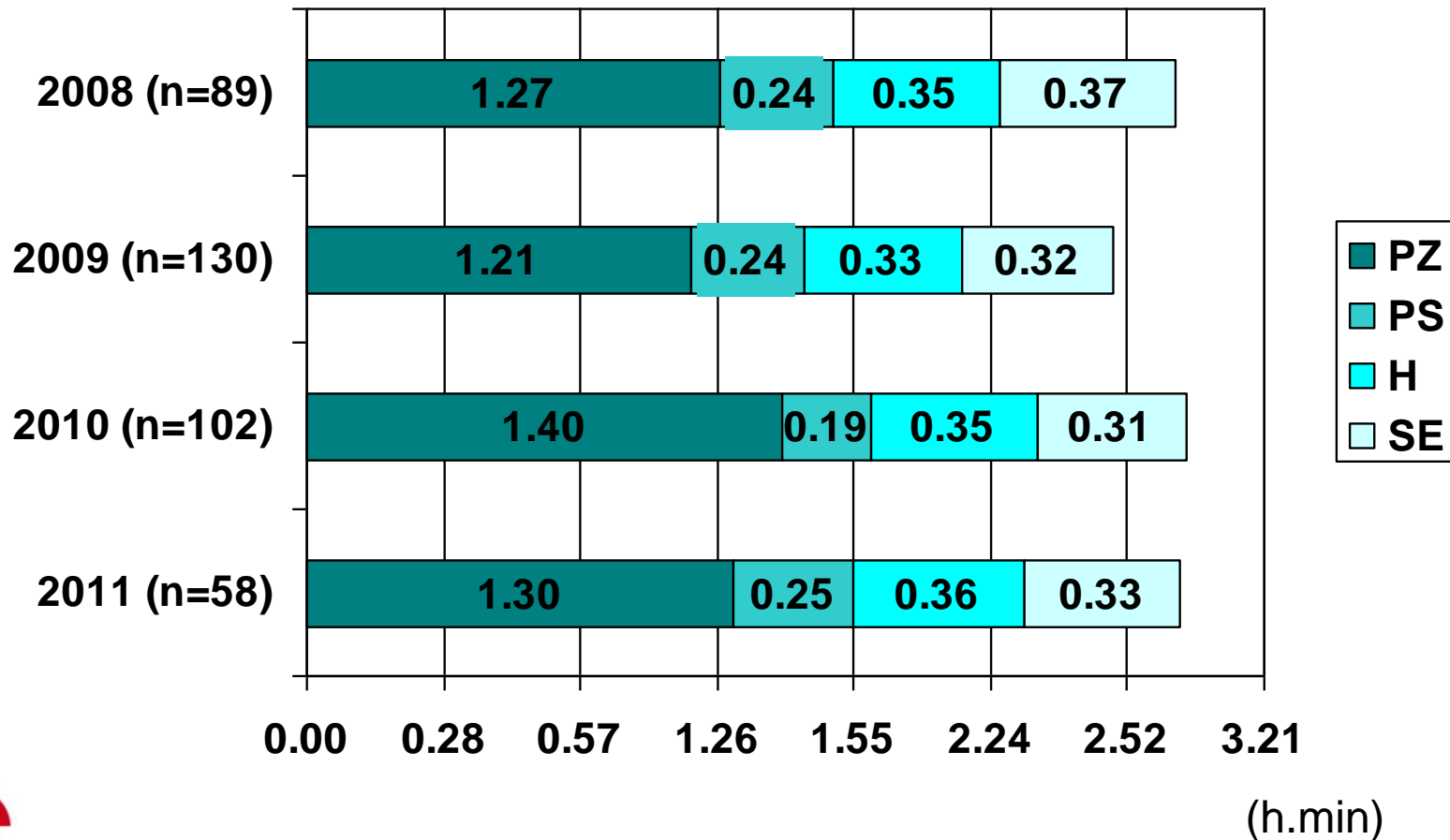


**D2B TIME OF PTS WITH DIRECT ACCESS TO OUR HOSPITAL**



