

**L'anziano con frattura del femore:
determinanti della sopravvivenza e
dello stato funzionale**

Stefania Maggi

CNR-Sezione Invecchiamento

Padova

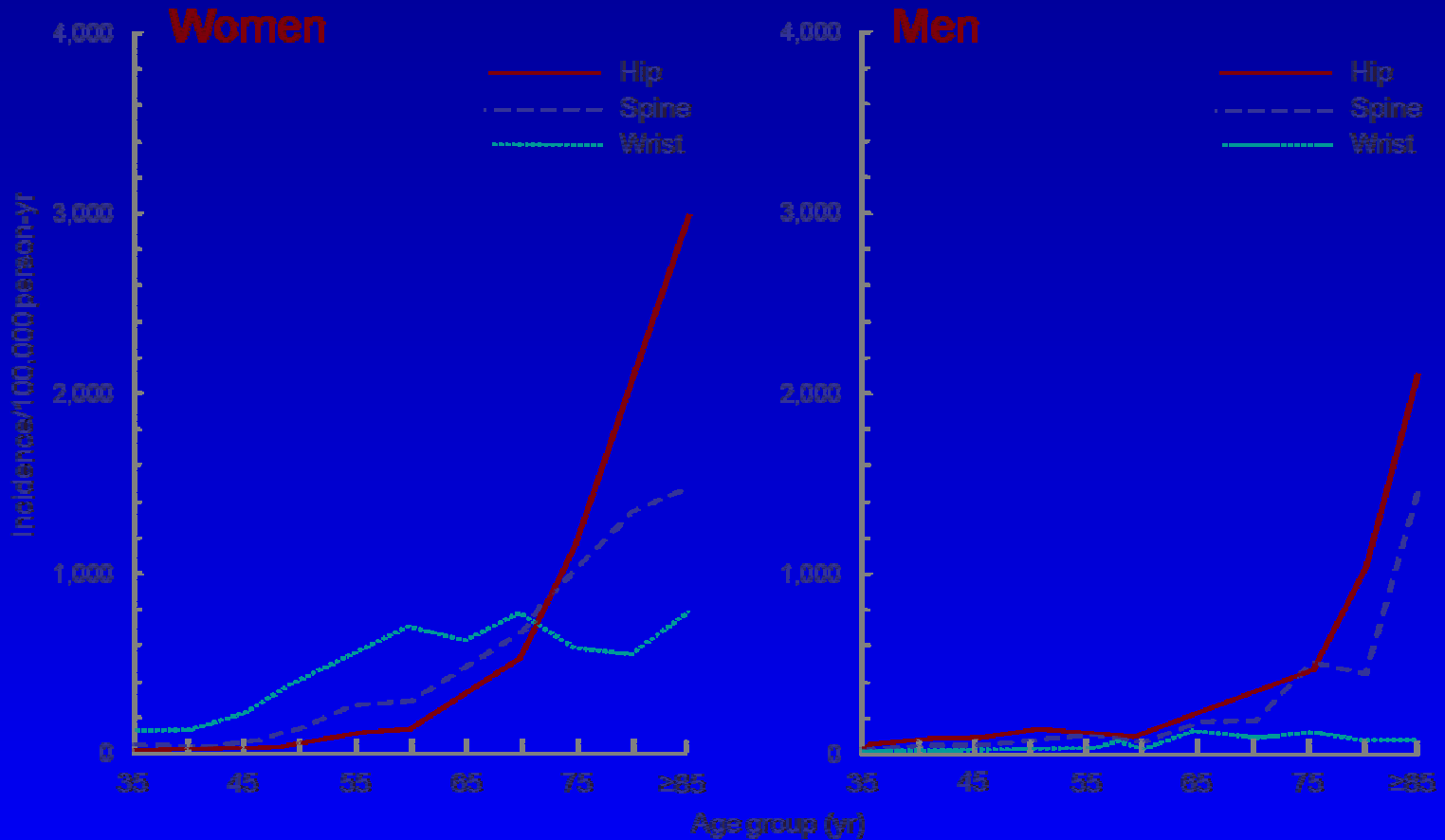
Razionale

La frattura del femore è una delle più importanti cause di morte e disabilità nell'anziano. Nonostante l'interesse a livello internazionale, dovuto alle pesanti conseguenze cliniche e funzionali, questa patologia in Italia non ha ancora avuto la meritata attenzione

