7th FFN Global Congress 2018

Dublin, Ireland
5–7 July 2018

Patient centred multidisciplinary care
A question of time: What is your impact on the future of fragility fracture?

Friday 6 July, 13:00–14:00
Cheyne Auditorium

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<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:00</td>
<td>A question of time: The start of the journey</td>
<td>Opinder Sahota &amp; Bente Langdahl</td>
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<tr>
<td>13:10</td>
<td>What caused the fracture: Should bone health be considered?</td>
<td>Henrik Palm &amp; Opinder Sahota</td>
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<td>13:30</td>
<td>Looking to the future: Risk assessment and management of patients with fragility fracture</td>
<td>Bente Langdahl &amp; Opinder Sahota</td>
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<tr>
<td>13:55</td>
<td>Improving outcomes for patients with fragility fracture: What role will you play?</td>
<td>Opinder Sahota</td>
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</table>

Join us on a journey through time:
How can we ensure our patients with fragility fracture have the best possible future?
To achieve this, we have defined three broad aims:

- To disseminate globally the best multidisciplinary practice in preventing and managing fragility fractures
- To promote research aimed at better treatments of osteoporosis, sarcopenia and fracture
- To drive policy change that will raise fragility fractures higher up the healthcare agenda in all countries

Our Philosophy

The starting point for FFN thinking is the patient who presents to the health service, having sustained a fragility fracture. The first priority is to respond to this acute situation by treating both the fracture and any comorbidities (of which there may be many in an elderly population) and restoring the patient to the maximum achievable functional capacity. The second priority is to prevent the next fragility fracture, by treating osteoporosis and the tendency to fall.

This perspective makes the FFN uniquely appealing to orthopaedic surgeons, compared to other international organisations in the field of osteoporosis and fragility fractures, and they form the largest professional group within our membership. However, good care cannot be given properly without the participation of experts from other fields. Multidisciplinary co-management is at the heart of our philosophy.

The ageing population presents us with an epidemiological emergency in terms of the predicted incidence of fractures, particularly hip fractures. This emergency is at its most acute in the emerging economies. We are therefore working hard to extend the Network, to assist the professional champions who are rising to the challenge in those areas.

Membership of the FFN is open to individual professionals in any field relevant to fragility fractures. Details may be found at our website.

For further information about FFN, please contact

FFN – Fragility Fracture Network
Central Office
Schaffhauserstrasse 550
8052 Zurich, Switzerland
T: +4144 894287
F: +4144 894201
ff-network@mci-group.com
www.fragilityfracturenetwork.org

Welcoming Address

Dear Colleagues,
Dear Ladies and Gentlemen,

FFN invites you to join the 7th FFN Global Congress 2018 in Dublin, Ireland from 5–7 July 2018. The annual meeting is an international congress addressing the full pathway of care for fragility fracture patients. Its themes include peroperative care, surgical treatment, rehabilitation, secondary prevention, research and policy change. The FFN Global Congress consists of invited international experts, plenary discussions, update sessions and free papers. The congress provides a unique platform to learn about new technical developments, state-of-the-art procedures and interaction with leading clinicians, researchers and other professional health workers and stakeholders. This year’s motto is “Patient centred multidisciplinary care”.

We are looking forward to welcoming you in Dublin in July.

Emer Ahern & Conor Hurson
Congress Chairs
Paolo Falaschi
President of the Fragility Fracture Network (FFN)
The organisers of the 7th FFN Global Congress 2018 gratefully acknowledge the support of the following companies:

**FFN Sponsors**
- AMGEN
- UCB Pharma
- DePuy Synthes

**FFN Supporters**
- Merit Medical
- Smith & Nephew
- PEI Surgical
- HYPREVENTION
- Tekno Surgical

**FFN Exhibitors**

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<tr>
<td><strong>Company Name</strong></td>
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<td>AMGEN</td>
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<td>Consilient Health Ltd.</td>
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<td>DePuy Synthes</td>
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<tr>
<td>Smith &amp; Nephew</td>
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<tr>
<td>Tekno Surgical</td>
<td>4</td>
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</table>

**Exhibition Hours**
- Thursday, 5 July 2018 8.00–18.00
- Friday, 6 July 2018 8.00–19.30
- Saturday, 7 July 2018 8.00–11.15
General Information

Scientific Organisation
FFN – Fragility Fracture Network
Central Office
Schaffhauserstrasse 550
8052 Zurich, Switzerland

Congress Chair
Emer Ahern, Ireland
Conor Hurson, Ireland

Scientific Committee
Lauren Beăupre, Canada
Ellen Binder, USA
Louise Brent, Ireland
Maria Crotty, Australia
Colin Currie, UK
Jay Magaziner, USA
Nicola Napoli, Italy
Opinder Sahota, UK
Cathie Sherrington, Australia
Stuart White, UK

Local Organising Committee
Paolo Falaschi, Italy
Emer Ahern, Ireland
Conor Hurson, Ireland
Louise Brent, Ireland
David Marsh, UK
John Bar, UK

Executive Committee
Paolo Falaschi, President
Matt Costa, President-Elect
Henrik Palm, Past President
Emer Ahern, Congress Chair
Conor Hurson, Congress Chair
David Marsh, General Secretary
Dieu Donné Niisten, Treasurer
Jay Magaziner, Scientific Committee Chair
Karsten Dreinhöfer, Nominations Committee Chair

Board
Donato Agnusdei, Italy
Louise Brent, Ireland
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Monica Perracini, Brazil
Killian Rapp, Germany
Opinder Sahota, UK
Hannah Seymour, Australia
Stuart White, UK
Anthony Woolf, UK

Cooptees
Kristina Akesson, Sweden
Aparajit Dey, India
David Hak, USA
Ami Hommel, Sweden
Simon Mears, USA
Anita Meehan, USA
Annette Hylen Ranhoff, Norway
Maroun Rizkallah, Lebanon
Takeshi Sawaguchi, Japan
Robyn Speerin, Australia

Legal Organiser (PCO)
MCI Deutschland GmbH
MCI | Germany – Berlin
Amira Hussein
Markgrafenerstrasse 56, 10117 Berlin
T: +49 30 20459323
F: +49 30 2045950
ffn-congress@mci-group.com

Sponsoring
T: +49 30 2045937
ffn-sponsoring@mci-group.com

Contacts

Certificate of Attendance
All registered attendees, whether they register in advance or on-site, will receive a certificate of attendance, 2 weeks after the congress by e-mail.

Congress Homepage
www.fragilityfracturenetwork.org

Congress Language
The official congress language will be English. All PowerPoint presentations have to be prepared in English only. There will be no simultaneous translations.

Internet/WiFi
Free wireless internet is available throughout the congress venue.

Name: FFN 2018
Password: FFN2018!

Liability Disclaimer
The organisers cannot be held liable for any hindrance or disruption of congress proceedings arising from political, social or economic events or any other unforeseen incidents beyond their control. The organisers will accept no liability for any personal injuries sustained or for loss or damage to property belonging to congress participants, either during or as a result of the congress or during all tours and events. Registration of a participant entails acceptance of these conditions.

Lost and Found
For lost and found items, please refer to the registration counter.

Lunch/Catering
Lunch during the Congress is not included in the Registration fee. You are able to pre-order lunch within the registration for Thursday, 5 July and Friday, 6 July 2018.
General Information

Name Badge
For identification purposes, badges have to be worn during all congress activities. Admission to the congress will not be allowed without badge identification.

Media Check
The media check is located on the Ground floor in the Tutorial Room 4. Speakers are asked to hand in their presentation at the media check at least 2 hours before the session. All rooms are equipped for PowerPoint presentation (data projection in 16:9).

Thursday, 5 July 2018 7.00-18.00
Friday, 6 July 2018 7.00-18.00
Saturday, 7 July 2018 7.00-12.30

Payment On-site
Please note that paying the registration fee on site is possible in Euro € only.

Poster Exhibition
Part of the Poster Exhibition (including Top 6 Posters and PE-6-1–PE-6-8) is located on the 1st Floor in the Exam Hall. The rest of the Poster Exhibition (including PE-1-1–PE-5-39) is located on the Ground floor around the perimeter of the Lecture Theatres. Posters shall be prepared in size DIN A0 (841x1189mm), portrait format, in paper, in English. Posters should be mounted on Thursday, 5 July 2018 by 10.00 and will remain accessible to all attendees until Saturday, 7 July 2018, 12.00.

Plenary Poster Presentation/Poster Walk
The presentation of the top 6 posters takes place on Friday, 6 July 2018 from 17.30 to 18.30 (Room Cheyne) and is followed by a poster walk (18.30–19.30).

Registration

Registration Desk
The registration desk is located on the Ground Floor at the reception via York Street. Registration is only valid if the complete payment of the congress fee as well as of other services booked has been made. Registration on-site is possible during the entire congress within the opening hours of the registration desk. Only credit cards and cash payment will be accepted on-site.

Opening Hours
Wednesday, 4 July 2018 18.00–20.00
Thursday, 5 July 2018 7.00-18.30
Friday, 6 July 2018 7.30-18.00
Saturday, 7 July 2018 7.30-12.30

Registration Fees
Category On-site
Member €460
Non-Member €540
Nurse* (Member) €290
Nurse* (Non-Member) €350
AHP* (Member) €290
AHP* (Non-Member) €350
Student* €250

* An appropriate proof of status must be presented to be entitled to the reduced registration fee.

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Dublin is a warm and welcoming city, known for the friendliness of its people and famous for its mixture of repartee, humour, intelligence, and acerbic and deflating insight that has attracted writers, intellectuals, and visitors for centuries. Dublin is one of the friendliest capital cities in the world founded by Vikings during the 9th Century, who established a key maritime centre. The city and port continued to prosper over the centuries and with English dominance came the city’s attractive 17th Century architecture. Dublin’s elegant Georgian architecture makes it one of Europe’s most attractive capitals.

FFN Public Lecture
On Wednesday, 4 July, the eve of the Congress, the FFN together with the Irish Osteoporosis Society will host a public lecture with talks covering ‘Quality Care in Ireland’, ‘Exercise and Eating for Healthy Bones’. This is the first time the FFN has co-hosted such an event and is testament to the commitment of the FFN to increase public awareness of osteoporosis and fragility fractures.

18.30–19.30 OTHERS
Room: O’Flanagan LT
Healthy Bones – Fragility Fracture Network Public Lecture
MC: Brent Pope

18.30–18.35 Welcome address
Paolo Falaschi, President of the Fragility Fracture Network
Moira O’Brien, President of the Irish Osteoporosis Foundation

18.35–18.55 Closing the gaps in Quality Bone Care in Ireland
John Carey

18.55–19.10 Exercise for Healthy Bones
Aoife Ni Eochaidh, Physiotherapist

19.10–19.20 Eating for Healthy Bones
Linda Killeen, Dietician

19.20–19.30 Questions
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<th>Time</th>
<th>Session/Workshop</th>
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<tr>
<td>8.00–9.30</td>
<td><strong>PLENARY SESSION I</strong>&lt;br&gt;Welcome and Opening Plenary: FFN Worldwide&lt;br&gt;Chairs: Paolo Falaschi, Emer Ahern, Conor Hurson</td>
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<tr>
<td>10.00–11.30</td>
<td><strong>WORKSHOP 1</strong>&lt;br&gt;FFN Regionalisation&lt;br&gt;Chairs: David Marsh and Paolo Falaschi</td>
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<tr>
<td>11.45–12.50</td>
<td><strong>FREE PAPERS SESSION 1</strong>&lt;br&gt;Fracture Management&lt;br&gt;<strong>FREE PAPERS SESSION 2</strong>&lt;br&gt;Peri-operative Management&lt;br&gt;<strong>FREE PAPERS SESSION 3</strong>&lt;br&gt;Research in Fragility Fractures</td>
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<tr>
<td>13.00–14.00</td>
<td><strong>LUNCH SYMPOSIUM</strong>&lt;br&gt;with DePuy Synthes &amp; Lilly</td>
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<td>14.15–15.45</td>
<td><strong>WORKSHOP 4</strong>&lt;br&gt;Vertebral Fracture SIG&lt;br&gt;<strong>WORKSHOP 5</strong>&lt;br&gt;Controversy in Fracture Management&lt;br&gt;<strong>WORKSHOP 6</strong>&lt;br&gt;Joint with IAGG</td>
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<tr>
<td>16.00–17.00</td>
<td><strong>AFTERNOON COFFEE SYMPOSIUM</strong>&lt;br&gt;AMGEN</td>
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<td>19.00–22.00</td>
<td><strong>NETWORKING DINNER</strong>&lt;br&gt;College Hall &amp; Board Room</td>
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Scientific Programme

Thursday, 5 July 2018

10.00–11.30 WORKSHOP 2

Room: Houston LT
Controversy in Anaesthesia
Chair: Richard Griffiths

10.00–10.15 Introduction and update on NAOCs
Richard Griffiths

10.15–10.30 Does it really matter what type of anaesthesia is delivered?
Physiological stability for all
Mark Coburn

10.30–10.45 Should anaesthetists be involved outside the operating department?
How anaesthesia can improve the perioperative team
Ciara O'Donnell

10.45–11.00 Does anaesthesia have to change, to deliver what the patients want?
Patient centred anaesthesia
Cliff Shelton

11.00–11.15 Next steps in anaesthesia research
Iain Moppett

11.15–11.30 Discussion

10.00–11.30 WORKSHOP 3

Room: Albert LT
Contemporary Issues in FLS
Chair: Robyn Speerin

10.00–10.15 Introduction, aim of the workshop and Special Interest Group
Robyn Speerin

10.15–10.35 Lessons learnt from the UK FLS audit
Sonya Stephenson

10.35–10.55 Adherence to treatment regimens for secondary fracture prevention: is behaviour change methodology and personalised care planning supportive?
Lyn March

10.55–11.10 Development of global education program for FLS teams
Robyn Speerin

11.10–11.30 The way forward – discussion

11.30–11.45 MOVE SESSIONS

Scientific Programme

Thursday, 5 July 2018

11.45–12.50 FREE PAPER SESSION 1

Room: Cheyne LT
Fracture Management
Chair: Henrik Palm and Matt Costa

11.45–11.53 Total hip replacement versus hemiarthroplasty for displaced intracapsular fractures: predicting outcomes & selecting patients
Julie R. M. Craig

11.53–12.01 A pilot study to evaluate the effect of a co-management care plan for older patients with hip fracture in Beijing
Maoyi Tian

12.01–12.09 The association between self-rated health, self-perceived fracture risk and fracture risk among women screened for osteoporosis – the ROSE study
Mette Juel Rathmann

12.09–12.17 Management of undisplaced intracapsular hip fractures in a regional trauma centre
Julie R. M. Craig

12.17–12.25 Extracapsular hip fracture surgery: nail or sliding hip screw?
Julie R. M. Craig

12.25–12.33 A systematic review and meta-analysis comparing a twin interlocking derotation and compression screw cephalo-medullary nail [InterTAN] with a single screw cephalo-medullary nail [Gamma3] in patients with intertrochanteric fractures
Leo Nherera

12.33–12.41 The last role of the uncemented Thompson’s hemiarthroplasty?
A series of 1445 patients
Copikanthan Manoharan

12.41–12.49 A novel way of managing intracapsular neck of femur fractures in patients who are otherwise deemed unfit to have general or spinal anaesthesia using palliative screw fixation
Hannah Morley
## Scientific Programme

**Thursday, 5 July 2018**

### FREE PAPER SESSION 2

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<th>Time</th>
<th>Title</th>
<th>Speaker</th>
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<tr>
<td>11.45–11.53</td>
<td>Is tranexamic acid for hip fracture patients safe? A consecutive cohort study based on complete follow-up in national databases</td>
<td>Bjarke Viberg</td>
</tr>
<tr>
<td>11.53–12.01</td>
<td>How we turned around a failing service – The Horton Fracture Neck of Femur experience – Rising to the top of the league table (NHFD)</td>
<td>Sam Anand</td>
</tr>
<tr>
<td>12.01–12.09</td>
<td>Factors affecting occurrence of delirium in elderly hip fracture patients</td>
<td>Pamela Sebastian</td>
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<td>12.09–12.17</td>
<td>Time to surgery after hip fracture across Canada by timing of admission</td>
<td>Katie Sheehan</td>
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<td>12.17–12.25</td>
<td>Implementation of national benchmarks: Changing local practice, improving patient outcomes. A quality improvement project at St George Hospital Sydney</td>
<td>Izreen Mohamed Iqbal</td>
</tr>
<tr>
<td>12.25–12.33</td>
<td>Surgical delay under 12 hours is associated with improved short- and long-term survival in moderate- to high-risk hip fracture patients</td>
<td>Maria S. Nuotio</td>
</tr>
<tr>
<td>12.33–12.41</td>
<td>High prevalence of preoperative deep venous thrombosis in elderly hip fracture patients with delayed hospital admission</td>
<td>Ianiv Klaber</td>
</tr>
<tr>
<td>12.41–12.49</td>
<td>Is it too old to operate? Mortality outcome in the oldest old (90 years and above) hip fracture patients in a dedicated hip fracture unit in Singapore</td>
<td>Su Su</td>
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### FREE PAPER SESSION 3

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<th>Time</th>
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<th>Speaker</th>
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<td>11.45–11.53</td>
<td>Research priorities in lower limb and pelvic fragility fractures: A UK priority setting partnership with the James Lind Alliance</td>
<td>Miguel Fernandez</td>
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<tr>
<td>11.53–12.01</td>
<td>Medical complications after arthroplasty for hip fracture in Sweden. A national study of 42,212 patients</td>
<td>Susanne Hansson</td>
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<tr>
<td>12.01–12.09</td>
<td>Affordable technology in rehabilitation to improve mobility and physical activity: interventions and outcomes for hip fracture survivors participating in the AMOUNT (Activity and MObility UsiNg Technology) rehabilitation trial</td>
<td>Cathie Sherrington</td>
</tr>
<tr>
<td>12.09–12.17</td>
<td>Mortality rates of patients screened as part of a provincial fracture liaison service in Ontario, Canada</td>
<td>Rebeka Sujic</td>
</tr>
<tr>
<td>12.25–12.33</td>
<td>The association between BMI and 1-year mortality in elderly patients with hip fractures – An observational study on the BMI paradox</td>
<td>Margareta Hedström</td>
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<td>12.33–12.41</td>
<td>Prior fracture cascade and incidence of imminent fracture after fragility fracture in a Swedish database study</td>
<td>Emese Toth</td>
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<tr>
<td>12.41–12.49</td>
<td>Rate of sustaining a second hip fracture: an analysis of 29,057 patients</td>
<td>Julie R. M. Craig</td>
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Scientific Programme

Thursday, 5 July 2018

13.00–14.00 SYMPOSIUM

Room: Cheyne LT

Lunch Symposium with DePuy Synthes & Lilly
Improving the outcomes of patients with fragility fractures
Moderator: Opinder Sahota

Opening
Opinder Sahota
Care4Today – Improving the outcomes of patients with hip fracture.
The OLVG Case Study
Danny Hage and R.N. Van Veen
The effect of Teriparatide in patients with hip or vertebral fractures:
Recent results from randomized clinical trials
Fernando Marin
Question & Answers
Opinder Sahota

14.15–15.45 WORKSHOP 4

Room: Cheyne LT

Vertebral Fracture SIG
Chairs: Opinder Sahota and Manuela Ferreira

14.15–14.25 Introduction
Opinder Sahota

14.25–14.50 Delphi study presentation and VFF 6 month outcome follow-up
Terrence Ong

14.50–15.15 International variation in the clinical guideline recommendations and practice
for the management of VFF
Manuela Ferreira

15.15–15.30 VFF National Osteoporosis Society UK 2017 Guidelines
Sonya Stephenson

15.30–15.45 Discussion

14.15–15.45 WORKSHOP 5

Room: Houston LT

Controversy in Fracture Management
Chairs: Martyn Parker and Henrik Palm

14.15–14.30 Introducing the Panel
Martyn Parker, Cecilia Rogmark, Jim Waddell, Henrik Palm, Markku Nousiainen
and Colin Murphy

14.30–14.40 Debate 1: Undisplaced Intracapsular Fractures: Fix or Replace?

14.40–14.50 Debate 2: Prosthesis for intracapsular displaced fractures in the elderly:
Cement or Not?

14.50–15.00 Debate 3: Surgical approach for hemiarthroplasty or THR:
posterior vs anterolateral

15.00–15.10 Scenario 1: Intracapsular fracture – hemiarthroplasty, THR, fixation

15.10–15.20 Scenario 2: Trochanteric fractures: nail or plate

15.20–15.30 Scenario 3: Subtrochanteric fractures: Closed reduction vs ORIF?

15.30–15.40 Scenario 4: Bisphosphonate induced fracture: and what about the other side?

