Rehabilitation
- Reducing costs and hospital stay

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Consultant Physician
What factors affect outcome?

- Comorbidities
  - Cardiac
  - Respiratory
  - Neurological
  - Nutritional issues
  - Diabetes
  - Anaemia

- Functional status

Roche J J W et al. BMJ 2005;331:1374
### Comorbidities and complications

<table>
<thead>
<tr>
<th></th>
<th>30 day mortality</th>
<th>1 year mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>80-89</strong></td>
<td>1.3 (0.7 to 2.6)</td>
<td>2.0 (1.4 to 2.8)</td>
</tr>
<tr>
<td><strong>≥90</strong></td>
<td>1.5 (0.8 to 3.0)</td>
<td>2.8 (1.9 to 4.1)</td>
</tr>
<tr>
<td><strong>Comorbidities</strong></td>
<td></td>
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<tr>
<td>Cardiovascular</td>
<td>0.7 (0.5 to 0.9)</td>
<td>1.0 (0.8 to 1.2)</td>
</tr>
<tr>
<td>Respiratory disease</td>
<td>1.6 (1.1 to 2.2)*</td>
<td>1.4 (1.1 to 1.7)*</td>
</tr>
<tr>
<td>Renal disease</td>
<td>1.8 (1.01 to 3.2)*</td>
<td>1.6 (1.1 to 2.3)*</td>
</tr>
<tr>
<td>Diabetes</td>
<td>0.97 (0.6 to 1.5)</td>
<td>1.3 (1.0 to 1.6)*</td>
</tr>
<tr>
<td><strong>Postoperative complications</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chest infection</td>
<td>3.0 (2.1 to 4.2)**</td>
<td>2.4 (1.9 to 3.0)**</td>
</tr>
<tr>
<td>Cardiac failure</td>
<td>8.0 (5.5 to 11.6)**</td>
<td>5.0 (3.9 to 6.5)**</td>
</tr>
<tr>
<td>DVT/PE</td>
<td>4.5 (2.7 to 7.6)**</td>
<td>2.1 (1.4 to 3.1)*</td>
</tr>
<tr>
<td>Myocardial infarction</td>
<td>3.2 (1.6 to 6.5)*</td>
<td>2.4 (1.4 to 4.0)*</td>
</tr>
<tr>
<td>Deep wound infection</td>
<td>0 (0 to ∞)</td>
<td>1.1 (0.7 to 1.9)</td>
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Roche et al, BMJ 2005
• Identify and treat correctable comorbidities immediately so that surgery is not delayed
• Offer patients a physiotherapy assessment and, unless medically or surgically contraindicated, mobilisation on the day after surgery.
• Offer patients mobilisation at least once a day and ensure regular physiotherapy review.
Optimisation for theatre

- Coordination and liaison between family carers, anaesthetic, and orthopaedic teams
- Ensuring capacity and consent issues
- Advocate for patient
- As well as the medical optimisation
- Setting realistic expectations for patients and families
‘An age old problem’ – Key recommendations

• Clinical management
  – Formal nutritional assessment
  – Recognition of frailty, polypharmacy, cog impairment
  – Clear & specific guidance on recognition & tx of pain
  – AKI pre and post operatively

• Clinical pathways (BOA and BGS more specific guidance)
  – MCOP (daily input, decision making, local policies)
  – Extended recovery/obs facilities on existing wards

• Documentation/Audit
Management of proximal femoral fractures 2011
Association of Anaesthetists of Great Britain and Ireland
What makes a sensible model of care?

Right professional
   in the right place
   at the right time

= A multidisciplinary team

Makes sense but does it make a difference??
Devas

“I'm only a humble carpenter and I need a physician to tell me what's wrong with the patient.”

“The first step in rehabilitation is the first step.”
Existing models of orthogeriatric care

- **Benefits of collaboration 1960s,** devas & irvine

- **Varying models,** Pioli et al, 2008 Aging Clin Exp Res 20;113-122

<table>
<thead>
<tr>
<th>Orthopaedic ward</th>
<th>Orthopaedic ward</th>
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<tbody>
<tr>
<td>Geriatric consultant service as needed</td>
<td>Daily consultative service</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Geriatric rehab ward</th>
<th>Orthopaedic ward</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orthopaedic consultant service</td>
<td>Integrated care</td>
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</table>
# Orthogeriatrics – the evidence

<table>
<thead>
<tr>
<th>Ortho ward, ad hoc input</th>
<th>Ortho ward, daily ger</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 rcts (1998, 2002)</td>
<td>8 studies (1RCT)</td>
</tr>
<tr>
<td>LOS: 1 longer, 1 shorter</td>
<td>LOS: 23 days v 27</td>
</tr>
<tr>
<td>ADLs : No effect 6 or 12/12</td>
<td>Complications: decrease in 2</td>
</tr>
<tr>
<td>Mortality: better in 1</td>
<td>ADLs: better in 3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ger ward, ortho input</th>
<th>Integrated care</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 studies (2RCTs)</td>
<td>6 studies (3RCTs)</td>
</tr>
<tr>
<td>Mortality: trend</td>
<td>Mortality: 1 lower</td>
</tr>
<tr>
<td>LOS: 27 days versus 32</td>
<td>LOS &amp; complications improved, but....</td>
</tr>
<tr>
<td></td>
<td>ADLs: better</td>
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*kammerlander et al*

*Osteoporos Int 2010*
What does orthogeriatric collaboration achieve?