Razionale

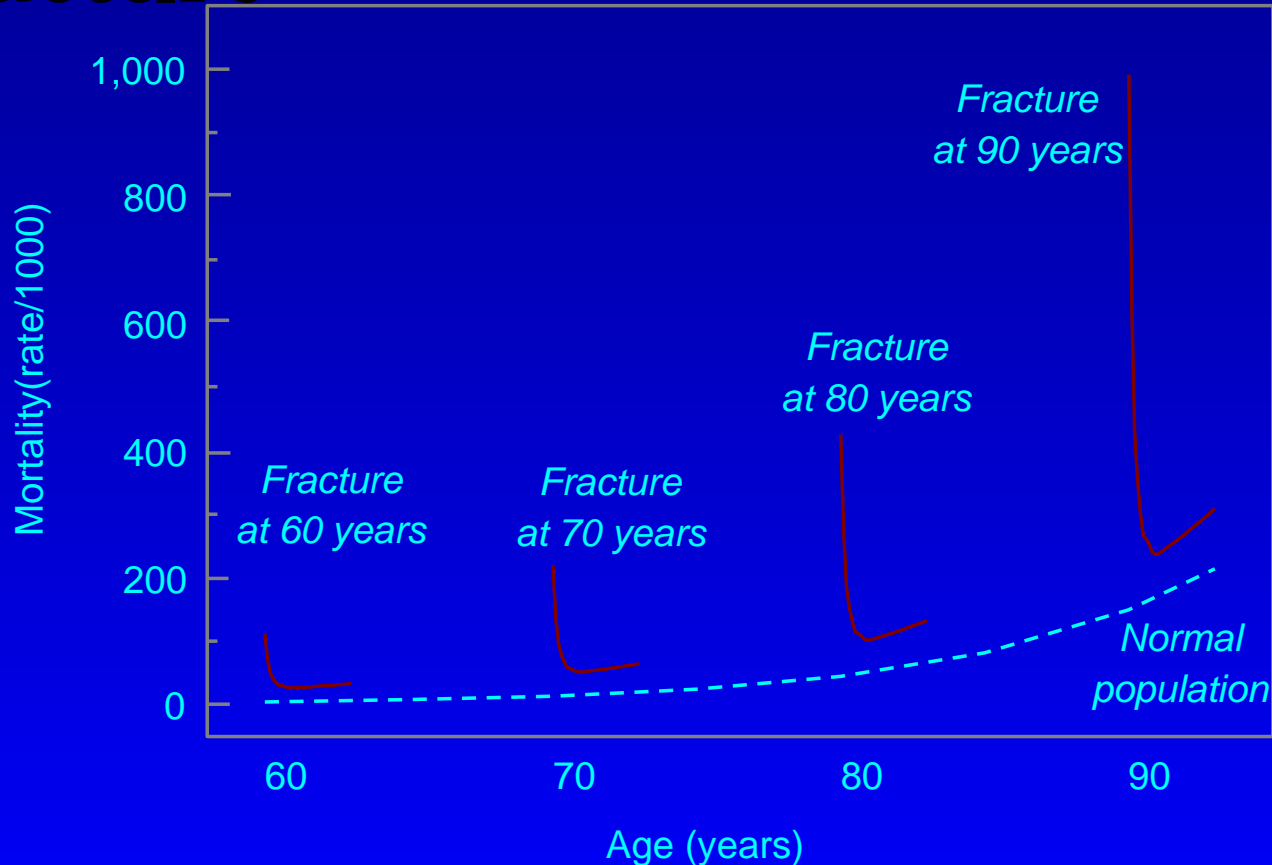
Le fratture del femore non sono solo responsabili di un'importante quota di disabilità e mortalità, ma hanno anche un peso economico e sociale molto rilevante: ogni anno, in Italia, il costo per l'assistenza ospedaliera a questa patologia è circa 400.000.000 €

Age-Related Fractures

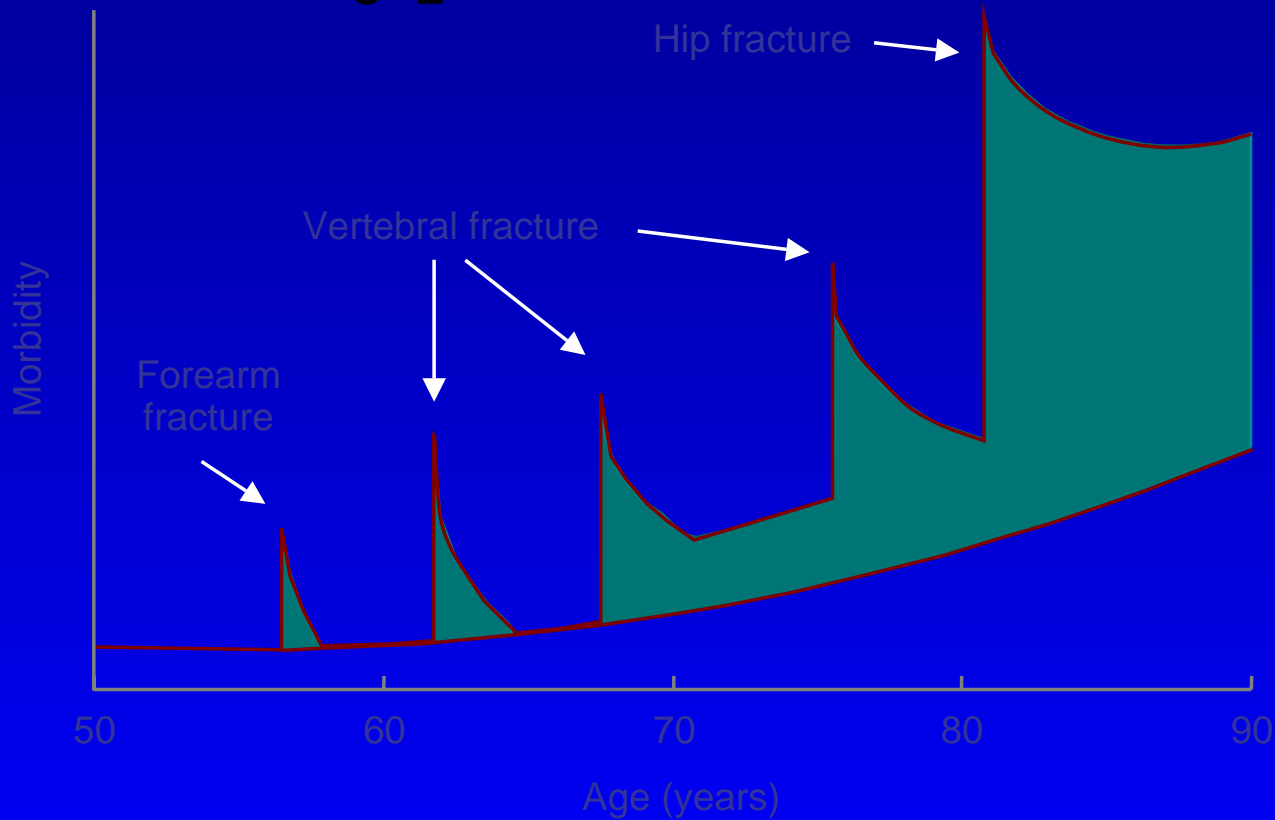


Cooper, C. Trends Endocrinol Metab 1992 3:224-9, with permission from Elsevier.

