

# Proposta di un sistema di raccolta dati comune dei pazienti con frattura di femore: la proposta del GIOG

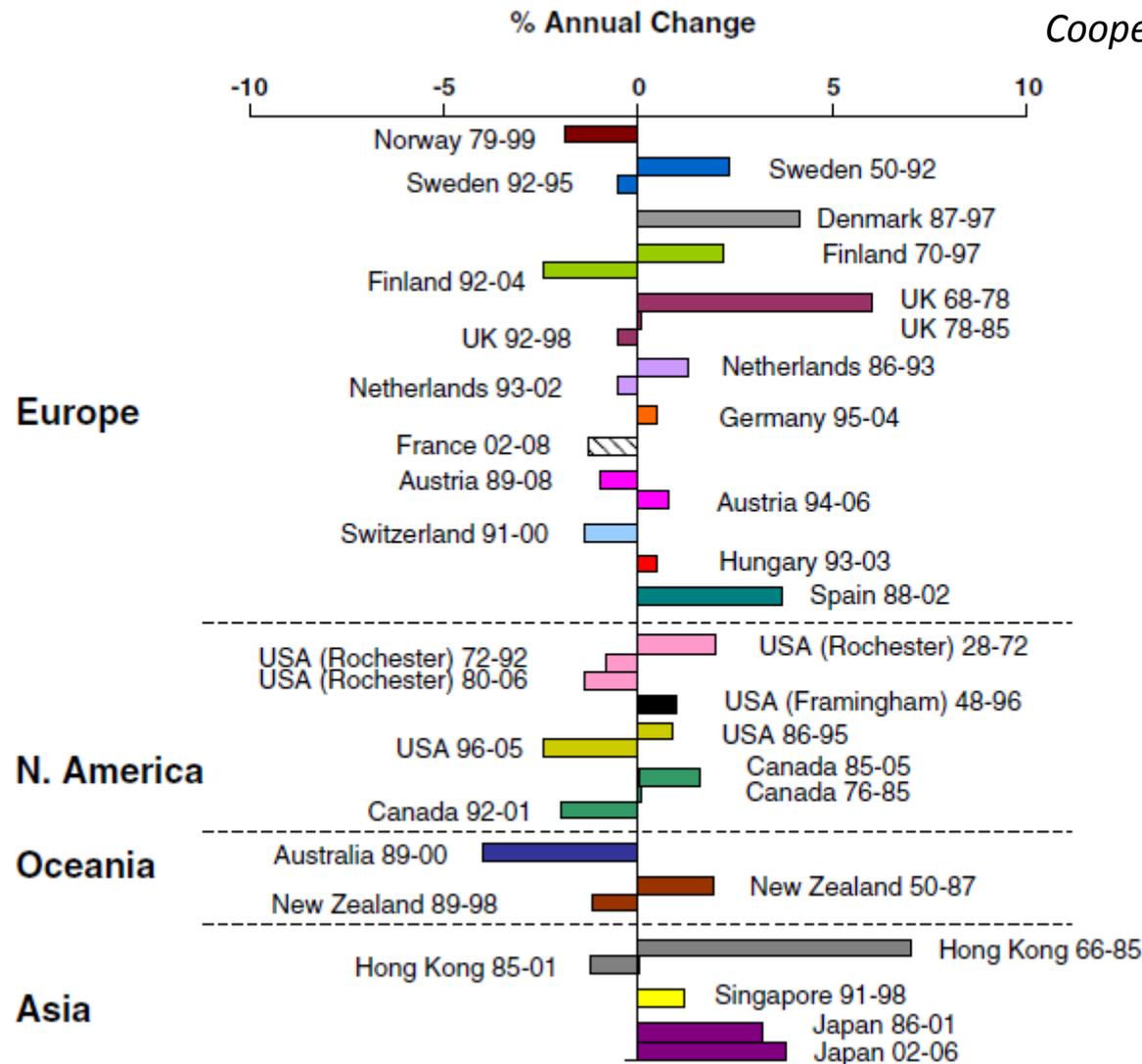
# Epidemiologia delle fratture di femore

- 90.000 fratture di femore ogni anno in Italia (+ 12% tra 2001 e 2005)
- Nel 2005 i costi ospedalieri (sistema sanitario nazionale) associati a fratture da fragilità negli anziani sono paragonabili a quelli degli stroke (ischemici e emorragici) che occorrono nella popolazione complessiva
- Costi (complessivi di degenza e riabilitazione) = 999 milioni di euro (2005)

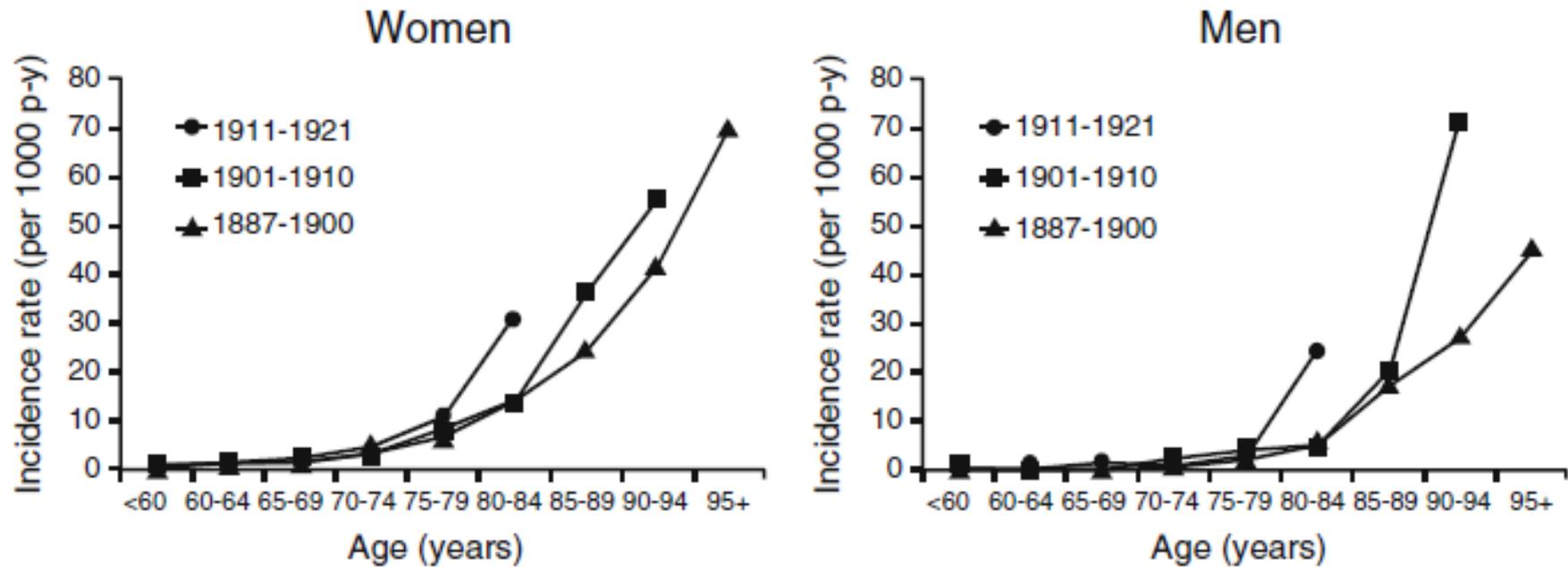


# Secular trends in HF worldwide: annual change in age- and sex- adjusted HF incidence

Cooper Osteop Internat 2011



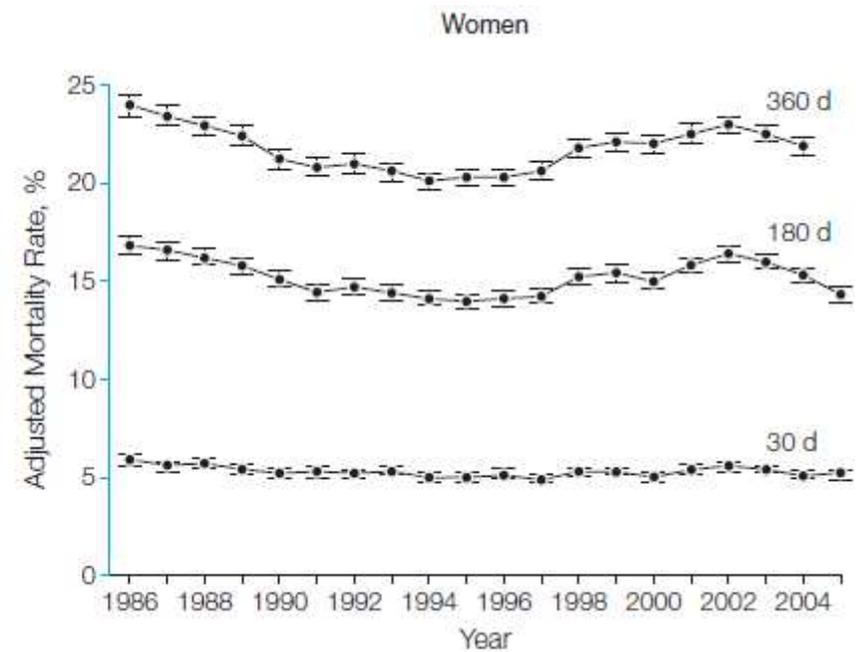
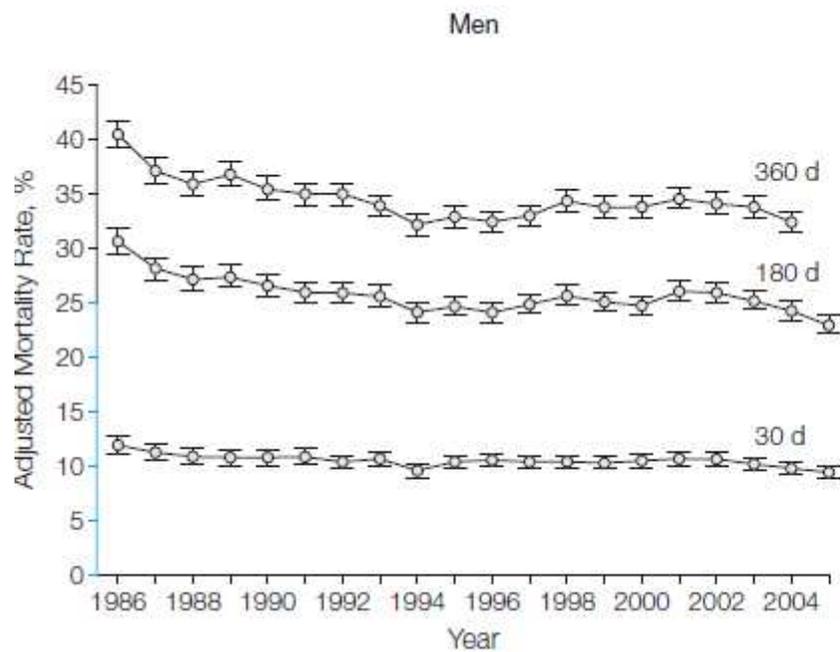
# Il numero assoluto di persone anziane in cui si verificheranno Hip Fractures è in aumento



# Un'emergenza dal punto di vista epidemiologico

- L' invecchiamento della popolazione porterà ad un incremento massivo del numero assoluto di fratture di femore nei prossimi 25 anni in Europa e negli USA:
  - 2X il numero di casi
  - 3X I costi
- In Asia e nel Sud America – incremento di 6 volte
- I sistemi sanitari nazionali non sono attualmente in grado di far fronte all' emergenza

# I tassi di mortalità sono rimasti invariati nonostante i progressi delle tecniche



# Chi è il paziente ortogeriatrico?

Table 1. Study Population Characteristics Women's Health and Aging Study-I

Characteristics	Overall (n = 966) n (%)	Hip Fracture (n = 76) n (%)	Non-Hip Fracture (n = 890) n (%)	P Value
Age (mean ± SD)	78.1 ± 8.0	82.6 ± 7.7	77.7 ± 7.9	.001
65-74	383 (40)	14 (18)	369 (41)	.001
75-84	304 (29)	20 (26)	284 (32)	
85+	279 (29)	42 (55)	237 (27)	
Race				
white	684 (71)	66 (87)	618 (69)	.001
African American	282 (29)	10 (13)	272 (31)	
Education (mean no. y)	9.7 ± 3.6	10.5 ± 3.6	9.6 ± 3.6	.06
Living alone	484 (48)	40 (53)	424 (48)	.40
Chronic disease (mean ± SD)	2.1 ± 1.4	1.9 ± 1.1	2.1 ± 1.4	.43
0	111 (12)	7 (9)	104 (12)	.81
1	261 (27)	21 (28)	240 (27)	
2+	594 (61)	48 (63)	546 (61)	
Depression (GDS ≥ 12)	225 (23)	16 (21)	209 (23)	
ADL (mean ± SD)	2.1 ± 1.8	2.5 ± 1.8	2.1 ± 1.8	.05
IADL (mean ± SD)	1.9 ± 1.5	2.3 ± 1.6	1.9 ± 1.5	.01

ADL, activities of daily living; GDS, Geriatric Depression Scale; IADL, instrumental ADL.

