CONGRESSO NAZIONALE
SOCIETÀ ITALIANA DI GERONTOLOGIA E GERIATRIA
21-24 Novembre 2012

Ottimizzare la gestione della complessità clinica perioperatoria del paziente anziano con frattura di femore

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ASMN-IRCCS Reggio Emilia

Perioperative Key points in orthogeriatric care

- ✓Choosing Surgery
- ✓Rapid assessment
- ✓Rapid optimization
- ✓Early surgery
- ✓Immediate mobilization
- ✓Avoiding the pitfalls of hospitalization
- ✓Protocol driven care
- ✓Rehabilitation and timely discharge to appropriate level of care

Standard della fase perioperatroia

Conservative therapy <4%.
Scottish Hip Fracture Audit 2004

80% entro 48 ore
Ministero della salute

98% of all hip fracture patients are to be operated on within 24 hours of admission to an orthopaedic unit.
Scottish Hip Fracture Audit 2008

BRITISH ORTHOPAEDIC ASSOCIATION - STANDARDS for TRAUMA

HIP FRACTURE

Standards for Practice

1. Secondary prevention, anti-resorptive therapy for osteoporosis and falls assessments are effective in reducing further fragility fractures and must be an integral part of the fracture care.
2. Hip fractures should be managed by a multidisciplinary team including orthogeriatricians, orthopaedic surgeons, anaesthetists, nursing and allied health professionals with expertise appropriate for these frail patients.
3. Patients who cannot weight-bear and who may have a hip fracture should be offered magnetic resonance imaging (MRI) if anteroposterior pelvis and lateral hip X-rays are negative; if MRI is not available within 24 hours or is contraindicated, consider computed tomography.
4. Assess the patient's pain and offer immediate analgesia on presentation at hospital and regularly as part of routine nursing observations throughout admission, including patients with cognitive impairment. Ensure analgesia is sufficient to allow movements necessary for investigations and for nursing care and rehabilitation.
5. Identify and treat correctable co-morbidities immediately so that surgery is not delayed. Intravenous fluids should be administered and appropriate blood tests undertaken. Preoperative assessment should follow local protocols including for those presenting on anticoagulants.
6. Perform hip fracture surgery on the day of, or the day after, admission on a planned trauma list. Consultants or senior staff should supervise trainee and junior members of the anaesthesia, surgical and theatre teams when they carry out hip fracture procedures.
7. Operate on patients with the aim to allow them to fully weight bear (without restriction) in the immediate postoperative period. Offer patients' mobilisation with a physiotherapist at least once a day and assessment on the day after surgery.
8. From admission, offer patients a formal, acute, orthogeriatric or orthopaedic ward-based Hip Fracture Programme that includes orthogeriatric assessment, rapid optimisation of fitness for surgery, early identification of individual goals for multidisciplinary rehabilitation to recover mobility and independence, and to facilitate return to pre-fracture residence and long-term wellbeing.
9. Assess patient's risk of delirium and dementia by actively looking for cognitive impairment when patients first present with hip fracture and perform regular re-assessment.
10. If a hip fracture complicates or precipitates a terminal illness, the multidisciplinary team should still consider the role of surgery as part of the palliative care.
11. Patients should be assessed and treated for their risk of venous thromboembolism and pressure sores.
12. Offer patients (or, as appropriate, their carer and/or family) verbal and printed information about treatment, care and rehabilitation.
13. Each hospital should submit data to the National Hip Fracture Database to monitor its performance against national benchmarks and quality standards.

BOAST 1 Version 2

January 2012

BRITISH GERIATRICS SOCIETY

Cause di ritardo operatorio maggiore di 24-48 ore

Cause mediche

- Instabilità clinica
- Esecuzione di indagini diagnostiche
- Uso di anticoagulanti e antiaggreganti

Cause organizzative

- Assenza di sale operatorie disponibili
- Assenza di staff disponibile (chirurghi, anestesisti, altro)
- Programmazione settimanale che esclude il week end
- Altre (non disponibilità di sangue, mancanza del consenso etc)

Cause di ritardo operatorio – INSTABILITÀ CLINICA

Situazione clinica all'ingresso

	McLaughlin, 2006*	Holt, 2010*
	571 pts	4284 pts
Minor abnormalities	34,3%	26,8%
Major abonormalities	22.6%	16,4%
Concerns		40,0%

Rischio di complicanze postoperatorie

	All Complications, 95% CI	Cardiopulmonary Complications, 95% CI
no abnormalities before surgery	Referent	Referent
minor abnormalities before surgery	0.70 (0.28 to 1.73)	0.80 (0.27 to 2.33)
major abnormalities before surgery	2.82 (1.38 to 5.79)	2.61 (1.11 to 6.12)

* McLaughlin, et al J Gen Intern Med 2006; 21:219–225.
Holt et al . J Bone Joint Surg [Br] 2010;92-B:835-41.