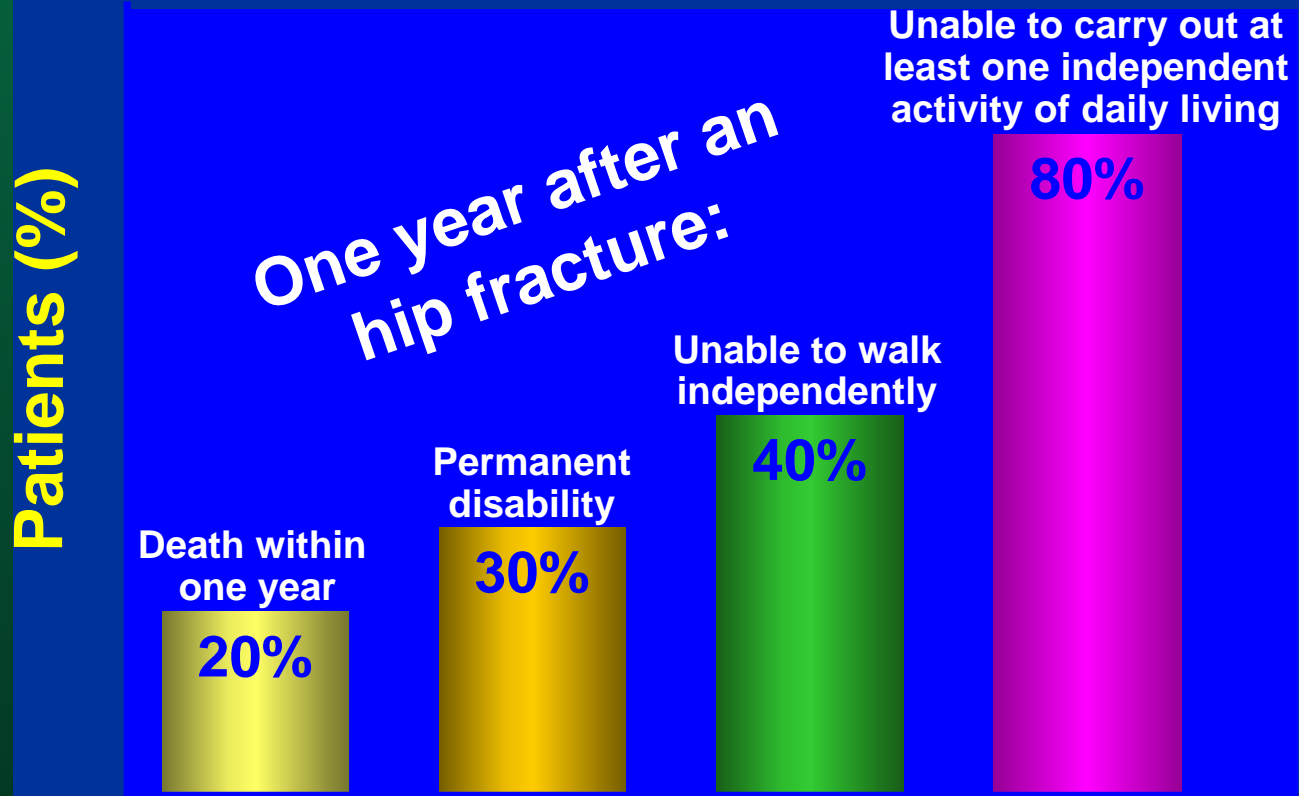
Pattern of Mortality after Hip Fracture



Excess Morbidity Patterns by Fracture Type



All fractures are associated with morbidity



..... ben oltre il problema ortopedico



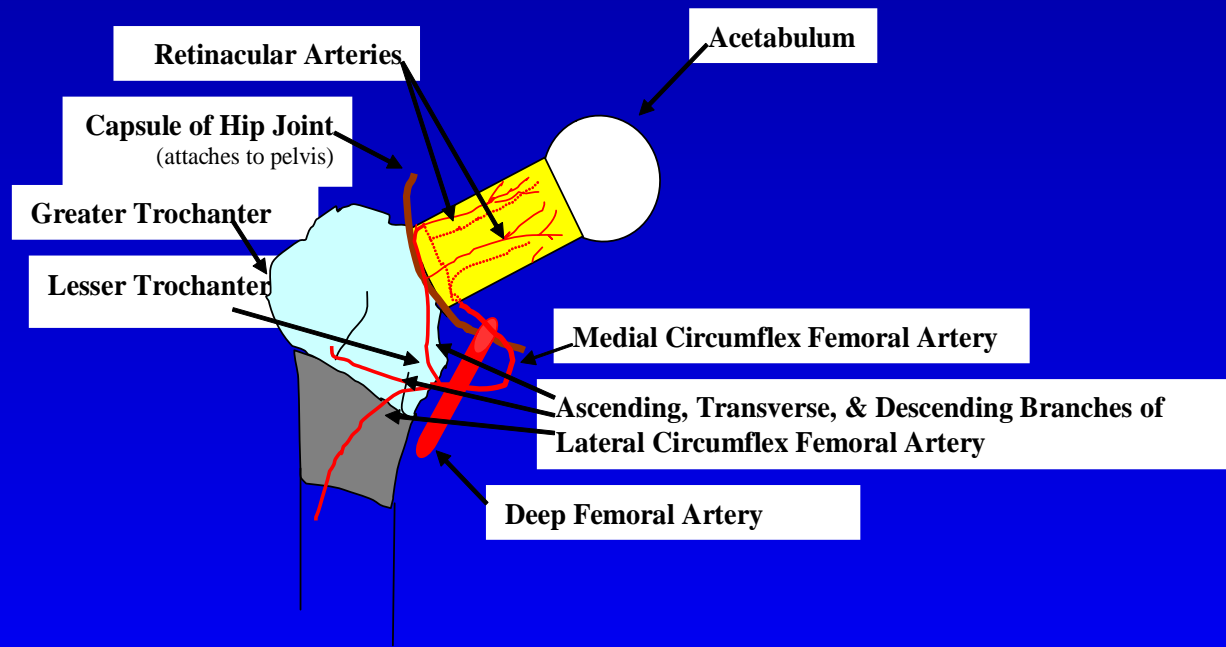
- Geriatria
- Riabilitazione
- Psichiatria
- Assistenza
- Economia sanitaria