15.40–15.45 Round up

14.15–15.45 WORKSHOP 6

Room: Albert LT

Joint with IAGG
Chairs: Paolo Falaschi and Alvaro Casas

14.15–14.30 Frailty and fragility fracture
Rónán Ó Caoimh

14.30–15.00 Physical exercise, frailty, Sarcopenia and fragility fracture
Alvaro Casas

15.00–15.30 The nursing perspective
J. Santy-Tomlinson

15.30–15.45 Alternative surgical approaches for frail patients with hip fracture
Matt Costa

16.00–17.00 SYMPOSIUM

Room: Cheyne LT

Afternoon Symposium with AMGEN
Hip fractures – patient burden and preventive options
Chair: J Bernard Walsh (Ireland)

The consequences of hip fractures on patients’ activities of daily living
and autonomy
Henrik Palm (Denmark)

Optimal osteoporosis care to prevent hip fractures
Polyzois Makras (Greece)

Panel Discussion
### Scientific Programme

#### Thursday, 5 July 2018

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<tr>
<td>17.15–18.15</td>
<td>SYMPOSIUM 1&lt;br&gt;Room: Cheyne LT&lt;br&gt;<strong>Joint with EUGMS</strong>&lt;br&gt;Chairs: Anette Hylen Ranhoff and Finbarr Martin</td>
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<tr>
<td>17.15–17.30</td>
<td>What causes sarcopenia: inactivity or ageing? Anette Hylen Ranhoff</td>
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<tr>
<td>17.30–17.45</td>
<td>How much exercise do people need for healthy ageing? Finbarr Martin</td>
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<tr>
<td>17.45–18.00</td>
<td>What do we mean by recovery after hip fracture? Katie Sheehan</td>
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<tr>
<td>18.00–18.15</td>
<td>Discussion</td>
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<tr>
<td>17.15–18.15</td>
<td>SYMPOSIUM 2&lt;br&gt;Room: Houston LT&lt;br&gt;<strong>Joint with ASBMR</strong>&lt;br&gt;Chairs: Nicola Napoli and Paolo Falaschi</td>
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<tr>
<td>17.15–17.30</td>
<td>Epidemiology of fragility fractures: current trends Nicola Napoli</td>
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<td>17.30–17.45</td>
<td>A Strategic Roadmap Action Plan to Prevent Secondary Fractures Robert Adler</td>
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<tr>
<td>17.45–18.00</td>
<td>Implementing a Fracture Liaison service Robyn Speerin</td>
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<td>18.00–18.15</td>
<td>A new challenge: Identification of vertebral fractures in Fracture Liaison services Kassim Javaid</td>
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<tr>
<td>17.15–18.15</td>
<td>SYMPOSIUM 3&lt;br&gt;Room: Albert LT&lt;br&gt;<strong>Joint with SICOT – How to provide orthogeriatric care in different healthcare Environments</strong>&lt;br&gt;Chairs: Jim Waddell and David Marsh</td>
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<td>17.15–17.30</td>
<td>Canada Rhona McGlasson</td>
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<td>17.30–17.45</td>
<td>India Aparajit Dey</td>
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<td>17.45–18.00</td>
<td>China Minghui Yang</td>
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<tr>
<td>18.00–18.15</td>
<td>Discussion</td>
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<td>19.00–22.00</td>
<td>OTHERS&lt;br&gt;<strong>Networking Dinner</strong>&lt;br&gt;College Hall &amp; Board Room</td>
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#### Friday, 6 July 2018

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<td>10.00–11.30</td>
<td><strong>WORKSHOP 7</strong> Workshop – Fracture Recovery Research SIG&lt;br&gt;<strong>WORKSHOP 8</strong> Osteoporosis&lt;br&gt;<strong>WORKSHOP 9</strong> Controversy in Perioperative Management</td>
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<td>11.30–12.00</td>
<td>Break</td>
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<td>11.45–13.00</td>
<td><strong>FREE PAPERS SESSION 4</strong> Fracture Prevention&lt;br&gt;<strong>FREE PAPERS SESSION 5</strong> Changing Policy&lt;br&gt;<strong>FREE PAPERS SESSION 6</strong> Rehabilitation after Fracture</td>
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<td>13.00–14.00</td>
<td><strong>LUNCH SYMPOSIUM</strong> with UCB</td>
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<td>14.15–15.45</td>
<td><strong>WORKSHOP 10</strong> Workshop – Progress in Hip Fracture Audit and Care&lt;br&gt;<strong>WORKSHOP 11</strong> Physio SIG&lt;br&gt;<strong>WORKSHOP 12</strong> Controversy in Nursing Care</td>
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<td>16.30–17.30</td>
<td><strong>SYMPOSIUM 4</strong> Fracture forum – Hip Fractures in Northern Ireland&lt;br&gt;<strong>SYMPOSIUM 5</strong> Joint with OHS/ISF – Fragility Fractures and Diabetes&lt;br&gt;<strong>SYMPOSIUM 6</strong> Secondary fracture prevention: Joint IOF FFN session</td>
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<td>17.30–18.30</td>
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<td>18.30–19.30</td>
<td><strong>POSTER WALK</strong> Drinks Reception</td>
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### Scientific Programme  
**Friday, 6 July 2018**

**8.00–9.15**  **PLENARY SESSION II**

**Room: Desmond Auditorium**

**Beyond the bone: Multimodal care for Hip Fracture Patients**  
*Chairs: Ellen Binder and Jay Magaziner*

- **8.00–8.20** Why Multi-Modal Interventions are Important  
  *Ellen Binder*

- **8.20–8.40** Managing cognitive problems and delirium in hip fracture patients  
  *Alasdair MacLullich*

- **8.40–9.00** The Trondheim Study: A multi-modal care during the acute and post-acute care period  
  *Olav Sletvold*

- **9.10–9.15** The Community Ambulation Project (CAP): A multi-modal physical therapy intervention after post-acute care  
  *Jay Magaziner, Kathleen Mangione*

**9.15–10.00** **COFFEE BREAK AND POSTERS**

**10.00–11.30** **WORKSHOP 7**

**Room: Cheyne LT**  
**Workshop – Fracture Recovery Research SIG**  
*Chairs: Lauren Beaupre and Sallie Lamb*

- **10.00–10.20** Trials in rehabilitation involving patients with dementia  
  *Toby Smith*

- **10.20–10.40** Managing patients with delirium  
  *Alasdair MacLullich*

- **10.40–11.00** Ensuring effective pain treatment after hip fracture  
  *Mark Neuman*

- **11.00–11.30** Discussion

**10.00–11.30** **WORKSHOP 8**

**Room: Houston LT**  
**Osteoporosis**  
*Chairs: John Carey and Moira O’Brien*

- **10.00–10.20** GI disorders and Osteoporosis  
  *Glen Doherty*

- **10.20–10.40** Best practice in Densitometry  
  *John Carey*

- **10.40–11.00** The importance of exercise for bone health  
  *Moira O’Brien*

- **11.00–11.30** Discussion

**10.00–11.30** **WORKSHOP 9**

**Room: Albert LT**  
**Controversy in Perioperative Management**  
*Chairs: Hannah Seymour and Helen Wilson*

- **10.00–10.15** Introducing the Panel

- **10.15–10.30** Case scenario discussion  
  Timing of surgery

- **10.30–10.45** Case scenario discussion  
  Perioperative interventions

- **10.45–11.00** Case scenario discussion  
  The role of palliative care

- **11.00–11.15** Case scenario discussion  
  Post-operative weight-bearing

- **11.00–11.30** Summary

**11.30–11.45** **MOVE SESSIONS**

**11.45–12.50** **FREE PAPER SESSION 4**

**Room: Cheyne LT**  
**Fracture Prevention**  
*Chair: Opinder Sahota*

- **11.45–11.53** Assessing the impact of prescribing anti-osteoporosis medication after an index fracture as part of a national clinical audit  
  *Kassim Javaid*

- **11.53–12.01** Clinical experience in 10 patients implanted with a contralateral prophylactic medical device in case of first low-energy hip fracture due to severe osteoporosis  
  *Max Aebi*

- **12.01–12.09** Characteristics of fragility fracture patients who report previous prescription for bone-sparing medication  
  *Taucha Inrig*

- **12.09–12.17** The effectiveness of 3-year Police General Hospital’s Fracture Liaison Service (PGH’s FLS) Implementation: A prospective cohort study  
  *Tanawat Amphansap*

- **12.17–12.25** The impact of a low-cost digital and print awareness campaign on patient behaviour in relation to personal risk of osteoporosis and fragility fracture  
  *Claire Bovey*

- **12.25–12.33** Identification of vertebral fractures in Fracture Liaison Services (FLS) in the UK  
  *Sonya Stephenson*
12.33–12.41 Tromsoporosis – secondary fracture prevention program resulted in high adherence to anti-osteoporotic drugs in Tromsø, Norway
Camilla Andreasen

12.41–12.49 Low fall and fracture risk in very dependant patients in residential care
Morgan Crowe

11.45–12.50 FREE PAPER SESSION 5

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11.45–11.53 Using national hip fracture audit to drive quality improvement in care: The Irish Experience
Louise Brent

11.53–12.01 Fracture Liaison Services (FLSs) in England and Wales, inequity of access and quality of care after a fragility fracture
Catherine Gallagher

12.01–12.09 Admission pathway for patients admitted to hospital with suspected but unproven hip fracture: Should it be medicine or orthopaedics? An evidence-based approach
Hamish Macdonald

12.09–12.17 Audit cycle on the formal introduction of a standardised orthopaedic trauma patients’ admission pro-forma: the first Italian experience
Valerio Pace

12.17–12.25 What happens to patients who sustain a hip fracture in-hospital? Benjamin Dougal Chatterton

12.25–12.33 Acute hip care unit in a tertiary care hospital India: Preliminary results
A. B. Dey

12.33–12.41 Low level falls lead to high incidence of major trauma. Data from the Major Trauma Audit in Ireland
Louise Brent

12.41–12.49 Strengthening our national databases – an audit of data provided to the national fracture database by a tertiary institution
Orla Hennessy
Scientific Programme

Friday, 6 July 2018

13.00–14.00 SYMPOSIUM

**Lunch Symposium with UCB**

Moderator: Opinder Sahota and Bente Langdahl

1. Presentation
   A question of time: The start of the journey
   Opinder Sahota & Bente Langdahl

2. Presentation
   What caused the fracture: Should bone health be considered?
   Henrik Palm & Opinder Sahota

3. Presentation
   Looking to the future: Risk assessment and management of patients with fragility fracture
   Bente Langdahl & Opinder Sahota

4. Presentation
   Improving outcomes for patients with fragility fracture: What role will you play?
   Opinder Sahota

14.15–15.45 WORKSHOP 10

**Progress in Hip Fracture Audit and Care**

Chairs: Colin Currie and Emer Ahern

14.15–14.30 Introduction & Irish Hip Fracture Database update
   Cris Ojeda-Thies
14.45–15.00 Emerging National Audits: Report from Japan
   Noriaki Yamamoto
15.00–15.15 Progress in Collaborative Care: Beijing, China
   Minghui Yang
15.15–15.30 Progress in Regional Audit: The Baltic Fracture Competence Centre
   Arndt-Peter Schulz
15.30–15.45 General discussion
   Tim Bunning & Jon Roberts (Crown Informatics) in attendance

14.15–14.45 WORKSHOP 11

**Physio SIG**

Chairs: Cathie Sherrington and Monica Perracini

14.15–14.35 Results of large scale fracture prevention trial
   Sallie Lamb
14.35–14.55 Cochrane review of exercise to prevent falls and fractures
   Cathie Sherrington
14.55–15.15 American Physical Therapy Association hip fracture guideline
   Kathleen Mangione
15.15–15.35 Factors associated with physical activity after hip fracture in Brazil
   Monica Perracini
15.35–15.45 Discussion

14.15–14.45 WORKSHOP 12

**Controversy in Nursing Care**

Chairs: Louise Brent and Zena Moore

14.15–14.35 Nursing a Global Crisis
   Zena Moore
14.35–14.55 How low nursing numbers affect patient care
   Julie Santy-Tomlinson
14.55–15.15 The importance of nursing competencies
   Judith Foley
15.15–15.45 Panel Discussion
   Julie Santy, Judith Foley, Zena Moore, Karen Hertz and Ami Hommel

15.45–16.30 COFFEE BREAK AND POSTERS

16.30–17.30 SYMPOSIUM 4

**Fracture forum – Hip Fractures in Northern Ireland**

Chairs: Conor Hurson and John O’Byrne

16.30–16.45 Outcome measures following hip fracture
   Clara O’Donnell
16.45–17.00 Orthogeriatric Care at the Royal Victoria, Belfast
   Gary Heyburn
17.00–17.15 Orthopaedic Care at the Royal Victoria, Belfast
   John Barr
17.15–17.30 Discussion
Scientific Programme

Friday, 6 July 2018

16.30–17.30 SYMPOSIUM 5

**Room: Houston LT**

**Joint with ORS ISFR – Fragility Fractures and Diabetes**

**Chairs:** Chantal Chenu and David Marsh

**16.30–16.45**

**Diabetes and Fragility Fractures: Why Gender Matters**

*Paula Rochon*

**16.45–17.00**

**Effect of diabetes on bone biology**

*Nicola Napoli*

**17.00–17.15**

**Fracture healing in diabetic bone**

*Chantal Chenu*

**17.15–17.30**

**Challenges of ankle fracture management in the diabetic patient**

*David Hak*

16.30–17.30 SYMPOSIUM 6

**Room: Albert LT**

**Secondary fracture prevention: Joint IOF FFN session**

**Chairs:** Kassim Javaid and Kristina Akesson

**16.30–16.45**

**Challenges of FLS: global perspective and results of survey**

*Kassim Javaid*

**16.45–17.00**

**Integration with Trauma Services**

*Kristina Akesson*

**17.00–17.05**

**Capture the fracture and IOF**

*Masaki Fujita*

**17.05–17.20**

**Key Tools from Capture the Fracture to improve your FLS**

*Donncha O’ Gradaigh*

**17.20–17.30**

**Discussion**

17.30–18.00 BREAK AND POSTERS

18.00–18.30 FREE PAPER SESSION 7

**Room: Cheyne LT**

**Top 6 Poster Presentation**

**Chairs:** Jay Magaziner and Miguel Fernandez

**18.00–18.05**

**Introduction of a restrictive blood transfusion threshold for hip fracture patients – a consecutive cohort study based on complete follow-up in national databases**

*Bjarke Viberg*

**18.05–18.10**

**Minimal effect of implant position in osteosynthesis of a femoral neck fracture with parallel implants**

*Anne Marie Nyholm*

**18.10–18.15**

**Investment in physiotherapy after hip fracture – results of the 2017 Physiotherapy ‘Hip Sprint’ Audit**

*Antony Johansen*

**18.15–18.20**

**Decreased grip strength and dynamic body balancing in women with distal radial fractures**

*Koji Fujita*

**18.20–18.25**

**Adverse health outcomes after hospital admission with hip fracture are predicted by social deprivation in England**

*Arti Bhimjiyani*

**18.25–18.30**

**Planning for end of life care among people presenting with hip fracture in the UK – data from the National Hip Fracture Database**

*Antony Johansen*

18.30–19.30 OTHER

**Drinks Reception and Poster Walk**
# Scientific Programme  
**Saturday, 7 July 2018**

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<td>8.00–9.00</td>
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**O’FLANAGAN LECTURE**

**GENERAL ASSEMBLY**

Paid-up FFN members only

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**PLENARY SESSION III**

Multi-National Studies

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**FREE PAPERS SESSION 8**

Top 6 Oral Presentation

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**PLENARY SESSION IV**

Closing Ceremony: The Future
### Scientific Programme  
Saturday, 7 July 2018

#### FREE PAPER SESSION 8

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Chairs: Jay Magaziner and Dieu Donne Niesten |
| 11.15–11.25| Variation in protocols for perioperative management of Direct Oral Anticoagulants (DOACs) in patients with hip fracture in the UK  
Antony Johansen |
| 11.25–11.35| Reduced revision risk in patients treated with a dual mobility cup and THA due to hip fracture. A nationwide study from the Danish Hip Arthroplasty Register  
Rasmus Kreipke |
| 11.35–11.45| Increasing awareness of delirium – the commonest complication of hip fracture surgery  
Antony Johansen |
| 11.45–11.55| Strategies Targeting Osteoporosis to Prevent Recurrent Fractures  
(STOP-FRACTURE: A provincial secondary prevention program in Alberta, Canada)  
Lauren Beaupre |
| 11.55–12.05| Prognosis of patients with vertebral fragility fracture:  
A systematic review with meta-analysis  
Paulo Ferreira |
| 12.05–12.15| Delays increase postoperative mortality in medically stable patients with hip fracture  
Boris Sobolev |

#### PLENARY SESSION IV

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| 12.30–13.30| **Closing Ceremony: The Future**  
Chairs: Paul Mitchell and David Marsh |
| 12.30–12.40| Introduction  
Paul Mitchell, David Marsh |
| 12.40–12.50| The Asia-Pacific Summit  
JK Lee, Derrick Chan |
| 12.50–13.00| Geriatric medicine in India  
Aparajit Dey |
| 13.00–13.10| Orthopaedics in Asia  
David Choon |
| 13.10–13.20| Implementation of FLS in Taiwan  
Derrick Chan |
Matt Costa |
| 13.25–13.30| Closing  
Paolo Falaschi, Emer Ahern, Conor Hurson |
**Oral Presentations**

Thursday, 5 July 2018

Free Paper 1

Free Paper 2

Free Paper 3

Friday, 6 July 2018

Free Paper 4

Free Paper 5

Free Paper 6

**Top 6 Oral Presentations**

Thursday, 5 July 2018

FREE PAPER 1

OP 1-1

Total hip replacement versus hemiarthroplasty for displaced intracapsular fractures: predicting outcomes & selecting patients

Craig J.R.M.1, McDonald S.1, Barr R.J.1

Royal Victoria Hospital, Trauma & Orthopaedic Department, Belfast, United Kingdom

Introduction: The United Kingdom National Institute for Health and Care Excellence (NICE) guidance on displaced intracapsular hip fractures recommends offering total hip replacement (THR) rather than hemiarthroplasty to patients who can walk independently outdoors, who are not cognitively impaired, and who are medically fit for anaesthesia and the procedure. However, many centres perform THR on only a small proportion of eligible patients. This may represent concerns regarding life expectancy and limited differences in functional outcomes.

Methods: A search of a regional trauma centre fracture inpatient database identified 1654 patients who underwent hemiarthroplasty (n=1506, 91.1%) or THR (n=148) for displaced intracapsular hip fractures between 4.1.11 and 4.8.14. All had telephone follow-up to 1 year. Patients able to “walk alone outdoors” (WAO) were deemed comparable to the NICE guidance mobility level. Data was analysed using 95% confidence levels.

Results: Among patients with ASA grades 1-3 who could WAO pre-injury, significantly more THR (81.3%) than hemiarthroplasty (34.2%) patients maintained this level of mobility at 1 year. Increasing age and ASA predicted mobility reduction. Fifty hemiarthroplasty and 50 THR patients were matched for age, gender, ASA grade (1-3 included), mini mental score examination (MMSE, 8-10 included), ability to WAO, and maximum Barthel score (functional score of 20 out of a maximum score of 20). Hemiarthroplasty patients were significantly less likely (p< 0.00001) to maintain their ability to WAO at 1 year (46.0%) than THR patients (90.0%) despite statistical similarity in these 6 factors.

Conclusions: Patients with ASA grade 1-3, MMSE 8-10, prior ability to WAO, Barthel score of 20, and comparable ages are significantly more likely to maintain the ability to WAO at 1 year after THR for displaced intracapsular hip fracture than hemiarthroplasty. These factors may be used to identify a target group for increasing THR uptake with good reliability for improving mobility at 1 year without high risk.

**OP 1-2**

A pilot study to evaluate the effect of a co-management care plan for older patients with hip fracture in Beijing

Yang M.1, Zhang J.1, Lindley R.2,3,4, Harris I.5, Ivers R.3, Tian M.2, Wu X.1

1Beijing Jishuitan Hospital, Orthopaedic Department, Beijing, China, 2The George Institute for Global Health, Peking University Health Science Center, Beijing, China, 3The George Institute for Global Health, University of New South Wales, Faculty of Medicine, Sydney, Australia, 4University of Sydney, Western Clinical School, Sydney, Australia, 5University of New South Wales, South Western Sydney Clinical School, Sydney, Australia

Introduction/Research question: Hip fracture is common among frail older people and significantly contributes to high morbidity and mortality. A previous hip fracture audit conducted in Beijing Jishuitan Hospital (JSTH) showed a significant gap existed in the management of geriatric hip fracture, compared with best practice delivered in UK hospitals. After the audit was completed, JSTH launched the geriatric and orthopaedic co-management care plan (CCP) for older patients with hip fracture, with the key aim of reducing the time from ward admission to surgery. This study aims to evaluate the effect of the CCP on the six standards recommended by the UK best practice.