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Rischio di complicanze postoperatorie

	All Complications, 95% CI	Cardiopulmonary Complications, 95% CI
no abnormalities on admission and prior to surgery	Referent	Referent
major abnormalities on admission but none or minor abnormalities only prior to surgery	0.82 (0.24 to 2.74)	0.87 (0.21 to 3.60)
no or minor abnormalities on admission but major abnormalities prior to surgery	3.28 (0.55 to 19.54	6.09 (0.97 to 38.17)
major abnormalities on admission and major abnormalities prior to surgery	2.79z (1.22 to 6.37)	2.32 (0.85 to 6.34)

* McLaughlin, et al J Gen Intern Med 2006; 21:219–225.
Holt et al . J Bone Joint Surg [Br] 2010;92-B:835-41.

Cause di ritardo operatorio – INSTABILITÀ CLINICA

	major	minor
Blood pressure (BP, mmHg)	Systolic BP ≤ 90	Systolic BP ≥ 181 Diastolic BP ≥ 111
Rate and rhythm	Pulse ≤ 45 beats per minute Pulse ≥ 121 (AF/flutter/SVT) Complete heart block ; Ventricular tachycardia	Pulse 46 to 50 bpm Pulse ≥ 121 (sinus tachycardia) Pulse 101 to 120 (AF/SVT)
Infection/ pneumonia	Temp < 35°C; Infection on CXR and temp ≥ 38.5°C	Temp ≥ 38.5°C, but no documented pneumonia; Infection on CXR but temp <38,5°C
Chest pain	Evidence of new myocardial infarction Angina with ST depression or elevation	Angina ± ischaemia or other concerns on ECG or otherwise (rhythm, ectopics, pacemaker)
Congestive heart failure (CHF)	Pulmonary oedema on CXR CHF on CXR with abnormal exam and/or dyspnea	Dyspnea or pulmonary rales or S3 but a normal CXR; CHF on CXR with a normal exam and no dyspnea
Respiratory failure	O2 SAT < 90% ; pO2 < 60 mm Hg pCO2 ≥ 55 mm Hg	pCO2 46 to 55 mm Hg
Electrolytes	Na ≤ 125 or > 155 mEq/l K ≤ 2.5 or ≥ 6.1 mEq/l HCO3 < 18 or > 36 mEq/l	Na 126 to 128 or 151 to 155 mEq/l K 2.5 to 2.9 or 5.6 to 6.0 mEq/l HCO3 18 to 19 or 35 to 36 mEq/l
Glucose	> 600 mg/dl	451/600 mg /dl
Urea/creatinine	Urea > 50 mg/dl ; Creatinine ≥ 2,6 mg/dl	Urea 41-50 mg/dl ; Creatinine 2,1-2,6 mg/dl
Anaemia	Hb ≤ 7.5 g/dl	Hb 7.6 to 8.0 g/dl

Cause di ritardo operatorio – INSTABILITÀ CLINICA

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Sopravvivenza a 30 giorni

	Improvement to basic model when postponement / resolution variable is included	Odds ratio, 95% CI
Not postponed	Base	Base
Postponed Resolved	p = 0.10	1.69 (0.90 to 3.19)
Postponed Not resolved	p = 0.006	0.44 (0.24 to 0.79)

* McLaughlin, et al J Gen Intern Med 2006; 21:219–225.
Holt et al . J Bone Joint Surg [Br] 2010;92-B:835-41.

Cause di ritardo operatorio – INSTABILITÀ CLINICA

Recommendation	Perform surgery on the day of, or the day after, admission.
Recommendation	Identify and treat correctable comorbidities immediately so that surgery is not delayed by: • anaemia • anticoagulation • volume depletion • electrolyte imbalance • uncontrolled diabetes • uncontrolled heart failure • correctable cardiac arrhythmia or ischaemia • acute chest infection • exacerbation of chronic chest conditions.

NHS
National Institute for Clinical Excellence

Hip fracture
The management of hip fracture in adults 2011

Scottish Intercollegiate Guidelines Network
56
Prevention and Management of Hip Fracture in Older People
A national clinical guideline

chasing unrealistic goal should not lead to delay

Cause di ritardo operatorio - INDAGINI DIAGNOSTICHE

Eseguire tutti gli accertamenti che garantiscano l'assenza di patologie instabili

Beneficio > rischio

Ridurre i tempi preoperatori entro le 24 ore

ACC/AHA 2007 Guidelines on Perioperative Cardiovascular Evaluation and Care for Noncardiac Surgery

A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Writing Committee to Revise the 2002 Guidelines on Perioperative Cardiovascular Evaluation for Noncardiac Surgery)

Developed in Collaboration With the American Society of Echocardiography, American Society of Nuclear Cardiology, Heart Rhythm Society, Society of Cardiovascular Anesthesiologists, Society for Cardiovascular Angiography and Interventions, Society for Vascular Medicine and Biology, and Society for Vascular Surgery

Table 2. Active Cardiac Conditions for Which the Patient Should Undergo Evaluation and Treatment Before Noncardiac Surgery (Class I, Level of Evidence: B)

