



Carlo Poma

Sistema Socio Sanitario



Regione  
Lombardia

ASST Mantova

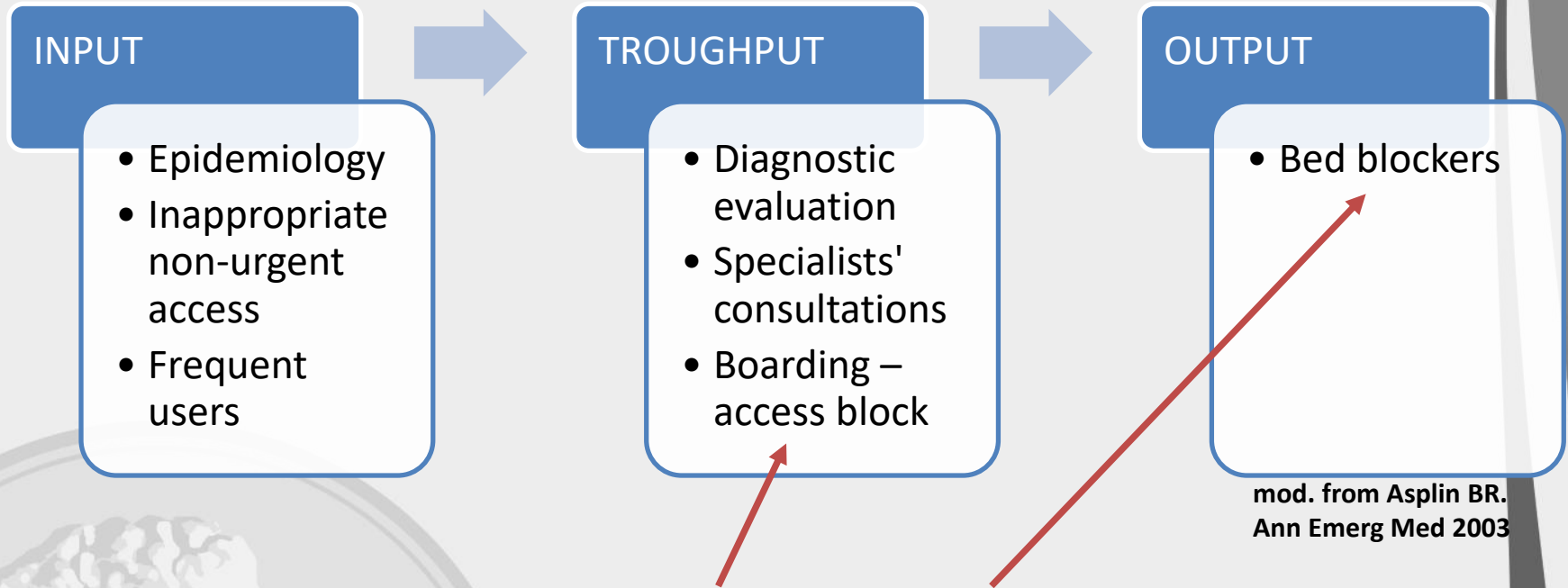
# Inappropriate hospital admission in the emergency department: an intensity of care model for multi-dimensional patient evaluation.