Methods: This project was designed as a single centre interventional study. The CCP intervention was
initiated from May 2015. The multidisciplinary team consisted of orthopaedic surgeons, geriatricians, anaesthesiologists, emergency physicians and physiotherapists. Data was retrospectively collected from patients admitted to JSTH between 1 January 2012 and 30 April 2017, satisfying the following criteria, aged 65 years and above with X-ray confirmed hip fracture, admitted to JSTH within 30 days after injury, without pathological fractures and terminal malignancies. Collected data included patients’ demographic information, time from emergency to admission, time from admission to surgery, pressure ulcers, osteoporosis assessment, and falls prevention. Multivariable logistic and median regression model was used for binary and continuous outcomes respectively. Segment regression was also performed for time-related outcomes.

Results: A total of 3147 eligible patients (1993 pre-CCP and 1154 post-CCP) were identified from the electronic medical records. Half (vs 6.4%) of the patients who received CCP were operated within 48 hours of the ward admission, 0.4% (vs 1.5%) developed pressure ulcers, 76% (vs 19%) received osteoporosis assessment, by adjusting age, sex, type of fracture, side of fracture and American Society of Anaesthesiologists grade. Similar pattern was found between the groups on falls assessment (99.7% vs 99.6%). Patients without CCP demonstrated a higher rate of the ward admission within 4 hours of arrival in emergency (6% vs 34%).

Conclusion: The introduction of the CCP significantly reduced the time from admission to surgery and improved other outcomes. A multicentre randomized controlled trial is needed to evaluate this model on the hard outcomes.

OP 1-3
The association between self-rated health, self-perceived fracture risk and fracture risk among women screened for osteoporosis – the ROSE study

Rothmann M.1,1,2, Möller S.1, Holmberg T.1, Helberg M.1,4, Gram J.1,2, Bech M.1, Brixen K.2,9, Hermann A.P.1,4, Rubin K.H.4

1Odense University Hospital, Department of Endocrinology, Odense, Denmark, 2Odense University Hospital, Department of Rheumatology, Odense, Denmark, 3University of Southern Denmark, Department of Clinical Research, Odense, Denmark, 4University of Southern Denmark, Department of Clinical Research, Odense, Denmark, 5University of Southern Denmark, Department of Public Health, Copenhagen, Denmark, 6Hospital of Southern Norway, Department of Internal Medicine, Oslo, Norway, 7Hospital of Southwest Denmark, Department of Endocrinology, Esbjerg, Denmark, 8VIVE – The Danish Centre of Applied Social Science Research, Copenhagen, Denmark, 9Odense University Hospital, Odense, Denmark

Background: Limited research has focused on women’s self-rated health and perception of fracture risk for osteoporotic fractures. Self-rated health has previously been shown to be a strong predictor of co-morbidity. Self-perceived fracture risk has been described as complex, influenced by factors such as previous fractures, falls and knowledge about osteoporosis. The link between self-rated health and self-perceived fracture risk and incident osteoporotic fractures is, however, to be explored more closely. Therefore, the aim of this study was to examine the relationship between self-perceived fracture risk and the risk of fractures as well as self-rated health and the risk of fractures using a population-based cohort of Danish women and national registers.

Methods: This prospective study included a cohort of 9,176 women aged 65-81 years living in the Region of Southern Denmark, who participated in the risk-stratified osteoporosis strategy evaluation study (ROSE). These data were linked with information on incident fractures retrieved from national registers. Mean follow-up was 4.8 years. Competing-risk regressions analyses were performed.

Results: A total of 966 women (9.5%) sustained an osteoporotic fracture during follow up. Analyses showed that the majority of fractures (crude numbers) occur among women who perceived their health to be average or good, and in women who perceived their fracture risk to be low or average (for age). Women who perceived their self-rated health to be poor had a higher probability of fractures than women with average or high self-rated health (SHR=1.42 p=0.041). When adjusting the analyses for e.g. age and comorbidity the probability became non-significant. Women with average and higher self-perceived fracture risk had a higher probability of fracture (SHR=1.23 p=0.005 and SHR=1.65 p=0.01). This probability of fractures only remained significant in women who perceived their fracture risk to be average when the analysis was adjusted (SHR=1.19 p=0.048).

Conclusion: The study did not find association between self-rated health and risk of osteoporotic fractures but demonstrated significant association between self-perceived and observed risk of osteoporotic fractures.

OP 1-4
Management of undisplaced intracapsular hip fractures in a regional trauma centre

Espel R.1, Patterson T.2, Craig J.2,3, McDonald S.1, Barr R.J.1

1Royal Victoria Hospital, Trauma & Orthopaedic Department, Belfast, United Kingdom, 2Queen’s University, Belfast, United Kingdom

Introduction: Optimal management for undisplaced intracapsular hip fractures remains controversial. The aim was to review the demographics and outcomes of patients with this injury treated in a regional trauma centre over 15 years.

Methods: A search of the regional trauma centre fracture inpatient database was performed to identify all undisplaced intracapsular hip fractures treated with arthroplasty, fixation techniques or non-operatively from January 2000 to December 2015. All had pre-operative demographic data collected (ASA or comorbidity score, age, mini-mental score, functional score, mobility, and residence) and telephone follow-up to 1 year (mortality, functional score, mobility, and residence).

Results: 948 patients were identified, including 491 (52%) treated with hemiarthroplasty, 380 (40%) with fixation (359 sliding hip screws (SHS) and 21 other internal fixation (IF) techniques), 15 with total hip replacement (THR), and 62 with initial non-operative treatment. Patients with fixation (SHS or IF) had significantly better preoperative demographics and outcomes than hemiarthroplasty patients in all measures apart from prior residence. For all operated groups, the most common American Society of Anaesthesiologists (ASA) grade was ASA 3, representing 316 hemiarthroplasty, 173 SHS, 14 IF, and 7 THR patients. Among ASA 3 patients, fixation patients had significantly better 30-day mortality (2.7% versus 7.9%, p<0.05) but were significantly younger than the hemiarthroplasty group (78 versus 81 years, p<0.001). Both groups were otherwise demographically and functionally similar at admission and 1 year (including 1-year mortality).

Conclusions: Hemiarthroplasty patients had worse outcomes but represented more frail cohort. Among ASA 3 patients, fixation patients were younger than hemiarthroplasty patients and had better 30-day survival but were otherwise similar preoperatively and at 1 year.

OP 1-5
Extracapsular hip fracture surgery: nail or sliding hip screw?

Craig J.2,3, Patterson T.2, McDonald S.1, Barr R.J.1

1Royal Victoria Hospital, Trauma & Orthopaedic Department, Belfast, United Kingdom, 2Queen’s University, Belfast, United Kingdom

Introduction: The United Kingdom (UK) guidelines on the management of trochanteric proximal femoral fractures (AO/OTA 31A) recommend sliding hip screws (SHS) for fixation of trochanteric A1-2 fractures, & cephalomedullary nailing for A3 (e.g. subtrochanteric) hip fractures. Controversy remains regarding fixation methods outside these guidelines. The aim was to compare the demographics &
Abstracts

OP 1-6
A systematic review and meta-analysis comparing a twin interlocking derotation and compression screw cephalo-medullary nail [InterTAN] with a single screw cephalo-medullary nail [Gamma3] in patients with intertrochanteric fractures

Nhrvoss L.1, Trueman P.1, Hofer A.1, Johnstone A.1
1Smith & Nephew, Hull, United Kingdom, 2Aberdeen Royal Infirmary, Aberdeen, United Kingdom

Background: Surgical treatment is the optimal strategy for managing intertrochanteric fractures as it allows early rehabilitation and functional recovery. We sought to assess the effectiveness of two commonly used types of cephalomedullary intramedullary devices for the treatment of unstable intertrochanteric hip fractures.

Methods: A comprehensive systematic review and a pairwise meta-analysis of randomised controlled trials and comparative observational studies comparing an integrated 2 screw de-rotation and compression cephalomedullary nail (InterTAN) versus a traditional single screw cephalomedullary nail (Gamma3) was performed. We report odds ratio (OR) for dichotomous outcomes and mean difference (MD) for continuous outcomes.

Results: Three studies met the inclusion criteria, 2 RCTs and 1 observational study (N=457). Mean age was 75 years and 68% of patients were female. There was no difference in device performance relating to revisions, p=0.20, non-unions, p=0.40 and pain, p=0.9. However, there was a significant difference in post-operative device related complications OR 0.18 (95% CI, 0.06 to 0.52) p=0.002 and HRQoL measured by the Short Form-36 MD 7.40 (95% CI, 2.73 to 12.07) p=0.002 respectively in favour of the integrated 2 screw de-rotation nail compared to the single screw nail.

Conclusion: Our meta-analysis suggests that there is no difference between the two cephalomedullary nails with respect to the incidence of revision, non-unions and pain, however, the integrated 2 screw de-rotation nail reduces post-operative implant related complications and improves HRQoL in patients with intertrochanteric fractures compared to the single screw nail.

OP 1-7
The last role of the uncemented Thompson’s hemiarthroplasty? A series of 1445 patients

Manoharan C.1, Chatterton B.1, Moores T.1, Roberts P.1,2
1Royal Stoke University Hospital, Trauma and Orthopaedics, Stoke on Trent, United Kingdom

Introduction: Guidelines on the management of displaced intracapsular fractures recommend using an Orthopaedic Data Evaluation Panel rated cemented implant. Prior to the National Institute for Health and Care Excellence guidelines, uncemented implants were commonly used in the UK. The Thompson’s hip hemiarthroplasty implant was designed to be inserted uncemented, despite its subsequent use with cement.

Methods: We retrospectively examined the outcomes of patients who received the uncemented Thompson’s hemiarthroplasties at our unit, between April 2005 and December 2010. Patients who underwent revision surgery before December 2011 were identified to give us a minimum of one year follow up. Implant survival calculation utilised the primary outcome of revision to total hip arthroplasty, revision hemiarthroplasty or excision arthroplasty.

Results: 1445 patients received the uncemented Thompson’s implant. Patient mean age was 82 years with 76% female. Forty-six (3.2%) patients required revision surgery, with 15% performed within 30 days of surgery and 62% within 1 year. Reasons for revision were infection (0.83%), acetabular erosion (0.83%) and loosening (0.62%). Twenty-seven patients (59% of total revisions) underwent revision to THA, fourteen (30%) to excision arthroplasty and five (11%) to revision hemiarthroplasty. Cumulative survival rate was 98% at 1 year and 95% at 5 years. 30-day mortality was 7.1%, 1-year mortality was 28.1%.

Conclusion: Current guidelines strongly favour cemented hemiarthroplasty. Recognition that fractured neck of femur patients are a non-homogeneous group is important. In patients with limited life expectancy, an uncemented Thompson is a quick, simple and palliative solution to allow early mobilisation. Correct surgical technique avoids using cement in this cohort, who is most vulnerable to Bone Cement Implantation Syndrome. Cost-effective resource utilisation with an increasingly elderly population remains a surgical responsibility.

Abstracts

OP 1-8
A novel way of managing intracapsular neck of femur fractures in patients who are otherwise deemed unfit to have general or spinal anaesthesia using palliative screw fixation

Marley A1, Jori P.1, Deierl K.1
1Watford General Hospital, Trauma and Orthopaedics, Watford, United Kingdom, 2Watford General Hospital, Watford, United Kingdom

Introduction: Hip fractures are a worldwide public health issue. Approximately 10% of patients with a hip fracture die within 30 days. The overwhelming evidence is in favour of operative management. However, the question of whether this can be applied to the patient who is unfit for general anaesthesia (GA) and spinal anaesthesia (SA) is controversial. We aim to introduce a new management pathway for patients who are unfit to have GA or SA or otherwise palliative. Palliative fixation under local anaesthesia (LA) alongside an ultrasound guided fascia iliaca compartment block (FICB) should be considered in palliative patients with a Garden 1 Neck of Femur Fracture.

Methods: We conducted a retrospective case note review of all of the cases in our Trust who had had this procedure done and assess their 30-day mortality in the past 8 years. In terms of the pathway, once the patient is identified, they are rapidly optimised, including Haematology support and correction of anaemia. An ultrasound guided FICB is performed at least 20 minutes prior to the procedure. Patient
specific thromboprophylaxis is provided. Despite the patient being nil by mouth, all regular medications are continued except for anticoagulants. Once in theatre, antibiotic cover consistent with current Trust Guidance is administered. 10 ml Chirioaine 0.5% for local infiltration is used. A closed reduction and minimally invasive screw fixation is performed. An experienced surgeon can do this in less than 10 minutes with minimal blood loss.

Results: We have identified 11 cases where this pathway has been used in our Trust. The 30-day mortality was zero.

Conclusion: Internal fixation by an experienced operator under ultrasound guided FICB and LA is a minimally invasive minimal risk procedure, which can be highly beneficial for a small subset of patients who would otherwise be deemed unfit for surgery. Whilst what we are presenting does not define a new surgical technique, it does identify a novel way of managing hip fracture fixation in the moribund. Furthermore, providing quality analgesia, nursing care, an acceptable life quality and some hope of a full recovery are all beneficial to the patient.

FREE PAPER 2

OP 2-1

Is tranexamic acid for hip fracture patients safe? A consecutive cohort study based on complete follow-up in national databases

Vilberg B.1, Gundtoft P.H.1, Schrammenn J.2, Pedersen L.1, Andersen L.R.1, Trintstad K.1, Madsen C.F.1, Lauritsen J.1, Overgaard S.5

Kolding Hospital – part of Lillebaelt Hospital, Orthopaedic Surgery and Traumatology, Kolding, Denmark. 1Hospital of Southern Jutland, Department of Orthopaedic Surgery and Traumatology, Esbjerg, Denmark. 2Odense University Hospital, Department of Clinical Immunology, Odense, Denmark. 3Odense University Hospital, Department of Orthopaedic Surgery and Traumatology, Odense, Denmark.

Introduction: Tranexamic acid (TXA) is an antifibrinolytic used in acute surgery for patients undergoing hip surgery due to fracture and lowers the need for red blood cell (RBC) transfusion. Randomized controlled trials have demonstrated RBC transfusion reduction but the safety has not been evaluated. The purpose was to estimate the association of introducing TXA during surgery in hip fracture patients >65 years old on transfusion frequency, haemoglobin, and mortality.

Method: On October the 1st 2016, all hospitals in the southern region of Denmark introduced TXA for hip fracture patients >65 years old. TXA was given during surgery and not recorded electronically. All other data was collected one year after introduction of TXA and compared to the previous year. Participant data for age, sex, body mass index (BMI), Charlson comorbidity index (CCI), time to surgery and death were retrieved from the Danish Interdisciplinary Registry of Hip Fractures and were merged with RBC transfusion and medication data extracted from the Danish Transfusion and Odense Pharmacoepidemiological Databases, respectively. Cox proportional hazards models were used to test relative mortality risk for the TXA group compared to the control group at 30 and 90 days.

Results: There were no major baseline differences concerning age, sex, BMI, CCI, type of fracture, time to surgery or medication. Overall RBC transfusions decreased from 31% to 27% (p < 0.023) and the haemoglobin reduction on the first postoperative day was mean (95% CI) 1.10 (1.06; 1.14) with TXA and 1.17 (1.13; 1.22) without TXA (p < 0.01). The 30-day mortality rate (95% CI) was 10% (9.12) for the TXA group compared to 10% (8.11) in the control group yielding an adjusted relative mortality risk of 1.07 (0.84;1.32). The 90-day mortality rate was 17% (15;19) in the TXA group and compared to 16% (14;17) in the control group yielding an adjusted relative mortality risk of 1.10 (0.93;1.32).

Conclusion: On a period level, TXA seems safe and was associated with a reduction of RBC transfusion frequency while not leading to a higher mortality in hip fracture patients. A limitation of our study is that TXA data on an individual patient level has not been validated yet.

OP 2-2

How we turned around a failing service – The Horton Fracture Neck of Femur experience – Rising to the top of the league table (NHFD)

Anand S.3, Kannan A.1, Hewitt-Cray J.1, Garrett L.1

Horton Hospital, Banbury, United Kingdom

Introduction: Hip fracture is a common, serious, costly and potentially preventable condition. Since 2009, the National Hip Fracture Database (NHFD) has demonstrated uneven service quality across the NHS. Optimum care is complex involving many professional disciplines and depends critically on teamwork that focuses on patient experience.

The NHFD 2011 Report documented that only 3% of hip fracture patients at Horton Hospital, Banbury, (UK) received Best Practice Tariff (BPT) standards. Only 57% were operated within 36 hours; mean time to theatre was 40 hours. Hemiarthroplasties were unencumbered and eligible patients did not receive total hip replacements. Thirty day mortality rate was 9.5% and pressure sore rate was 15% (second worst in the country). There was minimal perioperative assessment and no secondary prevention assessment.

Methods: It was agreed that an uncompromising response with a complete culture change was warranted. A core team of an Orthopaedic Surgeon, an Orthogeriatrician and an Anaesthetist were identified. The team decided to work together towards shared goals in a constructive way, concentrated on tasks not behaviour and moved quickly from analysis to action. The initial focus was on Best Practice Tariff and cases were discussed at monthly meetings. Each case was analysed by the team using the clinical notes and theatre list records. The findings were highlighted in displayed minutes and a “case of the month” was chosen where care had been exemplary. The team added additional Key Performance Indicators (KPI) using NICE guidance and specialty evidence base. We developed pathway protocols for conditions such as delirium starting from initial paramedic care through hospital care to discharge back to community services. The team continues to evolve KPIs and currently monitor 29 parameters.

Results: The Horton Hospital has ranked in the NHFD top five for provision of BPT for five successive years. In 2017, the hospital achieved first place amongst 177 hospitals with a BPT achievement rate of 93% (nationally -59%). Adjusted thirty day mortality rate has been below the national mean for three successive years and is currently 2.9% (nationally -6.7%). Time to theatre has reduced from 40 to 19 hours (nationally - 32 hours). Length of stay has decreased from 22 to 16 days (nationally - 20 days).

Conclusion: A multi disciplinary team approach with identification of additional KPIs were the key contributors in turning around a failing service.

OP 2-3

Factors affecting incidence of delirium in elderly hip fracture patients in Singapore

Levybolon S. V.1, Sebastian P. A.2, Ruan X. C.3, Tay Y. L.4, Ng R. M.1, Nguyen M. H.4

Ministry of Health Holdings, Singapore. 1Department of Geriatric Medicine, Singapore General Hospital. 2SingHealth Residency, Singapore

Introduction: Delirium is associated with worse outcomes in hip fracture patients. In ageing Singapore, data is scarce regarding the factors that contribute to the occurrence of delirium in elderly hip fracture patients.

Methods: A retrospective study of hip fracture patients aged 60 and above admitted to Singapore General Hospital over 5 months from February to October 2017. Comprehensive geriatric assessment was conducted on all patients and their clinical and surgical characteristics were documented. Patients were screened on admission and daily during inpatient rounds for delirium using the Confusion Assessment Method (CAM). Logistic regression analysis was employed to identify risk factors predisposing patients to delirium.

Results: A total of 257 hip fracture patients were admitted. Of these, 31 (12.1%) were diagnosed...
with delirium either on admission or during hospitalization. Patients with delirium had longer length of inpatient stay (mean 17.4, SD±3.9 days vs 12.5, SD±9.0 days, p<0.001) and more likely had non-operative management of hip fracture (25.8% vs 9.3%, p<0.003). Univariate analysis revealed that higher Clinical Frailty Score (OR 1.5, 95%CI: 1.1-1.9, p=0.006) and underlying dementia (OR 3.9, 95%CI: 1.7-9.1, p=0.002) were related to incidence of delirium in hip fracture patients. Charlson age-adjusted comorbidity index (OR 1.0, 95%CI: 0.8-1.2, p=0.976) and Nottingham Hip fracture Score (OR 11.9, 95%CI: 0.8-16, p=0.484) were independent but not significant risk factors for delirium. On multivariable regression analysis, newly diagnosed dementia (OR 5.3, 95% CI: 1.5-18.5, p<0.008) was an independent risk factor for delirium.

**Conclusion:** Frailty and underlying dementia were associated with delirium in elderly hip fracture patients in Singapore. Patients with delirium also had longer lengths of hospitalization and were more likely to receive non-operative management of hip fracture.

**OP 2-4**

**Time to surgery after hip fracture across Canada by timing of admission**

Shawhan K.1, Filliter C.2, Sobolev B.1, Levy A.2, Gay P.3, Karamoto L.1, Kim J.1, Dunbar M.1, Morin S.1, Jagal S.1, Harvey E.1, Beupre L.1, Chudyk A.1, The Canadian Collaborative Study on Hip Fractures

**Abstract:**

*Kings College London, London, United Kingdom, 2Dalhousie University, Halifax, Canada, 3University of British Columbia, Vancouver, Canada.*

**Introduction:** To compare whether time to surgery after hip fracture varies across Canadian provinces for surgically-fit patients and their subgroups defined by timing of admission.

**Methods:** We retrieved hospitalization records for 140,235 patients 65 years and older, treated surgically for hip fracture between 2004 and 2012 in Canada (excluding Quebec). We studied the proportion of surgeries on admission day and within 3 inpatient days, and times required for 33%, 66% and 90% of surgeries across provinces and by subgroups defined by timing of admission. Differences were adjusted for patient, injury and care characteristics.