Condition	Examples
Severe valvular disease	Severe aortic stenosis (mean pressure gradient greater than 40 mm Hg, aortic valve area less than 1.0 cm^2, or symptomatic)
	Symptomatic mitral stenosis (progressive dyspnea on exertion, exertional presyncope, or HF)
Unstable coronary syndromes	Unstable or severe angina* (CCS class III or IV)†
	Recent MI‡
Decompensated HF (NYHA functional class IV; worsening or new-onset HF)	
Significant arrhythmias	High-grade atrioventricular block
	Mobitz II atrioventricular block
	Third-degree atrioventricular heart block
	Symptomatic ventricular arrhythmias
	Supraventricular arrhythmias (including atrial fibrillation) with uncontrolled ventricular rate (HR greater than 100 bpm at rest)
	Symptomatic bradycardia
	Newly recognized ventricular tachycardia

Cause di ritardo operatorio - INDAGINI DIAGNOSTICHE

Eseguire tutti gli accertamenti che garantiscano l'assenza di patologie instabili

Beneficio > rischio

Ridurre i tempi preoperatori entro le 24 ore

THE ASSOCIATION OF ANAESTHETISTS of Great Britain & Ireland

Management of proximal femoral fractures 2011
Association of Anaesthetists of Great Britain and Ireland

Indicazioni all'ecocardiografia

- Soffi sistolico in sede aortica soprattutto sospetto per stenosi aortica (storia di angina da sforzo, sincopi, lento incremento del polso, assenza del secondo tono, ipertrofia ventricolare sin all'ECG senza ipertensione) e non precedentemente indagati (stenosi aortica è una importante causa di mortalità legata al'anestesia)
- Stabilire la funzione ventricolare sinistra in pazienti con dispnea a riposo o minimo sforzo

Impianto di defibrillatore o pacemaker temporaneo in caso di aritmia a rischio di morte improvvisa

Cause di ritardo operatorio – INDAGINI DIAGNOSTICHE

Impatto delle indagini diagnostiche cardiologiche preopeoratroie sul management del paziente

	No soggetti	Gruppo esaminato	Conseguenze dell'indagine	Impatto sugli outcome
Jettoo, 2011	349	29 (8%)	Nessuna variazione	Ritardo operatorio (2.7 vs 1.1 gg). no differenze mortalità
O'hEireamhoin 2011		49*	Variazioni farmacologiche e maggiore percentuale di monitaraggio invasivo	Ritardo operatorio (3.3 vs 1.5 gg). Aumento della degenza
Cluett, 2009	108	22 (20%)	Nessuna variazione (indicazioni postoperatorie)	Ritardo operatorio (4.0 vs 1.4 gg). Ritardo nel cammino e maggiori complicanze
Ricci, 2007	235	35 (15%)	Nessuna variazione (a parte farmacologiche)	Ritardo operatorio (3.3 vs 1.9 gg).

* vs gruppo di controllo random

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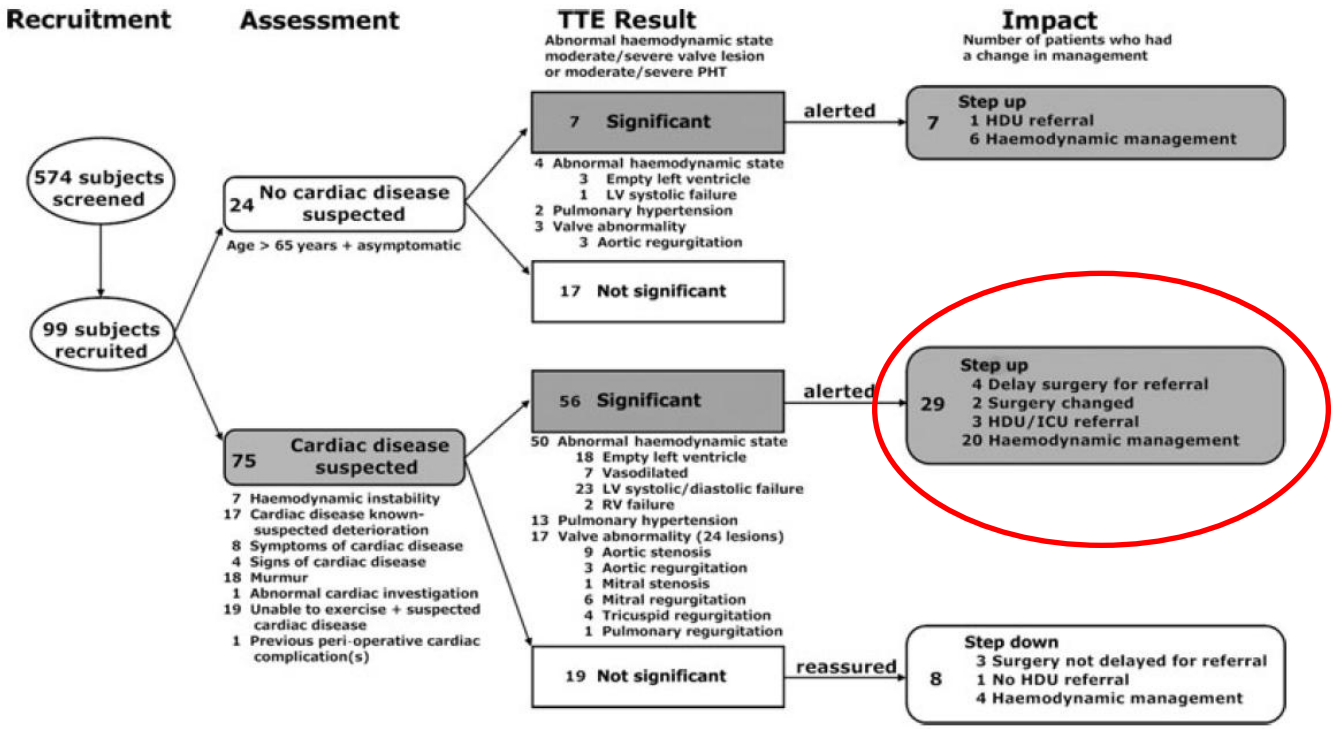
L'attesa dell'ecocardiografia non è una causa accettabile di ritardo.
Procedere all'intervento modificando la tecnica anestesiologica verso l'anestesia generale con monitoraggio pressorio invasivo e l'indicazione ad eseguire una ecocardiografia nell'immediato postoperatorio.