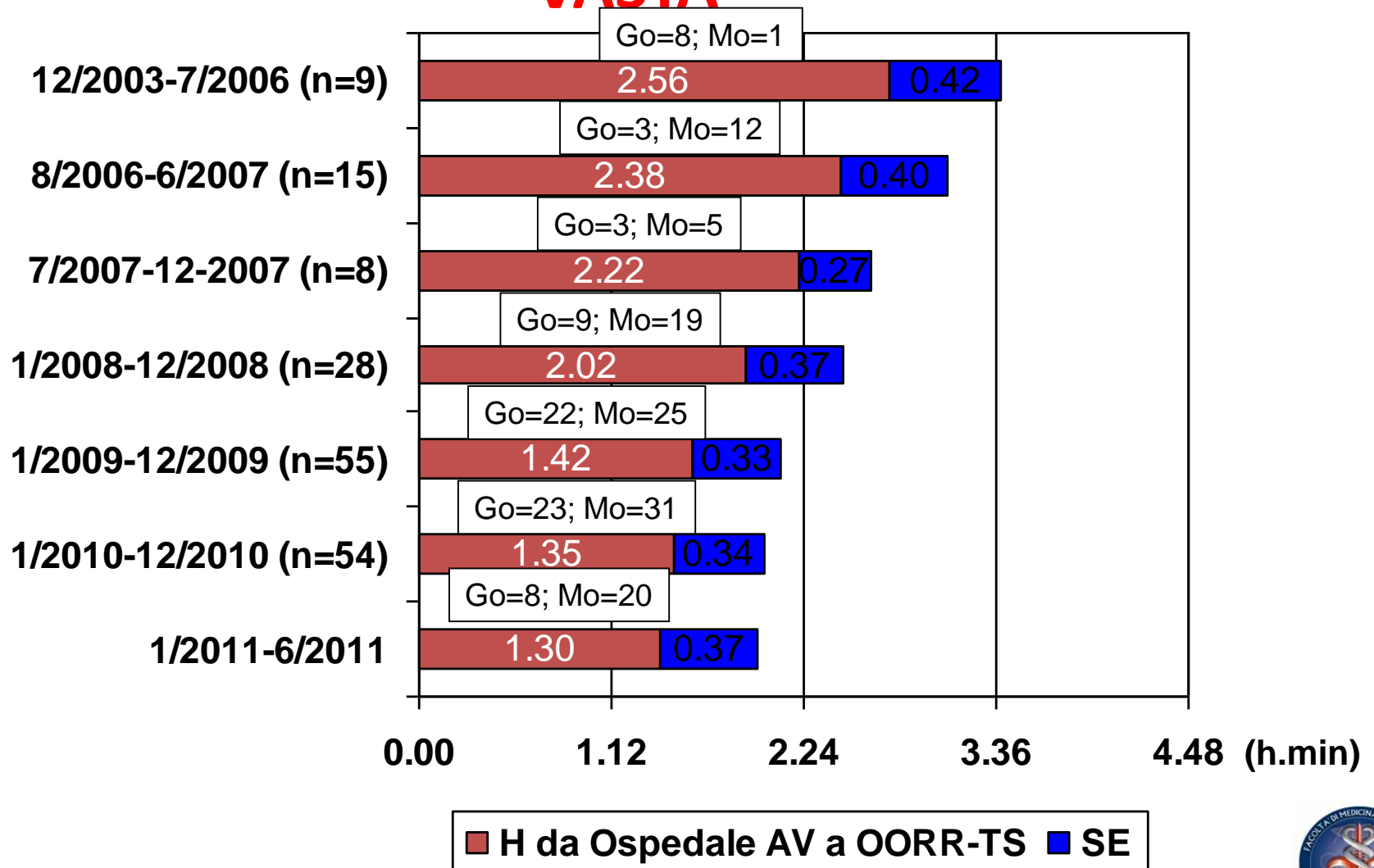
DAI CARDIOVASCOLARE – prof. G. Sinagra  
STEMI PPCI Registry 2008-6/2011