**Results:** Overall, provinces performed similar proportions of surgeries within the recommended three inpatient days, with all provinces requiring one additional day to perform the recommended 90% of surgeries. Prince Edward Island performed 70% more surgeries on admission day than Ontario irrespective of timing of admission (difference>70%, 95% CI 4.0, 9.3). The proportion of surgeries on admission day was 6.3% lower in Manitoba (difference=-6.3, 95% CI -12.1, -0.6), and 7.7% lower in Saskatchewan (difference=-7.7, 95% CI -12.7, -2.8) compared to Ontario. These differences persisted for late weekday and weekend admissions. The time required for 33%, 66%, and 90% of surgeries ranged from 1-2, 2-3, and 3-4 days, respectively, across provinces by timing of admission.

**Conclusions:** Provinces performed similarly with respect to recommended time for hip fracture surgery. The proportion of surgeries on admission day, and time required to complete 33% and 66% of surgeries varied across provinces and by timing of admission. This may reflect different provincial approaches to providing access to hip fracture surgery.

**OP 2-5**

**Implementation of national benchmarks:** Changing local practice, improving patient outcomes: A quality improvement project at St George Hospital Sydney

Sadler C.1, Giandzi S.2, Mohamed Iqbal I.2, Tate R.1, Mahnar R.1

*1St George Hospital, Kogarah, Australia, 2St George Hospital, Anaesthetics, Kogarah, Australia, 3St George Hospital, Orthopaedics- Trauma, Kogarah, Australia*

**Abstract:**

The 2016 first annual report of the Australia and New Zealand Hip Fracture Registry (ANZHFR) identified key areas for improvement in the management of hip fracture patients. A multidisciplinary team at St George Hospital was tasked with implementing local changes in policy and practice aiming for sustained improvement, meeting the benchmarks set by the ANZHFR. We report the outcomes of the peri-operative benchmarks following this initiative.

**Methods:** Staged changes were initiated and coordinated by the lead anaesthetist for orthopaedic trauma (July 2016-July 2017):

- Locking in the ‘golden’ case ensuring prompt start times and list efficiency, prioritising hip fractures on the orthopaedic lists.
- Multidisciplinary learning and collaboration: joint education sessions between anaesthesia, orthopaedics and orthogeriatrics focusing on early streamlined assessment and peri-operative management, facilitating communication and shared responsibility.

This formed the basis of a locally adapted management guideline (Orthopaedics – Fracture Neck of Femur Minimum Standard of Care), published in August 2017. Two audits of practice were undertaken (audit 1 March-June 2017, audit 2 July-October 2017) to evaluate the effect of these initiatives.

**Results:** Average time to surgery reduced from 56 (pre-intervention 2016) to 39 (audit 1) and 33 hours (audit 2), by improved theatre utilisation and reduced cancellation (medical and organisational). Operative delay beyond 48 hours reduced from 25% to 7% (p<0.0001). Other benchmarked measures which improved include:

1. 100% of patients received systemic analgesia in ED, increased from 85% (p 0.0018).
2. 90% of patients received pre-operative nerve blocks, an improvement from 86% (p 0.4076).
3. Sustained avoidance of general anaesthesia in 40% of patients, improved from an 8% baseline in 2016
4. 67% of patients mobilised on day 1, up from 47% (p 0.0168).

**Conclusion:** Implementation of a locally agreed standard of care in our institution enhanced the care of patients with hip fractures. Sustained improvements were demonstrated in key areas including time to theatre, analgesia, and post-operative mobilisation. A multidisciplinary approach is vital, involving all stakeholders. The anaesthetic department plays an integral role in the peri-operative management of these patients, with early assessment, provision of analgesia, and operating lists efficiency, all collectively leading to improved patient outcomes.

**OP 2-6**

**Surgical delay under 12 hours is associated with improved short- and long-term survival in moderate- to high-risk hip fracture patients**

Hongisto M.T., Pikiajamaki H.K.1, Luukkaala T.H.1,2, Valasto O.1, Nuoto M.S.1

*1Seinäjoki Central Hospital, Division of Orthopaedics and Traumatology, Seinäjoki, Finland, 2University of Tampere, Tampere, Finland, 3Pirkkala Hospital District, Research and Innovation Center, Tampere, Finland, 4University of Tampere, School of Health Sciences, Tampere, Finland, 5Seinäjoki Central Hospital, Department of Geriatric Medicine, Seinäjoki, Finland*

**Abstract:**

**Introduction:** The effect of 24 hours, 48 hours’ and 72 hours’ delay to surgery on short- and long-term mortality has been investigated comprehensively in hip fracture patients, while there is only limited evidence how a threshold of 12 hours’ delay to hip fracture surgery affects survival. The aim of this prospective observational study was to examine the impact of early timing (<12h) of surgery on short- and long-term survival in moderate- to high-risk hip fracture patients.

**Methods:** Population-based data were collected on consecutive hip fracture patients aged 65 sustaining their first hip fracture and treated at Seinäjoki Central Hospital. The independent variable of delay to surgery was categorized as >12h, 12-23h, 24-48h and >48h. Mortality data were registered at 30 days and 365 days post fracture. In the final analyses patients with American Society of Anesthesiologist
Introduction: With a global increase in life expectancy and an epidemic of hip fractures, the number of oldest old sustaining hip fracture is likely to increase. This group presents difficult management problems and are likely to be managed conservatively because of perceived risk of surgery, perception of age, and reluctance of surgeons to operate. With evolution of Orthogeriatric care and better understanding of frailty, this group of patients should be evaluated in the light of emerging evidence. The study aimed to examine one-year mortality in nonagenarians with hip fracture and its major determinants.

Methods: A retrospective analysis was done on 93 patients, 76 females and 17 males admitted to Hip Fracture Service between January 2015 and February 2017. 30-day and one-year mortality were analyzed and adjusted for demographic profiles, comorbidities, premorbid functional (Modified Barthel Index, MBI) and frailty status (Clinical Frailty Scale, CFS). American Society of Anesthesiologists (ASA) scores.

Results: Mean age of the cohort was 93.3(90-108) and 58% underwent surgical fixation. Four (4.3%) died within 30 days, 3 from non-surgical overall. One-year mortality was 19%, with 33.3% in the conservative group compared to 9.3% in the surgical group. In univariate analysis, frailty (p=0.019), ASA (p=0.016), and comorbidities (p=0.035) were independently associated with increased mortality. However, sex (p=0.358) and type of fracture (p=0.201) were not significant determinants. In multivariate logistic regression analysis, conservative management emerged as significant determinant of one-year mortality with odds of 4.65 (95% CI 1.09 – 19.7) p=0.034. There was a significant difference in both CFS and MBI in surgical compared to nonsurgical groups (CFS 5.2 vs 6.3 p<0.001 and MBI 88.64 vs 61 p<0.001).

Conclusion: Conservatively managed patients have a higher mortality at both 30 days and at 1 year. They are likely to be frailer and functionally dependent. Assessment of frailty and pre-fracture function should be taken into consideration when deciding about counseling and management options in this vulnerable group of patients.

OP 2-8
High prevalence of preoperative deep venous thrombosis in elderly hip fracture patients with delayed hospital admission

Bengoa F.1, Vicencio G.1, Schweitzer O.1, Amendtob P.P.P.1, Liu M.J.1, Klaber I.1
1Pontificia Universidad Católica de Chile, Orthopedic Surgery Department, Santiago, Chile; 2Pontificia Universidad Católica de Chile, School of Medicine, Santiago, Chile

Introduction: Deep venous thrombosis (DVT) is a common complication following hip fracture and is associated with high morbimortality rates. Reports of preoperative DVT prevalence are scarce, especially in patients with delayed hospital admission; most series are centered in postoperative DVT. Our objective was to determine the prevalence of preoperative DVT in patients with a hip fracture and delayed hospital admission of 48 hours or more.

Methods: We enrolled all patients with hip fracture occurred 48 hours or more previous to hospital admission, between September 2015 and October 2017. Out of 273 patients with hip fracture, 59 had a delay of 48 or more hours prior to admission. We excluded patients using anticoagulant therapy, those with pathologic fractures and patients with a previous diagnosis of DVT. We included 41 patients, all who were submitted to both lower extremity doppler venous ultrasound at admission. Age, sex, Charlson comorbidity score, ASA score, fracture type, hours from injury to admission, hours from admission to surgery and hours to discharge were registered.

Results: Forty-one patients were studied, 29 were female. Age was 79 (±10.3) years old. Time of injury to hospital admission was 120 hours (48-569). Seven patients (17%) were diagnosed with DVT at admission. There were no significant differences between patients with and without DVT in terms of demographic information, scores, fracture type, hours from admission to surgery and hours to discharge.

Conclusions: DVT prevalence in patients with 48 hours or more from injury to hospital admission was 17%. Preoperative DVT diagnosis and treatment did not affect time to surgery and time to discharge. To our knowledge, this study constitutes the largest series to date in patients with delayed hospital admission. Our results suggest screening for DVT in patients with hip fracture with 48 hours or more from injury.

Keywords: Thromboprophylaxis, hip fracture, deep venous thrombosis, thromboembolism

Level of Evidence: IV

FREE PAPER 3
OP 3-1
Research priorities in lower limb and pelvic fragility fractures: A UK priority setting partnership with the James Lind Alliance

Fernandez M.1, Costa M.1, on behalf of the Lower Limb PSP Steering Group
University of Oxford, Oxford Trauma, Oxford, United Kingdom; 2University Hospital Coventry & Warwickshire NHS Trust, Coventry, United Kingdom

Objective: To determine research priorities in lower limb and pelvic fragility fractures which represent the shared interests of patients, healthcare professionals, and carers.

Setting: A national (UK) priority setting partnership.

Participants: Patients: over 60 years of age who have previously suffered a fragility fracture of the
lower limb or pelvis. Carers: all those involved in the care (both in- and out-of-hospital) of adults with a fragility fracture of the lower limb or pelvis.

Healthcare professionals: all involved in the care of patients with fragility fractures of the lower limb or pelvis including but not limited to surgeons, physicians, physiotherapists, and occupational therapists.

Methods: The process and methodology employed was overseen by the James Lind Alliance over an 18-month period between August 2016–Jan 2018. A national scoping survey asked respondents to submit their research uncertainties. These research uncertainties were then amalgamated into a smaller number of representative research questions. A second national survey was distributed asking respondents to prioritise the research questions. A final shortlist of 25 questions was taken to a multi-stakeholder workshop.

Results: There were 963 original research uncertainties submitted by 365 respondents to the first survey. These original research uncertainties were refined into 88 representative research questions of which 76 were determined to be true uncertainties following a review of the current research evidence. Healthcare professionals and non-healthcare professionals (patients, carers, families) were represented equally in the respondents to both surveys. The top ten research questions represent uncertainties in rehabilitation, pain management, anaesthesia, and surgery.

Conclusions: We report the top ten UK research priorities for fragility fractures of the lower limb and pelvis derived by a Priority Setting Partnership with the James Lind Alliance.

**OP 3-2**

**Medical complications after arthroplasty for hip fracture in Sweden. A national study of 42 212 patients**

Hansson S.1, Nemes S.2,3, Kanthom J.2,4, Rogmark C.2,4
1 Lund University, Department of Orthopaedics, Skane University Hospital, Malmo, Sweden, 2 Swedish Hip Arthroplasty Register, Center for Registers, Gothenburg, Sweden, 3 University of Gothenburg, Department of Orthopaedics, Sahlgrenska Academy, Gothenburg, Sweden

**Introduction:** Many studies have focused on improving the surgical outcome after hip fracture. Less focus has been placed on the medical complications, which are equally hazardous for the patients. Annually, 18 000 Swedes suffer a hip fracture, but the true number of adverse events after hip fracture surgery are hard to determine. We aimed to assess the number of adverse events after hip fracture arthroplasty with emphasis on medical complications, based on register data.

**Methods:** Data from the Swedish Hip Arthroplasty Register on patients with acute hip fracture treated with total hip arthroplasty (THA) or hemiarthroplasty (HA) during 2005-2012 was cross-matched with the Swedish National Patient Register for the presence of diagnostic codes representing adverse events within 180 days after surgery and with Statistics Sweden for information on income and education. By logistic regression, the occurrence of medical complications was compared between HA and THA, and adjusted for age, gender, level of education, marital status and Elixhauser comorbidity index.

**Results:** 42 212 patients were included, 8 647 (21%) THA and 33 565 (80%) HA. 29 981 (71%) were female, mean age was 82 years (SD 8). Within 6 months after surgery, 13 680 patients (32%) had suffered a medical complication and 18 852 (45%) any adverse event, including complications affecting the hip. 8 760 (2%) were cardiovascular, 2 529 (6.0%) pneumonia, 2 337 (5.5%) urinary tract infection, 1 350 (3.2%) cerebrovascular, 1 041 (2.5%) thromboembolic, 538 (1.3%) renal failure, 477 (1.1%) stomach ulcer, 459 (1.1%) pressure wound. HA had a slightly lower risk of medical complications at 6 months post-surgery (OR=0.86, 95% CI 0.76-0.97).

**Conclusion:** Adverse events after fracture arthroplasty is common and 6 months after surgery almost half of the patients are affected. One third suffer medical complications, mainly cardiovascular events and infections, indicating that more medical vigilance is needed. On the other hand, thromboembolic events were rare, presumably due effective prophylaxis. HA was associated with fewer complications at 6 months. If this may be due to THA being more strenuous need to be further explored.

**OP 3-3**

**Affordable technology in rehabilitation to improve mobility and physical activity: interventions and outcomes for hip fracture survivors participating in the AMOUNT (Activity and MOBility UsiNg Technology) rehabilitation trial**

Sharington C.1, Crotty M.2, Hassett L.1, van der Berg M.1, McCluskey A.1, van der Ploeg H.4, Smith S.5, Schurr K.6
1 University of Sydney, Musculoskeletal Health Sydney, School of Public Health, Sydney, Australia, 2 Flinders University, Adelaide, Australia, 3 University of Sydney, Faculty of Health Sciences, Sydney, Australia, 4 VU University Medical Center Amsterdam, Department of Public Health and EMCO+ Institute for Health and Care Research, Amsterdam, Netherlands, 5 Southern Cross University, Coffs Harbour, Australia, 6 Bankstown-Lidcombe Hospital, Physiotherapy, Sydney, Australia

**Introduction/Research question:** Technology may enable a higher dose of exercise to improve rehabilitation outcomes. We explored the addition of affordable technology to usual care in people with mobility limitations after hip fracture, admitted to inpatient rehabilitation units.

**Methods:** We undertook a pragmatic, assessor blinded, parallel-group randomised trial among 302 consenting rehabilitation inpatients. Twenty-five participants were hip fracture survivors. The intervention group received a 6-month technology-based exercise program, prescribed by a physiotherapist to target mobility and physical activity problems. Technology included video and computer games/exercises and tablet applications as well as activity monitors. The control group received no additional intervention and both groups received usual rehabilitation care. In the whole sample, significant between-group differences were seen in mobility improvement at both 3 weeks and 6 months, using the Short Physical Performance Battery (SPPB). The present analysis describes the intervention dose, SPPB scores and falls frequency among trial participants with recent hip fractures.

**Results:** The 25 hip fracture survivors participating in the trial had an average age of 82.5 (SD 10.8) years, 15 (60%) were female and 10 (40%) were randomised to the intervention group. These intervention group participants received an average (SD) dose of technology-based exercise of 170 (63) minutes during the inpatient phase, in an average of 5.5 (1.9) sessions with an average duration of 33 (9) min. In the post-hospital phase the average physiotherapy input was 350 (87) min over an average of 71 (2) face to face and 71 (4.6) remote (commonly phone-based) sessions. The average (SD) improvement in 12-point SPPB score in the intervention group was 2.4 (2.3) at 3 weeks and 4.3 (2.6) at 6 months. Corresponding values in the control group were 2.0 (2.1) and 3.7 (3.0). Between-group differences did not reach statistical significance at 3 weeks (0.30, 95% CI 1.159 to 2.2, p=0.745, n=24) or 6 months (0.56, 95% CI -2.08 to 3.19, p=0.662, n=22). Over the 6-month follow-up period 5 falls occurred in the control group and 2 in the intervention group.

**Conclusions:** A tailored exercise intervention, using technology in addition to usual rehabilitation, is feasible, appears to have positive impacts, and is worthy of further investigation in hip fracture survivors.
OP 3-4
Mortality rates of patients screened as part of a provincial fracture liaison service in Ontario, Canada
Beaton D.1, Suic Q.1, Luo J.1, Mamdani M.1, Jagolli S.3, Cadarette S.5, Bogaie J.3, Sale J.1, Jain R.3, Fracture Screening and Prevention Program Evaluation Team 1St. Michael’s Hospital, Toronto, Canada, 2Institute for Clinical Evaluative Sciences, Toronto, Canada, 3Department of Physical Therapy, Toronto, Canada, 4Chronic Disease & Pharmacotherapy Research Program, Toronto, Canada, 5Osteoporosis Canada, Toronto, Canada

Research question: What are the mortality rates and factors influencing mortality rates among fragility fracture patients screened as part of a provincial fracture liaison service (FLS) in the province of Ontario, Canada?

Methods: This longitudinal cohort study was based on data from fragility fracture patients aged 50 years and over who were screened as part of a provincial FLS. All patients in the study consented to their data being linked to a provincial administrative database. We assessed mortality rates at year one, two and five. Multivariable Cox model was used, adjusting for age, sex and index fracture type while assessing the likelihood of death at year five post screening.

Results: There were 6,543 fragility fracture patients 50 years of age and older whose data were successfully linked to administrative databases. Majority were female (82%) with mean age 68.1 (±11.4). Crude mortality rates at follow up were 2.7% at year one, 5.6% at year two and 14.8% at year five. The multivariable Cox regression model showed that index fracture, age and gender were all associated with a higher likelihood of death 5 years after screening. As compared to the 50-65 age group, those 66 and older had a higher likelihood of death at the 5 year follow up (HR 2.5 [1.9-3.3] p< 0.001) as did presenting with a hip fracture (HR 1.5 [1.3-1.8] p< 0.001) and shoulder fracture (HR 1.4 [1.2-1.7] p< 0.01). Being female was found to decrease the probability of death HR 0.54 [0.46 -0.62] p< 0.001.

Conclusion: This analysis describes the likelihood of death at five years post screening in patients screened through a provincial FLS. Adjusted analysis showed that patients presenting with a shoulder or a hip fracture had higher likelihood of death as compared to those with a wrist fracture. Those presenting with multiple fractures at screening had an even higher likelihood of death, even after adjusting for other factors. This, along with our previous research showing that patients presenting with multiple fractures have high re-fracture rates, points to the need to flag this patient group as high risk.

OP 3-5
Hip fractures – treatment and functional outcome. The development over 25 years
Turesson E.1, harsson K.1, Thorhagen K.1-4, Hommel A.2,3
1Skåne University Hospital, Department of Orthopaedics, Lund, Sweden, 2Lund University, Department of Clinical Sciences, Lund, Sweden

Introduction: Nearly 18000 individuals suffer from hip fracture in Sweden each year. The choice in operation method has evolved over the years as well as the overall management. Functional outcome after hip fracture is affected by several factors and the overall functional level for old people in Sweden has improved over the last decades.

The objective of this study is to describe and analyse the functional outcome and choice in operation method for patients with cervical and trochanteric fractures over the last 25 years.

Methods: All patients with cervical and trochanteric hip fracture treated at Lund University Hospital, Sweden, from 1988 until 2012 were collected from the National Quality Register for hip fracture patients, RIKSHÖFT. Patients younger than 50 years and those with pathological fractures were excluded.

Using WHO classification, 30.0-34.9 had the highest adjusted OR, 3.522 (95% CI: 2.67-4.64), for 1-year survival. Patients with BMI 25.0-29.9 were most likely to return to independent living at 4 months, OR 1.586 (95% CI: 1.21-2.08).

Conclusion: The BMI paradox seems to be relevant also for patients with hip fractures. A high BMI was associated with lower 1-year mortality and greater ability to return to independent living among elderly hip fracture patients.

OP 3-6
The association between BMI and 1-year mortality in elderly patients with hip fractures – An observational study on the BMI paradox
Erdfelt A.1, Hommel A.2,3, Mehn C.1, Heidström M.1, Karolinska Institutet, Stockholm, Sweden, 2Swedish Hip Fracture Registry, Lund, Sweden, 3Umeå University, Umeå, Sweden, 4Swedish Hip Fracture Registry, Karolinska Institutet, Stockholm, Sweden

Introduction: Previous studies on elderly patients have reported findings of BMI being positively associated with survival, a phenomenon called the BMI paradox. BMI as a predictor has not been studied on patients with traumatic hip fractures, which afflicts approximately 18,000 patients yearly in Sweden. As hip fractures are associated with high mortality and reduced quality of life postoperatively, it is of interest to identify prognostic factors.

Aims: To investigate the association between BMI, short-term mortality, and independent living after a hip fracture.