Cause di ritardo operatorio – INDAGINI DIAGNOSTICHE

bedside echocardiography examination on all patients (374) admitted with a hip fracture.

	No abnormality	Mild stenosis or sclerosis	Moderate stenosis	Severe stenosis	Other lesion
Murmur heard (n = 96)	30 (31%)	35 (36%)	16 (17%)	7 (7%)	8 (8%)
No murmur heard (n = 278%)	175 (63%)	78 (28%)	8 (3%)	1 (0.5%)	16 (6%)

Loxdale et al .Anaesthesia, 2012



36% variazione del management chirurgico od anestesiologico a seguito dei risultati dell'ecocrardiografia

Canty et al .Anaesthesia, 2012

Cause di ritardo operatorio – INDAGINI DIAGNOSTICHE

Pre-operative echocardiography for hip fractures: time to make it a standard of care

Heyburn et al .Anaesthesia, 2012

Un'ecocardiografia preoperatoria potrebbe essere vantaggiosa per tutti i pazienti a rischio cardiologico per storia precedente o per riscontro di nuovi segni o sintomi, al fine di orientare le pratiche anestesiologiche e gestire i rischi di complicanze nel post-opertorio ma deve essere eseguita in tempi rapidi, senza ritardo operatorio ed a costi accettabili …

Barriers to Implementation of an Organized Geriatric Fracture Program

Kates et al . Geriatric Orthopaedic Surgery & Rehabilitation, 2012

L'anestesista deve sentirsi partner del percorso del paziente. E' importante che gli obiettivi vengano condivisi da parte di anestesisti, ortopedici e geriatri e si comprenda l'importanza dell'urgenza chirurgica per ridurre i rischi perioperatori. La letteratura sul ruolo del timing dell'intervento deve essere discussa con gli anestesisti.

Cause di ritardo operatorio – ANTICOAGULANTE

In linea generale I valori di INR che consentono l'intervento chirurgico dovrebbero essere < 2 e quelli che consentono l'anestesia spinale < 1.5

Konakion fl = 1 ml = 10 mg
Konakion sol = 1 gtt = 1 mg

Indicazioni pratiche

- Ricoagulazione con piccole dose di vitamina K (1-2,5 mg) per via orale o e.v. (efficace generalmente in 12-24 ore in ¾ dei soggetti, dose aggiuntiva nei restanti)
- Bridge con EBPM quando INR è < di 2
- Concentrati di protrombina hanno un effetto di ricoagulazione rapida ma sono costosi e generalmente non indicati
- Warfarin può essere ripreso 24 ore dopo l'intervento (in alcuni studi viene ripreso lo stesso giorno dell'intervento)

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Sono indicate la sospensione del warfarin e la somministrazione di vitamina K per consentire l'intervento chirurgico precoce

Cause di ritardo operatorio – ANTIAGGREGANTE

Indicazioni pratiche

- Aspirina può essere sospesa nel momento del ricovero a meno che l'indicazione sia angina instabile o recente/ricorrente TIA
- Il clopidogrel generalmente non deve essere sospeso soprattutto nei pazienti con stent coronarico medicato
- L'anestesia spinale o epidurale non è controindicata in caso di terapia con aspirina mentre non è consigliabile in caso di doppia antiaggregazione o clopidogrel (preferibile l'anestesia generale o in alternativa l'uso di tecniche anestesiologiche periferiche, come il blocco continuo del plesso lombare).
- Piastrine possono essere trasfuse in caso di eccesivo sanguinamento durante l'intervento (raramente indicate)