Classificazione delle fratture del femore

■ Femoral Neck Fracture

■ Intertrochanteric Fracture

■ Subtrochanteric Fracture



Rationale

Scottish Intercollegiate Guidelines Network



Prevention and Management of Hip Fracture on Older People **Surgical management**

- Conservative vs surgical management
- Timing of surgery

Management

- Conservative treatment of undisplaced intracapsular fractures is associated with an increased risk of fracture displacement and later replacement of the femoral head with an arthroplasty. For extracapsular fractures, conservative treatment appears to be associated with a

Management

Indications

- Very short life expectancy
- Severe co-morbid conditions make surgery too risky or recovery of ambulation unlikely

No more than 3-5% of total number of fractures!!

Risk of surgery in patients with MI

- *Reinfarction:*
- 37% within the first 3 months after the initial infarction
- 17% 4-6 months
- 5% after 6 months
- (Tarhan, JAMA, 1972)
- 6% within the first 3 months after the initial infarction

Risk lower than for nonoperative care

Rationale

Scottish Intercollegiate Guidelines Network



Prevention and Management of Hip Fracture on Older People Surgical management

As well as causing distress to the patient, delay in operative fixation is associated with increased morbidity and mortality, and with reduced chance of successful internal fixation and rehabilitation.

A delay of more than 24 hours between admission and operative fixation of fracture has been shown to be associated with increased mortality.

Hip Fracture, timing of surgery

Early surgery versus optimisation for surgery?

Which route do we take?

Is there any Evidence Based Data?



Hip Fracture, timing of surgery

Meta-analysis

Is Operative Delay Associated with Increased Mortality of hip fracture patients?

Shiga et al Toho University Tokyo Japan
ASA San Francisco September 2007

Hip Fracture, timing of surgery

Surgical repair within 24 hours recommended

15 studies, observational, 252,336 patients

Mean age 81 yrs

Female 77.4%

Cut off of 24-72 hrs (mean 48) to define delay

Hip Fracture, timing of surgery

Shiga et al continued

Delayed surgery increased 30 day all cause mortality significantly, by 44%

1 year all cause mortality

Hip Fracture, timing of surgery

Shiga et al

For every 1,000 patients who undergo delayed surgery instead of early surgery there would be 29 more deaths after 30 days

Operative delay and mortality (Shiga, 2008)