M. Amato, C. Basili, M. Bolognini,  
J. Chester, G. Lucchini and P. Parogni



# Background

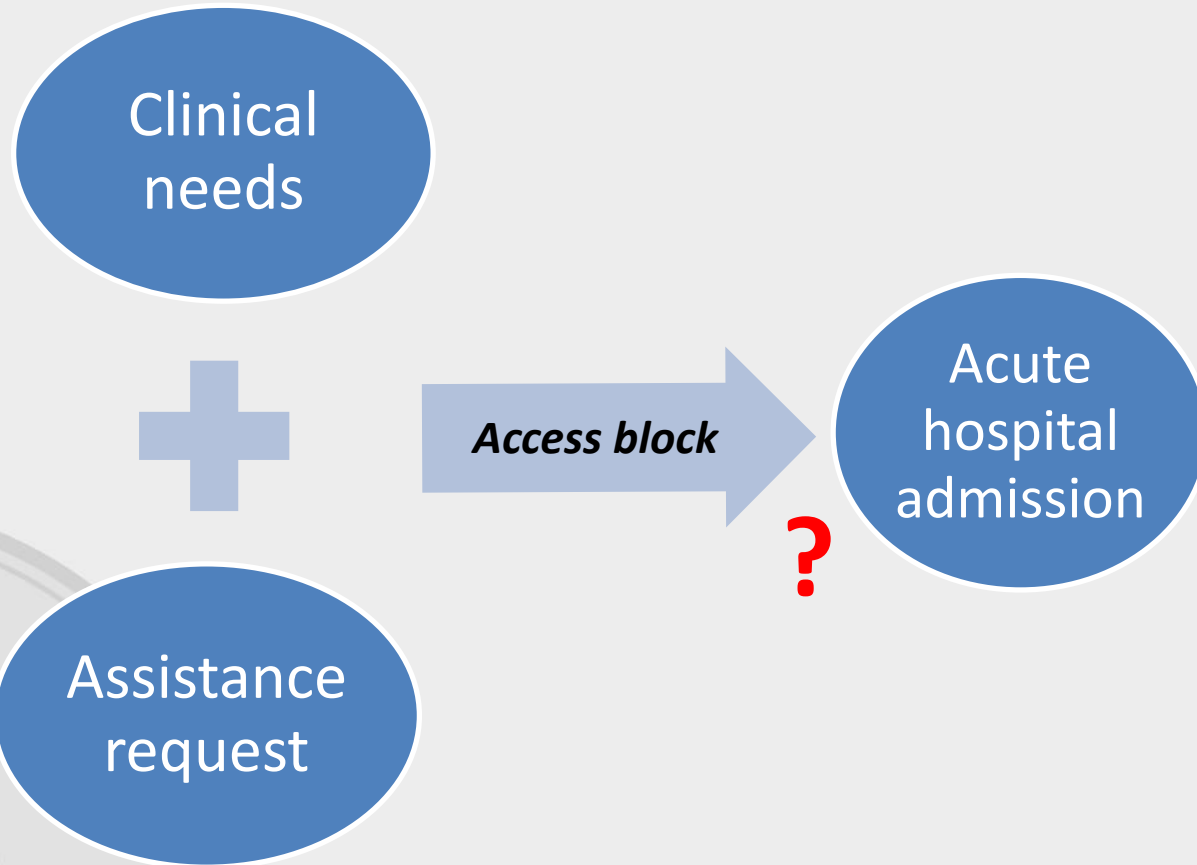
## ED Overcrowding



## Elderly Patients in ED

- multiple health issues requiring greater urgency and global assistance evaluation;
- Often admitted to hospital and/or return to EDs, waiting extended time for care and often reporting low satisfaction rates;
- The interplay of multiple comorbidities and functional decline of elderly patients result in the complex state of frailty.

# Aim: to design a new framework



ED approach to elderly patients' needs:

- Multidimensional evaluation tools
- Hospital admission only after correct risk assessment

# Methods

## Tri-Co *(triage of corridor)*

NEWS  
New Early Warning Score

NICE, 2007

Clinical assessment

IDA  
Assistance dependency index  
+  
ICA  
Assistance Load index

S. Argenta - M.Civita, 2018

Geriatric assessment

= multidimensional evaluation of elderly patients in ED

# Multidimensional evaluation in ED: intensity of care model

Clinical & Assistance assessment	IDA+ICA 27-30	IDA+ICA 15-26	IDA+ICA 10-14
NEWS 0-4	Tri-Co 1	Tri-Co 2	Tri-Co 4
	Low intensity (Discharge)	Low-medium intensity (Geriatric hospital, Rehabilitation)	High intensity (hospital)
NEWS 5-6	Tri-Co 3	Tri-Co 3	Tri-Co 4
	Medium intensity (Subacute care unit)	Medium intensity (Subacute care unit)	High intensity (hospital)
NEWS $\geq 7$ (or 1 parameter = 3)	Tri-Co 4	Tri-Co 4	Tri-Co 4
	High intensity (hospital)	High intensity (hospital)	High intensity (hospital)