# Comorbidità della frattura di femore

## Rochester Epidemiology Project

All Olmsted County residents aged 50 years or more  
first documented hip fracture (case control study)

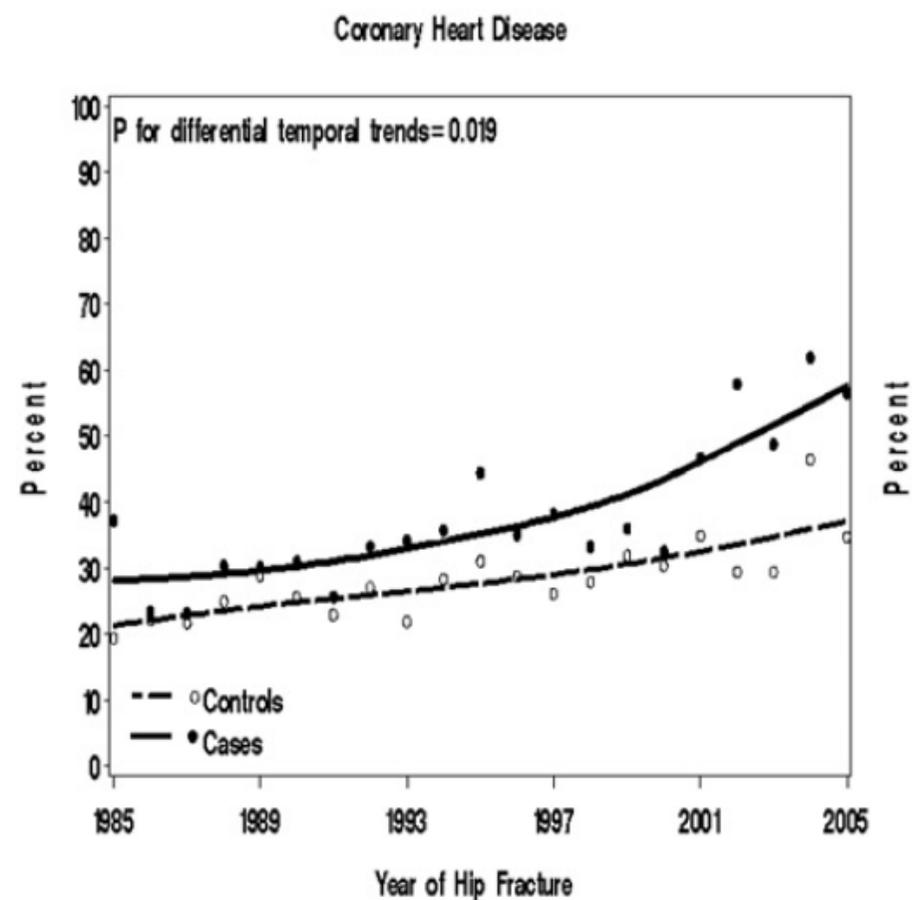
**Table 1** Pertinent Clinical Characteristics Among Hip Fracture Cases Compared With Controls

Characteristic	Hip Fracture Status	
	Cases	Controls
n	1904	1904
Age, y, mean (SD)	82.2 (9.5)	82.1 (9.4)
Female, n (%)	1444 (76)	1444 (76)
Selected comorbidities, n (%)		
Myocardial infarction	366 (19)	261 (14)*
Heart failure	533 (28)	336 (18)*
Peripheral vascular disease	275 (14)	201 (11)*
Cerebrovascular disease	628 (33)	405 (21)*
Dementia	563 (30)	211 (11)*
Chronic pulmonary disease	303 (16)	175 (9)*
Ulcer	466 (24)	316 (17)*
Diabetes	306 (16)	253 (13)†
Cancer	424 (22)	309 (16)*

SD = standard deviation.

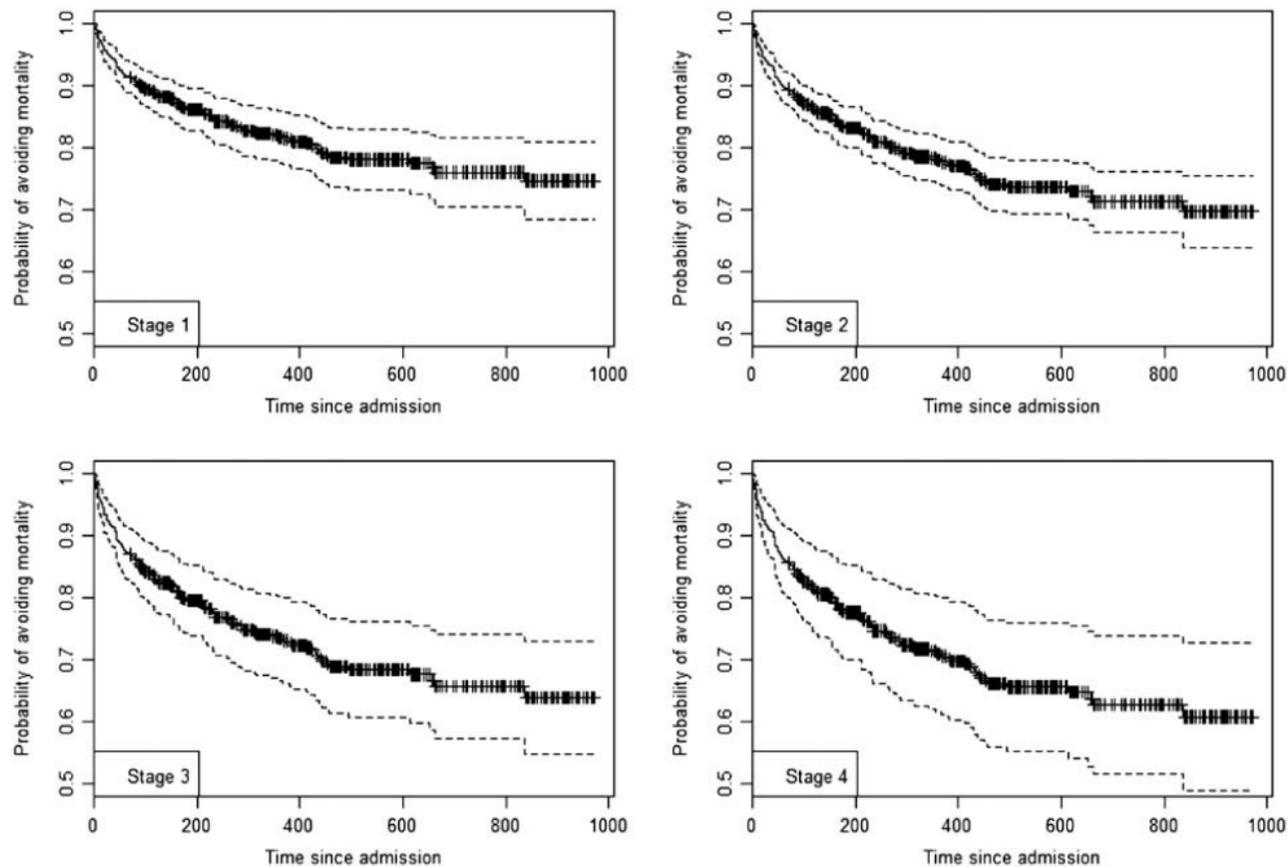
\* $P < .01$ .

† $P = .02$ .



# Elderly men with renal dysfunction are most at risk for poor outcome after neck of femur fractures

SAMEER K. KHAN<sup>1</sup>, STEPHEN P. RUSHTON<sup>2</sup>, MICHAEL COURTNEY<sup>1</sup>, ANDREW C. GRAY<sup>1</sup>, DAVID J. DEEHAN<sup>1</sup>



# Predittori preoperatori di mortalità nel paziente con frattura di femore

Moderate, limited and conflicting evidence predictive factors associated with the excess mortality following senile hip fractures.

Evidence level	Factors related to excess mortality	Patient number of high quality studies	Patient number of moderate quality studies	Patient number of low quality studies
Moderate evidence	Intertrochanteric fracture (versus femoral neck)	562 <sup>20,67</sup>	1543 <sup>38,43</sup>	170 <sup>35</sup>
	Low body mass index	7205 <sup>49,83</sup>	1051 <sup>40,52</sup>	
	Low serum albumin or malnutrition	408 <sup>11,78</sup>	1879 <sup>41,69,85</sup>	1575 <sup>47,52,57,63,66,73</sup>
	Low haemoglobin		1073 <sup>10,38,69</sup>	1650 <sup>9,34,47,52</sup>
	High serum creatinine		9736 <sup>10,82,83</sup>	
	Chronic renal disease	2448 <sup>82</sup>	15,566 <sup>18,32,74,101</sup>	400 <sup>66</sup>
	Chronic pulmonary disease	2448 <sup>82</sup>	15,381 <sup>18,74,101</sup>	695 <sup>52,104</sup>
Limited evidence	Living alone	420 <sup>45</sup>		1459 <sup>6</sup>
	Previous year hospital admission		412 <sup>14,63</sup>	
	Poor social function		804 <sup>101</sup>	143 <sup>79</sup>
	Smokers	2448 <sup>82</sup>	165 <sup>11</sup>	
	Low blood lymphocyte count		239 <sup>11,69</sup>	1266 <sup>9,57</sup>
	High serum potassium		2448 <sup>82</sup>	292 <sup>52</sup>
	High serum troponin T		346 <sup>16,27</sup>	
Conflicting evidence	High heart rate at admittance	538 <sup>15</sup>	292 <sup>52</sup>	
	Cerebrovascular disease		1050 <sup>75,101</sup>	901 <sup>47,66,104</sup>
	Digestive disease	480 <sup>67</sup>		400 <sup>66</sup>
	Delirium		731 <sup>42</sup>	106 <sup>28</sup>
	Depression	211 <sup>7</sup>		
	Race: whites or not		2692 <sup>74</sup>	571 <sup>38</sup>

# Functional Recovery After Hip Fracture: The Combined Effects of Depressive Symptoms, Cognitive Impairment, and Delirium

Jane L. Givens, MD, MSCE,\* Tara B. Sanft, MD,<sup>†</sup> and Edward R. Marcantonio, MD, SM<sup>‡§</sup>

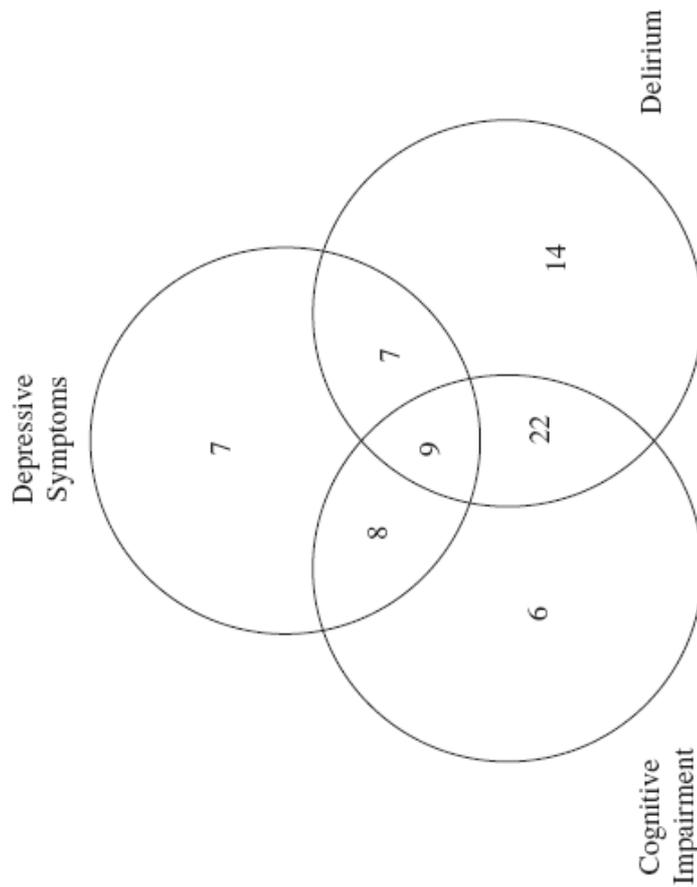


Figure 1. Prevalence of depressive symptoms, cognitive impairment, and delirium in the cohort of 126 hip fracture patients; 50 patients (41%) had none of the three disorders.

Table 2. Adjusted Odds Ratios (AORs) from Multivariable Regression Models Predicting Outcomes at 1 and 6 Months

Outcome	Loss of		AOR (P-Value)
	≥1-Point Decline in ADLs	Prefracture Ability to Walk 15 Feet Independently	
<b>One month</b>			
Depressive symptoms	1.26 (.63)	1.18 (.75)	3.53 (.03)
Cognitive impairment	2.25 (.08)	2.58 (.05)	8.42 (.001)
Delirium	3.40 (.005)	4.39 (.002)	4.26 (.007)
Combined cognitive and mood disorders	1.78 (.02)	1.83 (.02)	3.90 (<.001)
<b>Six months</b>			
Depressive symptoms	0.34 (.08)	0.30 (.07)	0.71 (.62)
Cognitive impairment	1.11 (.84)	1.20 (.72)	1.48 (.57)
Delirium	2.35 (.07)	2.10 (.12)	2.17 (.17)
Combined cognitive and mood disorders	1.01 (.96)	0.93 (.79)	1.22 (.53)

# Demenza fattore di rischio per frattura

**Table 3.** Hazard ratios for hip fractures according to age at AD diagnosis.

Age at diagnosis	N	n of events (%)	events/1,000 person-years	HR (95%CI)		
				Model 1 <sup>a</sup>	Model 2 <sup>b</sup>	Model 3 <sup>c</sup>
No AD	24,183	845 (3.5)	10	1.00 (reference)	1.00 (reference)	1.00 (reference)
<74 years	6,871	347 (5.1)	15	5.60 (4.28, 7.33)	5.64 (4.29, 7.41)	5.11 (3.87, 6.74)
74.0–78.9 years	7,621	542 (7.1)	22	3.19 (2.67, 3.81)	3.20 (2.66, 3.84)	2.97 (2.46, 3.57)
79.0–82.9 years	6,546	526 (8.0)	26	2.14 (1.82, 2.51)	2.17 (1.84, 2.56)	2.04 (1.73, 2.41)
≥83 years	6,751	601 (8.9)	31	1.75 (1.50, 2.05)	1.78 (1.51, 2.08)	1.68 (1.43, 1.98)

<sup>a</sup>Unadjusted.