Material and Methods: 10,203 patients from the Swedish National Hip Fracture Registry (RIKSHÖFT) were included. Excluded were younger patients (< 65 years) and those who were treated conservatively. The association between BMI and both 1-year survival and ability to return to independent living was investigated by using multiple logistic regression. Odds ratios (OR) were adjusted for age, gender, comorbidities, mental status, and time until surgery.

Results: Patients with BMI >26 had higher survival rate (83.3%) than patients with BMI < 22 (69.0%) and BMI 22-26 (78.3%), respectively (p< 0.0001). Using WHO classification, BMI 30.0-34.9 had the highest adjusted OR, 3.522 (95% CI: 2.67-4.64), for 1-year survival. Patients with BMI 25.0-29.9 were most likely to return to independent living at 4 months, OR 1.586 (95% CI: 1.21-2.08).

Conclusion: The BMI paradox seems to be relevant also for patients with hip fractures. A high BMI was associated with lower 1-year mortality and greater ability to return to independent living among elderly hip fracture patients.
Fx incidence following aFx to explore how Fx type influences subsequent Fx risk.

Materials and Methods: Women aged 55–90 years, who suffered a fragility Fx in 2013 (index Fx) were identified from Swedish national registries. A history of prior Fx (earliest available date 2001) was used to describe Fx cascade patterns. The cumulative incidence of Fx within 24m following index Fx was assessed by index Fx type to describe the association between index and subsequent Fx type.

Results: 35,171 women were included in the analysis (the number of index Fx types were: 7187 hip; 2,827 clinical vertebral; 25,503 non-hip/non-clinical vertebral [NNHVF]). The mean age at index date was 74 years. The percentages of women with a history of prior Fx by index Fx type were: hip, 40%; clinical vert, 41%; NHVF, 27%. Across all index Fx types, the proportion of women with a history of any prior Fx increased with age (50–59 years [12%]; 60–69 years [22.2%]; 70–79 years [30.7%]; 80–89 years [43.1%]; 90 years [50.6%]). A similar pattern was observed for index Fx types: hip, clinical vert and NHVF. Overall, more than 1 in 3 patients with an index hip or clinical vert Fx had already suffered one or more prior fragility Fx. Over 24m following any index Fx, the cumulative incidence of any post-index Fx was 11.4%; for post-index clinical vert Fx it was 17.6%, and for post-index hip Fx it was 13.7%.

Conclusions: The proportion of patients with a prior Fx increases with advancing age, >40% of hip and clinical vert Fx in women ≥70 yrs of age were subsequent Fx. The location of Fx influences the incidence and type of subsequent Fx during the 24 months following a fragility Fx. The imminent Fx risk is >10% for vertebral, hip and humerus Fx. These Fx may have been prevented with the use of effective treatments at the time of the first Fx. These data highlight the importance, clinical impact and need for early effective treatment soon after any fragility Fx for subsequent Fx prevention.

Funding: UCB Pharma.

OP 3-8
Rate of sustaining a second hip fracture: an analysis of 29057 patients
Craig LQ M1, Patterson T2, McDonald S1, Foster A3, Patton S1, Shirley D1, McLachlan G C1, Barr R1.
Royal Victoria Hospital, Trauma & Orthopaedic Department, Belfast, United Kingdom, 1Queen’s University, Belfast, United Kingdom, 2Aalborg Osteoporosis Centre, Aalborg, Denmark, 3Craigavon Area Hospital, Trauma & Orthopaedic Department, Craigavon, United Kingdom, 4Ulster Hospital, Trauma & Orthopaedic Department, Belfast, United Kingdom

Introduction: Hip fractures are the most common cause of serious injury in the elderly. As hip fractures are fragility fractures, patients who have sustained a hip fracture may be prone to further fragility fractures in future. Information on the rate of a second (contralateral) hip fractures is limited. The aim was to identify the rate of fracture of the contralateral hip among patients who have already sustained a hip fracture, and mean time to second fracture.

Methods: Details of all patients admitted with acute hip fractures in Northern Ireland from 1 January 2000 to 28 October 2017 were retrieved from the regional inpatient database. A spreadsheet analysis model was created to identify readmissions, and admissions of patients with similar details, for which other demographic identifiers were used to clarify identity. Procedures used for treatment of acute hip fracture, and patients treated non-operatively, were included. Revision procedures, and other procedures such as soft tissue procedures, were excluded.

Results: 31321 cases were identified. 561 cases were excluded (most as duplicate entries). 29057 patients were included. 27354 patients sustained only one hip fracture. 1703 (5.5%) sustained a second hip fracture (i.e. 30760 cases total). Patients sustaining their first hip fracture while aged 75–79 had the highest risk of sustaining a second hip fracture (7.3%), with this risk declining steadily with age, to a rate of 2.7% if aged 95 or over. 8% of hip fracture patients aged 95 or over had sustained a previous hip fracture. This rate increased with age from 1% of patients aged under 50. The mean time to fracture of the other hip was 3 years, with this time interval decreasing with age, from 4.5 years in patients aged under 50, to 1.3 years among patients aged 95 or over.

Conclusions: 5.9% of patients sustained a second hip fracture. The mean time to a second fracture was 3 years, and decreases with patient age. Patients aged 75–79 had the greatest risk of fracturing their other hip.

Friday, 6 July 2018

FREE PAPER 4
OP 4-1
Assessing the impact of prescribing anti-osteoporosis medication after an index fracture as part of a national clinical audit
Iavoad K1, Judge A1, Caglocher C2, Vasilakos N3
1Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences, Oxford, United Kingdom, 2Royal College of Physicians, London, United Kingdom

Introduction: Our aim was to identify what proportion of patients over 50 years are initiated on bone protection therapy following a fragility fracture. Methods: Each FLS in the audit was asked to submit data on all patients they saw who were aged 50 or over and who had sustained a fragility fracture that was diagnosed in the NHS between 1 January and 30 December 2016. As part of the audit we asked whether the patient was recommended bone therapy by the FLS. Anti-osteoporosis medication included were: alendronate, risedronate, ibandronate, raloxifene, teriparatide, strontium, systemic oestrogen, systemic oestrogen and progesterone, calcitriol and alfalcacidol. There were a few cases where more than one drug was submitted. To identify the recommended drug, a hierarchy was used to select the one drug: oral bisphosphonate > denosumab > zoledronate, then teriparatide or raloxifene or strontium or activated vitamin D or oestrogen therapy.

Results: 50 FLS submitted data on 42,000 patients. Of the patients who have a recorded treatment outcome, 23% were recommended for bone therapy and 11% required further clinical input (either by a GP or another clinician). However, there was considerable variation at FLS level, firstly the decision to treat and then the specific type of bone therapy recommended by FLSs:

- 30% of patients had a recorded clinical decision not to treat or inappropriate (IQR 22–42%, Range 0–70%)
- 18% of patients were prescribed an oral bisphosphonate (IQR 5–27%, Range 0–51%)
- 2% of patients were prescribed zolendronate (IQR 0–2%, Range 0–32%)
- 3% of patients were prescribed denosumab (IQR 0–2%, Range 0–15%)
- 0% of patients were prescribed raloxifene (IQR 0%, Range 0–4%)
- 0% of patients were prescribed teriparatide (IQR 0–0%, Range 0–4%)

Conclusions: NICE technology assessments (TAs) 161/204 have provided recommendations for first and second-line bone therapies after a fragility fracture for FLSs to follow. This audit has demonstrated marked variation between FLSs in the decision to treat and the type of bone therapy. Bone therapies vary in cost but also adherence and potentially effectiveness. These data suggest that local interpretation of national recommendations is significantly impacting therapeutic options offered to patients in the NHS. Better understanding of the contributory factors for this variation will inform future FLS delivery and more effective and efficient medicines management.
Clinical experience in 10 patients implanted with a contralateral prophylactic medical device in case of first low-energy hip fracture due to severe osteoporosis

Aebli M.1,2, Gevenois P.2, Joyankuro M.1,2
1Salem Spitali, Orthopedic Department, Bern, Switzerland, 2University Hospital of Brugmann, Brussels, Belgium, 3Pellegrin Hospital, University Hospital of Bordeaux, Bordeaux, France

Introduction: An innovative implant, Y-STRUT® (Hyprevention, France) was designed to provide prophylactic reinforcement of the proximal femur in patients suffering from a first pterochanteric low-energy hip fracture due to osteoporosis. We present our clinical experience1 of the first 10 patients implanted between February 2013 and December 2016.

Methods: Prophylactic consolidations were performed under the same anaesthesia of a hip fracture surgical treatment in the opposite side for osteoporotic patients at high risk of contralateral fracture. A prospective, single-arm, multicentre, and international pilot study, HIPHO, was completed including the first 10 osteoporotic patients implanted with the studied device, with a follow-up of 5 years that is still ongoing. Procedure feasibility and safety as well as mid-term safety and tolerance of the studied device were assessed with several criteria, such as walking recovery, pain, radiographic control and adverse events. Clinical efficacy was evaluated through the occurrence of fractures during post-operative follow-up.

Results: Ten elderly patients (mean 82±7.9y) had contralateral prophylactic consolidation because of a severe osteoporosis (mean T-score -3.2±1.2) resulting in first hip fractures. Median follow-up ranges from 5 to 47 months. Six orthopaedic surgeons performed the surgery with a mean duration of 56±19min for device implantation and 37±24min for hip fracture fixation, with a mean cement injection of 8±1.6mL. In all patients, wound healing was achieved, with no case of wound infection, bleeding, or inflammation. No hospitalisation lengthening was needed. All patients recovered walking and no pain was reported at 3 weeks. Radiographic exams performed at 3-month-follow-up revealed that the device was well integrated in the bone. No fracture occurred up to now.

Conclusions: Results from this study demonstrated the tolerance and safety as well as the short-term clinical efficacy of the studied device. In addition, safety and feasibility of the procedure was also demonstrated. Additional data need to be recorded on a greater number of subjects with longer follow-up to confirm the clinical benefits of Y-STRUT® implantation.

References:

Characteristics of fragility fracture patients who report previous prescription for bone-sparing medication

Inrig T.1, Cullen J.1, Linton D.1, Frankel L.1, Sujic R.1, Bogoch E.1,2, Jain R.1, Weidon J.1, Sale J.1, E.M.1,6
1St. Michael’s Hospital, Musculoskeletal Health Outcomes Research, Li Ka Shing Knowledge Institute, Toronto, Canada, 2University of Toronto, Department of Surgery, Toronto, Canada, 3University of Toronto, Institute of Health Policy, Management and Evaluation, Toronto, Canada

Purpose: We sought to describe fragility fracture patients who self-reported not being currently on medication, but having a previous prescription to treat osteoporosis, osteopenia, bone health or to reduce the risk of fracture at the time of screening, (previous prescription) vs. those who reported never having had a prescription to treat bone health.

Methods: Descriptive statistics were generated on data from fragility fracture patients aged 50+ years screened as part of Ontario’s Fracture Screening and Prevention Program (FSPP) between November 2014 and July 2016.

Results: Of the 14,147 patients available in the database, 10,766 were not currently taking bone-sparing medication reported whether or not they had a previous prescription for medication to treat bone health. Only 71% (n=1,013) reported a previous prescription. Those who reported a previous prescription were older (mean age 73.3 (SD 10.4) vs. 68.5 (SD 11.5) years), and more likely to be female (95.7% vs. 79.6%) than those who reported no previous prescription. Previous prescription patients reported similar levels of access to the care of a general practitioner (98.1% vs. 96.4%) and experienced a similar mean number of comorbid conditions (2.0 (range 1-6) vs. 2.0 (range 1-7)), though they were more likely to be seen for multiple fractures during their baseline screening (5.2% vs. 2.7%) and to report fractures prior to the index fracture (34.3% vs. 19.5%). Regarding patients’ understanding of their bone health, those who reported a previous prescription were more likely to believe their fracture was due to poor bone strength (22.3% vs. 8.7%), and were more worried about their bone health as a result of their current fracture (45.2% vs. 29.3%) than those who reported no previous prescription.

Conclusion: Differences were found between those who reported a previous prescription for bone-sparing medication and those who did not in terms of age, gender, number of current and prior fractures. However, the 2 groups reported similar access to primary health care and experienced similar numbers of comorbid conditions. Although patients with a previous prescription appeared to have greater concern for their bone health and considered their bone health to be responsible for their current fracture, there remains a need to continue to monitor patients even after a prescription for bone-sparing medication has been given.
Keywords: Fracture Liaison service, Frailty hip fracture, Thailand

OP 4-5
The impact of a low-cost digital and print awareness campaign on patient behaviour in relation to personal risk of osteoporosis and fragility fracture
Aidan L., Bovey C., Stephenson S.*
National Osteoporosis Society, Bath, United Kingdom

Introduction: The National Osteoporosis Society (NOS) ‘Stop at One’ campaign aims to encourage people who are over 50 and have broken a bone to find out, by taking an online quiz, if they are at risk of osteoporosis and to take action to reduce their risk of further fractures. A low-cost marketing intervention was trialled making printed campaign materials available direct to patients at the point of care (fracture clinic). The analysis sought to establish whether the marketing intervention increased take up of the online quiz, and to what extent taking the quiz influenced people’s behaviour with regard to their bone health.

Methods: Between May and October 2017, the NOS placed Stop at One printed campaign materials encouraging people to take the online bone health quiz at 8 sites across the UK covering 13% (16/124) of UK postcode areas. 7 sites had no enhanced provision of the online quiz, and 54% (5/9) had either booked or attended an appointment with their GP to discuss their possible risk of osteoporosis.

Introduction of the online quiz, and to what extent taking the quiz increased uptake of the quiz and subsequent survey.

Results: 1500 people were sent a follow up survey one month later.

- 67% (1023) of respondents had broken a bone in the previous ten years.
- 73% (116) thought they were at risk of osteoporosis after taking the test.
- 26% (41) had either booked or attended an appointment with their GP to discuss their possible risk of osteoporosis.
- A further 11% (16) planned to book a GP appointment to discuss their risk.
- 30% (46) had made changes to their exercise habits.
- 32% (49) had made changes to their diet.

Conclusions: Digital activity (patients accessing website) and the electronic patient survey show meaningful changes in patient behaviour to reduce their fracture risk. Visibility of the awareness campaign at the point of care increased uptake of the quiz and subsequent survey.

OP 4-6
Identification of vertebral fractures in Fracture Liaison Services (FLS) in the UK
Stephenson S.*
National Osteoporosis Society, Bath, United Kingdom

Introduction: FLS prevent secondary fractures through systematic identification of fragility fractures using case finding, with assessment and treatment of osteoporosis where necessary. Services are measured for quality against the National Osteoporosis Society Clinical Standards for FLS (NOS 2015): All patients over 50 with a newly reported vertebral fracture will be systematically and proactively identified. This analysis sought to establish to what extent this standard is being met in the UK.

Methods: A rolling gap analysis of FLS provision for identification of vertebral fractures in patients aged over 50 has been undertaken by the NOS Service Development team. This measures service provision against the national standard. Data was collected at 110 sites across the UK between 2014 and 2018.

When surveyed, of the 158 respondents:
- 67% (74) of respondents had broken a bone in the previous ten years.
- 73% (116) thought they were at risk of osteoporosis after taking the test.
- 26% (41) had either booked or attended an appointment with their GP to discuss their possible risk of osteoporosis.
- A further 11% (16) planned to book a GP appointment to discuss their risk.
- 30% (46) had made changes to their exercise habits.
- 32% (49) had made changes to their diet.

Conclusions: Digital activity (patients accessing website) and the electronic patient survey show meaningful changes in patient behaviour to reduce their fracture risk. Visibility of the awareness campaign at the point of care increased uptake of the quiz and subsequent survey.

OP 4-7
Tromsoporosis – secondary fracture prevention program resulted in high adherence to anti-osteoporotic drugs in Troms, Norway
Andersen C.*1, Rognli V.C.*2, Elvenes J.*1,2, Joakimksen R.M.1,2, Borgen T.T.3, Solberg L.B.4, Frihagen F.4,5, Nordsetten L.4,6, Eriksen E.F.4,5, Basso T.7, Dahl C.1, Omstand T.K.1, Bjerremo A.1,2
1University Hospital of North-Norway, Troms, Norway, 2The Arctic University of Norway, Tromsø, Norway, 3Vestre Viken Health Trust, Hospital of Drammen, Drammen, Norway, 4Oslo University Hospital, Oslo, Norway, 5University of Oslo, Oslo, Norway, 6St. Olav University Hospital, Trondheim, Norway

Introduction: Secondary fracture prevention is important, but often suboptimal. Adherence to treatment is crucial to achieve proper prevention of new fractures. We evaluated the adherence to prescribed anti-osteoporosis drugs (AOD) in fracture patients who are included in a nurse led fracture liaison service.

Methods: Tromsoporosis is a quality assurance study, and part of Norwegian Capture the Fracture® Initiative (NoFRACT) at the Department of Orthopedic Surgery, University Hospital of North Norway. Women and men, aged >50 years with fragility fractures are offered evaluation and treatment. According to the NoFRACT protocol, AOD is recommended in patients with 1) hip fracture, vertebral fracture or ≥2 low-energy fractures (regardless of FRAX estimate or BMD T-score) or 2) one low-energy fracture (and FRAX 10 year probability of major osteoporotic fracture ≥ 20% or BMD T-score <-1.5). Self-reported adherence was assessed by phone at 3 and 12 months after prescription of AOD. We present results on those who have completed 3 and 12 months follow-up from October 2015 through August 2017.

Results: Of 260 patients: 75% were females, aged 69±11 years and BMI 26±5kg/m^2 (mean±SD). Fractures distribution was: hip 21%, forearm 29%, and other fractures. Of 260 patients, 195 (75%) fulfilled the criteria for treatment with AOD. Of those, only 16 (8%) were already on treatment, 180 (92%) started
Abstracts

OP 4-8
Low fall and fracture risk in very dependant patients in residential care
Crowe M.1, Smith M.1, Tiernan C.1, Cogan L.1
1The Royal Hospital Donnybrook, Dublin, Ireland

Introduction: Hip fracture rates in patients in residential care far exceed rates in non-institutionalised patients(1). However non ambulatory, dependant patients may be at lower risk compared to more mobile patients.We examined our experience of total and hip fracture rates in patients in extended care(ENC) compared to more mobile patients undergoing rehabilitation.

Methods: Falls and fracture rates were computed from a prospectively maintained register in 60 ENC beds and 65 rehab beds in an offsite rehab and ENC facility over a 5.6 year period from 1.1.2012 to 31.7.2017. Mobility(M) and transfer( TF) competency was expressed numerically using the M and TF scores from the Barthel Index(0=bed and chair bound to 6-independent in M and TF).Fracture rates(FR) per 1000 person years(PY) were computed from bed occupancy data.

Results: Over the 5.6 year period in ENC there were 6 fractures(2 hip) in 6 patients equivalent to a total FR of 18.5(hip FR 6.2)per 1000py compared to 19 fractures in 18 patients (hip) equivalents to a significantly higher total FR of 49.5(hip FR 10.4) per 1000py in the rehab patients. Whilst most of the fracture patients in ENC were relatively immobile scoring only 2 on M/TF scores, most of the 60 patients in ENC were completely bed and chair bound(M/TF =0) compared to rehab patients who were much more mobile scoring 4-6 on M/ TF score. Annual falls rates were higher in rehab patient(median 3.7-6.5 per 1000bed days) compared to patients in ENC (median 0.3-1.8 per 1000bed days).

Conclusion: Non ambulatory dependent patients in ENC have a very low falls and fracture rate compared to more mobile patients in rehab. This has implications for bone protection measures.

References:

FREE PAPER 5

OP 5-1
Using national hip fracture audit to drive quality improvement in care: The Irish Experience
Brent L.1, Hurson C.1, Ahern E.1
1National Office of Clinical Audit, Dublin, Ireland.
3Royal College of Physicians, Care Quality Improvement Department, London, United Kingdom, 4University of Oxford, Nuffield Department of Orthopaedics, Oxford, United Kingdom

Introduction: The Fracture Liaison Service Database (FLSDB) aims to measure the volume and quality of care in secondary fracture prevention delivery across England and Wales.

Methods: In 2015 a facilities audit of all acute trusts and LHBs in England and Wales was completed in order to establish where fracture liaison services are commissioned, the services they provide and how they are resourced. In 2016 the FLSDB started to collect patient level data on a continuous basis. We looked at the number of patients seen by an FLS between January 2016 and December 2016.

Results: 56 FLSs are currently participating in the FLSDB and have entered over 89,000 patient records to date. Based on 2016 data, this represents an estimated 40% of all fragility fractures that should have been submitted by the participating FLSs, from a total of 107,454 fractures. Nationally only around 1/3 of NHS trusts and LHBs in England and Wales participate in the audit, therefore only an estimated 13% of all fragility fractures in the NHS are being identified and entered on to the FLSDB. Of those submitted, there was marked variability in the performance of key indicators of quality secondary fracture prevention with some FLSs able to deliver high quality care for specific indicators.