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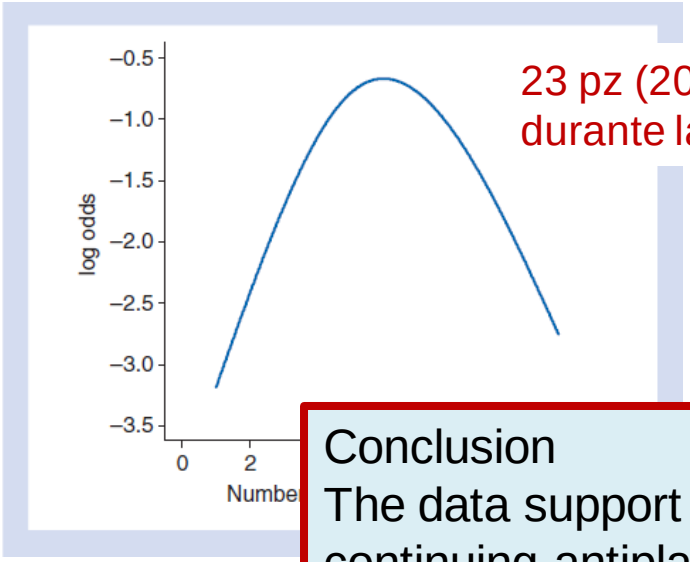
L'intervento chirurgico non deve essere ritardato a causa del trattamento antiaggregante sebbene un perdita ematica leggermente maggiore possa avvenire

Perioperative management of clopidogrel therapy

Studio retrospettivo su 1381 pz con frattura di femore → 114 in terapia con clopidogrel



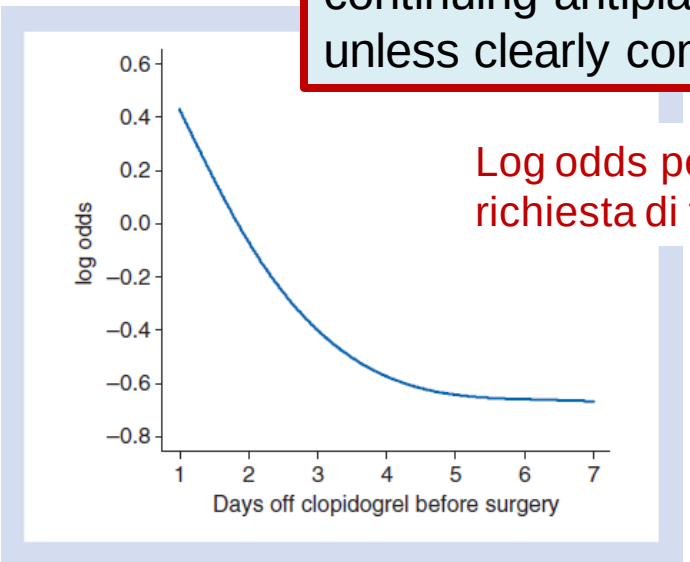
23 pz (20.2%) ACS durante la degenza

111 (98%) sospensione all'ingresso
ma durata variabile della sospensione

	Duration (days)
Duration withheld before surgery	2 (1–4)
Duration withheld after surgery	3 (1–8)
Total time withheld	7 (3–12)
Time from admission to surgery	2 (1–4)
Total length of hospital stay	18 (13–28)

	83.7 (60–98)
	36/78
	6 (5)
	70 (61)
IV	38 (33)
Anaesthetic technique	
General anaesthesia	21 (18)
General anaesthesia with regional nerve block	65 (57)
Spinal anaesthesia with or without sedation	25 (22)
Incidence of ACS	23 (20.2)
Total blood transfusions	
Number of patients	60 (52.6)
Total number of units [median (IQR)]	1 (0–2)

Conclusion
The data support a change in practice towards continuing antiplatelet therapy perioperatively, unless clearly contraindicated.