<sup>b</sup>Adjusted for cardiovascular diseases, cancer, diabetes, pernicious anemia and other disturbances in absorption of vitamin B<sub>12</sub>, Parkinson's disease, epilepsy, glaucoma and rheumatoid arthritis.

<sup>c</sup>Adjusted for covariables in Model 2 plus use of bisphosphonate and psychotropic drugs in 2005.

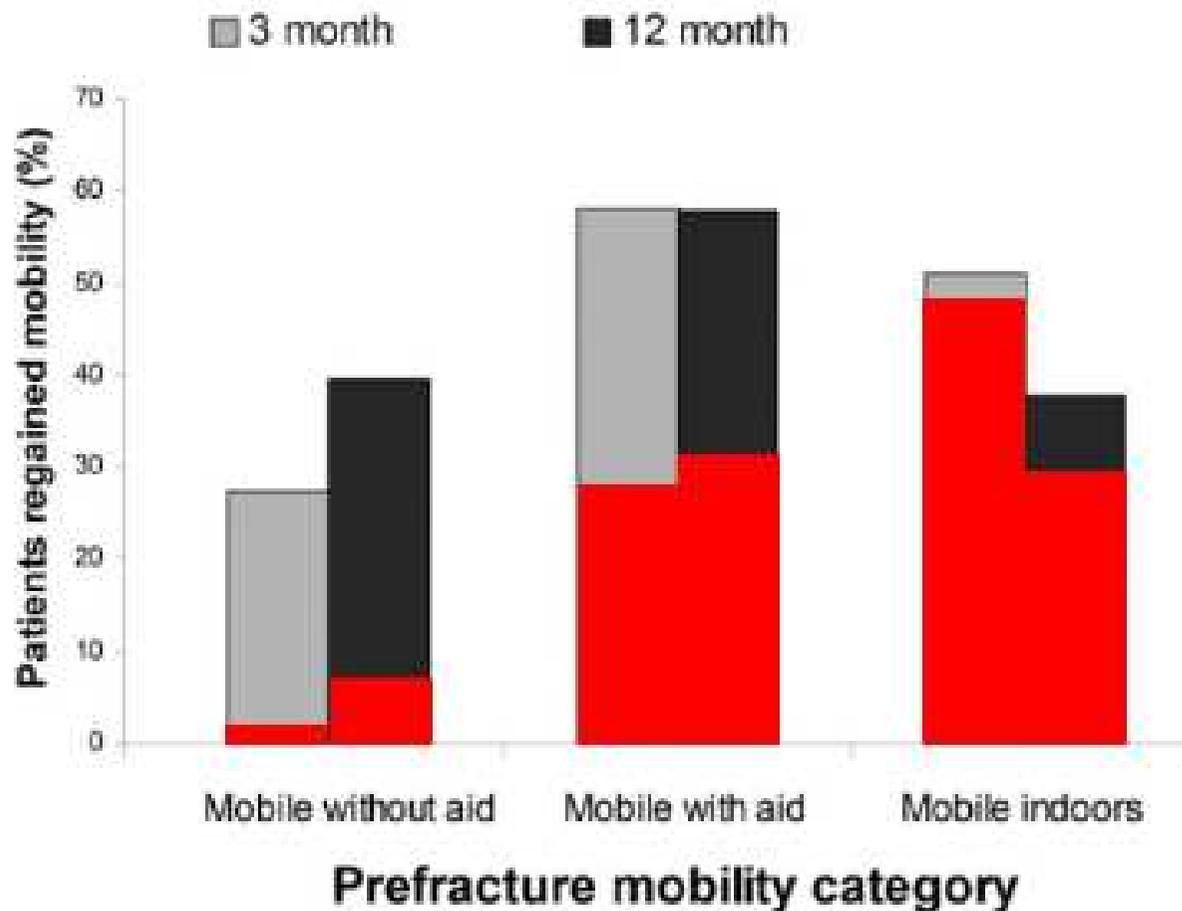
doi:10.1371/journal.pone.0059124.t003

# Risk factors for failure to return to the pre-fracture place of residence after hip fracture: a prospective longitudinal study of 444 patients

**Table 3** Risk factors known at admission for failing to return to their own home

	Independent variables	Odds ratio	95% CI	P value	
Multivariable logistic regression analysis Analysis performed in <sup>a</sup> 268 patients, <sup>b</sup> 242 patients; <sup>c</sup> 225 patients <sup>d</sup> Reference category is mobile without an aid GARS Groningen Activity Restriction Score	At discharge <sup>a</sup>	Age (per year)	1.10	1.05 to 1.16	<0.001
		Female gender	2.23	1.17 to 4.26	0.015
		Absence of a partner	2.00	1.06 to 3.78	0.032
		● Dementia	4.84	1.02 to 23.0	0.047
		GARS (per 10 units)	1.48	1.16 to 1.89	0.002
	At 3 months <sup>b</sup>	Age (per year)	1.10	1.03 to 1.16	0.003
		● Dementia	9.21	3.14 to 27.0	<0.001
		GARS (per 10 units)	1.84	1.42 to 2.35	<0.001
	At 12 months <sup>c</sup>	Age (per year)	1.09	1.03 to 1.16	0.003
		● Dementia	5.96	2.23 to 15.9	<0.001
	Mobility category <sup>d</sup>				
	With an aid in- and/or outdoors	2.97	1.39 to 6.32	0.005	
	Only mobile indoors	6.03	1.39 to 26.2	0.016	

# Dementia as a risk factor for failure recovery of walking abilities



JAGS 2011

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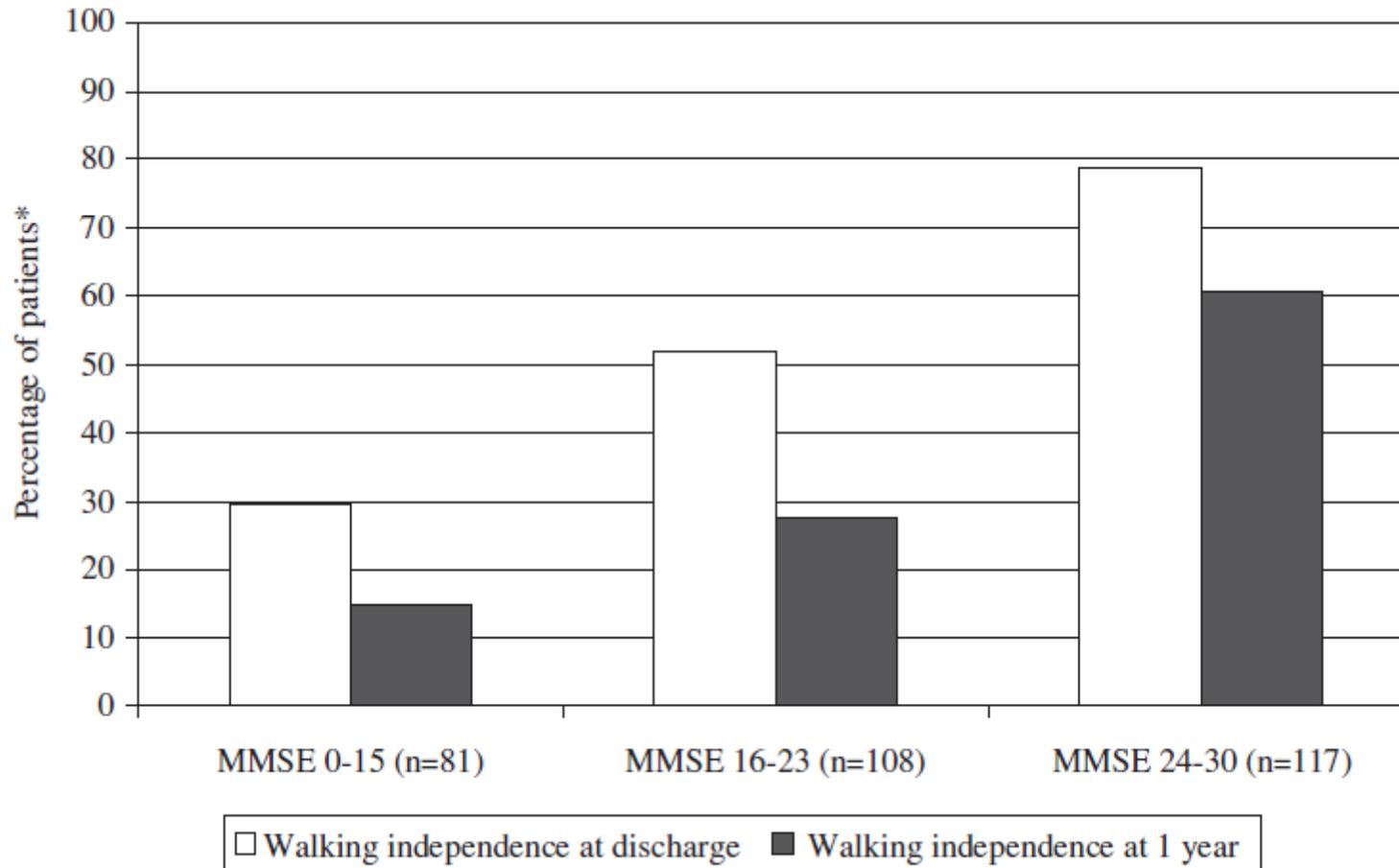
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## BRIEF REPORTS

# Rehabilitation of Older Adults with Hip Fracture: Cognitive Function and Walking Abilities

*Sara Morghen, PsyD,<sup>\*†</sup> Simona Gentile, MD,<sup>\*†</sup> Eleonora Ricci, MD,<sup>\*†</sup> Fabio Guerini, MD,<sup>\*†</sup>  
Giuseppe Bellelli, MD,<sup>\*†‡</sup> and Marco Trabucchi, MD<sup>\*†</sup>*

# Percentage of participants with walking independence at discharge and at 1 year according to Mini-Mental State Examination (MMSE) score (range 0–30)



# II delirium pre-chirurgico

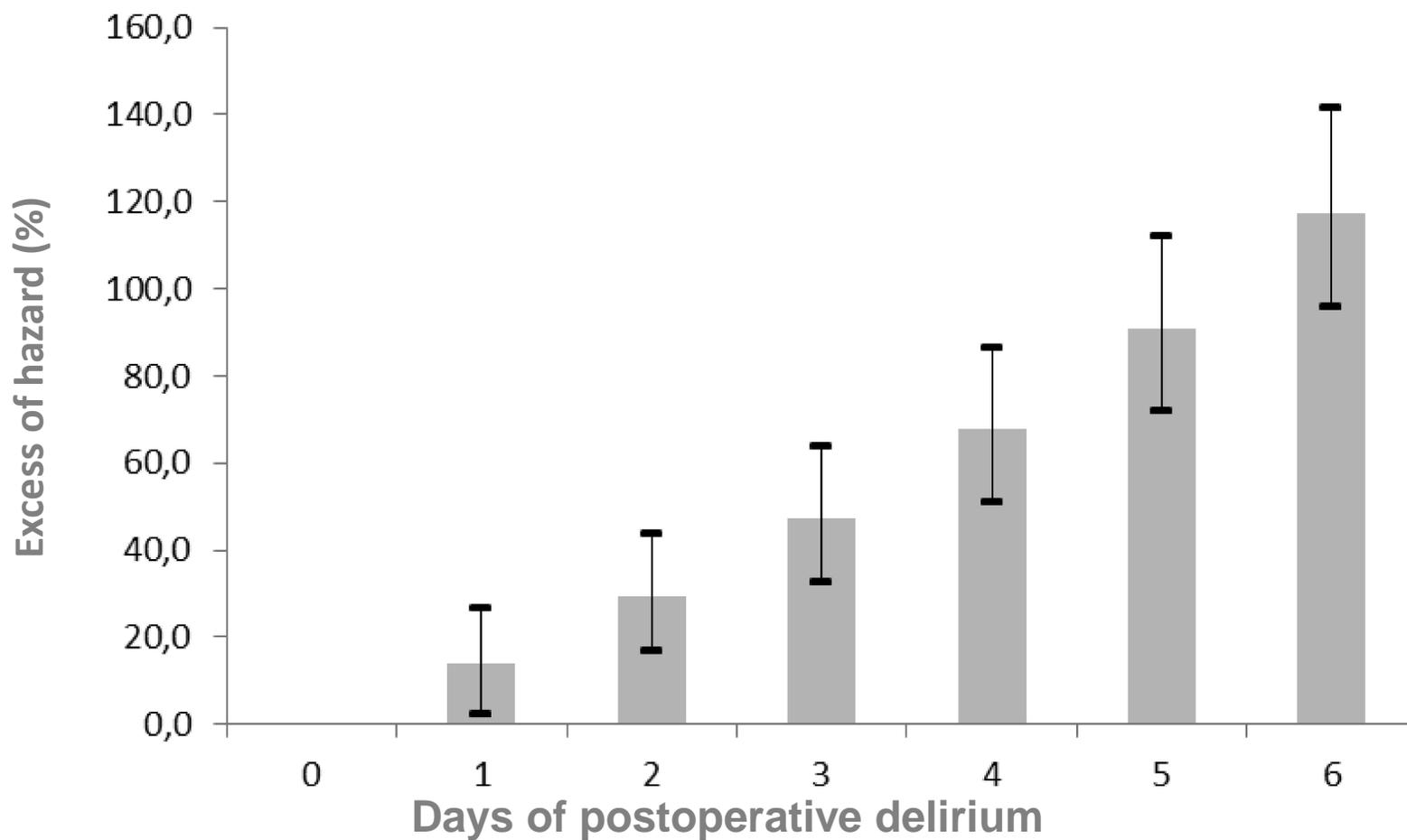
Characteristic	Preoperative Assessment (n = 237)		
	Delirium, n = 50 (21.1%)	No delirium, n = 187 (78.9%)	P-Value
Background characteristic			
Age at fracture, median (IQR)	83 (80–89)	84 (78–88)	.89
Female, n/N (%)	33/50 (66.0)	145/187 (77.5)	.09
Living in an institution, n/N (%)	17/50 (34.0)	22/187 (11.8)	<.001*
Injury occurred indoors, n/N (%)	46/50 (92.0)	120/185 (64.9)	<.001*
Cognitively impaired, n/N (%)*	32/44 (72.7)	64/172 (37.2)	<.001*
Barthel Index 19 or 20, n/N (%)	11/39 (28.2)	97/164 (58.9)	.001*
Body mass index < 20.0 kg/m <sup>2</sup> n/N (%)	14/45 (31.1)	41/181 (22.7)	.24
American Society of Anesthesiologists group III, IV, or V, n/N (%)	31/50 (62.0)	88/186 (47.3)	.06
Charlson Comorbidity Index > 1	18/50 (36.0)	53/187 (28.3)	.29
History of hypertension, n/N (%)	18/50 (36.0)	71/187 (38.0)	.80
History of congestive heart failure, n/N (%)	4/50 (8.0)	22/187 (11.8)	.45
History of coronary heart disease, n/N (%)	8/50 (16.0)	42/187 (22.5)	.32
Previous stroke, n/N (%)	17/50 (34.0)	28/187 (15.0)	.002*
History of obstructive pulmonary disease, n/N (%)	10/50 (20.0)	14/187 (7.5)	.009*
High anticholinergic burden, n/N (%) <sup>†</sup>	10/50 (20.0)	37/187 (19.8)	.97
Time from admission to surgery, hours, median (IQR)	37.5 (24.9–49.5)	20.3 (13.9–31.6)	<.001*