Conclusion: This audit has enabled unprecedented insight into secondary fracture prevention in England and Wales, with over 89000 patient records currently included in the audit. The initial findings have highlighted the marked great variation in the availability and delivery of secondary fracture prevention by FLSs in England and Wales. The FLSDB has gone some way to achieve its
OP 5-3 Admission pathway for patients admitted to hospital with suspected but unproven hip fracture: Should it be medicine or orthopaedics?

An evidence-based approach

Macdonald H.1, Vetharajan N.2, Kempshall P.1

Gloucestershire Hospitals NHS Foundation Trust, Trauma & Orthopaedic Surgery, Gloucester, United Kingdom.

Southmead Hospital, Trauma & Orthopaedic Surgery, Bristol, United Kingdom.

Background: Patients with suspected hip fractures who require further imaging to confirm or disprove the diagnosis may be admitted under orthopaedics or medicine. We aim to provide evidence regarding the appropriate admission pathway for such patients, to ensure they receive timely expert input from the appropriate teams and that efficient patient flow is achieved.

Methods: Retrospective study of all suspected hip fracture patients receiving second line imaging for suspected hip fracture, in cases where plain radiographs were normal or inconclusive, between 1st January 2016 and 31st December 2017 with a hip fracture between 2016 and 2017. We identified patients who had sustained their fracture in-hospital via the National Hip Fracture Database, and then performed on all patients admitted to our trust with a hip fracture whilst an inpatient in the United Kingdom rose from 3.9% in 2015 to 4.1% in 2016. Although evidenced based quality standards are in place for patients with a hip fracture, it is unclear whether this cohort of patients meet these standards. In addition, their outcomes are poorly reported.

Methods: A retrospective cohort study was performed on all patients admitted to our trust with a hip fracture between 2016 and 2017. We identified patients who had sustained their fracture in-hospital via the National Hip Fracture Database, and then obtained further information on the events of the fall via hospital incident reports. We compared this cohort of patients to those admitted via A&E, using descriptive statistics and appropriate statistical tests.

Results: 937 patients were admitted between 1st January 2016 and 31st December 2017 with a hip fracture. Of these, 41 (3.1%) sustained their fracture whilst in-hospital. The majority of these (28, 68%), occurred on medical wards. 10% (4) occurred on “escalation” wards. The mean time to diagnosis from falling was 3.8 hours (range 0-17). The mean age of both groups was the same (82 years). A significantly higher proportion of patients who sustained their fracture whilst an inpatient were in ASA groups 4/5 compared to patients admitted via A&E (42% vs 14% respectively, p< 0.001). The 30-day mortality rate was 22% for in-hospital fractures (9), compared to 5% (65) for those admitted via A&E (p< 0.001).

Conclusion: Patients who sustain a hip fracture whilst in-hospital are a frail cohort, whose outcomes compare poorly to those admitted via A&E with a hip fracture. Institutional policies should be in place to ensure these patients receive prompt recognition and referral to Orthopaedic and Orthogeriatric services in-line with best practice guidance, particularly as falls often occur on non-surgical wards.

OP 5-4 Audit cycle on the formal introduction of a standardised orthopaedic trauma patients’ admission pro-forma: the first Italian experience

Pace V.1,2, Lanzetti R.3, Marzano F.2, Milazzo F.2, Sebastioni L.2, Carambili A.3, Zaganelli A.3, De Laarre E.1, Cavallo D.1, Di Marco A.1, Caraffa A.1

1The Royal National Orthopaedic Hospital, Perugia, Italy. 2University of Perugia, Perugia, Italy. 3Italy)

An internationally recognised issue of general district hospitals is the accuracy and completeness of the admission documentation, particularly in a trauma setting. This issue widely affects the documentation and interpretation of findings with subsequent management decisions, drug chart completion, essential information for the ward staff. Medico-legal implications are also not to be underestimated. We built, experimented and formally introduced a Hospital Widen admission pro-forma for orthopaedic trauma patients in line with the international recommendations of best clinical practise. An Audit looking into the quality of the admission clinical documentation for orthopaedic trauma patients was carried out at “Silvestrini Hospital” (Perugia, Italy) in December 2017. A data collection was retrospectively performed for the first Audit round and prospectively for the second round. The clerking pro-forma was produced following the first round and introduced on the 1st of January 2018 following official probation from the Head of the local Trauma & Orthopaedic (TSO) Department and the Hospital Management Board. Compliance by doctors to the use of the pro-forma was recorded. A satisfaction questionnaire was also administered. This was followed by formal implementation of the pro-forma within the TSO team. 120 patients were included for each group. The admission documentation was incomplete in 29% of the cases for the first round.

Conclusions: This research provides objective evidence supporting admission of patients with suspected but unproven hip fractures under medical specialists unless and until second line imaging confirms fracture. These patients have a wide range of acute and chronic medical problems; a minority require acute orthopaedic input, whilst the majority are best served by medical specialists. Formalising this admission pathway ensures optimal patient flow, appropriate use of medical and surgical beds and best patient care.

OP 5-5 What happens to patients who sustain a hip fracture in-hospital?

Chatterton B.D.1, Manoharan G.1, Roberts P.J.1

1University Hospitals of the North Midlands NHS Trust, Trauma & Orthopaedics, Stoke-on-Trent, United Kingdom.

Introduction: The number of patients sustaining a hip fracture whilst an inpatient in the United
OP 5-6
Acute hip care unit in a tertiary care hospital
India: Preliminary results
Bansal R.1, Singh S.1, Chatterjee P.1, Malhotra R.1, Dev A.B.2
1AIIMS, Department of Geriatric Medicine, New Delhi, India,
2AIIMS, Department of Orthopaedics, New Delhi, India

Introduction: Early and collaborative management of hip fracture in older patients has been reported to have improved outcome. In many health systems, collaboration between Geriatrician and Orthopaedic Surgeon, may be logistically difficult. With support of evidence from emerging literature, first ever Acute Hip Care Unit was started in India at AIIMS, New Delhi.

Methods: Several models for developing an “Acute Hip Unit” were conceived with six dedicated beds for older patients (aged 60 years or more) in JPN Trauma Center of AIIMS. A Senior Resident (MD Geriatric Medicine) was exclusively posted in trauma center to guide and lead the Junior Residents of Orthopaedics in preoperative care and post-operative care beyond 4 days. Using a pre-defined proforma.

Results: Total of 31 patients were recruited between 1st January, 2018 to 31st January, 2018 with mean age of ~69 years. Door to admission time was ~43 minutes in all these patients. Door to 1st geriatrician contact time was ~16 hours. Amongst these patients, 15 patients were operated within 48 hours of admission. 16 patients were declared unfit by the admitting and treating Orthopaedic teams.

Conclusion: Door to 1st geriatrician contact time was delayed due to limited man power and deficiencies in admission practice. Delayed surgery was possibly due to pending medical issues and attitude issues in anaesthesiology practice. It is expected that over time, collaborative approach will change practice and attitude and provide better outcome.

OP 5-7
Low level falls lead to high incidence of major trauma. Data from the Major Trauma Audit in Ireland
Brennan L.1, Deasy C.2
1National Office of Clinical Audit, Dublin, Ireland, 2Cork University Hospital, Cork, Ireland

In recent years there has been a change in the profile of major trauma patients from young males suffering high trauma mechanism injuries to older people with low mechanism injuries. The MTA provides high quality data to facilitate local, regional and national quality improvement initiatives. MTA collects data from all 26 trauma receiving hospitals in Ireland. The data is directly entered onto the Trauma Audit Research Network (TARN). The MTA National Report 2016 details the care of 4,426 patients. 47% of all patients sustaining MT. Pre-hospital carers and emergency medicine professionals should exercise a high level of suspicion of major trauma in older patients with low-energy mechanism injuries. To support this approach to care – Clinical assessment and triage tools should be adapted to suitably assess older patients. Education programmes for pre-hospital carers and emergency medicine professionals should include care for the older patient with low-energy mechanism injuries.

OP 5-8
Strengthening our national databases – an audit of data provided to the national fracture database by a tertiary institution
Hennessy O.1, Hughes A.J.1, Rana A.1, Murphy C.G.1
1Galway University Hospital, Orthopaedics, Galway, Ireland

The Irish Hip Fracture Database (IHFD) is a clinically led prospective audit based on the Blue Book Standards. It is used for both national and international benchmarking. In each contributing hospital, data is collected by an individual data collector through the Hospital In-Patient Enquiry (HIPE) portal, a review of ward records and by a subsequent chart review of each discharged patient. The accuracy of the HIPE and IHFD data collected in our unit from the 1st of January to the 31st December 2016 was audited. All patients 60 years and older discharged after a hip fracture were included. The accuracy of the data provided to the IHFD for hip fracture classification and operation performed, as well as HIPE codes for hip fracture classification, was assessed by comparison with pre-operative and post-operative plain film radiographs. The data was categorised as ‘correct’, ‘mild error’, ‘incorrect’, ‘severe error’ or ‘unable to code’. 252 cases were identified. The HIPE recorded fracture classification was accurate in 29% of cases and the IHFD recorded fracture classification in 61.1% (p<0.001). The IHFD recorded operation performed was accurate in 75.8% of cases. 36 cases (14.3%) were omitted by HIPE, and 8 (3.2%) from the local IHFD (p<0.001). Errors resulted from poor documentation, as well as determining fracture displacement, prosthetic coating and intramedullary nail length. Diagnoses and procedures were identified that the data coordinator was unable to record. The accuracy of the data coded by HIPE and provided to the IHFD is improved by a systematic chart review and a review of all imaging prior to submission to the IHFD. While HIPE data has its limitations, poor documentation by the admitting and treating Orthopaedic teams compounds inaccuracies, resulting in inaccuracy of the IHFD. The IHFD is a key resource; consequently, clear note keeping and regular local audit are essential to improve the quality of its output in order to have confidence in the reported conclusions.

Abstracts
Oral Presentations
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**Introduction:** Early mobilization is monitored in most national hip fracture (HF) registries and included as mandatory in enhanced HF recovery programs. However, the importance of acute hospital recovery in relation to achievement of the pre-fracture basic mobility status, considered an important first step of rehabilitation from HF, is sparse. At the same time, critics say that achievement of the pre-fracture level is just a matter of length of stay (LOS). We, therefore, examined if the severity of pre-fracture basic mobility loss at hospital discharge was associated with 30-day post-discharge mortality in adjusted analyses including LOS. Further, the analysis indicates that it’s not only a matter of the complete regain of the pre-fracture CAS level since less CAS points lost during the early rehabilitation the more patients seem to survive.

**Conclusion:** In this large national HF registry study, we found that the severity of pre-fracture basic mobility loss upon acute hospital discharge was strongly associated with 30-day post-discharge mortality in adjusted analyses including LOS. Further, the analysis indicates that it’s not only a matter of the complete regain of the pre-fracture CAS level since less CAS points lost during the early rehabilitation the more patients seem to survive.

**Methods:** Using the nationwide Danish Multidisciplinary Hip Fracture Database (DMHFD) from January 2015 through December 2015, we included 5,147 patients 65 years or older (70% women) who had surgery for a first time HF at one of the 25 hospitals treating HF patients in Denmark. The Cumulated Ambulation Score (CAS) being an obligatory DMHFD score was recorded at pre-fracture (questionnaire) and objectively in discharge. The CAS evaluates the ability of patients to get in and out of bed, sit to stand from a chair and walk with a score of 0-6 points (6 points indicating an independent basic mobility status and 0 points a completely bedridden patient). The severity of pre-fracture CAS-points lost (from 1-6 points) at discharge was entered into Cox regression analyses, adjusted by sex, age, BMI, Charlson Comorbidity Index, type of fracture, residential status, and LOS.

**Results:** The mean LOS for the 60% (n=3,097) of patients who had not regained their pre-fracture CAS level at discharge was 9.5 days compared to 8.5 days for the 2,050 who did. In adjusted analyses, the risk of 30-day mortality increased with increasing loss of CAS points. Thus, the risk of death (hazard ratio, 95%CI) was 1.4 (0.9; 2.2), 1.6 (1.02; 2.6), 2.3 (1.6; 3.3), 3.9 (2.5; 6.0), 5.1 (3.0; 8.8) and 11.7 (7.3; 18.7) times higher for patients who respectively lost 1, 2, 3, 4, 5 and 6 CAS points, compared to no loss.

**Conclusion:** In this large national HF registry study, we found that the severity of pre-fracture basic mobility loss upon acute hospital discharge was strongly associated with 30-day post-discharge mortality in adjusted analyses including LOS. Further, the analysis indicates that it’s not only a matter of the complete regain of the pre-fracture CAS level since less CAS points lost during the early rehabilitation the more patients seem to survive.

**OP 6-2**

**Balance exercise on the mobility improvement in older adults after hip fracture: a systematic review**

**Lima C.1,** Funabashi M.‘, Weber S.‘, Perracini M.‘, Beaupré L.‘.

1Universidade Cidade de São Paulo, Sao Paulo, Brazil, 2University of Alberta, Departments of Physical Therapy and Surgery (Division of Orthopaedic Surgery), Edmonton, Canada

**Introduction:** More than 90% of hip fractures are due to falls with 30% of patients falling recurrently after hip fracture surgery. Nonetheless, balance exercises are still poorly used and insufficiently described in the hip fracture recovery literature. The investigation of balance recovery characteristics needs to be better described, so that clinicians can transfer the evidence into clinical practice. Therefore, the objective of this systematic review was to evaluate the characteristics and dimensions of balance exercises included in hip fracture rehabilitation programs.

**Methods:** Manual and electronic searches (OVID, EMBASE, CINAHL, Web of Science and Proquest) were conducted without date restriction and in English language. We included randomized controlled trials with older adults after hip fracture that included balance training. Studies were reviewed by two independent reviewers and methodological quality was assessed using the Physiotherapy Evidence Database scale (PEDro).

**Results:** Among the 1572 identified studies, 21 protocols from 26 studies met our inclusion criteria. The included studies presented high to moderate methodological quality. Almost 60% of protocols were home-based programs and 52% included older adults in sub-acute phases of rehabilitation. Regarding the exercise characteristics, all protocols described the frequency and 61.9% described the intensity (progression). Only 6 protocols (n=405 participants) included balance exercises as a specific target of rehabilitation. Fifteen protocols (n=1673 participants) included only one dimension of balance and of these, 93% focused on training stability during centre of gravity movement. Specific balance assessment was included in 11 studies (n=1349 participants) with only 6 studies (n=617 participants) reporting statistically significant improvement with balance training between groups on assessment.

**Conclusion:** Balance exercises have been poorly described in rehabilitation clinical trials hindering the application of its evidence to clinical practice. Balance training does not seem to be a primary aim in rehabilitation programs and only 6 protocols included it as a specific recovery target. Additionally, not all balance dimensions were incorporated in the included protocols, which could lead to insufficient balance recovery. In order to reduce the risk of falling and prevent recurrent falls after hip fracture surgeries, balance exercises are a fundamental component of the rehabilitation.

**OP 6-3**

**Rehabilitation programs for patients after hip fracture – assessing the impact of progressive resistance training components on patient outcomes: a systematic review**

Weber S.‘, Funabashi M.‘, Astolphi Lima C.‘, Pennicini M.‘, Beaupré L.‘.

1University of Alberta, Edmonton, Canada, 2Universidade Cidade de São Paulo, Sao Paulo, Brazil

**Introduction:** Hip fracture is associated with substantial morbidity and often leaves patients with reduced mobility and quality of life. Thus, hip fracture place a large burden on the individual, their family, and the health care system. Rehabilitation, including the use of progressive resistance training, is essential to improve recovery and allow return to activities of daily living. There is limited literature reporting specific parameters of progressive resistance training programs and their impact on patient outcomes. The aim of this systematic review was to evaluate current literature reporting the use of resistance training after a hip fracture to determine program parameters and their impact not only on strength/power/endurance, but also on overall functional outcomes and mobility.

**Methods:** Manual and electronic searches (Medline, EMBASE, CINAHL, Angeline, Lilacs, Web of Science, Cochrane Library and Physiotherapy Evidence Database [PEDro]) were conducted for studies published in English between 2000-2017. We included randomized controlled trials with older adults after hip fracture that had resistance training as part of their rehabilitation program. Studies were reviewed by two independent reviewers and studies’ methodological quality was assessed using the PEDro scale.

**Results:** The initial search resulted in 1572 studies, of which only 7 (n=865 participants) were included for data extraction. While all rehabilitation programs included resistance training, overall program content and outcomes assessed were highly variable. Two studies (n=185 participants) compared weight-bearing versus non-weight bearing exercises...
instead of using a resistance protocol (e.g., weights or bands). Studies assessed the impact of the program up to 6 months with most studies reporting significant changes in knee extensor strength and walking speed rather than functional measures and mobility. Frequently, there was improvement in strength and gait outcomes with limited impact on functional performance outcomes. **Conclusions:** Results suggest that while resistance training may aid in improving muscular strength and walking speed, it does not strongly contribute to improving functional performance. Evidence is lacking regarding the exact parameters of resistance training programs and their impact on patients’ daily activity and function. Future research should incorporate progressive functional activities in their resistance training programs.

**OP 6-4**
The impact of patient engagement on disability and patient experience following upper extremity fractures

Gudym S.1, Jayakumar P.1, Williams M.2, Ring D.3, Lamb S.4


To assess the correlation between patient engagement (Patient Activation Measure (PAM-13); Effective Consumer Scale (ECS-17)) within a month of shoulder, elbow or wrist fracture, and medium-term disability (Quick Disabilities of the Arm, Shoulder and Hand (QuickDASH); PROMIS Upper Extremity Physical Function Computer Adaptive Test (PROMIS UE PF CAT)) at 6 to 9 months after fracture, accounting for demographic, clinical and psychosocial factors. Secondly to assess the predictive ability of PAM-13/ECS-17 for patient experience (Numerical Rating Scale (NRS) satisfaction with clinical care and NRS satisfaction with overall health service experience) at 6 to 9 months post-injury. A prospective cohort study involving a consecutive series of 775 adult patients sustaining isolated proximal humerus, elbow and distal radius fractures attending new patient fracture clinics between 1st January 2016 and 31st August 2016 was conducted. 744 patients completed patient reported outcome measures on an encrypted, web-based data collection tool at initial orthopaedic review, 2-4 weeks and 6-9 months post-injury. Statistical analysis included bivariate analysis, collinearity assessment, factor analysis and multivariable regression. In bivariate analysis, PAM-13 and ECS-17 had moderate-high correlations with PROMIS UE PF (PAM-13: r=0.55; ECS-17: r=0.60) and QuickDASH (PAM-13: r=0.65; ECS-17: r=0.67) at 6-9 months after upper extremity fractures. PAM-13 and ECS-17 also demonstrated moderate correlations with NRS satisfaction clinical care (PAM-13: r=0.52; ECS-17: r=0.57) and NRS satisfaction overall health services (PAM-13: r=0.55; ECS-17: r=0.58). Individuals that are more engaged with their health and health care systems may achieve better health-related and experiential outcomes following upper extremity fractures. But one should account for psychosocial factors, such as self-efficacy, which may supersede patient engagement in predicting outcomes. Actively engaging patients early in the recovery pathway following an upper extremity fracture may not only minimize their future perception of limitations, but lead to improved perceptions of clinical care and service experience. A combined approach in improving the knowledge, skills and confidence in dealing with an upper extremity fracture and providing specific coping strategies may be required to achieve a substantial improvement in patient outcomes.

**OP 6-5**
Prognostic factors of functional outcome after hip fracture surgery: a systematic review

Shakib F.1, Williamson J.1,2, Alexander J.1, Filliter C.1, Soboleu B.1, Gug P.1, Beane L.1, Sackley C.1

1Kings College London. School of Population Health and Environmental Sciences. London. United Kingdom. 2Dalhousie University. Halifax. Canada. 3University of British Columbia. Vancouver. Canada

Introduction: This systematic review aimed to identify immutable and modifiable prognostic factors of functional outcomes and their proposed mechanism after hip fracture surgery. **Methods:** Systematic search of MEDLINE, Embase, CINAHL. PEDRO. OpenGrey and ClinicalTrials.gov for observational studies of prognostic factors of functional outcome after hip fracture among surgically treated adults aged ≥ 50 years. Study selection, quality assessment, and data extraction were completed independently by two reviewers. The Quality in Prognosis Studies Tool was used for quality assessment and assigning a level of evidence to factors. Proposed mechanisms for reported associations were extracted from discussion sections. **Results:** From 33 studies of 9,552 patients, we identified 25 prognostic factors of functional outcome after hip fracture surgery. We organised factors into groups: demographics, injury and comorbidities, body composition, complications, and acute care. We assigned two factors a weak evidence level – anaemia and cognition. We assigned Parkinson’s disease an inconclusive evidence level. We could not assign an evidence level to the remaining 22 factors due to the high risk of bias across studies. frailty was the proposed mechanism for the association between anaemia and functional outcome. Medication management, perceived potential, complications, and time to mobility were proposed as mechanisms for the association between cognition and functional outcome. **Conclusion:** We identified one modifiable and one immutable prognostic factor for functional outcomes after hip fracture surgery. Future research may target patients with anaemia or cognitive impairment by intervening on the prognostic factor or the underlying mechanisms.