## TIME DELAYS IN PPCI PTS





# TIME DELAY IN PPCI PTS COMING FROM “AREA VASTA”

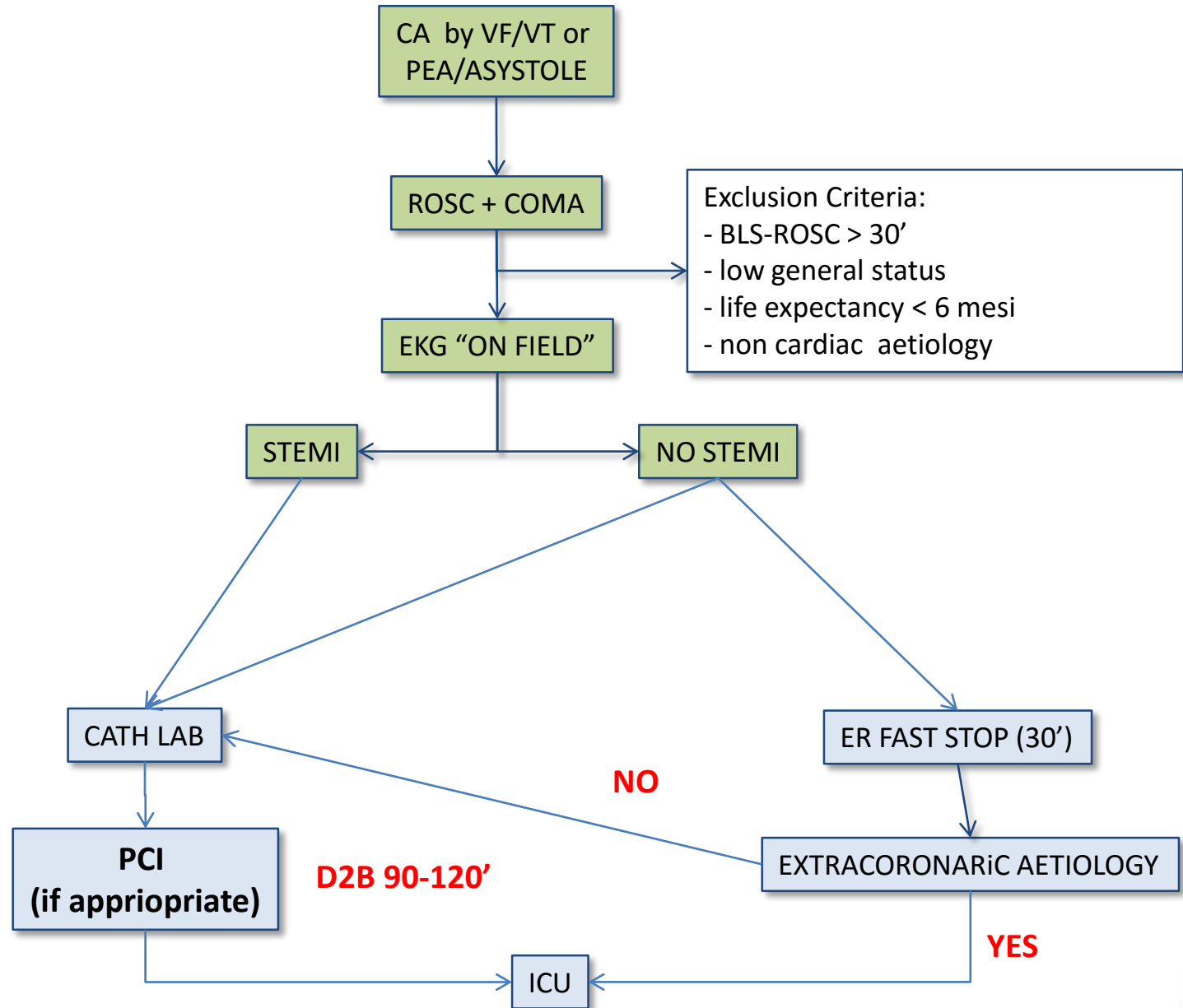


# MANAGEMENT OF OHCA

OUT-OF-HOSPITAL

MILD INDUCED HYPOTHERMIA

HOSPITAL



ONGOING DIAGNOSTICWORK-UP

# E-CARDIONET RETE DI EMERGENZA CARDIOLOGICA

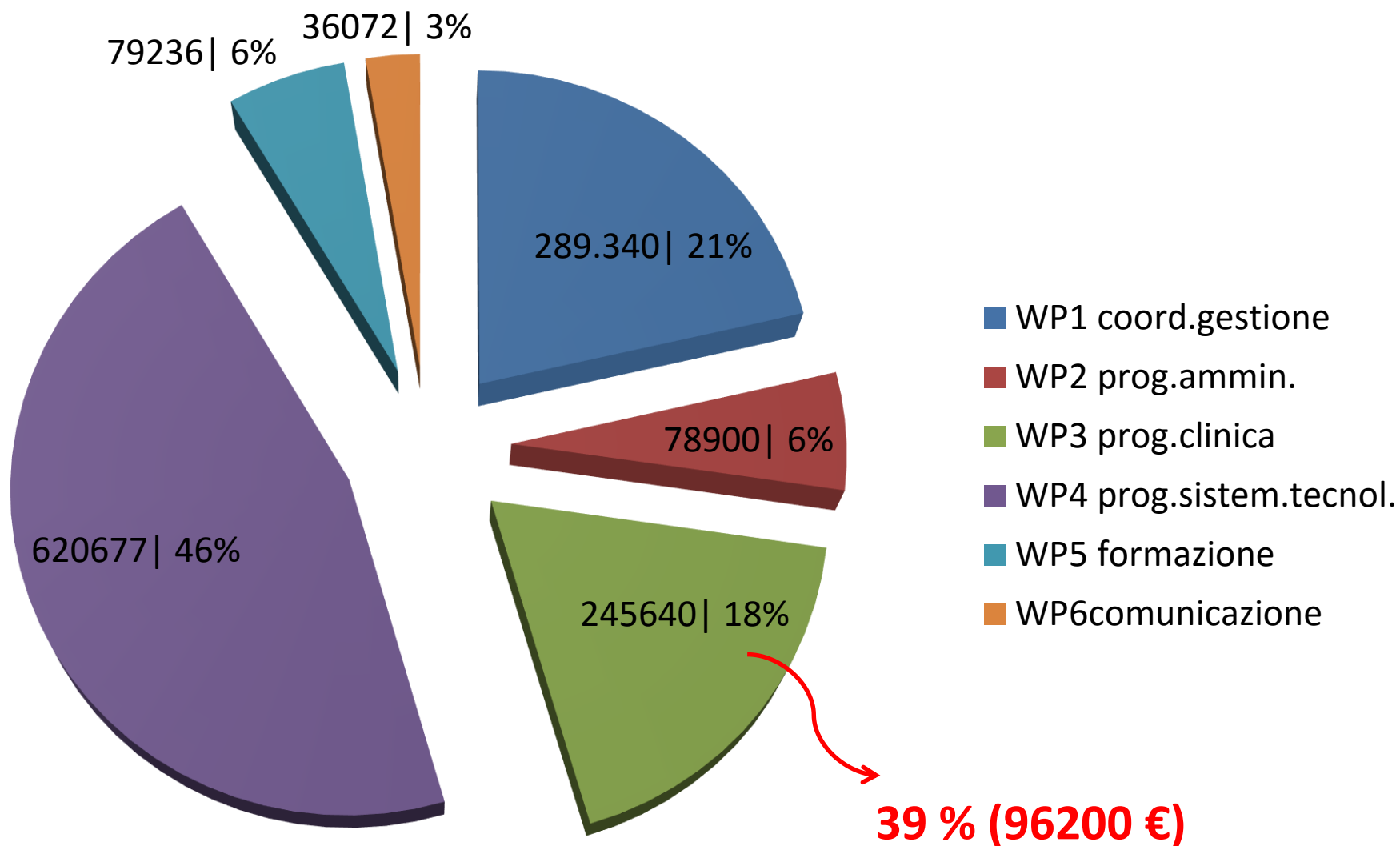
*Kardiološko alarmno omrežje na obmejnem območju*

---

## FINANCING



**COSTO TOTALE (1.853.865 euro)**  
**ripartizione in WP**



**RETE EMERGENZA CARDIOLOGICA**

*Kardiološko alarmno omrežje na obmejnem območju*

# COSTO TOTALE PROGETTO (1.853.865 euro)

ripartizione tra LP e PP

SKUPAJ IZDATKI