# II delirium post-chirurgico

Postoperative Assessment (n = 187)

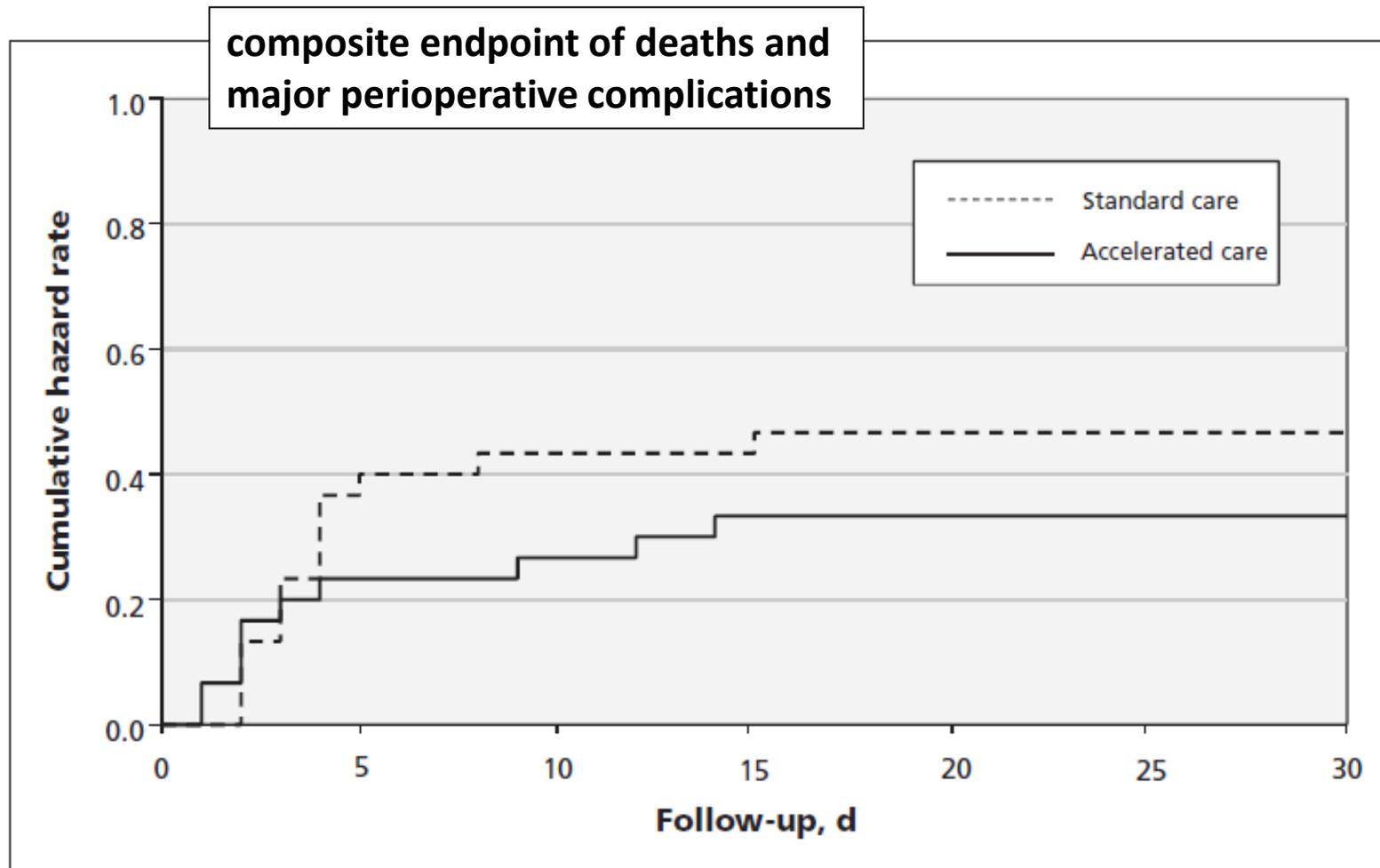
Characteristic	Delirium, n = 68 (36.4%)	No delirium, n = 119 (63.6%)	P-Value
Background characteristic			
Age at fracture, median (IQR)	85 (82–89)	82 (77–87)	.005*
Female, n/N (%)	55/68 (80.9)	90/119 (75.6)	.41
Living in an institution, n/N (%)	14/68 (20.6)	8/119 (6.7)	.005*
Injury occurred indoors, n/N (%)	54/67 (80.6)	66/118 (55.9)	.001*
Cognitively impaired, n/N (%)*	35/58 (60.3)	29/114 (25.4)	<.001*
Barthel Index 19 or 20, n/N (%)	23/56 (41.1)	74/108 (68.5)	.001*
Body mass index < 20.0 kg/m <sup>2</sup> n/N (%)	23/66 (34.8)	18/115 (15.7)	.003*
American Society of Anesthesiologists group III, IV, or V, n/N (%)	41/67 (61.2)	47/119 (39.5)	.004*
Charlson Comorbidity Index > 1	21/68 (30.9)	32/119 (26.9)	.56
History of hypertension, n/N (%)	30/68 (44.1)	41/119 (34.5)	.19
History of congestive heart failure, n/N (%)	11/68 (16.2)	11/119 (9.2)	.16
History of coronary heart disease, n/N (%)	18/68 (26.5)	24/119 (20.2)	.32
Previous stroke, n/N (%)	11/68 (16.2)	17/119 (14.3)	.73
History of obstructive pulmonary disease, n/N (%)	7/68 (10.3)	7/119 (5.9)	.27
High anticholinergic burden, n/N (%) <sup>†</sup>	17/68 (25.0)	20/119 (16.8)	.18
Time from admission to surgery, hours, median (IQR)	17.6 (13.1–24.9)	21.8 (14.6–39.1)	.03*

## Persistenza del delirium & mortalità



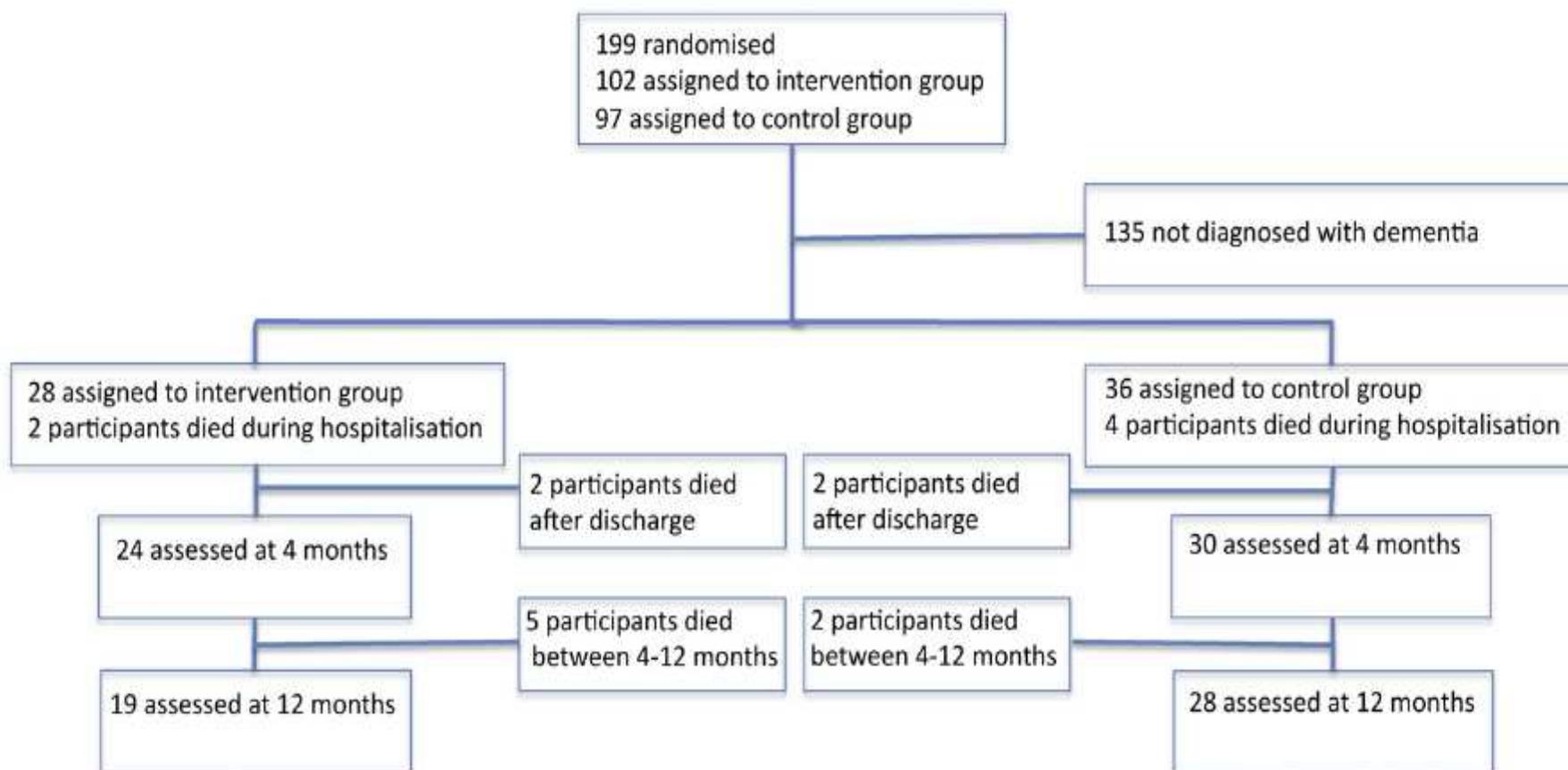
*Bellelli, et al. J Am Geriatr Soc 2014; Jul;62(7):1335-40.*

# Accelerated care versus standard care among patients with hip fracture: the HIP ATTACK pilot trial



# A multidisciplinary intervention program improved the outcome after hip fracture for people with dementia—Subgroup analyses of a randomized controlled trial

RCT on patients aged 70 yrs or more, subgroup analysis on pts with dementia (64%)



*Stenvall M et al, Arch Gerontol Ger 2011*

# A multidisciplinary intervention program improved the outcome after hip fracture for people with dementia—Subgroup analyses of a randomized controlled trial