# Study setting

## Study design:

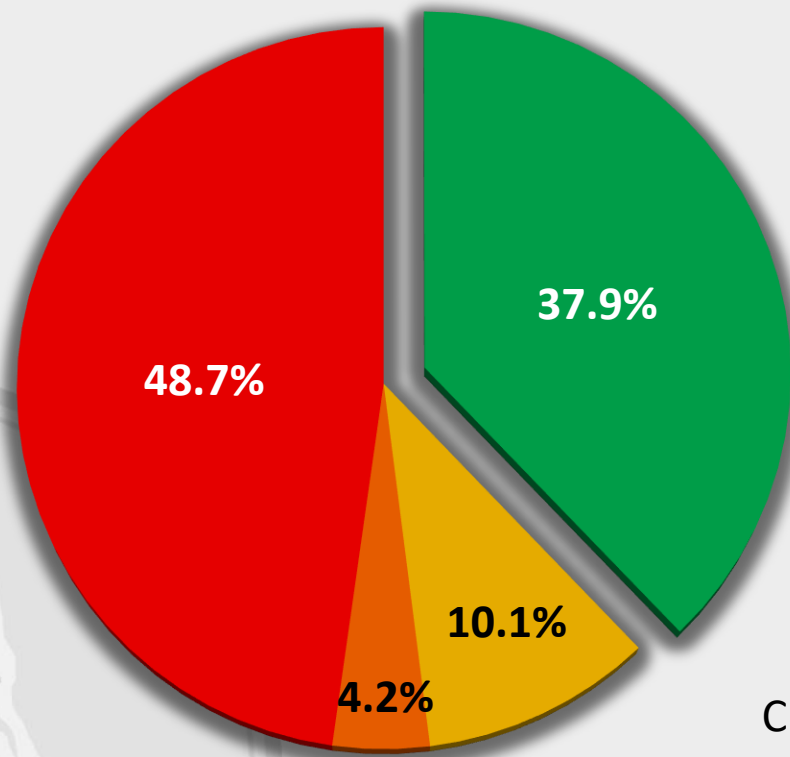
- retrospective, observational
- 1,377 patients (1 Jan 2016 - 28 Feb 2017);
- admitted to Internal Medicine Ward – ASST Mantua “Carlo Poma” hospital;
- > 14 years old.

## Aim of the study:

- To evaluate inappropriate hospital admission rate
- To apply a standardized “risk stratification”