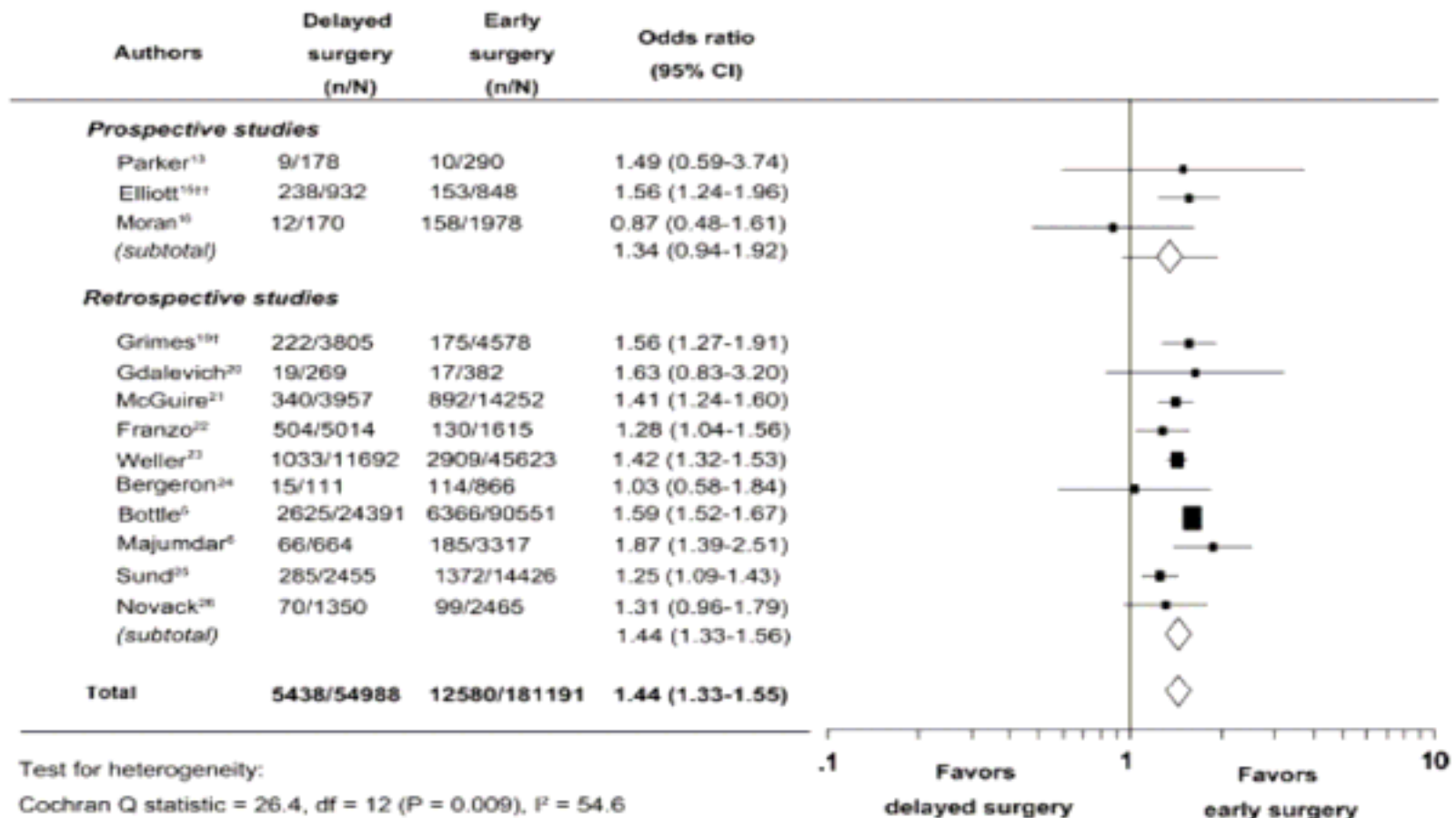
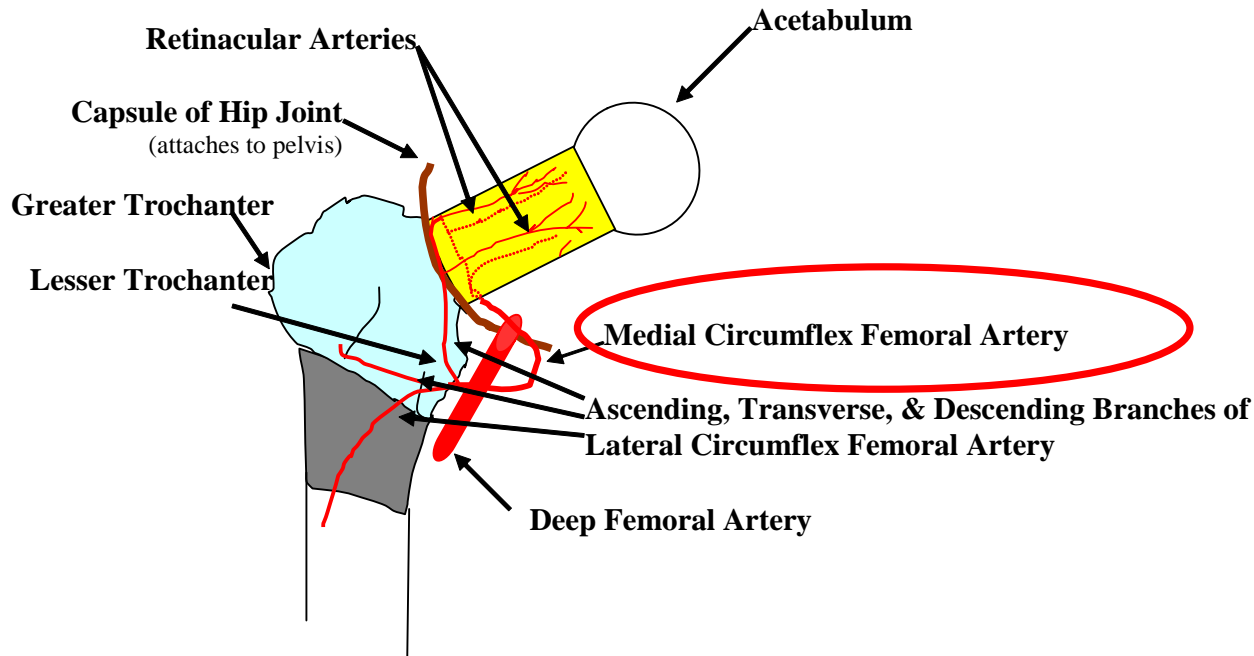


FIGURE 2 Forest plot of odds ratios for the influence of operative delay on 30-day mortality. Effect sizes were estimated according to study design (prospective *vs* retrospective) and overall. Diamonds indicate pooled odds ratios. Horizontal line for each trial denotes 95% confidence interval. Squares represent point estimates. The area of each square is proportional to the sample size. † Indicates that the study used a cut-off of 24 hr for delay, and †† indicates that the study used a cut-off of 72 hr for delay. All other studies used a cut-off of 48 hr to define operative delay. n = number of deaths, N = total number of patients in each group, CI = confidence interval.

■	Femoral Neck Fracture	45-50%
■	Intertrochanteric Fracture	45-50%
■	Subtrochanteric Fracture	5-10%



Dopo frattura del collo del femore, l'intervento dovrebbe essere entro 6-8 ore, per evitare la necrosi della testa (Burger, NEJM,335:1994)

Hip Fracture, timing of surgery

Bottle A, Aylin P. BMJ 2006;332:947-950

Mortality associated with delay in operation after hip fracture: observational study

Study period April 2001 to March 2004

Delay in operation associated with increased risk of death in hospital

40% of procedures performed > 1 day after admission

21% delayed for 2 days

“deleterious effect of delaying operation even after adjusting for co-morbidity”

Hip Fracture – co-morbidity

Which route to take?

Delay or optimise?