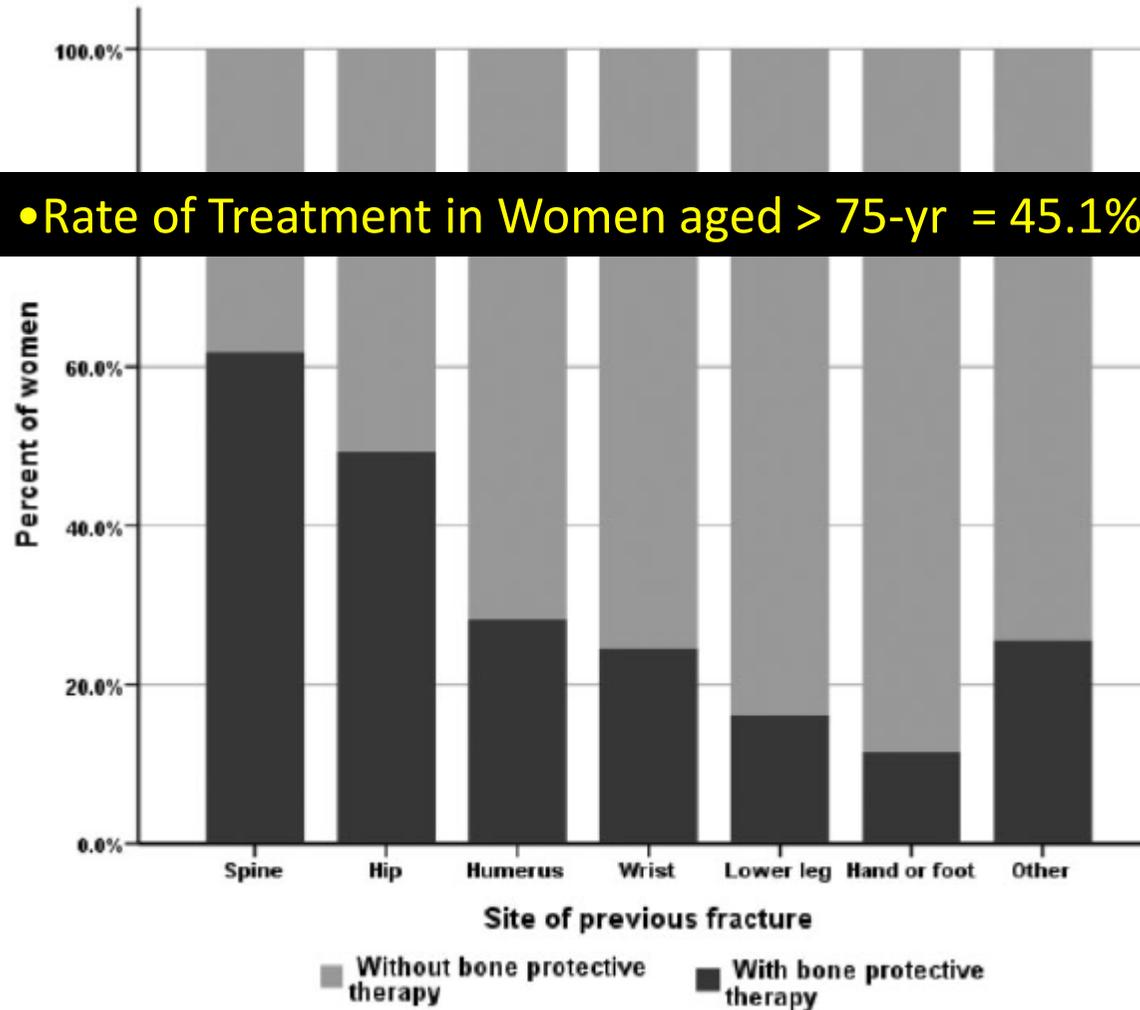
	intervention (n = 28)	control (n = 36)	p-value
<i>Complications during inpatient stay, length of hospital stay, drugs prescribed at discharge</i>			
Inpatient mortality	2 (7%)	4 (11%)	0.688
Pneumonia	3 (11%)	2 (6%)	0.446
Urinary tract infection	6 (21%)	23 (64%)	0.001
Decubital ulcers (n=28/35)	3 (11%)	9 (26%)	0.132
Nutritional problems	5 (18%)	16 (44%)	0.025
Preoperative delirium (n = 27/36)	12 (44%)	20 (56%)	0.383
Postoperative delirium	19 (68%)	35 (97%)	0.002
Number of delirious days	3.2 ± 4.1	12.8 ± 17.6	0.003
Delirium on discharge	0	15	<0.001
Number of fallers	1 (4%)	11 (31%)	0.006
Number of falls	1	34	
Fall incidence rate ratio (95% CI)	0.07 (0.01–0.57)	1.00 (Ref)	0.013
New fracture	0	3 (8%)	0.250
Length of postoperative hospital stay, mean ± SD	20.0 ± 12.0	32.3 ± 35.3	0.059
Number of drugs at discharge, mean ± SD	6.6 ± 3.1	6.8 ± 2.7	0.723
<i>Living situation at discharge</i>			
Institutional living (n = 26/32)	22 (85%)	27 (84%)	1.000
<i>Functional performance at discharge</i>			
Independent in P-ADL activities	0	0	
Preserved baseline P-ADL performance according to Katz ADL index (n=26/33)	11 (42%)	9 (27%)	 0.226
Independent walking ability indoors without walking aid or human assistance (n=26/31)	1 (4%)	0	 0.456

CI=confidence interval, SD=standard deviation, ADL=activities of daily living; P: personal/primary.

Stenvall M et al, Arch Gerontol Ger 2011

# Low rates of treatment after fragility fracture

• Rate of Treatment in Women aged > 75-yr = 45.1%



• Premaor MO et al., Q J Med 2010

# Comprehensive geriatric care for patients with hip fractures: a prospective, randomised, controlled trial



Anders Prestmo\*, Gunhild Hagen\*, Olav Sletvold, Jorunn L Helbostad, Pernille Thingstad, Kristin Taraldsen, Stian Lydersen, Vidar Halsteinli, Turi Saltnes, Sarah E Lamb, Lars G Johnsen, Ingvild Saltvedt

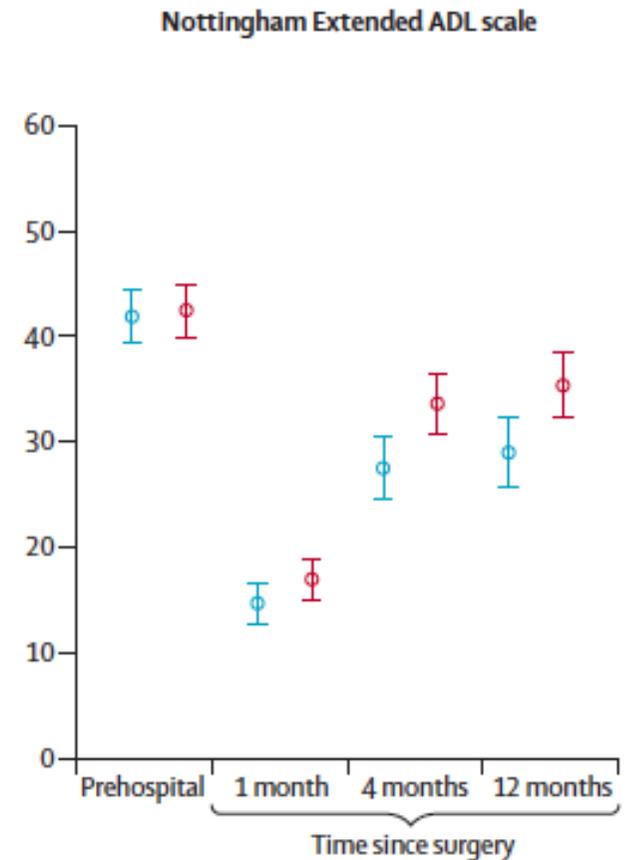
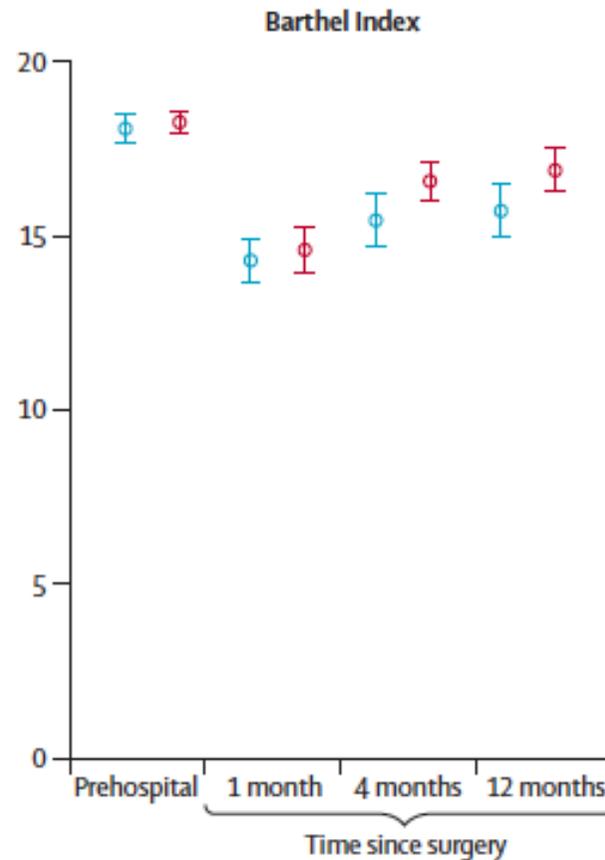
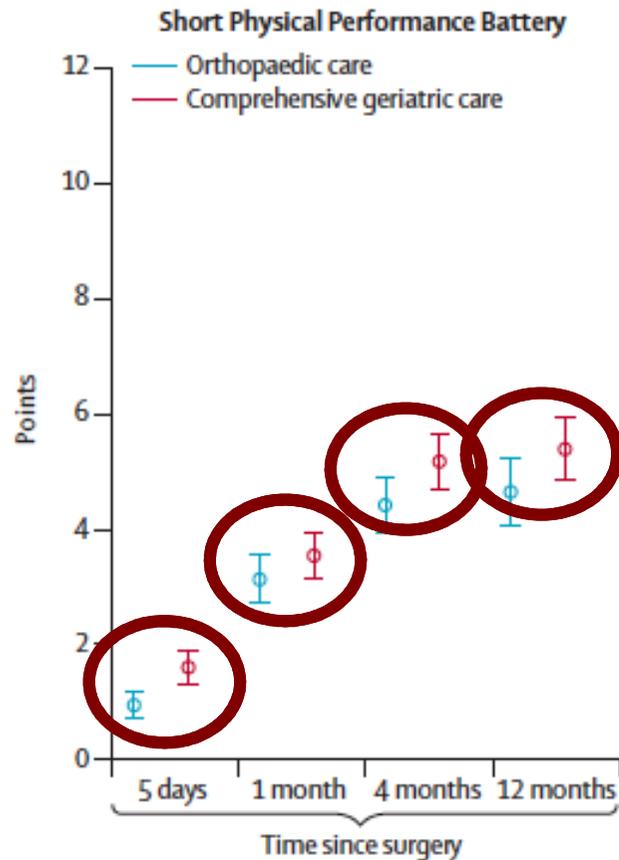
	Comprehensive geriatric care (N=198)	Orthopaedic care (N=199)
Age (years)	83.4 (5.4)	83.2 (6.4)
Female	145 (73%)	148 (74%)
Sheltered housing	26 (13%)	20 (10%)
Living alone	115 (58%)	124 (62%)
Barthel Index (0-20)	18.3 (2.3)	18.1 (2.8)
Nottingham Extended ADL scale (0-66)	42.5 (17.7)	41.9 (17.5)
Clinical Dementia Rating Scale (0-18)	2.7 (4.0)	2.7 (3.9)
APACHE II (5-89)	9.3 (3.3)	9.1 (2.9)
Charlson comorbidity index (0-30)	2.3 (2.3)	2.3 (2.0)
Previous diagnoses		
Heart disease	97 (49%)	89 (45%)
Stroke	49 (25%)	57 (29%)

	Comprehensive geriatric care (N=198)	Orthopaedic care (N=199)
Diabetes	23 (12%)	28 (14%)
Dementia	27 (14%)	26 (13%)
Cancer	53 (27%)	43 (22%)
Kidney disease	18 (9%)	9 (5%)
Fracture type		
Femoral neck	119 (60%)	127 (64%)
Trochanteric	66 (33%)	58 (29%)
Subtrochanteric	13 (7%)	14 (7%)
Surgical treatment		
Hemiarthroplasty	76 (38%)	88 (44%)
Screws	38 (19%)	32 (16%)
Bone plates and screws	69 (35%)	63 (32%)
Other	13 (7%)	14 (7%)
Died before surgery	2 (1%)	2 (1%)

	Comprehensive geriatric care	Orthopaedic care
Department	Department of Geriatrics, Clinic of Internal Medicine	Department of Orthopaedic Surgery, Clinic of Orthopaedics and Rheumatology
Facilities*	Geriatric ward: Five one-bed rooms organised in a group together reserved for patients with hip fractures within a 15-bed ward	Orthopaedic trauma ward: One, two, or four-bed rooms in a 19-bed ward before, or single rooms in a 24-bed ward after relocation Mixed orthopaedic trauma patient population
Team members, †number per bed		
Geriatricians	0-13	-
Registered nurses, licensed practical nurses	1-67	1-48
Physiotherapists	0-13	0-09 (0-07 after relocation)
Occupational therapists	0-13	None
Orthopaedic surgeons	-	0-11 (0-08 after relocation)
Treatment	Structured, systematic interdisciplinary comprehensive geriatric assessment and care focusing on: somatic health (comorbidity management, review of drug regimens, pain, nutrition, elimination, hydration, osteoporosis, and prevention of falls); mental health (depression, delirium); function (mobility, p-ADL and i-ADL) and social situation Early discharge planning Early mobilisation and initiation of rehabilitation	Following of routines of Department of Orthopaedic Surgery
<p>For both groups, management of standard treatment and surgery is the same: standard treatment consists of preoperative intravenous fluid, analgesia (preoperative femoral nerve block, regular paracetamol, opioids on demand), thromboembolic prophylaxis, perioperative antibiotic prophylaxis, use of pressure relieving mattresses to avoid decubitus ulcers, and preoperative assessments by an anaesthetist; surgery consists of spinal anaesthesia, two-screw fixation for non-dislocated femoral neck fractures, hemiarthroplasty for dislocated femoral neck fractures, and a sliding hip screw system for trochanteric and subtrochanteric fractures (some subtrochanteric fractures are fixed with antegrade intramedullary nailing). p-ADL=personal Activities of Daily Living. i-ADL=instrumental Activities of Daily Living. * Orthopaedic care was relocated to a new hospital building after 219 of 397 patients were recruited. †Separate teams with no collaboration.</p>		

**Table 1: Management in the comprehensive geriatric assessment and care and the orthopaedic care groups**

# Comprehensive geriatric care for patients with hip fractures: a prospective, randomised, controlled trial



*Prestmo A, et al, Lancet 2015*

# Comprehensive geriatric care for patients with hip fractures: a prospective, randomised, controlled trial



Anders Prestmo\*, Gunhild Hagen\*, Olav Sletvold, Jorunn L Helbostad, Pernille Thingstad, Kristin Taraldsen, Stian Lydersen, Vidar Halsteinli, Turi Saltnes, Sarah E Lamb, Lars G Johnsen, Ingvild Saltvedt

**Interpretation** Immediate admission of patients aged 70 years or more with a hip fracture to comprehensive geriatric care in a dedicated ward improved mobility at 4 months, compared with the usual orthopaedic care. The results suggest that the treatment of older patients with hip fractures should be organised as orthogeriatric care.