# Results:

## *patient classifications*



Tot: 1,377 pts  
Chi-square sign:  $p < 0.001$

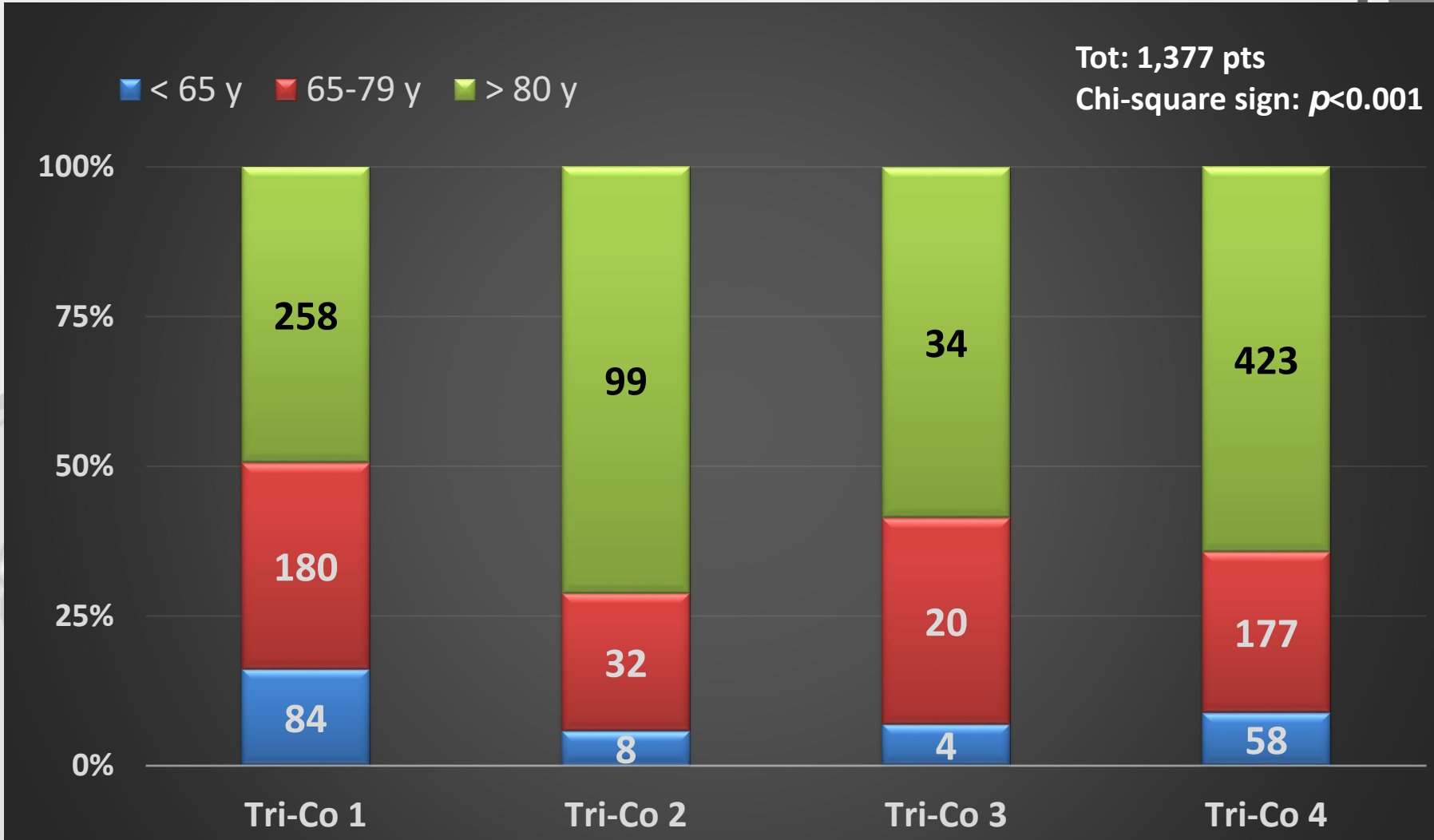