Is there any evidence
for optimisation?

Is there any evidence
that delay can do
harm?



Perioperative Considerations

- Timing of surgical repair - 24-48 hr (ASAP)
- Traction - no evidence to support its use
- Antibiotic prophylaxis
 - 44% lower risk of infectious complications
 - 40% lower with multiple vs. single doses
 - Cephalosporin
 - Stabilization of medical co-morbid conditions
- Choice of anesthesia

Hip Fracture – co-morbidity

McLaughlin et al Preoperative Status and Risk of Complications in Patients with Hip Fracture

Journal of General Internal Medicine 2006;21(3);219-225

Attempt to investigate if presence of pre-operative abnormalities caused post-operative complications

Hip Fracture – co-morbidity

Hip fracture patients from 4 New York Hospitals

Looked at hospital records

571 identified, 554 had surgery

12 % from nursing homes

23 % had dementia

14 % had COPD

(Journal of General Internal Medicine 2006;21(3);219-225)

DELAYING SURGERY (>24 HOURS FROM ADMISSION)

- MEDICAL ASSESSMENT
- UNNECESSARY INVESTIGATIONS (e.g. ECHOCARDIOGRAM)
- MINOR ELECTROLYTE ABNORMALITIES
- CONSENT
- HIGH INR
- ASPIRIN, CLOPIDOGREL
- LACK FACILITIES

Delay in surgery increases the risk of:

- Deep venous thrombosis
- Pulmonary complications
- Urinary tract infection
- Skin breakdown

DECISION ABOUT THE TIMING OF
SURGERY REQUIRE CLOSE
INTERACTION BETWEEN THE
Friedman, WAGS, 2008

Control

- **Non-pharmacologic:** Hot/cold, massage, relaxation
- **Mild to moderate pain:** acetaminophen +/- NSAIDs
- **Severe pain:** opioids are the cornerstone
 - Morphine, oxycodone are commonly used
 - Meperidine, propoxyphene to be avoided - toxic metabolites (risk of seizure), delirium
 - Start low, go slow

Primary aims of the hip fracture registry in Italy

- ❖ To ascertain the profile of hospital care for hip fractures in several centers
- ❖ To evaluate the impact of the profile of care for hip fractures
- ❖ To assess the pharmacological treatment at discharge

Methods

The same general approach to data collection was used in all areas.

Patients with pathological fractures were excluded from the analysis, as well as multiple hospital discharges for the same event.

Results

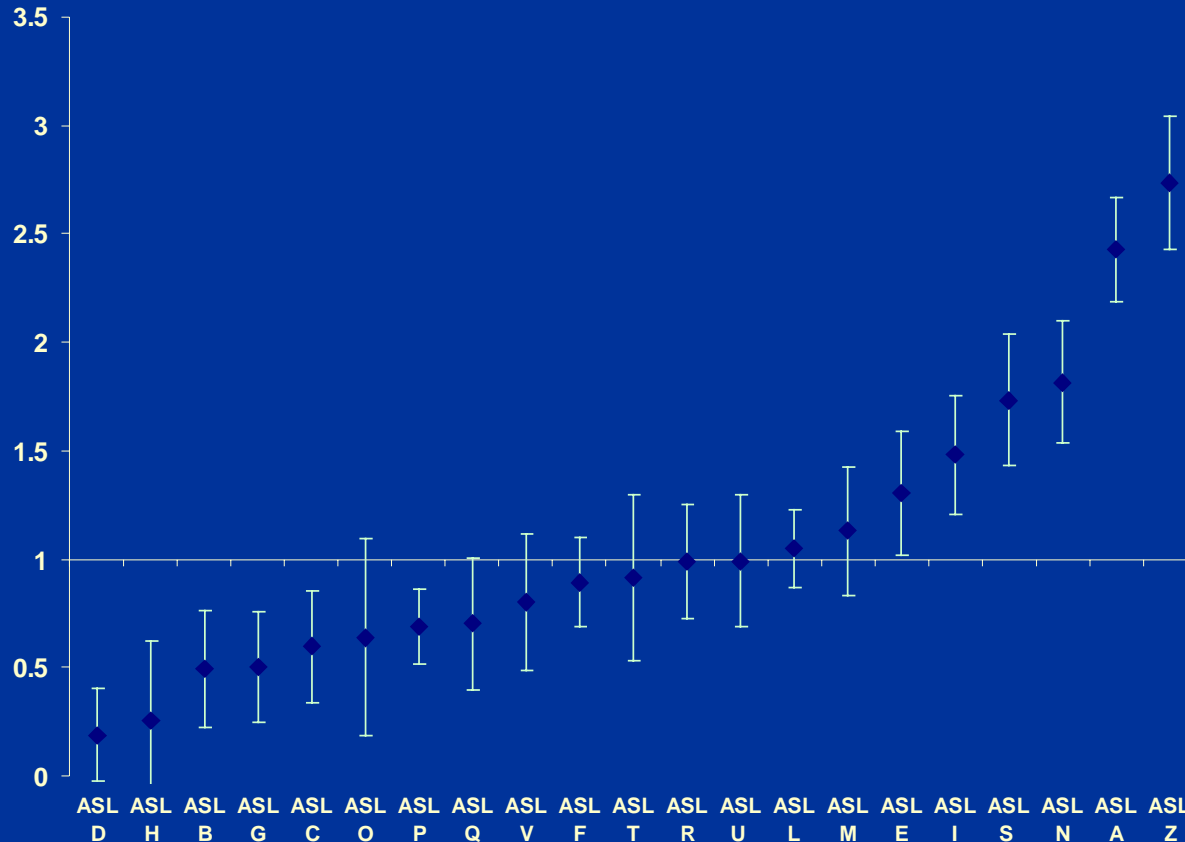
Proportion of patients undergoing surgery within 24 h, by age –Veneto
(% e 95%CI)