# Fattori di rischio di underassessment

<b>Fattori di Rischio</b>	<b>Categoria di Rischio</b>	<b>Referenza</b>
Età	<b>&gt; 90 anni</b>	Neuner JM et al. J Am Geriatr Soc 2003
	<b>&gt; 85 anni</b>	McNally DN et al. Osteoporos Int 2007
Pregresse Fratture	Anamnesi Negativa	Neuner JM et al. J Am Geriatr Soc 2003 McNally DN et al. Osteoporos Int 2007
Stato Socioeconomico	<b>&lt; 18542 \$/anno</b>	McNally DN et al. Osteoporos Int 2007
Stato Funzionale	<b>Disabilità</b>	McNally DN et al. Osteoporos Int 2007
Stato Cognitivo	<b>Demenza</b>	McNally DN et al. Osteoporos Int 2007
Specializzazione Medica	Medicina Generale	Solomon DH et al. Osteoporos Int 2003
% Tempo Dedicato Clinica	< 50%	Solomon DH et al. Osteoporos Int 2003
Fiducia Terapie Osteoporosi	Scarsa	Solomon DH et al. Osteoporos Int 2003

**Il modello ortogeriatrico è più  
efficace del modello tradizionale**

# Can improved quality of care explain the success of orthogeriatric units? A population-based cohort study

- 11,461 hip fracture patients registered in the Danish Multidisciplinary Hip Fracture Registry with a discharge date between 1 March 2010 and 31 November 2011, excluding those with multiple fracture, errors, early transfers from orthop surgery
- **Orthopaedic care model:** the orthopaedic surgeon assumes principal care responsibility, while medical queries and complications are handled by medical service on the surgeon's demand.
- **Orthogeriatric unit** co-management with a geriatrician and an orthopaedic surgeon sharing responsibility and leadership from admission to discharge.

# Can improved quality of care explain the success of orthogeriatric units? A population-based cohort study

Table 3. 30-Day mortality by risk stratification according to unit setting

Tal		Patients, <i>n</i>	Dead (%)	OR (95% CI)	—
—					CI)
..					..
Ort	0–20% baseline outcome risk				
Ort	Orthopaedic unit	7,971	694 (8.71)	1 (reference)	
—	Orthogeriatric unit	1,671	112 (6.70)	0.75 (0.61–0.93)	—
<sup>a</sup> Ad					
<sup>b</sup> Ad	21–40% baseline outcome risk				nce
mea	Orthopaedic unit	1,311	358 (27.31)	1 (reference)	
<sup>c</sup> Bo	Orthogeriatric unit	291	62 (21.31)	0.72 (0.53–0.98)	
	>40% baseline outcome risk				
	Orthopaedic unit	172	85 (49.42)	1 (reference)	
	Orthogeriatric unit	45	14 (31.11)	0.46 (0.23–0.93)	

# Can improved quality of care explain the success of orthogeriatric units? A population-based cohort study

Table 1. The quality of care according to unit settings

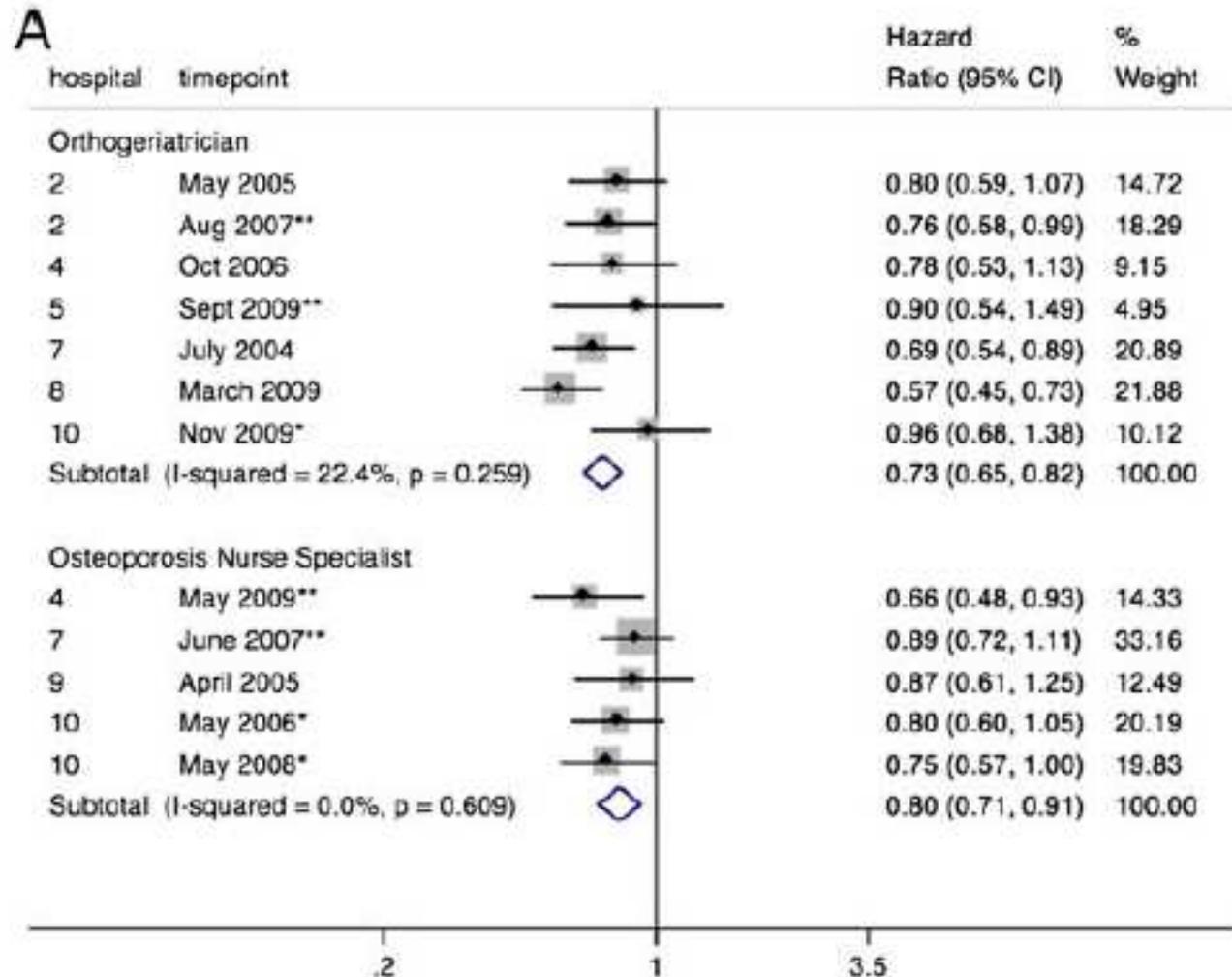
Process of care	Eligible patients, #	Process received, (%)	Unadjusted RR (95% CI)
Systematic pain assessment			
Orthopaedic unit	7,542	5,529 (73.3%)	1 (reference)
Orthogeriatric unit	1,416	1,171 (82.7%)	1.13 (1.10–1.16)
Mobilised <24 h postoperatively			
Orthopaedic unit	9,024	6,411 (71.0%)	1 (reference)
Orthogeriatric unit	1,955	1,396 (71.4%)	1.01 (0.97–1.04)
Basic mobility assessment			
Orthopaedic unit	9,454	7,743 (81.9%)	1 (reference)
Orthogeriatric unit	2,007	1,705 (85.0%)	1.04 (1.02–1.06)
Post discharge rehabilitation programme			
Orthopaedic unit	8,828	7,615 (86.3%)	1 (reference)
Orthogeriatric unit	1,882	1,738 (92.4%)	1.07 (1.05–1.09)
Anti-osteoporotic medication			
Orthopaedic unit	9,454	7,953 (84.1%)	1 (reference)
Orthogeriatric unit	2,007	1,750 (87.2%)	1.04 (1.02–1.06)
Prevention future fall accidents			
Orthopaedic unit	9,454	6,717 (71.1%)	1 (reference)
Orthogeriatric unit	2,007	1,635 (81.5%)	1.15 (1.12–1.18)

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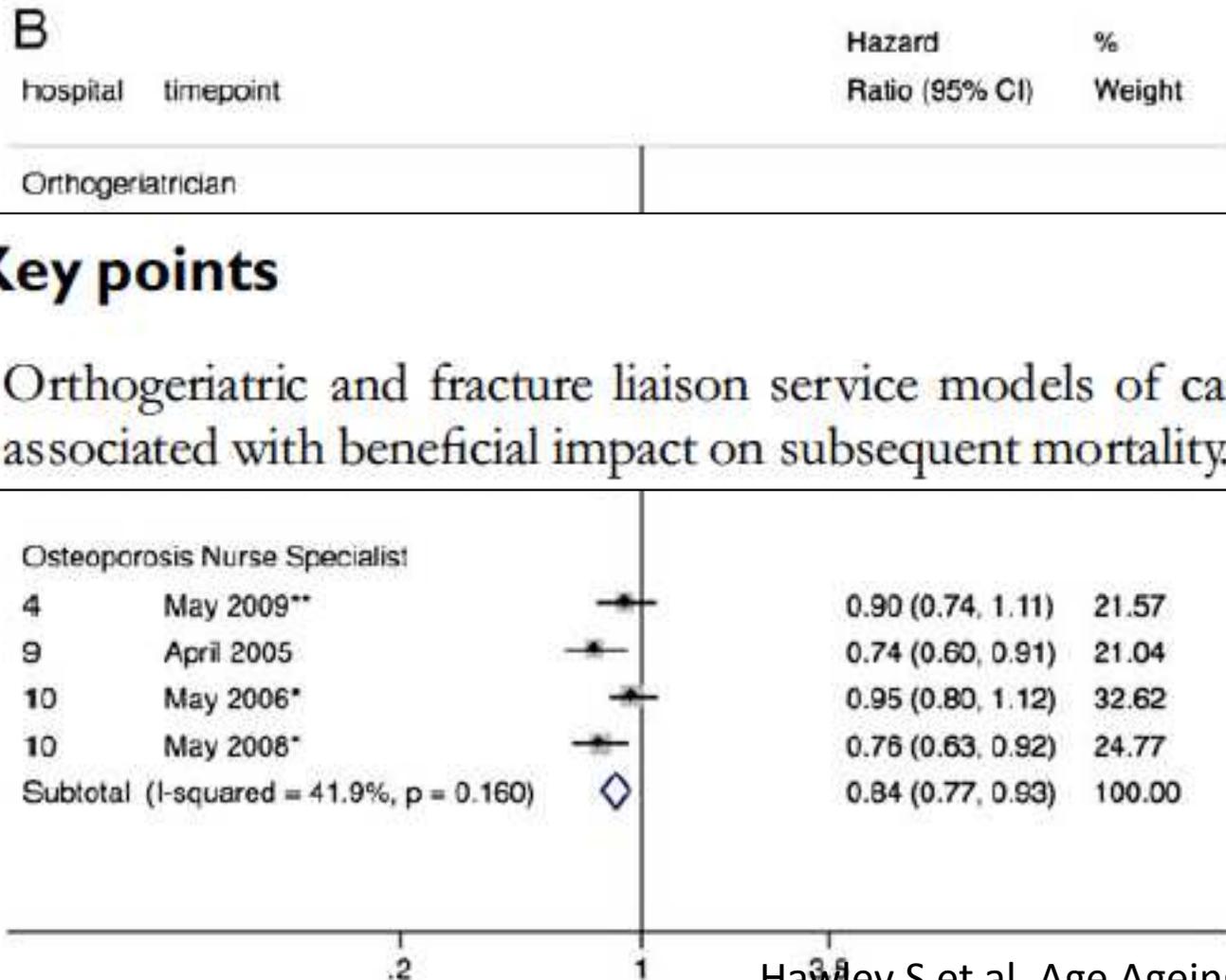
# **Clinical effectiveness of orthogeriatric and fracture liaison service models of care for hip fracture patients: population-based longitudinal study**

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NIGEL K. ARDEN<sup>1,2</sup>, CYRUS COOPER<sup>1,2</sup>, ANDREW JUDGE<sup>1,2</sup>, THE REFRESH STUDY GROUP

**Forest plots of HR for outcomes within each hospital comparing the time period after relative to the time period before orthogeriatric or FLS service model interventions for mortality at 30 d and 1 –year**



**Forest plots of HR for outcomes within each hospital comparing the time period after relative to the time period before orthogeriatric or FLS service model interventions for mortality at 30 d and 1 –year**



# La miglior gestione dei pazienti con frattura di femore è una gestione combinata ortopedico-geriatra

**BRITISH GERIATRIC SOCIETY**  
**BGS**  
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## Our historic alliance

with the world of orthopaedics

**T**he BGS has established an exciting new collaboration with the British Orthopaedic Association, with the shared aim of improving the clinical care of patients with fragility fractures and promoting effective secondary prevention to reduce future falls and fractures.