Log odds per la richiesta di trasfusioni

Collyer et al British Journal of Anaesthesia, 2011

Perioperative Key points in orthogeriatric care

Standard della fase perioperatroia

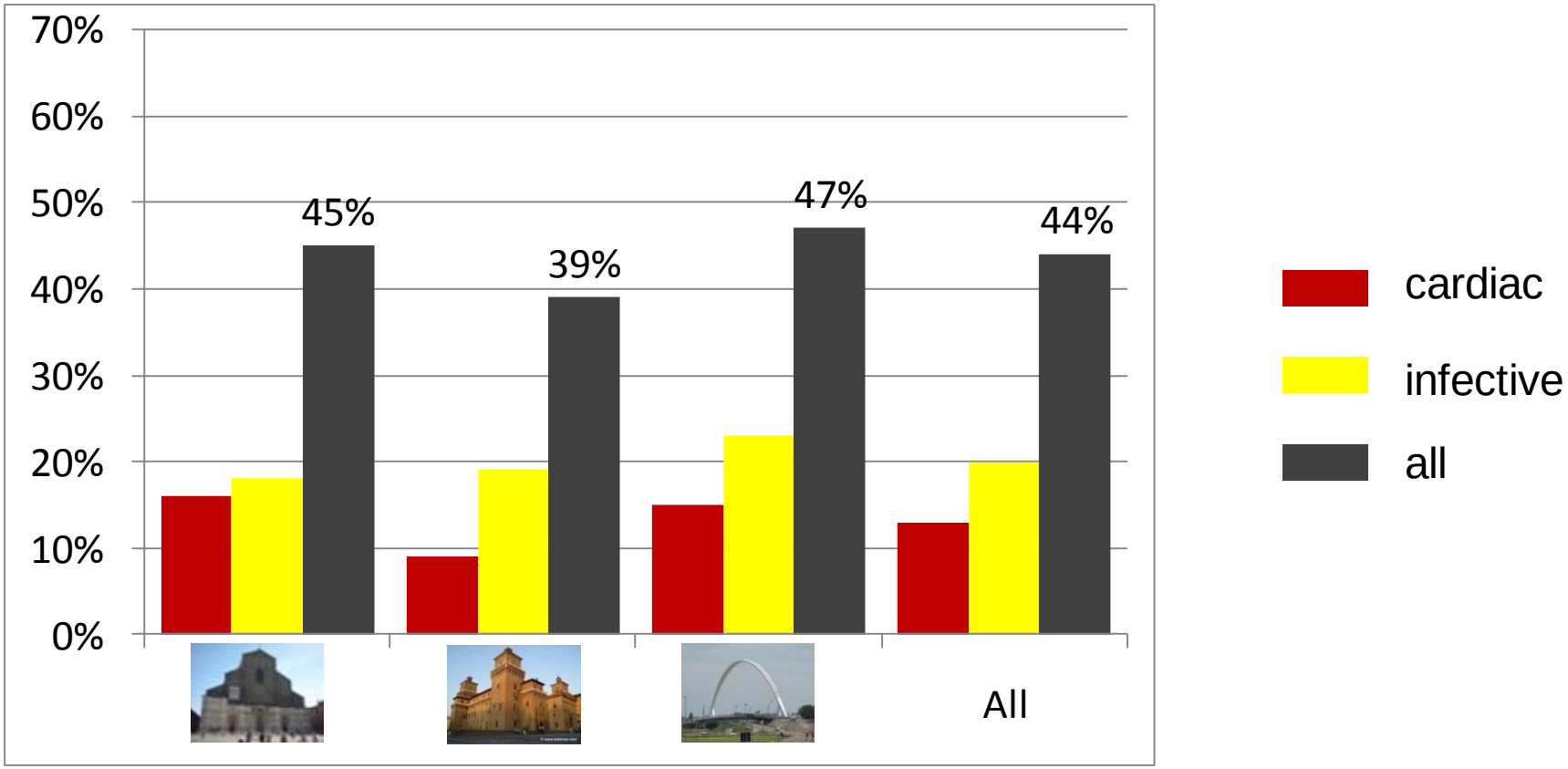
- ✓Choosing Surgery
- ✓Rapid assessment
- ✓Rapid optimization
- ✓Early surgery
- ✓Immediate mobilization
- ✓Avoiding the pitfalls of hospitalization
- ✓Protocol driven care
- ✓Rehabilitation and timely discharge to appropriate level of care

Operate on patients with the aim to allow them to fully weight bear (without restriction) in the immediate postoperative period. BOA 2012.

Multidisciplinary management from admission to all patients.
Scottish Hip Fracture Audit 2008
BOA 2012.

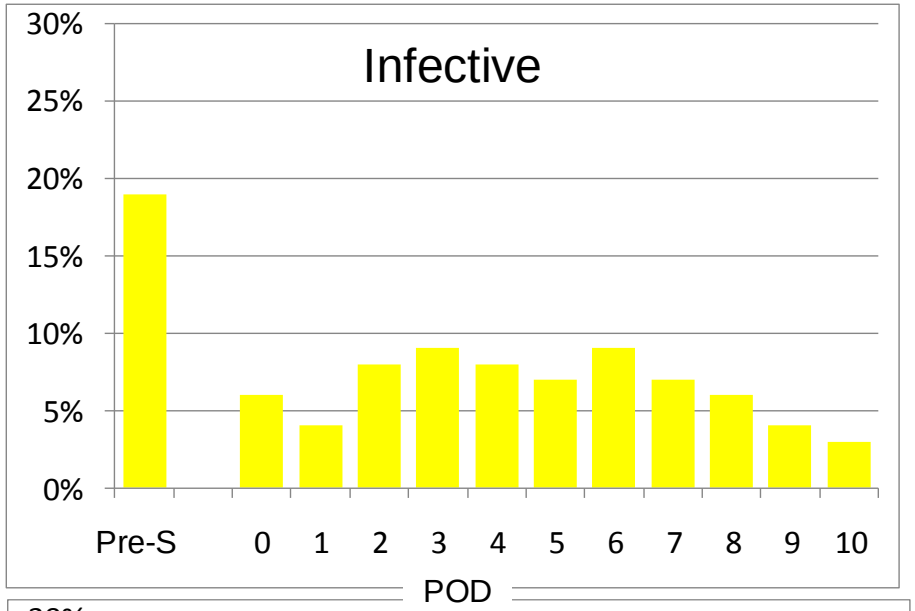
Medical complications during orthopedic stay