	2000	2001	2002	2003
<= 44 yrs	31 (27-35)	29 (25-33)	28 (24-32)	34 (30-38)
45-54 yrs	25 (19-33)	24 (17-31)	21 (15-27)	28 (22-34)
55-64 yrs	22 (18-27)	20 (16-24)	21 (17-25)	26 (22-30)
65-74 yrs	15 (13-18)	17 (15-20)	16 (14-18)	19 (17-21)
75-84 yrs	15 (13-17)	15 (13-17)	15 (13-17)	17 (15-19)
=>85 yrs	18 (16-20)	18 (16-20)	16 (14-18)	17 (15-19)



Results

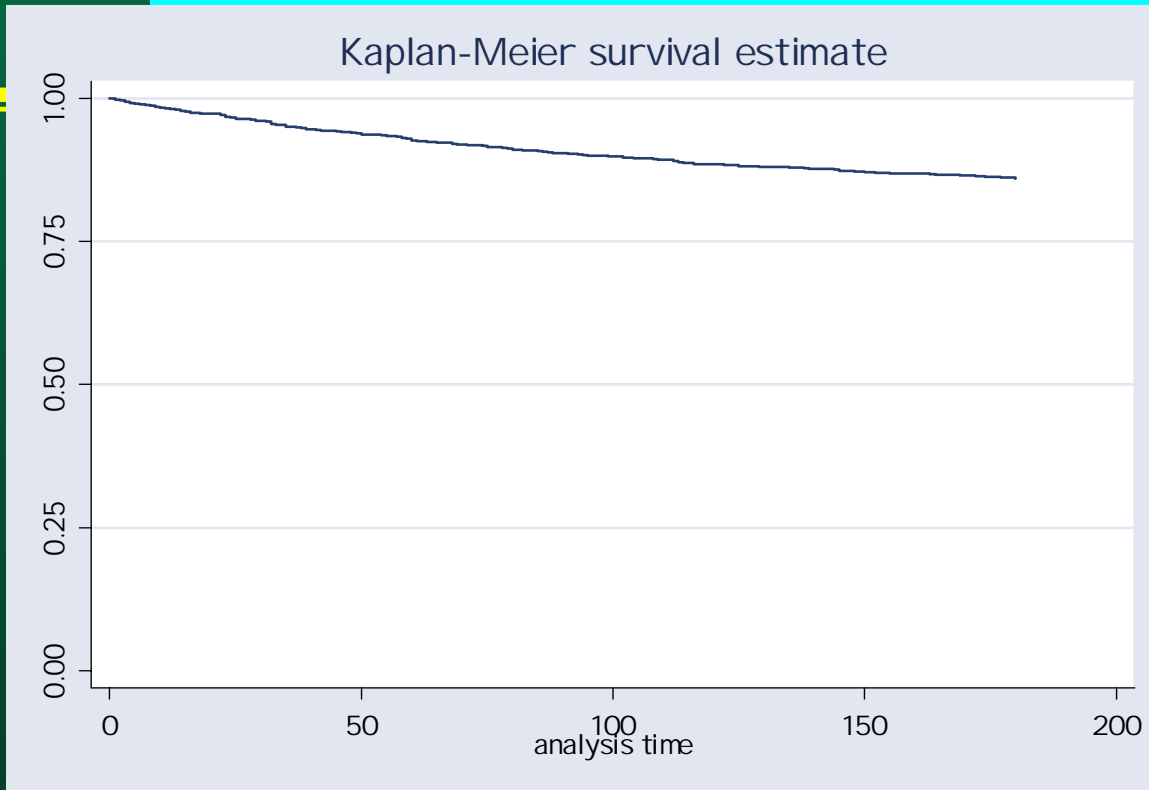
Standardized ratio of hip fx patients undergoing surgery within 24 h. per Health Unit – Veneto Region (O/E e 95% IC)



~~Risk factors for mortality and~~ disability at 6 months



Survival probability at 30 days and 6 months



Days	Patients	Dead	% surv.	[95% Int. Conf.]	
30	1117	46	96.0%	94.8%	97.0%
180	994	116	86.0%	83.9%	87.9%