Sponsored by the BOA and BGS, it has also been endorsed by the Age Association, the National Osteoporosis Society, the Faculty of Public Health, the BGS, the Society for Gerontology, the Forum of the Royal Colleges of Surgeons and the Specialist Surgical Association of Great Britain and Ireland – a real demonstration of multidisciplinary commitment to improving hip fracture care. The Blue Book thus offers a foundation for joint making and clinical governance activities that can build on the success of our BGS/BOA national joint "Instructional Course" for trainees and consultants held in 2006 and 2007, with a third now planned for 2008 (see 1st Statement Fragility Fractures Course at [www.moh.nhs.uk/education](http://www.moh.nhs.uk/education)).

Central to the strategy are the two key initiatives, the Blue Book on the Care of Patients with Fragility Fractures and the National Hip Fracture Database, which were jointly launched with widespread TV, radio and press coverage on September 19th.

**Blue Book**  
 The second edition, totally rewritten and updated, replaces a 1st edition published several years ago and is now an authoritative evidence-based clinical practice guide for the multidisciplinary team, and includes a set of six specific clinical practice modules. Guest editors: Opinder Sahota, Anthony Johnson and Colin Gault, worked hand in hand with the Blue Book's multidisciplinary writing group, with Colin Gault as its editor. It can be downloaded as a pdf file from [www.bgs.co.uk](http://www.bgs.co.uk) or from [www.nhs.uk](http://www.nhs.uk).

**National Hip Fracture Database**  
 (NHFD, [www.nhfd.co.uk](http://www.nhfd.co.uk)) This joint BGS/BGS venture is entirely complementary to the Blue Book. It has involved the creation of an ongoing web-based database of key clinical, process and outcome indicators to monitor and improve the clinical care of hip fracture patients by enabling users to measure the care they provide against the standards set out in the Blue Book. It has been developed from several existing audits, including the Scottish Hip Fracture Audit, which has been established for several years and has now garnered the Scottish government's ongoing explicit

**for better health in old age**

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- I pazienti anziani sono fragili e hanno problemi clinici complessi. I bisogni di salute, cura e riabilitazione di queste persone sono corrisposti in modo adeguato allorquando un team ortogeriatrico – geriatra e ortopedico con interesse specifico nel campo delle fratture– è adeguatamente integrato e funzionante nel contesto di cure dell'ospedale.

# British Orthopaedic Association

PATRON: H.R.H. THE PRINCE OF WALES



## THE CARE OF PATIENTS WITH FRAGILITY FRACTURE

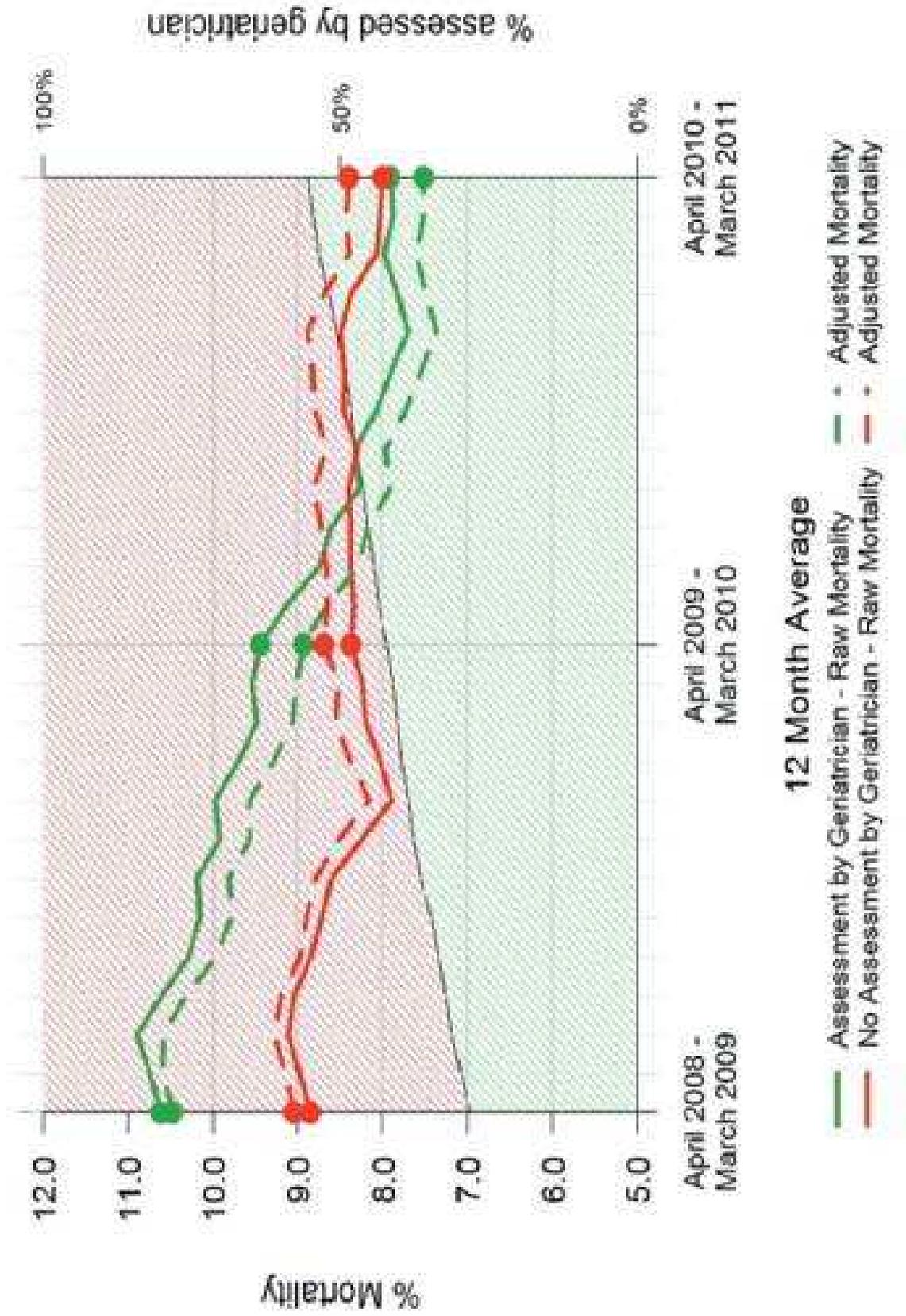
Published by the British Orthopaedic Association September 2007

# BOA-BGS Blue Book

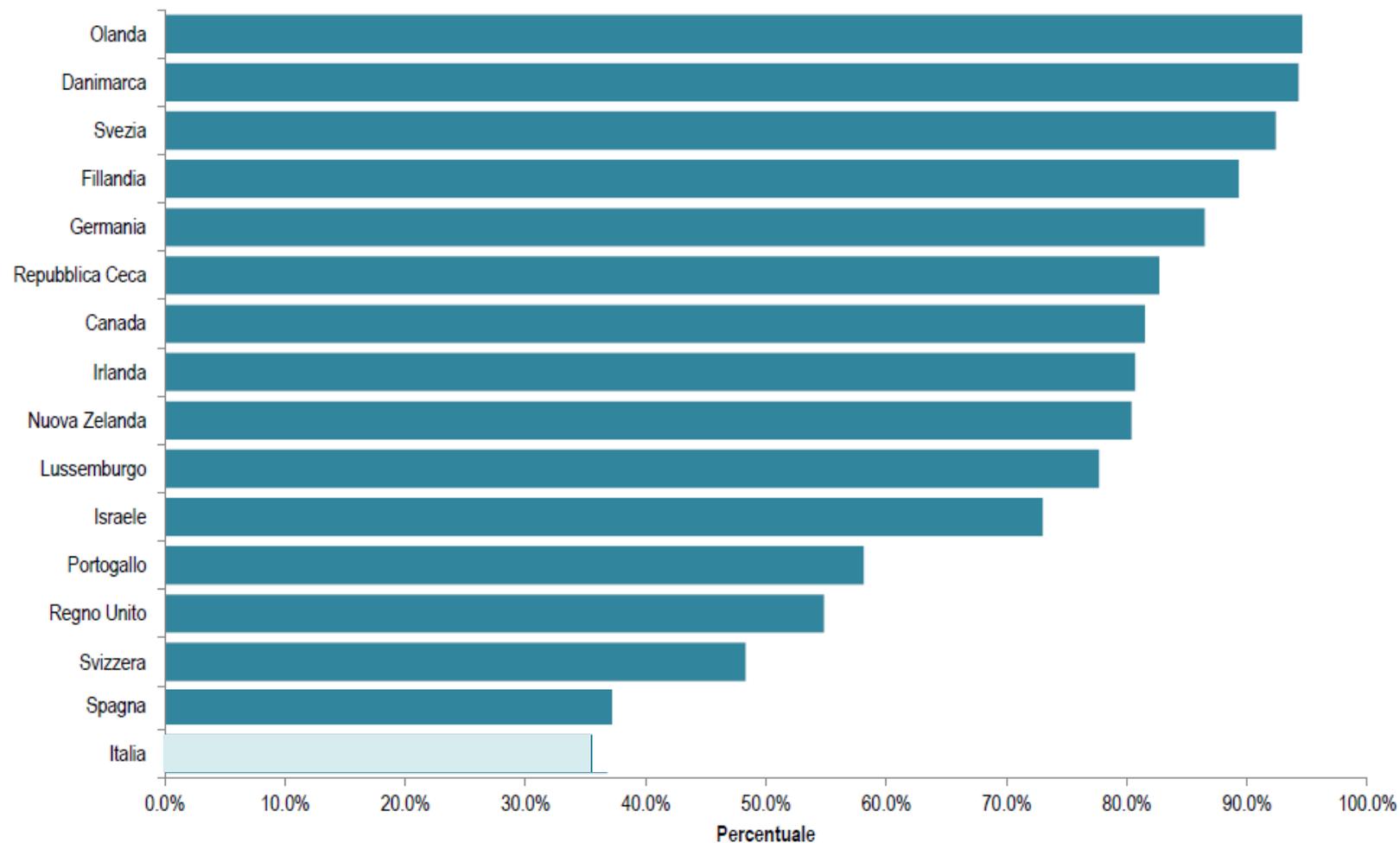
## six standards for hip fracture care

1. All patients with hip fracture should [redacted] to an acute orthopaedic ward [redacted] of presentation
2. All patients with hip fracture who are medically fit should have [redacted] of admission, during normal working hours
3. All patients with hip fracture should be assessed and cared for with a view to minimising their risk of developing a [redacted]
4. All patients presenting with a fragility fracture should be managed on an orthopaedic ward with routine access to [redacted] from the time of admission
5. All patients presenting with fragility fracture should be assessed to determine their need for [redacted] to prevent future osteoporotic fractures
6. All patients presenting with a fragility fracture following a fall should be offered multidisciplinary assessment and intervention to [redacted]

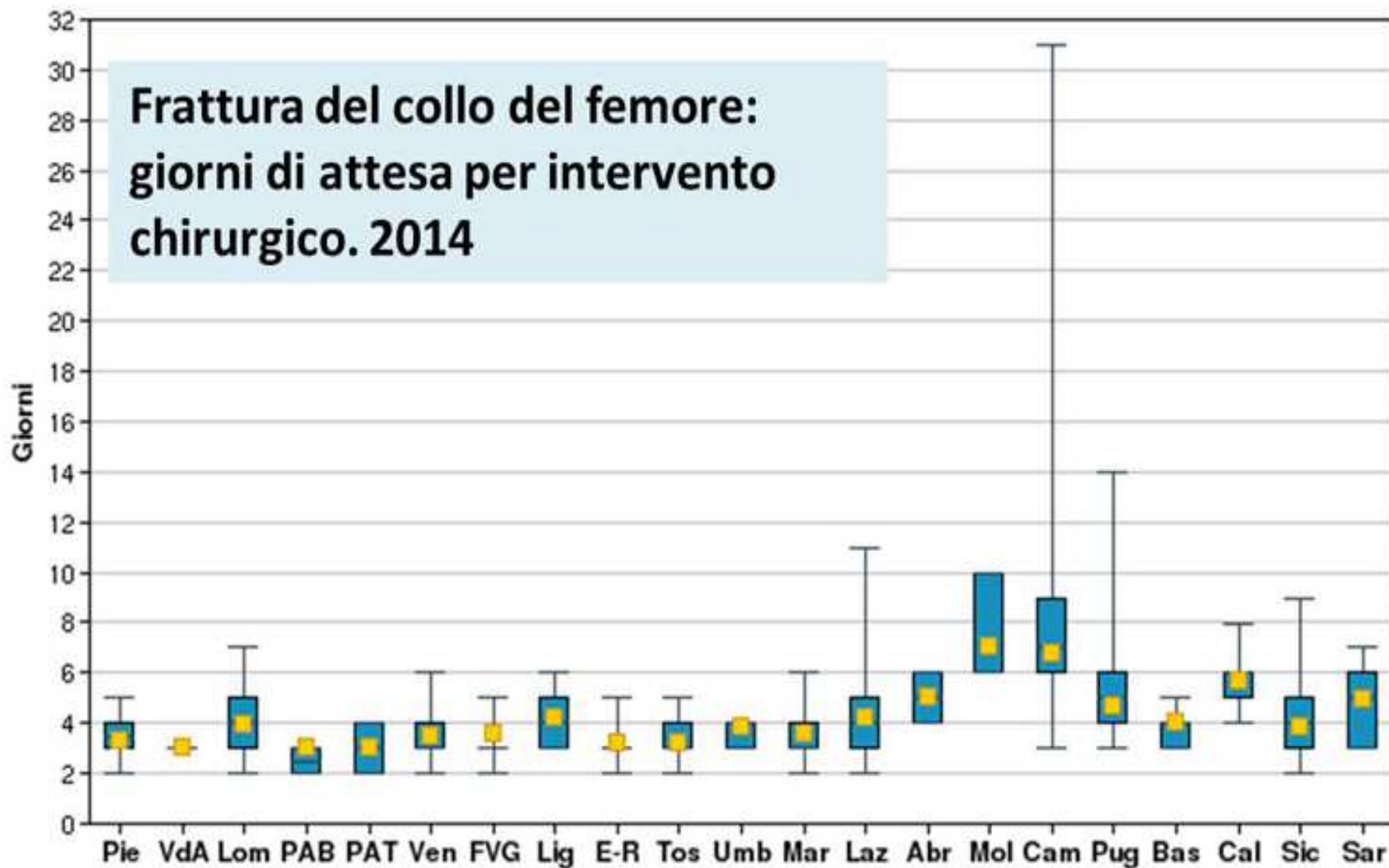
# Trend in 30 day mortality: April 2008 to March 2011