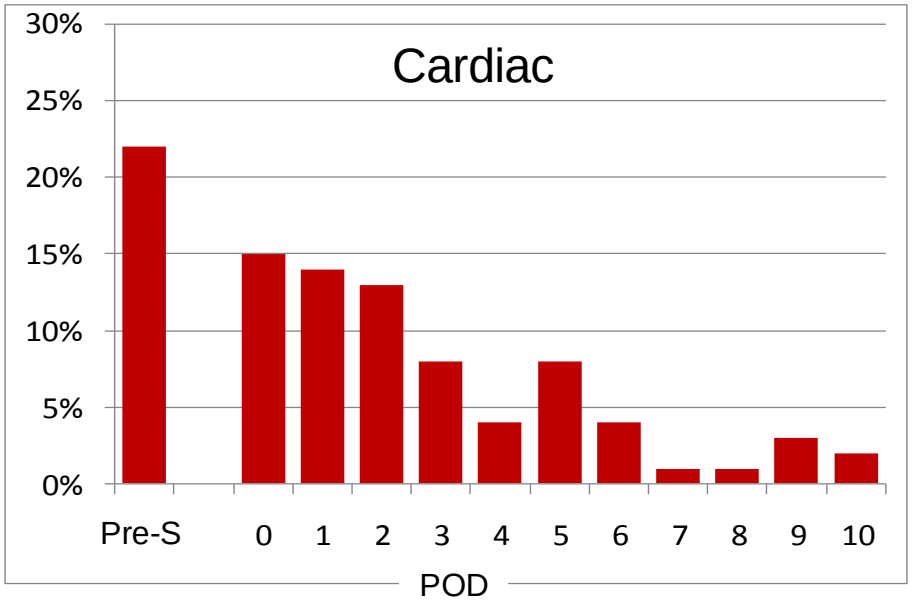
Ricerca multicentrica Regione Emilia Romagna
Prospective inception multicenter cohort study
806 pazienti, età media 86 anni (24% maschi)