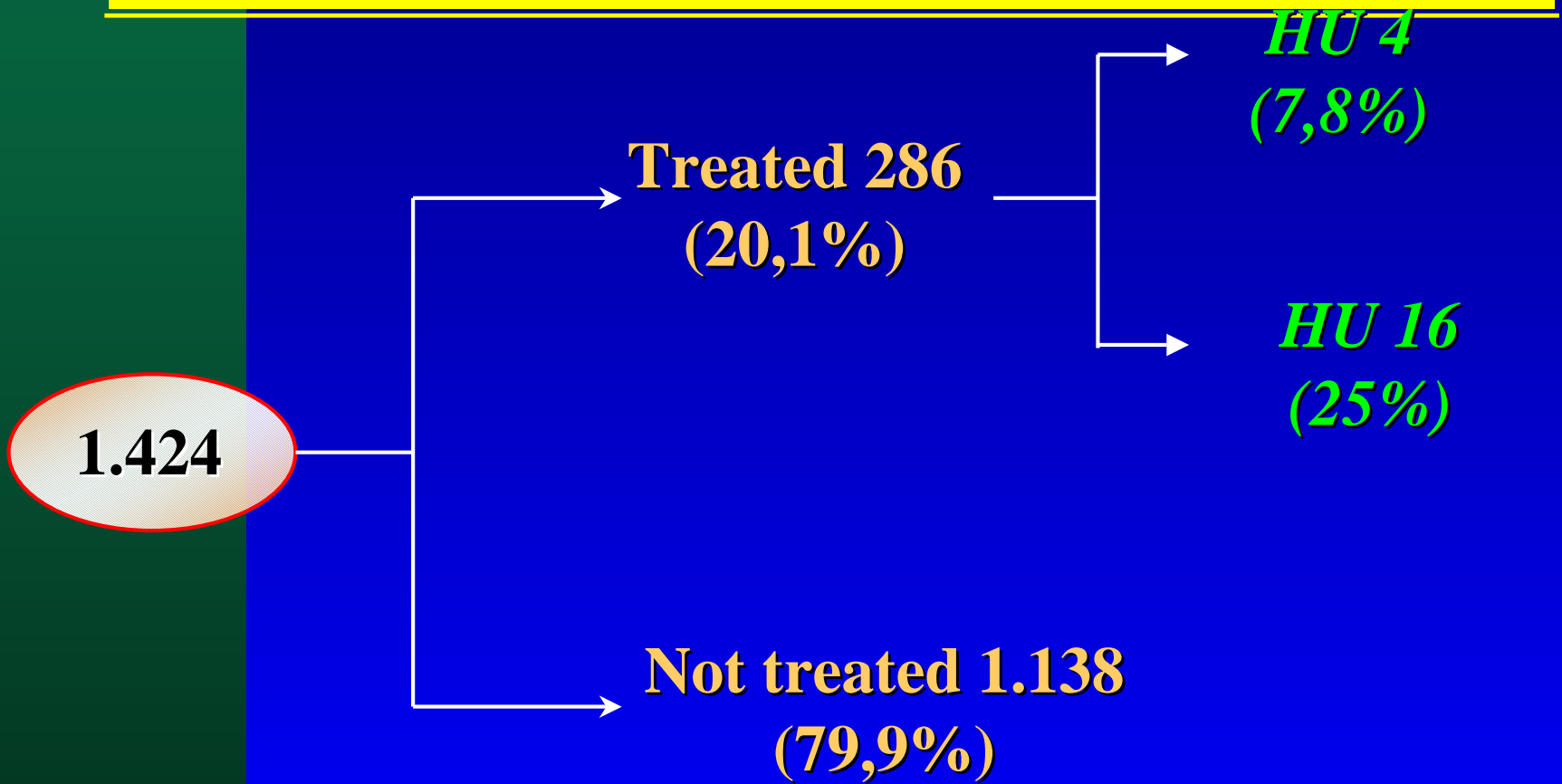
Predictors of 6 Months mortality. Hip fracture registry (N=3288)

		HR	[95% CI]	
Gender (Woman)		0.38	0.31	0.48
Age (years) (Vs 50-77 yrs)	78-82 years	2.36	1.56	3.60
	83-88 years	1.97	1.62	2.39
	>88 years	1.85	1.63	2.09
ASA Grade (vs healthy)	Mild D-no funct.lim	1.51	0.68	3.33
	Severe D-funct.lim	2.01	0.93	4.31
	Symt D- severe lim or moribund	2.89	1.33	6.30
Pre-fracture walking ability (vs walk alone)	Walk alone home	1.65	1.28	2.14
	Walk only accomp.	1.93	1.46	2.56
Time to surgery (vs < 24 h)	Within 48 h	1.34	0.92	1.96
	After > 48 h	1.60	1.16	2.20

Predictors of 6 Months functional loss. Hip fracture registry
(N=3288)

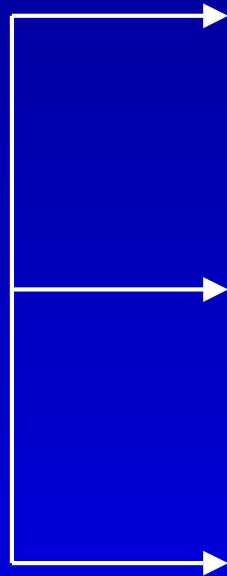
		HR	[95% CI]	
Gender (Woman)		0.90	0.68	1.185
Age (years)		1.08	1.07	1.101
ASA Grade (vs healthy)	Mild D-no funct.lim	1.32	0.77	2.27
	Severe D-funct.lim	2.20	1.30	3.72
	Symt D- severe lim or moribund	3.55	2.00	6.28
Pre-fracture walking ability (vs walk alone)	Walk alone home	2.88	2.24	3.71
	Walk only accomp.	8.03	5.50	11.74
OP therapy at discharge		0.67	0.54	0.84
Time to surgery	Within 24 h	0.65	0.50	0.86

Patients treated for osteoporosis



How are they treated?

TREATMENT



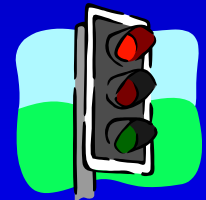
OPTIMAL
8,1%



SUB-OPTIMAL
33,6%



NOT OPTIMAL
58,3%



Re-fractures

Treated	Optimal treatm	Sub-Opt. treatm	Not-Opt treatm
3,5%	0%	3,2%	4,2%

Not Treated
3,3%

Pop. eligible
3,4%

Conclusioni (1)

Il principale obiettivo del trattamento è di riportare il paziente ad un livello di autonomia funzionale simile a quello che aveva prima della frattura. Questo è ottenibile con l'intervento chirurgico e una precoce mobilizzazione.

Conclusioni (2)

- L'intervento va eseguito entro 24/48 h
- I pazienti da trattare in maniera conservativa sono meno del 4%
- La cura del paziente con frattura del femore deve essere basata su una valutazione multidimensionale e in collaborazione col geriatra
- E' fondamentale seguire protocolli standardizzati basati sull'evidenza clinica