■ Tri-Co 1

■ Tri-Co 2

■ Tri-Co 3

■ Tri-Co 4

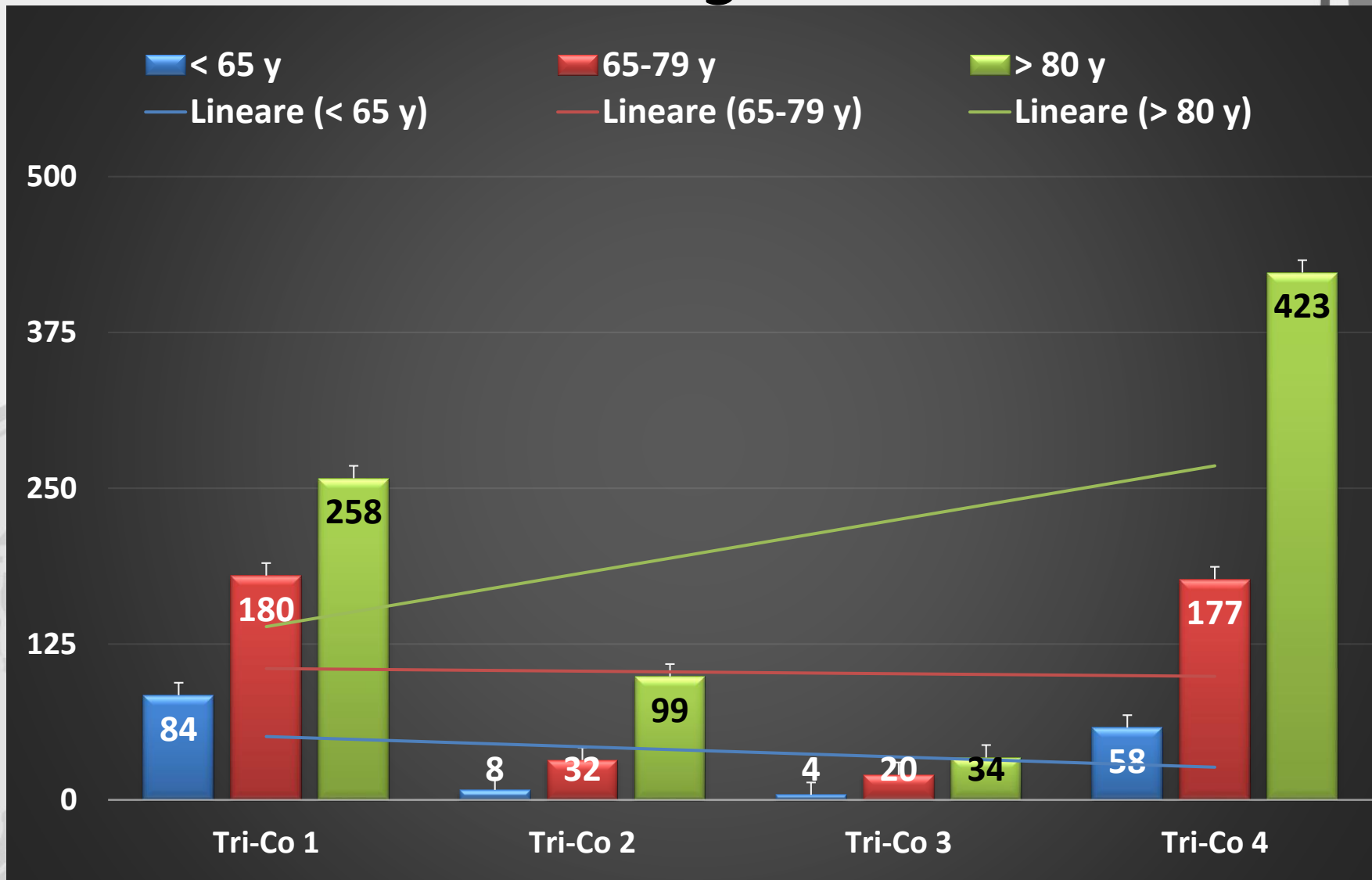
# Hospital admission appropriateness *age classes*