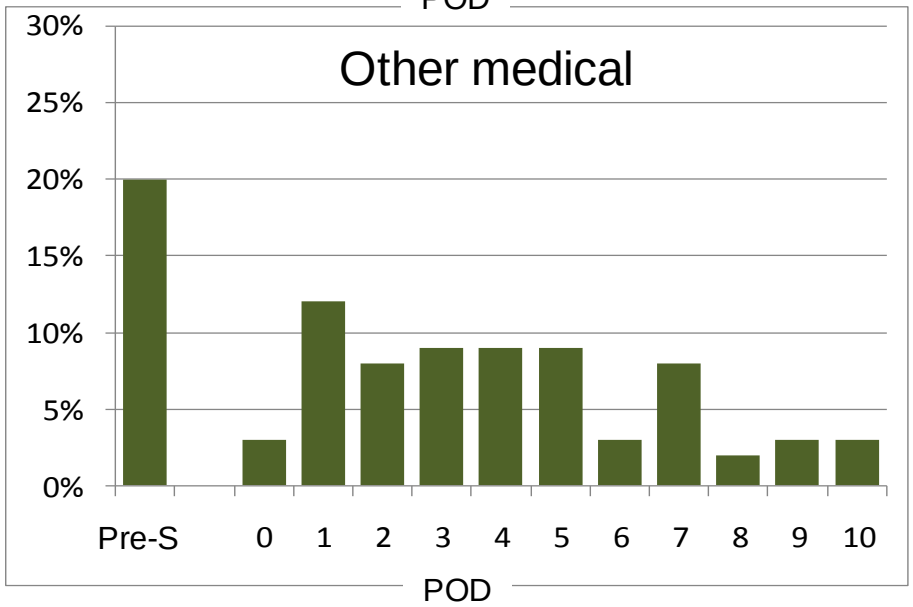


Lunardelli et al European Geriatric Congress 2011

Medical complications during orthopedic stay





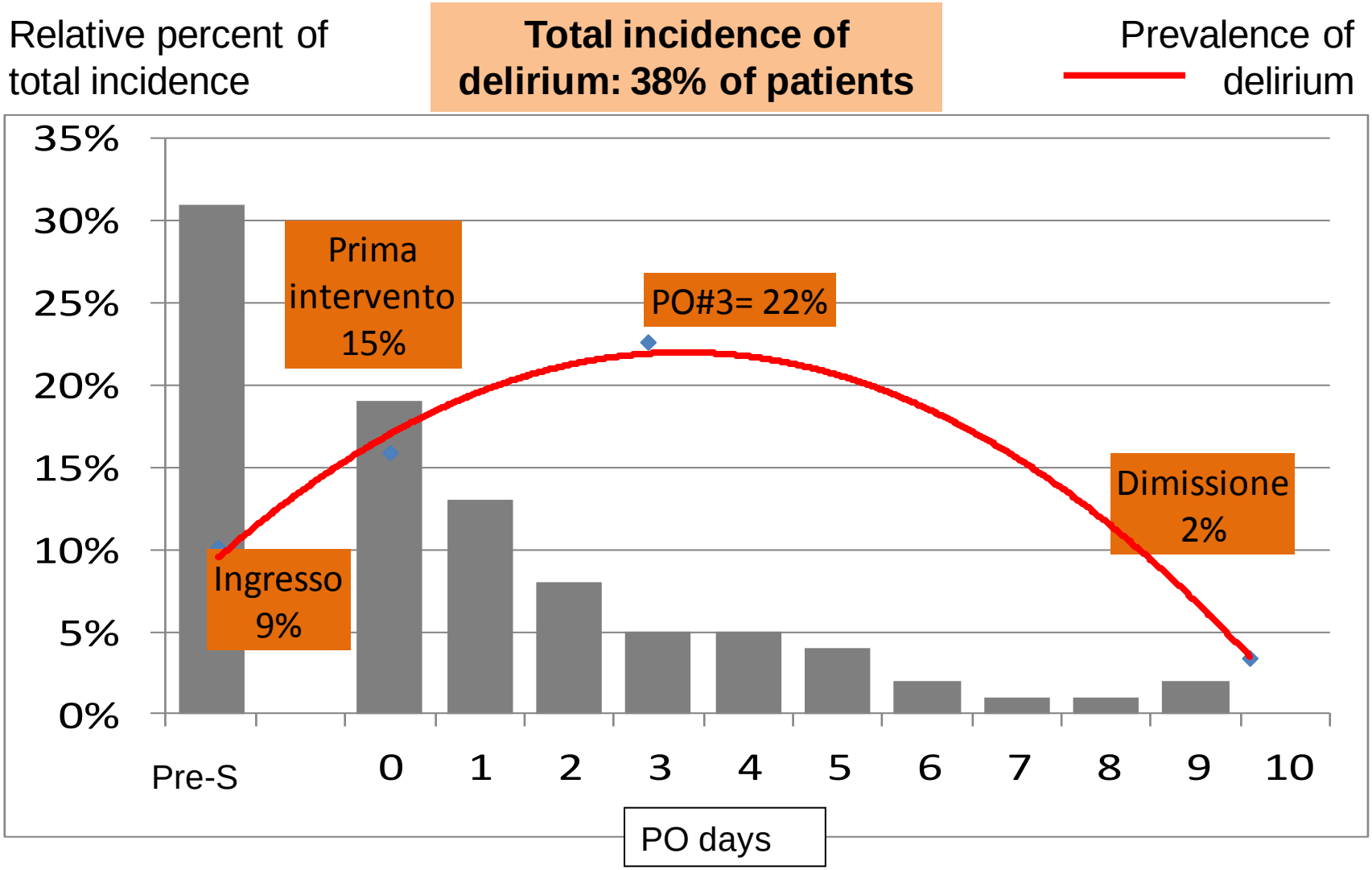


Distribution of complications during hospital stay
Relative percent of total incidence

Lunardelli et al European Geriatric Congress 2011

Complications during orthopedic stay - Delirium

Prospective inception multicenter cohort study: 806 patients, mean age 86 yrs, 24% male



Protocol driven care

	Development / feasibility	*Resources*	*Evidence*	*Implementation*
Antibiotics – prophylaxis against infections	*simple*	*low*	*established*	*widespread*
Thromboembolism prophylaxis	*simple*	*medium*	*established*	*widespread*
Hydration – fluid and electrolyte balance	*complex*	*low*	*few data*	*partially*
Supplementary oxygen	*simple*	*low*	*few data*	*partially*
Anaemia - blood transfusiom	*simple*	*medium*	*controverse*	*partially*
Pain relief	*complex*	*low*	*established*	*widespread*
Delirium	*complex*	*high*	*established*	*limited*
Constipation	*simple*	*low*	*few data*	*partially*
Incontinence – urinary catheterisation	*simple*	*Low / medium*	*few data*	*partially*
Beta blockers	*simple*	*low*	*controverse*	*limited*
Skin care	*simple*	*high*	*established*	*widespread*
Nutrition - Malnutrition	*complex*	*high*	*established*	*limited*
Early rehabilitation	*complex*	*medium*	*few data*	*partially*

Ortogeriatria

Cosa è

- Un complesso progetto di intervento multidisciplinare orientato ad incidere sugli outcome maggiori dei soggetti anziani fratturati
- Un intervento che cerca di mettere in atto tutte le strategia che hanno prove di efficacia sul miglioramento degli outcome (implica una revisione globale dell'approccio al paziente)
- Un investimento di risorse che deve essere attentamente monitorato e valutato nel tempo.

Cosa non è

- Una consulenza geriatrica per affrontare i problemi internistici dei soggetti anziani fratturati
- Un mezzo per migliorare il lavoro in ortopedia
- Un intervento a basso costo per ridurre le degenze e favorire la dimissione dei pazienti