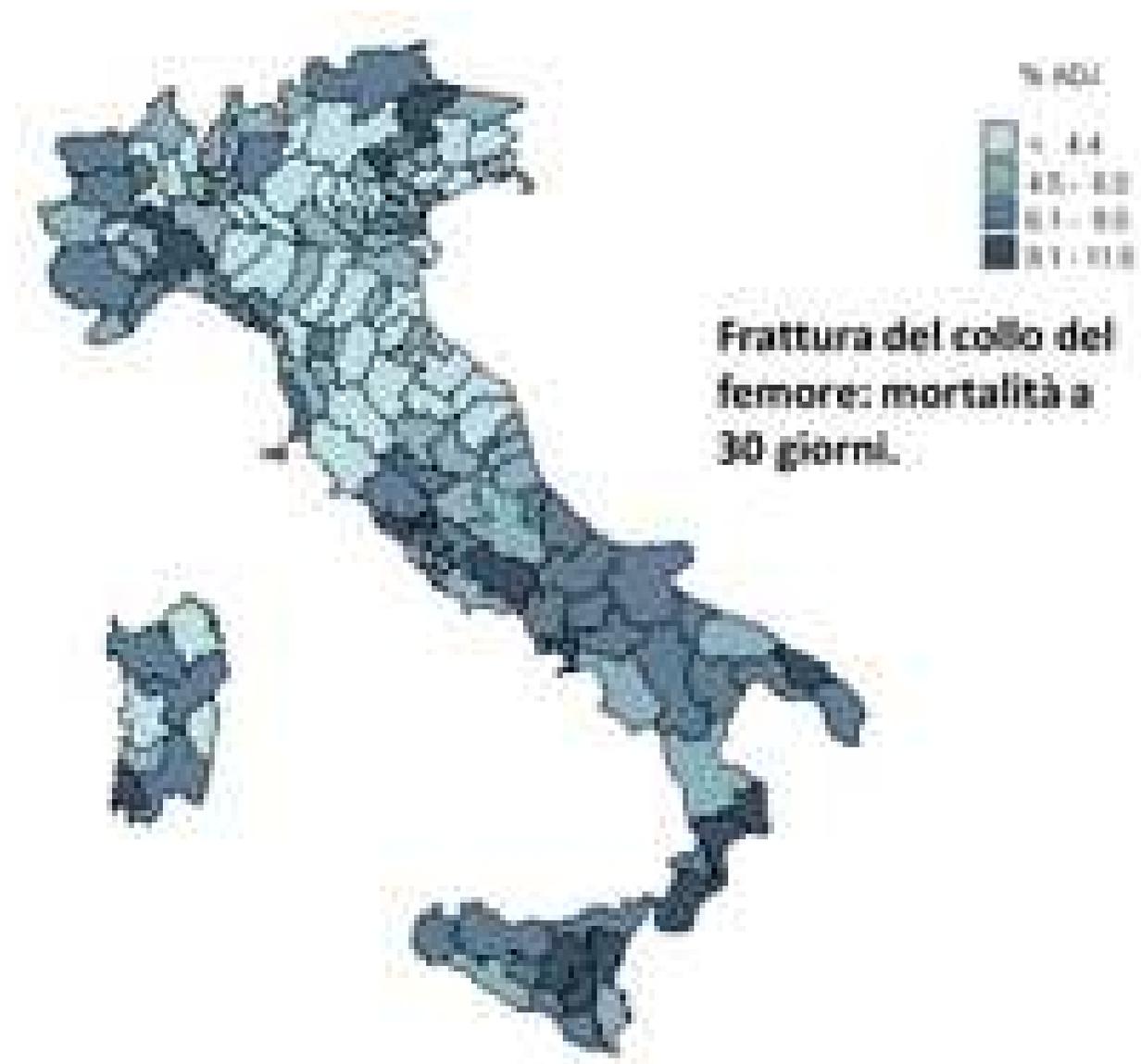


# Intervento chirurgico entro 48 ore, dati EU



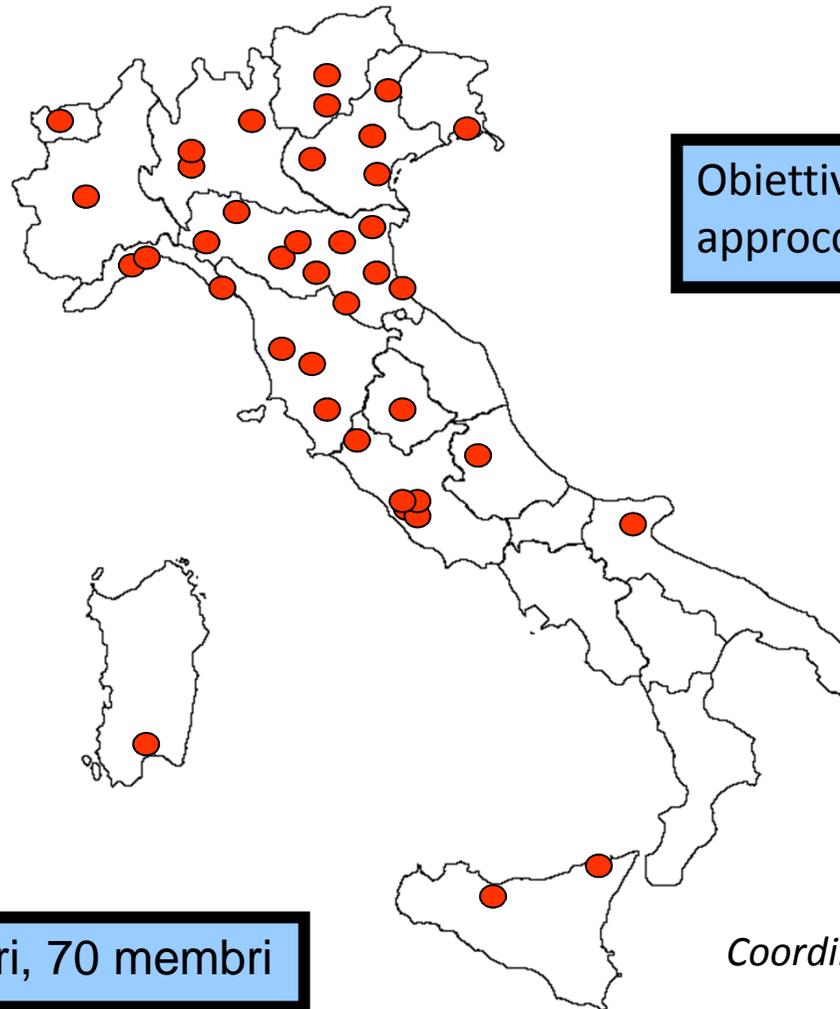
Fonte Ocse - Dati anno 2009





*Piano Nazionale Esiti, 2015*

# Il Gruppo Italiano di Ortogeriatria (GIOG)

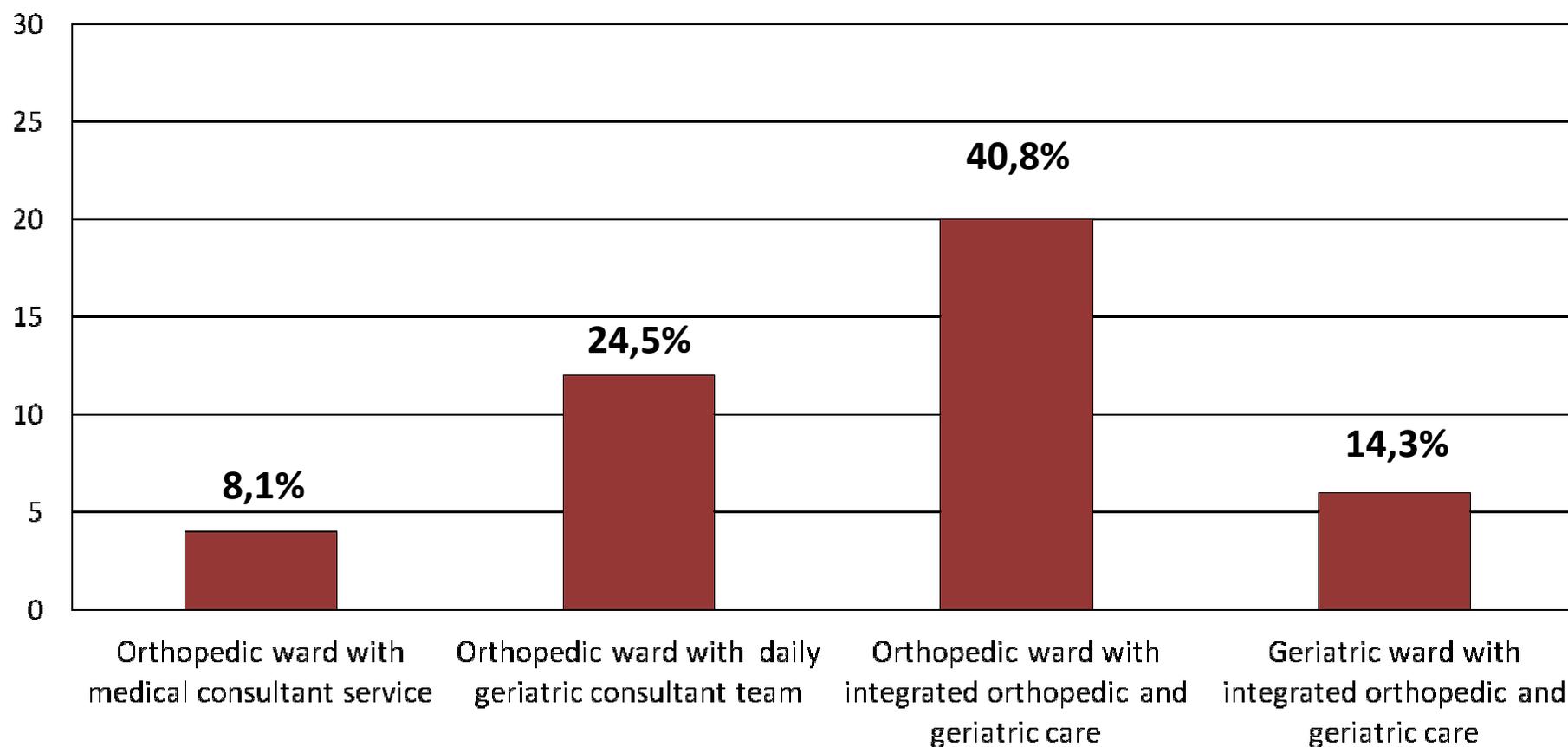


Obiettivo: promuovere un approccio ortogeriatrico in Italia

49 centri, 70 membri

Coordinatori: G. Bellelli and P. Falaschi

## Mapping of orthogeriatric model in Italy (49 center - April 2013)





# Italian Fragility Fracture Network: GIOG - Registro Frattura di Femore

Strumento di valutazione 1.0: scheda  
di raccolta dati



## FRAGILITY FRACTURE NETWORK: GRUPPO DEDICATO AL REGISTRO FRATTURA DI FEMORE

Benvenuto su **Giog**,  
inserisca l'username e la password che le sono state fornite.

### LOGIN

Username

Password

Accedi

<http://www.km-studio.net/clienti/giog/form/?page=1>

# Indicatori

- Socio demografici
- Deambulazione pre-frattura
- Cognitività (SPSMQ)
- ASA score
- Tipo frattura
- Terapia osteometabolica pre-frattura
- Data e ora arrivo in PS/ Data e ora intervento chirurgico
- Tipo anestesia/ Tipo intervento chirurgico
- Concessione carico

# Indicatori

- Coinvolgimento geriatra (timing e tipo collaborazione)
- Marcatori complessità 1° giornata (delirium, deambulazione attiva, supplementazione proteica, catetere vescicale)
- Marcatori complessità osservati nel corso della degenza (ulcere da pressione, emotrasfusioni)
- Dimissione (data e ora/setting/decesso)
- Terapia osteometabolica prescritta
- Follow-up a 30 e 120 giorni (decesso- reintervento- EQ5D)

# Conclusioni

- Il paziente con frattura di femore è gravato tipicamente da un'elevata comorbilità e da deficit psicocognitivi che richiedono un approccio psicogeriatrico;
- nell'ambito della valutazione psicogeriatrica si devono tenere presente anche aspetti di management farmacologico che potrebbero impattare sulla salute a lungo termine
- La realizzazione di un registro su base nazionale consentirà di monitorare comportamenti prescrittivi e gestionali dei singoli centri, favorire un benchmarking su base nazionale e innescare in questo modo il miglioramento della qualità delle cure all'interno di ogni singola organizzazione
- Il registro potrà avere operatività anche su base regionale/nazionale