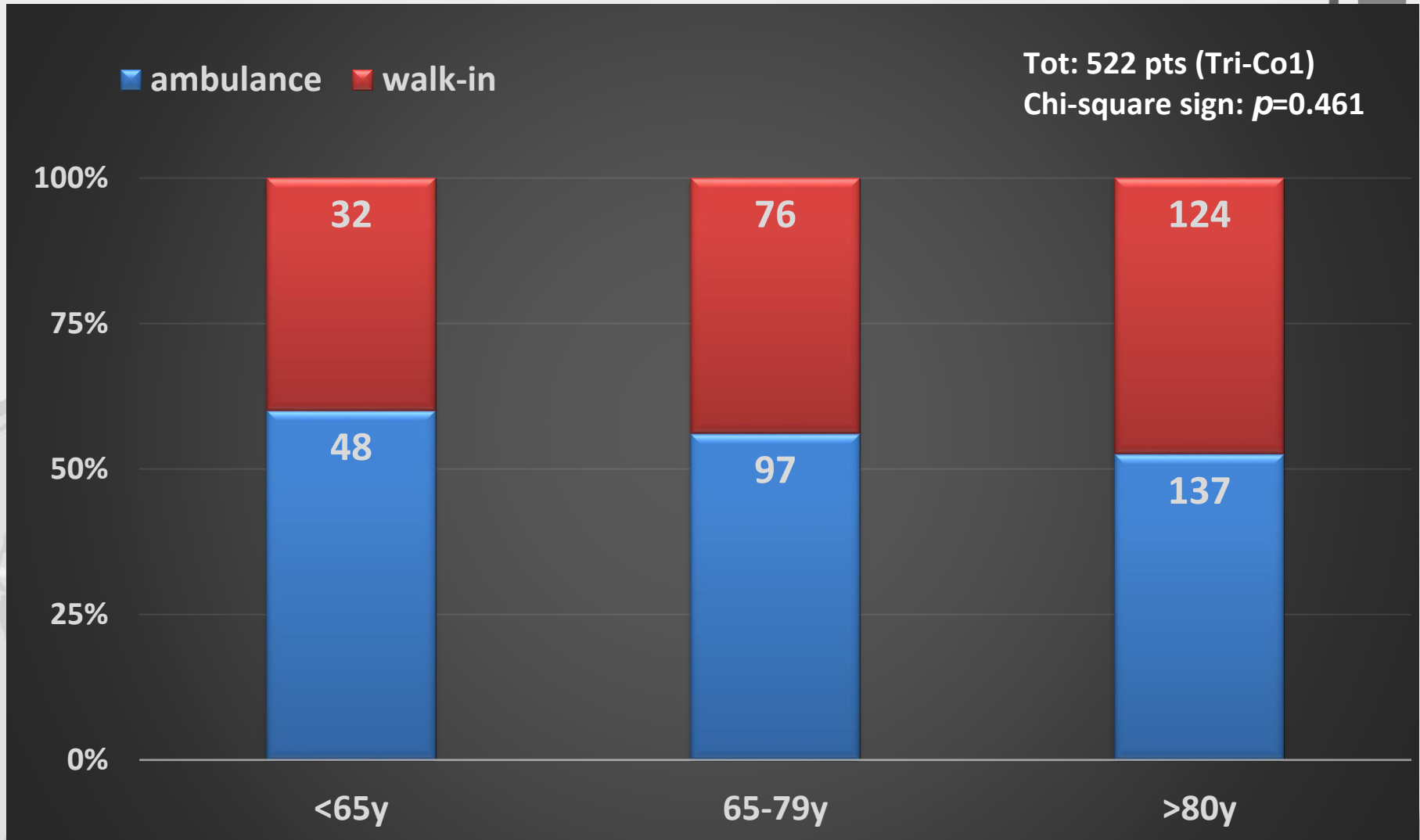


# Hospital admission appropriateness

## *linear regression*

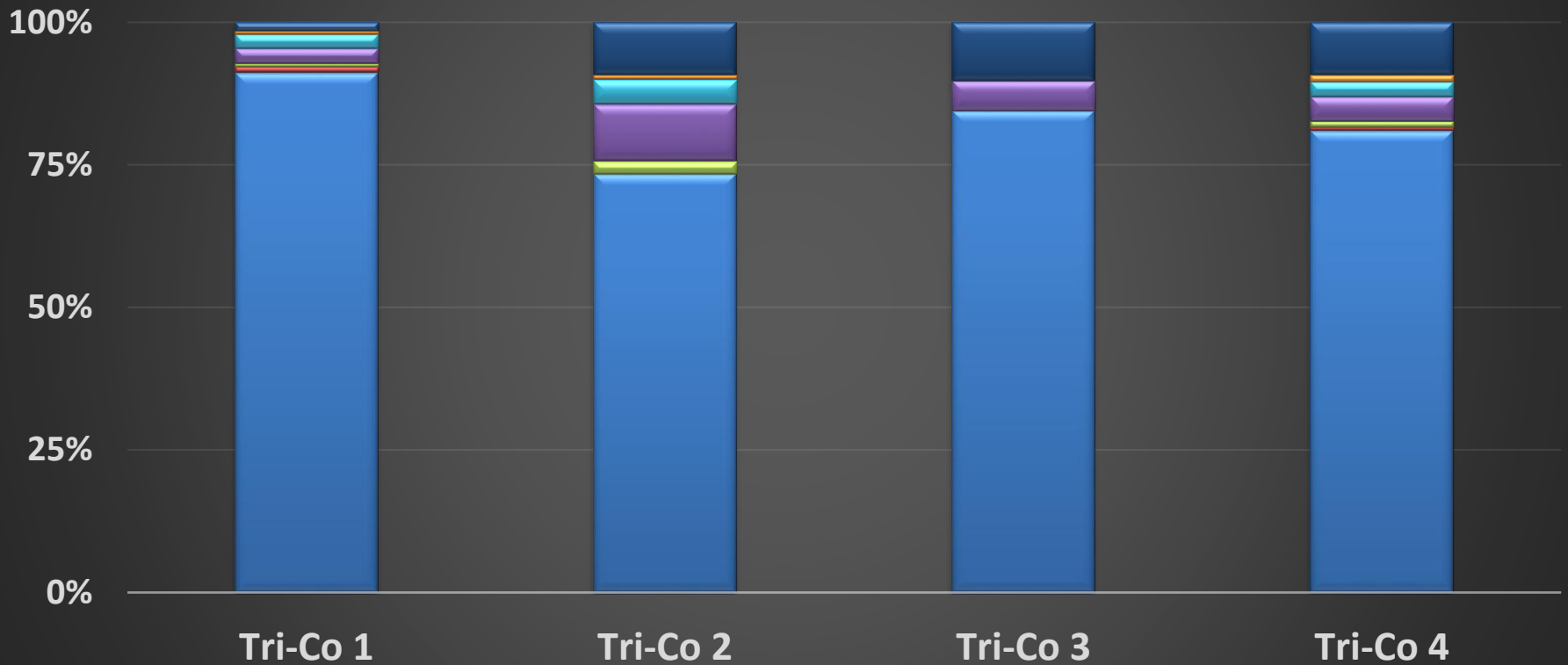


# ED: modality of presentation *inappropriate admitted patients*



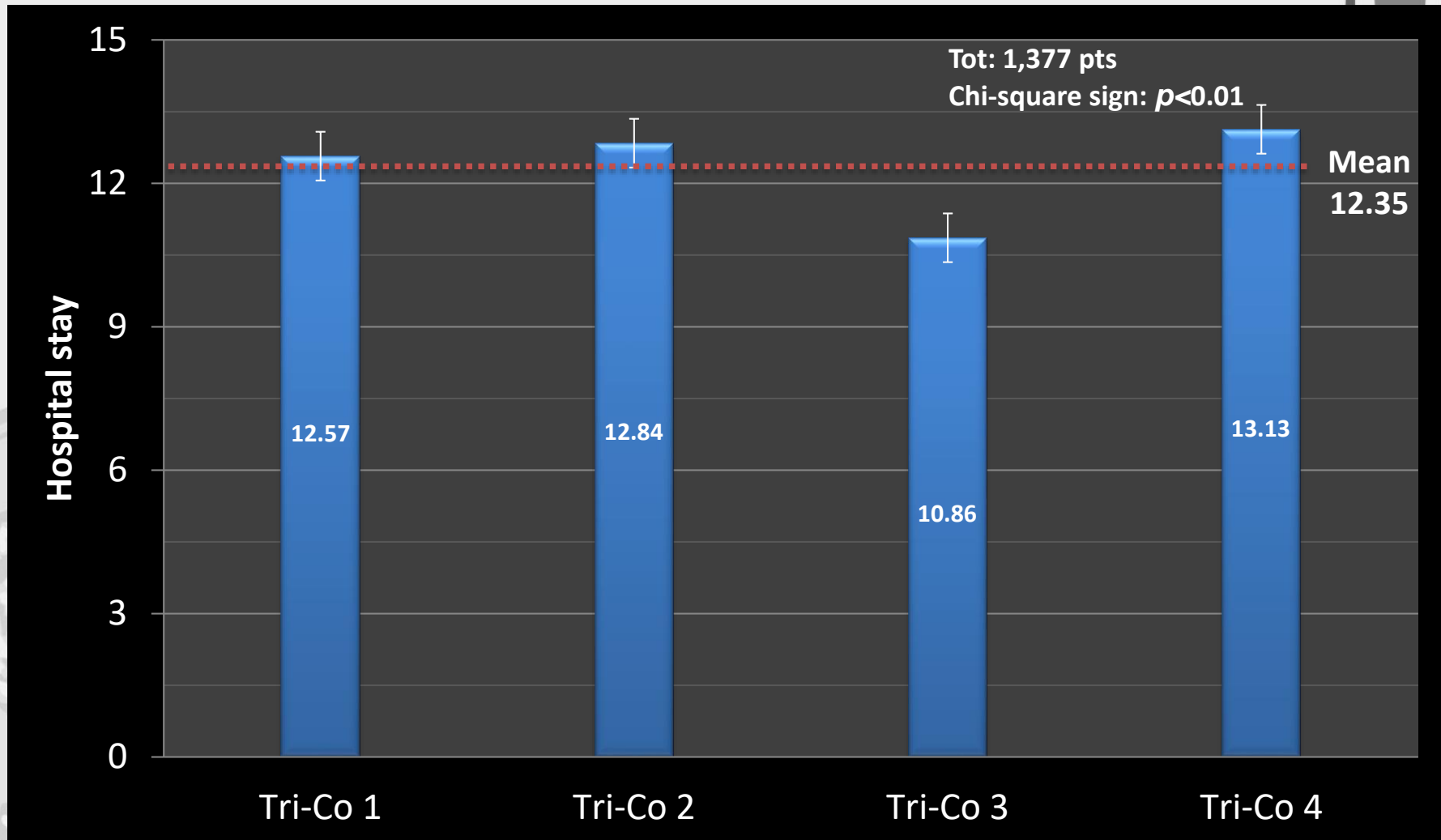
# Discharge modality: *Tri-Co classification*

■ ordinary      ■ voluntary      ■ transf to other H      ■ interm. care  
■ rehabilitat      ■ home assistance      ■ mortality



Tot: 1,377 pts  
Chi-square sign:  $p=0.044$

# Hospital stay: *Tri-Co classification*



# Bottom line

1. High level of organizational inappropriateness (Tri-Co):
  - Standardization of a new ED patient evaluation model
  - Differentiation of hospital / intermediate care unit admission;
2. Worst appropriateness in <65years patients (Tri-Co1>4);
3. High rate (83%) >65 years patients Tri-Co1;
4. Length of hospital stay better explains “bed-blockers” phenomenon and ED overcrowding.