- Cochrane review Cameron 2001
- “no conclusive evidence of the effectiveness of co-ordinated post-surgical care...a trend towards effectiveness in all main outcomes.”

- Cochrane review Halbert 2007
- “patients receiving multidisciplinary rehabilitation were at lower risk of a poor outcome – death or admission to a nursing home”
- “the routine provision of organized care following hip fracture, as is current practice for patients after stroke.”

- Cochrane review Handoll 2009
- “our conclusions for this setting remain consistent with those in Cameron 2001”

- 2011 Handoll and Stott reviewed the Cochrane of 2009 in the context of a BMJ article on inpatient rehabilitation for geriatric patients (Bachmann)
- “the findings of both of these review are supportive of co-ordinated multidisciplinary inpatient care for older patients”
Multidisciplinary management
NICE CG 124

From admission, offer patients a formal, acute orthogeriatric or orthopaedic ward-based Hip Fracture Programme that includes all of the following:

• 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
• continued, coordinated, orthogeriatric and multidisciplinary review
• liaison or integration with related services, particularly mental health, falls prevention, bone health, primary care and social services
• clinical and service governance responsibility for all stages of the pathway of care and
• rehabilitation, including those delivered in the community.
Multidisciplinary management

• Goals for multidisciplinary rehabilitation
• Continued, coordinated, orthogeriatric and multidisciplinary review
• Liaison or integration with related services
• Discharge planning
  • (utilisation of rehab/services)
• Estimated date of discharge
• Facilitate return to pre fracture residence
NICE

• The increased costs of hospital MDR were more than offset by:
• reduction in the acute hospital stay costs, including those associated with complications such as delirium and pressure sores.
• a reduction in the level of domiciliary social care costs as a result of increased probability of regaining pre-fracture independence in activities of daily living.
• reduction in costs for patients who avoid the need for long-term care in a residential or a nursing home.

• HFP was the strategy with the highest incremental net
How to reduce costs

• Joint care from admission with geriatrician
• Clear pathways
• Formal protocols for management of pain, delirium, etc
• Close working relationships and dialogue with orthopods and anaesthetists
• Daily therapies (both physio and OT)
Community based rehabilitation schemes
What is it?

• The aim of community-based rehabilitation (CBR) is to help people with disabilities, by establishing community-based programs for social integration, equalization of opportunities, and rehabilitation programs for the disabled. The strength of CBR programs is that they can be made available in rural areas with limited infrastructure, as program leadership is not restricted to professionals in healthcare, education, vocational or social services.
Early supported discharge

- Early Supported Discharge (ESD) describes pathways of care for people transferred from an inpatient environment to a primary care setting to continue a period of rehabilitation, reablement and recuperation at a similar level of intensity and delivered by staff with the same level of expertise as they would have received in the inpatient setting.

- Service provision is focused around time specific patient goals and embraces the needs and ability of their carers.
Stroke Early supported discharge teams

- ESD in stroke
  - Reduces length of stay (cost) by 8 days
  - No difference in readmission rates
  - Costs are about 9-20% less for this group

- Patients outcomes
  - Improvement in ADL’s
  - More likely to report satisfaction
  - No change in mortality mood or subjective health

Cochrane review
What is the evidence for ESD?

• Very little in hip fracture care
NICE evidence for hip fracture

- There is a statistically significant and clinically significant reduction in hospital length of stay, but an increase in total length of rehabilitation (hospital + home) with home-based multidisciplinary early supported discharge (ESD) compared with usual care.

- There is a statistically significant and clinically significant increase in functional independence measures with home-based multidisciplinary ESD compared with usual care.
NICE evidence

• There is no statistically significant difference in mortality at 12 months and readmission to hospital at 4 months with home-based multidisciplinary ESD compared with usual care
NHFD data

mean acute length of stay (days)
mean total length of stay (days)
Discharge options

• Tailor made rehabilitation programme
• Community Rehabilitation
• Inpatient Community Rehabilitation
• Social care alone
• Specialist teams
Consider early supported discharge as part of the Hip Fracture Programme, provided the Hip Fracture Programme multidisciplinary team remains involved and the patient:

- is medically stable and
- has the mental ability to participate in continued rehabilitation and
- is able to transfer and mobilise short distances and
- has not yet achieved their full rehabilitation potential, as discussed with the patient, carer and family
Patient selection
Plan realistic goals with patients and relatives/carers with an EDD
Multidisciplinary management

- Goals for multidisciplinary rehabilitation
- Continued, coordinated, orthogeriatric and multidisciplinary review
- Liaison or integration with related services for planning discharge
Intermediate care

• Only consider intermediate care (continued rehabilitation in a community hospital or residential care unit) if all of the following criteria are met:
  • intermediate care is included in the Hip Fracture Programme and
  • the Hip Fracture Programme team retains the clinical lead, including patient selection, agreement of length of stay and ongoing objectives for intermediate care and
  • the Hip Fracture Programme team retains the managerial lead, ensuring that intermediate care is not resourced as a substitute for an effective acute hospital Programme

But there is no evidence on the cost-effectiveness
• Patients admitted from care or nursing homes should not be excluded from rehabilitation programmes in the community or hospital, or as part of an early supported discharge programme
Specialist Teams
Ideal service

• In reach
• Integrated service
• Length of stay does not increase superspell
• Goal driven
How to set them up

• Engage stakeholders
• Work with existing intermediate care teams
• Social services
• Short pilot of care to demonstrate long term savings
• Review the evidence
Community rehabilitation