**OP 6-6**
Performance stability and interrater reliability of the 10-metre walking test in older community-dwelling adults with hip fracture

Overgaard J.A.1,2, Kristensen M.T.3,4


Introduction: The “Watson” Ten-metre Walking Test (10MWT) (1) was recently cross-cultural adapted into Danish, and available from the Danish Physiotherapy Associations webpage for outcome measures, but the psychometric properties have not been established in older adults with hip fracture (HF). We, therefore, examined the number of trials needed to achieve performance stability and the interrater reliability of the 10MWT in older adults with HF that followed rehabilitation in a community health care center. **Methods:** A consecutive sample of 49 (20 men) older adults with HF (mean (SD) age of 76.8 (8.1) years) were assessed at a mean of 43.1 (11.2) days after hip fracture surgery. All participants performed five timed 10MWT trials as fast as safely possible with a standardised four-wheeled roller with 20-second pauses between each trial. One more session was conducted on the same day, also supervised by a physiotherapist (in a randomized order) with 1-hour rest between the two sessions. The two physiotherapists were blinded to each other’s results, until the end of the study. Repeated measures ANOVA analysis with Bonferroni correction was used to elucidate performance stability, while the ICC2,1 (absolute agreement, single measure), standard error of measurement (SEM) and minimal detectable change (MDC) was used to examine interrater reliability and measurement error.
Abstracts

OP 6-7
Irish hip fracture database 2016 results – 
A new focus on function
Fitzgerald M.1, Collinan E.2, Blake C.1, Brett L.4, Hurson C.1, Ahern E.1, Cunningham C.1
1Tallaght Hospital, Dublin, Ireland, 2Merlin Park University Hospital, Dublin, Ireland, 3University College Dublin, Dublin, Ireland, 4St Vincent’s University Hospital, Dublin, Ireland.

Introduction: Functional outcomes post hip fracture are poor, despite recent advances in hip fracture care standards. Rehabilitation remains a central challenge in trauma services. A key factor in improving hip fracture outcome is the implementation of national hip fracture databases, which allow health services to monitor care standards. New rehabilitation focussed data-fields were added to the Irish Hip Fracture Database (IHF0) on 1st January 2016 with the aim of providing information regarding hip fracture physiotherapy service provision and functional outcome across all acute trauma orthopaedic units in Ireland.

Methods: The IHFD is a clinically-led, national web based audit of hip fracture casemix, care and outcomes. The IHFD has been recording data since 2012, with new rehabilitation-focussed data-fields added on 1st January 2016. Data is collected through the hospital inpatient enquiry (HIPE) portal in collaboration with the Healthcare Pricing Office (HPO). The National Office of Clinical Audit (NOCA) provides operation governance for the IHFD. The new rehabilitation data-fields include:  
- Day one postoperative physiotherapy assessment: Yes/No  
- Day one postoperative mobilisation: Yes/No  
- Pre-fracture function: New Mobility Score (NMS)  
- Function on first postoperative day and acute hospital discharge. Cumulated Ambulatory Score (CAS)

Results: The 2016 IHFD report comprises data from 3,629 hip fracture patients in Ireland from all 16 acute trauma orthopaedic units. The New Mobility Score was captured for 93% (n=2383) of patients, with 48% of having high pre-fracture function (NMS ≥7). 78% of patients (n=2325) were assessed on the day of or day after surgery by a physiotherapist, with 71% mobilised by a physiotherapist. CAS was captured for 50% (n=1829) of patients on the first postoperative day and 36% (n=1307) of patients on acute hospital discharge. Of those patients, 92% required assistance in their basic mobility (CAS≥3) on the first postoperative day, with 18% achieving independence (CAS=6) on discharge.

Conclusion: This new data enables profiling of both physiotherapy service provision and functional outcome post hip fracture in Ireland. With continued commitment to data collection quality and extension of the IHFD data collection time-frames beyond the acute hospital setting, it will be possible to identify barriers to rehabilitation and evaluate the impact of organisations’ improvements in hip fracture care delivery on functional outcome.

References:  

Abstracts

OP 6-8
Can telerehabilitation for frail aged community dwelling patients following femoral or pelvic fracture achieve equivalent functional outcomes as traditional care? 
Morris C.1, Ban C.1, van den Berg M.1, George S.1, Crotty M.1
1Flinders University, Bedford Park, Australia

Introduction: Despite growing evidence of the effectiveness of telerehabilitation (TR) for patients with a wide range of conditions, and the need for improved care for frail aged patients to rehabilitation following hip and pelvic fractures, there is limited evidence of the provision of TR to this demographic. The aim of the study was to ascertain whether TR delivered within a home rehabilitation service (HRS) can achieve equivalent functional outcomes to traditional rehabilitation.

Methods: Between January and November 2017, all community dwelling patients admitted to HRS at a metropolitan hospital in Adelaide (Australia) following femoral or pelvic fracture were offered TR. Using iPad technology, multidisciplinary rehabilitation was delivered via videoconferencing and therapeutic apps, as an alternative or in addition to usual care. Outcomes measures included Functional Independence Measure (FIM), Timed Up and Go (TUG) and length of stay (LOS). The number of therapy sessions and adverse events were also reported. We compared functional levels at admission and discharge between those who received TR (group 1) with a matched historical group (group 2) who received HRS prior to the introduction of TR.

Results: FIM scores for group 1 were significantly lower (p=0.012) at admission. However, a significantly higher change in FIM in group 1 (p=0.028) resulted to similar FIM scores at discharge (p=0.0128) despite a shorter LOS in this group (p=0.000). There was no significant difference in discharge TUG scores (p=0.472) between the groups.

Conclusion: Frail elderly with fractured hip or pelvis admitted to HRS and receiving TR achieve equivalent functional outcomes to the historical group receiving usual care.
Abstracts

Top 6 Oral Presentations

Saturday, 7 July 2018

FREE PAPER SESSION 8

TO 8-1
Variation in protocols for perioperative management of Direct Oral Anticoagulants (DOACs) in patients with hip fracture in the UK
Johansen A1,2, Imran L1, Boulton C1, Hannoford J1, Liddicoat M1, Rajaguru S1, Wakeman R1
1National Hip Fracture Database (NHFD), Royal College of Physicians, London, United Kingdom, 2Trauma Unit, University Hospital of Wales, Cardiff, United Kingdom

Introduction: Consensus on perioperative management of direct oral anticoagulants (DOACs) does not exist, despite the decade since dabigatran’s approval for licencing in the UK. The National Institute for Health and Care Excellence have issued guidance on the withholding DOACs before elective procedures, but guidelines on use of reversal agents and urgent or emergency surgery are lacking (NICE, 2016).

Methods: We asked all hospitals in England, Wales, and Northern Ireland which participate in the National Hip Fracture Database (NHFD) to submit any hospital policy they use to guide use of DOACs around hip fracture surgery. We analysed these documents to compare the duration of pre-op. omission of apixaban, rivaroxaban and dabigatran. We also examined data on post-op. recommencement, bridging, monitoring and reversal use.

Results: Only 16 of 171 participating hospitals were able to provide a policy relevant to peri-op. management, though others identified that hospital guidelines on the general use of these drugs. Of these, only 7 policies mentioned guidelines specific to hip fracture/orthopaedic surgery. Elective surgery guidelines largely agreed on a 24-48 hour pre-op. omission, but pre-op. omission for hip fracture surgery varied 12-48 hours depending on the agent and renal function. One hospital suggested there should be no delay. Nine hospitals included recommendations for the reversal agent (idarucizumab) for dabigatran, with six not including this in their guidelines. There was great inconsistency in recommendations for restarting DOACs post-op., varying 12-96 hours, with eight hospitals failing to mention a suggested time period. Three hospitals addressed bridging therapy if a ‘high thrombotic risk’ was present, and one policy suggested using bridging if there was a delay of >24 hours in restarting the DOAC.

Conclusion: We observed great inter-hospital variability in recommendations for this situation, despite the fact that risk factors for hip fractures (e.g. polypharmacy, cognitive impairment) show considerable overlap with indications for the use of a DOAC in place of warfarin. A national and international consensus is urgently required for what is the commonest situation in which an older patient will need emergency anaesthesia and surgery.

TO 8-2
Reduced revision risk in patients treated with a dual mobility cup and THA due to hip fracture. A nationwide study from the Danish Hip Arthroplasty Register
Krejpal P1, Dastrup A1, Pedersen A.B.4, Overgaard S4
1Department of Orthopaedic Surgery and Traumatology, Odense University Hospital, Denmark, 2Department of Clinical Research, Faculty of Health Sciences, University of Southern Denmark, Denmark, 3Department of Orthopaedic Surgery and Traumatology, Odense University Hospital, Odense, Denmark, 4Department of Clinical Epidemiology, Aarhus University Hospital, Aarhus, Denmark, *Danish Hip Arthroplasty Register, Aarhus, Denmark

Introduction/Research question: Total hip arthroplasty (THA) as the primary treatment option for patients with displaced femoral neck fractures is debated. THA may be associated with less pain, better function and lower rates of re-operation compared to hemiarthroplasty (HA) but a higher rate of dislocation. This risk may be reduced by Dual mobility cups (DMC) which recently have gained popularity in this treatment regime as an alternative to the standard metal-on-polyethylene cup (MoP).

We investigated whether DMC in primary total hip arthroplasty in patients with displaced femoral neck fractures was associated with an increased risk of revision compared to MoP cups. The primary aim was to evaluate overall risk of revision and secondary to evaluate the risk of specific causes.

Methods: Using the Danish Hip Arthroplasty Register (DHR) we conducted a nation-wide cohort study.

We included patients reported to DHR with a primary THA due to acute or sequelae from proximal femoral fracture treated with MoP bearings (n=7088) or DMC bearings (n=3295) in the study period 1995-2014. Patients were followed until revision, death, emigration, or the end of the follow-up whichever came first. We used Fine & Gray competing risk regression with first revision as outcome and death was treated as a competing risk to calculate adjusted hazard ratios (AHR) and 95% confidence intervals (CI) for revision for any reason and specific revision causes. We adjusted for age, gender, implant fixation technique, surgical approach and duration of surgery.

Results: Median (IQR) follow-up time in years were 4.1(7.1-7.8) and 2.47(0.84-4.66) for MoP and DMC. DMC cups had a lower risk of revision for any reasons (AHR, 95% CI=0.64; 0.52-0.78). DMC cups had a lower risk of revision due to aseptic loosening (AHR, 95% CI=0.34; 0.18-0.62), dislocation (AHR, 95% CI=0.32; 0.21-0.50). There was no difference in revision due to deep infection (AHR, 95% CI=1.05; 0.73-1.53), periprosthetic fractures (AHR, 95% CI=1.13; 0.71-1.81), revision due to pain (AHR, 95% CI=0.35; 0.05-2.30) and revision due to other reasons (AHR, 95% CI=1.06; 0.58-1.91).

Conclusion: Patients treated with a DMC were associated with a lower risk of revision for any reason and specific causes. The use of DMC may be the preferred treatment of patients with proximal femoral fracture in primary THA.

Level of Evidence: Prognostic Level Ib

TO 8-3
Increasing awareness of delirium – the commonest complication of hip fracture surgery
Johansen A1,2, Boulton C1, Hannoford J1, Liddicoat M1, Rajaguru S1, Wakeman R1
1National Hip Fracture Database (NHFD), Royal College of Physicians, London, United Kingdom, 2Trauma Unit, University Hospital of Wales, Cardiff, United Kingdom

Introduction: Delirium is often poorly recognised by staff looking after patients with hip fracture. The National Hip Fracture Database (NHFD) have therefore adopted the 4A test (4AT) as a simple measure that will encourage routine assessment, and help improve staff understanding of a complication that can dominate patients’ hospital stay and recovery [Bellelli et al. Age Ageing 2014, doi: 10.1093/ageing/afu021].

Methods: We examined NHFD data on the 63,471 patients who presented to 176 acute trauma units in England, Wales and Northern Ireland during the 2017 calendar year. The 4AT was completed in all but 8,698 patients (13.7%) during their first week after hip fracture surgery. We compared the results of this test for patients of different ages, in those with different fracture types and comorbidities, and examined the impact of delirium on patients recovery and outcome.

Results: Half (51.1%) of tested patients scored 0; normal, and a quarter (24.0%) scored 1-3. Quarter (24.3%) were identified as ‘possible delirium’; a score of 4+. People with an abnormal Abbreviated Mental Test (AMT < 8) or on first presentation were several times more likely to develop delirium the post-op. period (55.8%, cf. 7.4% of people with a normal AMT). The 4AT suggested delirium in 24.5% of patients with intracapsular fracture but 25.9% of those with trochanteric fracture. The ‘AMT4’ and ‘Attention’ elements of the test were often abnormal, and minor abnormality in one of these aspects of the 4AT meant that the commonest abnormal score was 1. Only 6.8% of people were identified as having abnormal ‘Alertness’, and only 10.5% as exhibiting ‘Acute change’. People who developed delirium were...
Conclusion: One in four patients appeared to have delirium using the 4AT in the week after surgery. At least one in fifteen were identified with ‘hypoaemic delirium’ – a subtype that is easily overlooked and carries a poor prognosis. Our figures probably still underestimate the incidence of delirium. Awareness of this condition is improving, but greater sensitivity to feature such as ‘acute change and fluctuation’ in mental state is vital, and depends on seeking collateral history from patients’ family, usual carers and hospital night staff.

Introduction: Osteoporosis (OP) affects 250,000 Albertans >50-years with 22,000 OP fractures occurring annually at a cost of $100M CAD. Despite evidence-based guidelines, global data suggest that <20% of adults >50-years are treated for OP post-fracture. Optimal OP care addresses 3Is: Identify those at risk; investigate bone density; initiate treatment as needed. Our overall goal was to improve care for Albertans >50-years with OP-related fractures. We comprehensively evaluated Strategies Targeting Osteoporosis to Prevent Recurrent Fractures (STOP-FRACTURE) in Alberta as a partnership between health organizations and academic researchers.

Methods: 3 programs were evaluated between 2015-2018, 2 of which were implemented by the provincial health system: Catch a Break (CAB) identified all non-hip fracture patients >50 years and used a 1+ approach contacting patients and their physicians to encourage appropriate testing and treatment; Hip Fracture Liaison Service (HipFLS) used 3i case management to identify hip fracture patients in hospital and investigate and initiate OP care in the first post-fracture year. The third program was an RCT (C-STOP) evaluating OP case management for upper extremity fracture patients. All 3 programs underwent quantitative (time series), qualitative (interviews) and cost-effectiveness analysis.

Results: CAB: Time series administrative data analysis of >31,000 patients found significant improvement in bisphosphonate prescription within 3-months of program implementation. The program (544/patient) was cost-effective. Qualitative evaluations revealed that patients did not consider themselves as experiencing ‘fracture fractures’ or ‘having osteoporosis’. HipFLS: 1571 hip fracture patients were screened across 5 sites; further analyses are pending. C-STOP: At 6-months post-fracture, 86/180 (48%) case-managed patients were treated with bisphosphonates vs 51/181 (28%) controls (p<0.001). Case-management cost more ($56/intervention vs $18/control), but was still cost-effective. Qualitatively, patients were highly accepting of case management.

Conclusion: The programs were effective, acceptable and cost-effective. CAB has been implemented provincially and HipFLS is expanding to all hospitals that treat patients with hip fracture. C-STOP is being considered for high-risk non-hip fracture patients. This academic-organizational partnership provided comprehensive evaluative information to improve secondary fracture prevention in Alberta.
day 3, and 12.4% after day 3. Cumulative 30-day incidence of in-hospital death increased with delay to surgery, from 4.9% of patients operated on admission day to 6.9% of patients operated on after day 3. We project an additional 10.9 (95% confidence interval, 6.8 to 15.1) deaths per 1,000 surgeries if all patients were to undergo surgery after more than 3 inpatient days instead of admission day; the risk difference was much smaller with shorter time. A substantial proportion of patients, 16.5% (95% CI, 12.0% to 21.0%), would have avoided death had they undergone surgery within 2 days of admission.

**Conclusions:** We recommend that all medically stable older adults with a fractured hip undergo surgery on the day of admission to hospital or the following day. This recommendation is more stringent than the nationally recognized 48-hour benchmark which ends on inpatient day 3.

**PERI-OPERATIVE MANAGEMENT**

**PE-1-1**

The importance of the secondary survey: Incidence and burden of secondary musculoskeletal injuries in hip fractures

Chan M., Williams H., Wagner W.

Weston General Hospital, Trauma & Orthopaedics, Weston Super Mare, United Kingdom, 2Princes Royal Hospital, Trauma & Orthopaedics, Telford, United Kingdom

**Introduction:** Hip fractures are common injuries that pose significant burden on the NHS. Typically they occur in elderly and often frail patients secondary to low energy trauma such as falls. These patients are also at high risk for other fractures. Such injuries can have an impact on the patient’s rehabilitation and hospital burden. However, little has been done to explore the incidence of these secondary injuries and burden on the NHS.

**Methods:** Patient data was taken from national hip fracture database. Inclusion criteria included all patients over the age of 75 who presented to our district general hospital with a hip fracture. Clinical data was analysed using local PACS and clinical portal systems. Data collected included demographics, length of stay, discharge destination, mortality, other injuries and there location.

**Results:** A total of 234 patients were included in the study. Incidence of secondary injury was found to be 6.8%. 80% of associated injuries were upper limb fractures with wrist being the most common (40%). All injuries were managed non-operatively. Average length of stay was around 2 days longer in those with secondary injuries. Two-thirds (66%) of patients with secondary injuries required placement in rehabilitation hospital or residential/nursing home on discharge. Just over half (53%) of the isolated hip fracture group required placement in rehab or residential/nursing home on discharge. Mortality was higher in the isolated hip fracture group at 21.5% as opposed to 6.7% in the secondary injury group.

**Conclusion:** Secondary injuries in hip fractures are common and are associated with a longer hospital stay and lead to a more complex rehabilitation and discharge. A compete secondary survey assessment as per ATLS guidelines can identify these injuries early and ensure prompt management to optimise rehabilitation. Further research focussed on the impact of operative management of these secondary injuries and specific rehabilitation programmes should be considered to help improve the outcomes in this patient group.

**PE-1-2**

Pre-fracture dementia a significant factor influencing the mortality of fracture neck of femurs in elderly

Rajeev A., Zourob E., Latimer L., Mohamed A., Anto J.

Queen Elizabeth Hospital, Gateshead, Trauma and Orthopaedics, Gateshead, United Kingdom

**Introduction:** Patients with pre-existing dementia are more susceptible to hip fracture due to various risk factors such as age, decreased activity leading to sarcopenia and osteoporosis, Vitamin D deficiency and presence of Apolipoprotein gene. The mortality associated with dementia and fracture neck of femurs was thought to be 2.3 times more than that of patients with intact cognitive function. The aim of this study is to assess the mortality of patients at 28 days, 4 months and one year after undergoing surgery for fracture neck of femurs.

**Methods:** A retrospective study of 184 patients admitted with fracture neck of femur and had dementia for a period from April 2014 to August 2016 were carried out. The patient demographics, AMT score, pre-operative co-morbidities, perioperative mortality and one year mortality were analysed.

**Results:** A total no. of 1007 patients was admitted with fracture neck of femurs during the study period. 184 patients were found to have pre fracture neck of femurs during the study period. 184 patients were found to have pre fracture neck of femurs. The mean age was 87.088 years (Range 64-101).There was 42 males and 142 females. The average ASA grade was 2-3. 99 patients (53.8%) had
Alzheimer’s disease, 50 patients (27%) had vascular dementia and 35 patients (19.2%) had other types of dementia. 94 patients (5%) had more than one co-morbidity. The average AMT score was 0.66 (normal range 0-10). The total number of patients died was 114 (62%). The overall mortality at 28 days was 24% (44 patients, p<0.0001), 4 months was 46% (84 patients) and one year was 62% (114 patients, p<0.0001). In 90 (49%) patients who had only dementia and no other co-morbidities (ASA grade 1-2) the mortality at 28 days was 20% (p=0.0051), 4 months was 40% and at one year 61% (p<0.0001).

**Conclusion:** In our study we found that the overall mortality in patients with dementia and fracture neck of femurs is 52% and the perioperative mortality rate was 24%. The peri-operative mortality rate was 20% in patients with pure dementia. The mortality rate in dementia with fracture neck of femurs patients was far more than what is noted in the literature.

**PE-1-3**

**Fragility fracture: survival and mortality predictors. Perspective observational study**

Polini A.1, Cicaloporo V.1,2, Pasqualetti G.1, Tognini S.1, Paterni S.1, Diotte C.1, Romani L.1, Bollati M.2, Qosem A.A.1, Malatesta M.G.2, Scaglione M.4, Monzoni F.2

Azienda ospedaliero-universitaria Pisana, Genicati Unit, Pisa, Italy. 1University of Pisa, Center for Clinical and Experimental Medicine, Pisa, Italy, 2Imperial College London, London, United Kingdom, 3University of Pisa, Orthopaedic Unit, Pisa, Italy

Fragility femur fracture of the elderly is associated with an increase in disability and death. About 5% of patients die from complications in acute phase, 15-25% within 1 year. These patients are exposed to a large number of adverse events, which contribute to reduce autonomy and to worse clinical outcome. Therefore, elderly patients with femur fracture need a multidisciplinary approach aimed improving outcome as well as reducing complications risk. Several predictors of outcome were documented in the literature even if validated markers of survival are not yet available.

Aim of this prospective study was to evaluate the impact of some clinical-functional parameters, on medium to long-term mortality, in patients with femur fracture followed in the Orthogeriatric Unit of the Azienda Ospedaliero-Universitaria Pisana (Pisa – Italy). Patients with fragility femur fracture was consecutively enrolled between April 2013 and May 2015. Patients were subjected to medical history and multidimensional geriatric evaluation, including pre-intervention ADL (Activities of daily living), CAM (Confusion Assessment Method), SPMQ (Short Portable Mental Status Questionnaire), CIRS (Cumulative Illness Rating Scale). Both in-hospital and medium to long-term survival was evaluated. 825 patients were enrolled [age (mean ± SD) 83.7 ± 8.1 years, 74.2% women]. The average hospital stay was 5.9 ± 2.5 days and the delirium’s incidence of 10.8%. At follow-up (median 28.9, range 11-36 months) 170 patients (20.6%) were dead. Logistic regression analysis documented a significant mortality in male older subjects (p<0.01). However, the appearance of delirium during hospital stay and comorbidity load were not significantly related to mortality risk. Arthroplasty was related to greater mortality compared to osteosynthesis. In the multivariate analysis, correcting for age, sex, ADL and cognitive status, arthroplasty conferred an increase average risk of death by about 70% (OR 1.73, CI 95% 1.08-2.74; p<0.01). Overall this prospective study documented that male sex, age, cognitive impairment and poor functional autonomy represent main predictive factors of medium to long-term mortality in patients with fragility fracture, while appearance of delirium it does not seem to significantly affect. Furthermore this study documents that osteosynthesis, in elderly disabled patients with cognitive impairment, is associated with a better survival with respect to arthroplasty.
Introduction: Healthcare teams are faced with a management dilemma with a Neck of Femur Fracture (NOF)? New Oral Anticoagulant Drugs (NOACs), PE-1-6

New Oral Anticoagulant Drugs (NOACs), do they impact on the care of patients with a Neck of Femur Fracture (NOF)?

Moorey H.1, Savouré M.1, Sabah S.1, Gilsenan M.1, Li L.2

Watford General Hospital, Trauma and Orthopaedics, Watford, United Kingdom. 1Watford General Hospital, Watford, United Kingdom

Introduction: Hip Fractures affect the patient, their family, our Hospitals and society at large. When a patient with a hip fracture is also on a NOAC, healthcare teams are faced with a management dilemma. On one hand to operate as soon as possible to prevent medical complications, and on the other hand to risk the risks associated with rapid anticoagulant reversal or intra-operative bleeding. Hip fracture management in the UK is guided by the National Institute for Clinical Excellence (NICE) which states that anticoagulant medication should not be a barrier to surgery. However, perioperative management of patients on NOACs is also guided by the British Society of Haematology, which recommends delaying all but emergency surgery. Methods: We aimed to define our current practice against national guidance. We developed two differing Audit Criteria. Primarily, that 100% of our patients with both a NOAC and a NOF should be operated upon within 36 hours of admission. All cases should be discussed with a named Consultant Haematologist prior to theatre. We included all NOF fractures between June 2017 and July 2017 admitted to WGH. We chose to exclude any patient who was admitted with a NOF fracture who was proved not to have one, or a patient with a NOF fracture who died prior to procedure or whom did not qualify for a procedure. The National Hip Fracture Database (NHFD) was used to capture the data. Results: There were 69 patients in total. 7 patients were on a NOAC. 3 of the 7 were delayed over 36 hours. Meaning that 57% reached outcome measure 1. 27.3% of those delayed over 36 hours were on a NOAC. Documentation of cancellation reasons is generally poor within the department. All patients were discussed with a Haematologist in the notes, however, none had a named Haematologist. Education was done within the Orthopaedic and Anaesthetic Department however, this did not significantly alter outcomes. A change in the Neck of Femur Fracture Pathway has been added as a result. Conclusion: NOACs are useful medications and convenient for patients. However, with their growing use, preparations must be in place on how to manage these patients in the urgent surgical setting. Whilst education in management is important, it is not on its own an effective vector for change.

Conclusion: The patients admitted from nursing homes had slightly higher mortality rate and length of stay than from own or residential homes. There was no significant difference in the ASA grades, time to surgery among the three groups.

Enhanced recovery after hip fracture surgery – from physiology to physiotherapy

Johansen Å.1, Havelock W.1, Hodges L.1, Lewis J.1, Jemmett R.1, Saraswathy G.1

Trauma Unit, University Hospital of Wales, Cardiff, United Kingdom

Introduction: In 2017 the ‘Hip Sprint’ national audit of physiotherapy identified that nearly a third (32%) of patients did not get out of bed on the day after hip fracture surgery www.fffap.org.uk/phfsa. The commonest reasons for this were low blood pressure (5.5%) and inadequate pain control (4.7%). With a further 76% of patients either refusing or being too confused to engage in physiotherapy. Only 2.7% did not get up because they had not been seen by a physio. Method: Our hospital’s procedure was typical of that described in the national Hip Sprint report – only 65% of our patients were able to get up on the day following surgery. The same factors appeared to underpin this failure, so as part of a local programme of Enhanced Recovery After Surgery (ERAS) we have examined potential reasons for such failings. Results: In a review of 19 patients’ anaesthetic and operation notes we found very detailed records of patients’ blood pressure and observations in theatre and recovery, and comprehensive information about measures taken to optimise these. However, for 78.9% of cases we could find no mention of blood loss in post-op. instructions, and no plan for either transfusion or fluid management in 89.5%. When we examined the patients’ records for the first 24 hours after surgery we found no documentation of plans for pain control or analgesia in 78.4% of cases, of plans for BP in 78.9%, or of plans for transfusion in

Materials and Methods: A retrospective audit of all the patients admitted with fracture neck of femurs over a period of five years (April 2011 to December 2016) was carried out. The patients were divided into three groups. Method: Our hospital’s performance was typical of that described in the national Hip Sprint report – only 65% of our patients were able to get up on the day following surgery. The same factors appeared to underpin this failure, so as part of a local programme of Enhanced Recovery After Surgery (ERAS) we have examined potential reasons for such failings. Results: In a review of 19 patients’ anaesthetic and operation notes we found very detailed records of patients’ blood pressure and observations in theatre and recovery, and comprehensive information about measures taken to optimise these. However, for 78.9% of cases we could find no mention of blood loss in post-op. instructions, and no plan for either transfusion or fluid management in 89.5%. When we examined the patients’ records for the first 24 hours after surgery we found no documentation of plans for pain control or analgesia in 78.4% of cases, of plans for BP in 78.9%, or of plans for transfusion in
Abstracts

PE-1-9
Post-operative management of proximal femur fractures: a quality improvement project
Theodorou P.1, Fleming T.1, Greig G.1, Teh E.H.1, Patel R.1, White T.1
1Musgrove Park Hospital, Taunton, United Kingdom

Introduction: Approximately 75,000 proximal femur fractures occur annually and have a significant financial, medical, and social impact. Proximal femur fracture patients remain at high risk for complications in the early post-operative period, so a local policy of six and twelve hour check was implemented. The compliance with these checks was variable, and the impact of the checks was unknown. Therefore the aims of the project were to measure the impact of these changes, and implement changes to improve compliance.

Methods: A retrospective case notes review of all patients who had surgery for proximal femur fracture during July 2017 was performed. The reviewers identified the presence of 6 and 12 hour post-operative checks, the presence of acute kidney injury (AKI), the length of stay (LOS), and the 30 day mortality. In August 2017, a post-operative proforma was designed, and nursing staff were educated about the post-operative checks to help with compliance. A second retrospective case note review of all patients who had surgery in September 2017 was undertaken. The same outcomes were identified.

Results: 33 notes were reviewed in July, and 36 notes reviewed in September. In July, 42% had a 6 hour check, 30% had a 12 hour check, and 30% had both checks. In September compliance increased to 72% for 6 hours, 75% for 12 hours, and 84.6% for both checks. The mean LOS in July was 14.1 days for patients with post-operative checks, and 20 days with no checks. In September, the LOS for patients with checks was 15.4 days and 14.6 without checks. 25% of patients who did not receive a post-operative check developed an AKI (n=20) compared to 2.1% who did (n=48). In the patients with post-operative checks the management was altered in 14.5%. There was no significant difference in 30 day mortality.

Conclusion: We have demonstrated that a local policy of 6 and 12 hour post-op checks for patients admitted with hip fracture was associated with a lower rate of AKI. There was a trend towards shorter length of stay, but this did not reach statistical significance. Implementation of a dedicated form was shown to significantly increase compliance with post-operative checks.

PE-1-10
A readit of longterm compliance on warfarin reversal for patients awaiting hip fracture surgery: the need to persist to succeed
Charity L.1, Hutton C.1, Flanery O.1
1Royal Devon and Exeter Hospital NHS Foundation Trust, Exeter, United Kingdom, 2Royal Devon and Exeter Hospital NHS Foundation Trust, Orthopaedics, Exeter, United Kingdom

Introduction: Warfarinised patients admitted with a hip fracture awaiting surgical treatment require prompt reversal to avoid delays and comply with best practice. A guideline developed at our hospital has shown through audit to be effective and that timely reversal is possible as long as intravenous K is administered in the Emergency Department as soon as the diagnosis is made and followed by subsequent monitoring for further administration of vitamin K as required. The aim of this reaudit was to assess long term compliance to the guideline.

Method: We identified patients on warfarin presenting to ED with a neck of femur fracture over a 3 month period from 1/10/17 to 31/12/17. We reviewed emergency department records for evidence of vitamin K administered as per the guideline. We also assessed if these patients met the target for surgery within 36 hours of admission.

Results: There were 173 patients with neck of femur fractures. Of these, 15 patients were on warfarin (8.7%). 14 of these patients had their INR checked in ED however only 6 patients (40%) received vitamin K prescribed by the emergency department. Vitamin K was given at the correct dose via the correct route in only 3 patients. It is important to note that there was often a delay of up to two hours between the prescription of Vitamin K and the patient receiving the dose. Overall 7 (47%) of patients on Warfarin failed to meet the best practice tariff having surgery more than 36 hours after admission. Of note 15 (8.7%) of patients with neck of femur fractures were taking direct oral anticoagulant drugs (DOACs) with 9 (60%) of these failing to meet the best practice tariff.

Conclusion: The reversal of warfarin in neck of femur fracture patients can be greatly improved. Relevant guidelines that have been previously shown to be effective are not being routinely followed. We discuss strategies for further ongoing education to doctors and nurses in the emergency department and within trauma and orthopaedics. Patients on warfarin are more likely to experience delays waiting for surgery not only disadvantaging them but also the hospital who do not comply with the national best practice tariff. Further work also needs to be done to establish guidelines for the increasing number of patients taking DOACs.

Abstracts

PE-1-11
Predisposing factors and outcomes after prolonged admission following hip fracture: a retrospective analysis
Mohan K.,1 Elliott P.,1 Hadidi O.,1 Moore D.,2 Hogan N.,1 McCarthy T.1
1Department of Trauma & Orthopaedics, Saint James’s Hospital, Dublin, Ireland

Introduction: Hip fractures are increasingly prevalent in modern healthcare, resulting in substantial morbidity and mortality, as well as escalating economic cost. Despite the existence of tailored enhanced recovery strategies, patients with prolonged hip fracture admissions persist. The objective of our study was to identify characteristics associated with a prolonged hospital length of stay (LOS), as well as quantifying return to baseline once discharged.

Methods: A retrospective review of hip fractures between 2007 and 2010 was conducted, identifying patients with a LOS over 100 days. Demographics and comorbidities were recorded, and pre- and post-admission function and status was collated.

Results: 71 hip fractures were treated, of which 57 (8%) had a LOS of 100 days or more. The median age and LOS was 83 years (IQR 60) day respectively, and an intertrochanteric fracture being the most common. The median number of patient co-morbidities was 5, and 40% of patients had a diagnosis of dementia prior to admission, increasing to 56% on discharge. 40% were mobilising without supports and 1.8% of patients were in LTC prior to admission, worsening to 5% and 61% respectively upon discharge.

Conclusion: Octogenarians presenting with an intertrochanteric fracture with a number of medical comorbidities or a diagnosis of dementia were identified as being the most likely to have a prolonged LOS, which in turn impacted drastically on subsequent independence. Early and appropriate identification and management of this cohort could conceivably help reduce the potential disease burden and associated economic effects a prolonged LOS creates.
Abstracts

PE-1-12
One year mortality in Irish hip fracture patients: the experience in the Southwest

Hudsey D.1, Morrisey D.2, O’Keeffe T.1, Clare J.1, Reidy D.1
1Cork University Hospital, Department of Trauma and Orthopaedics, Cork, Ireland, 2Cork University Hospital, Department of Geriatric Medicine, Cork, Ireland

Introduction: The Irish national hip fracture database is currently collecting information from all units in Ireland that treat hip fractures. This provides us with excellent and relevant information, identifies areas for improvement, and improves patient outcomes. 1 year mortality, a commonly quoted outcome in hip fractures, is not assessed. We wished to assess this in our own unit, to compare with international literature, and identify within these high risk patients modifiable factors that will impact their outcome.

Methods: A prospective database is compiled in Cork University Hospital. This collects data pertinent to the hip fracture database. Additional patient information is also collected- including premorbid medical problems, patient complications, and primary care physicians. Following a minimum of 1 year from first presentation information on mortality was obtained using: I. Patient Manager® system, telephone follow up with primary care physicians, RIP .ie, or direct contact with the patient or the patient’s family.

Results: 425 hip fracture patients were identified. Of these, complete data including mortality was available on 398. In the study period there were 86 recorded mortalities. This equates to a 1 year mortality rate of 21.6%. This figure compares with international literature, and identifies within these high risk patients modifiable factors that will impact their outcome.

Conclusion: The one year mortality rate in hip fracture patients treated in our institution was 21.6%. This figure compares with international literature, and identifies within these high risk patients modifiable factors that will impact their outcome.

PE-1-13
Preventing perioperative surgical site infections among hip fracture patients: An integrative care-bundle approach

Mok W.Q.1, Ulil M.J.1, Su S.1, Yiap P.L.1, Yu L.H.1, Lim S.M.M.1, Ker S.Y.1
1Khoo Teck Puat Hospital, Singapore, Singapore

Introduction: Surgical site infection (SSI) following hip surgery is an unintended and often preventable complication with profound clinical and economic implications for both the patient and healthcare system. SSI prevention is an essential component of our integrated Hip Fracture Unit’s (HFU’s) safety efforts. Ultimately, we hope to prevent SSIs among surgical hip fracture patients.

Methods: The team capitalised on the expertise of various healthcare professionals by employing a three-prong (pre-operative, intra-operative, post-operative) integrative care-bundle approach informed by best practice guidelines to ensure SSI prevention is comprehensive and spans the continuum of care.

Pre-operative
- Geriatrician: Optimise modifiable patient risk factors
- Dietitian: Optimise patient’s nutrition
- Nurse: Screen and isolate surgical patients from infectious patients; Perform preoperative skin preparation
- Anaesthetist: Prevent hypothermia
- Orthopedic surgeons: Limit human flow in operative theatre
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Intra-operative
- Infectious disease physician: Initiate antibiotic prophylaxis
- Orthopedic surgeons: Limit human flow in operating theatre
- Anaesthetist: Prevent hypothermia
- Orthopedic surgeons: Limit human flow in operating theatre
- Anaesthetist: Prevent hypothermia
- Orthopedic surgeons: Limit human flow in operating theatre
- Anaesthetist: Prevent hypothermia
- Orthopedic surgeons: Limit human flow in operating theatre
- Anaesthetist: Prevent hypothermia

Post-operative
- Geriatrician: Conduct post-operative fever examination; Regular wound inspection
- Nurse: Prevent multiple dressings removal
- Rehabilitation therapists: Early mobilization to facilitate recovery and discharge
- Case manager: Early discharge planning

Conclusion: Preventing SSIs following hip surgery is an important component of our patient safety efforts. We capitalised on the expertise of various healthcare professionals by employing an integrative care-bundle approach informed by best practice guidelines to prevent SSI while contributing to better patient outcomes. The HFU admitted 967 patients from 2015 to September 2017, of which 759 patients (78.5%) underwent surgery. An overall low SSI incidence of 1.8% as compared to international data of 9.0% was achieved. Furthermore, there was decreasing trend of SSI incidence over the years, with the latest data standing at the lowest at 1.4%. Consequently, successful SSI prevention contributed to outstanding clinical outcomes within the unit. The average length of stay for surgical patients has been decreasing steadily with the latest data standing at the lowest at 10.3 days. Additionally, HFU has low incidences of 30-day readmission (0.2%) and 30-day mortality (awaiting data confirmation).

Conclusion: SSIs cause significant morbidity and mortality for patients and put a significant strain on healthcare resources. SSIs prevention is a fundamental principle of perioperative hip fracture care. An integrative care-bundle approach informed by best practice guidelines promoted shared responsibility among multi-disciplinary team members, and successfully resulted in low SSI incidence while contributing to better patient outcomes within the unit.

PE-1-14
Ultra-low dose intrathecal anaesthesia for femoral fracture surgery

Thirunavukkarasu V.1, Spodniewska E.1, Tighe S.1
1Countess of Chester Hospital Foundation NHS Trust, Anaesthetic Dept, Chester, United Kingdom

Introduction: We decreased the amount of intrathecal plain levobupivacaine from our usual dose ≥ 10.0 mg to ≤ 6.0 mg, with additional fentanyl, in order to minimize cardiovascular effects and mortality, reduce transfusions, maximize early mobilization and reduce length of hospital stay (LOS), on the assumption that lower doses would improve BP maintenance.

Methods: R&D approval was obtained. Ethical approval was not required. 25 patients had a fascia iliaca block and then 5.0-6.0 mg of intrathecal plain levobupivacaine with fentanyl 15 µg made up to 3 ml saline, in the lateral position with the fracture side uppermost. One lhr of Ringer’s Lactate was given, plus ephedrine and/or metaraminol to maintain mean arterial pressure (MAP) within 20% of the baseline. Conscious sedation was minimised, with ketamine, midazolam or propofol.

Results: One patient required GA conversion (failure 4%), but had a sensory block to T10 in PACU. No patients required additional analgesia. The mean dose of levobupivacaine was 5.84 (0.37) mg, with a range of 5.0-6.0 mg. The mean age was 84.3 (10.3) years. 19 (76%) patients were ASA 3/4. There were 10 hemiarthroplasties and 15 DHSs. Mean surgical time was 66 (18.7) [range 45-108] minutes. The mean fluid volume was 1.0 (0.26) litres. 19 (76%) patients required vasoconstrictors. The mean % maximum drop in MAP from baseline was 19.14 (13.79), but 12 (48%) of patients had a maximum MAP drop > 20%. The drop in postoperative HB was 15.0 (15.17) g/l and 8 (32%) received a blood transfusion. 15 (80%) had a urinary catheter. Time to first mobilisation was 35.56 (20.54) [14-88] hours and length of hospital stay was 23.5 (22.12) [range 1-83] days. There were 3 (12%) hospital deaths.

Conclusion: We reduced the levobupivacaine dose by >50%, despite some surgery lasting >100 minutes. Despite this, 76% of patients required vasoconstrictors and 48% had an MAP drop >20%, with a mean HB drop of 15.0 g/l. White et al have inversely related intrathecal dose to MAP and reduced mortality, recommending reduction of the intrathecal dose “towards” 7.5 mg. This target could possibly be lowered, to reduce mortality further without increasing failure rates, but MAP drop was still significant and there seemed to be no effect on mobilisation, LOS, catheter use, or mortality, possibly due to organisational failures and the small sample size. A larger, more controlled prospective study is indicated, comparing higher with lower intrathecal doses.
from a level 1 trauma centre, utilising the RPH State goals. Literature review and data will be presented fractures are managed in trauma units, and we can’t a significant proportion of patients with fragility fractures. These systems must be prepared and equipped to consider falls risk assessment and osteoporosis prevention (which includes falls prevention and osteoporosis treatment) as part of the overall care. The proportion of elderly Australians is increasing. The problem we need to address is an increase in geriatric trauma (and therefore fragility fractures), resulting in an increase in admissions, in patients over 65y, in both relative and absolute terms. It is expected that elderly patients will make up 40% of trauma unit admissions by 2050. Geriatric trauma patients suffer problems of undertriage which increases mortality. Geriatric patients have better outcomes when they are admitted to trauma units that are experienced in looking after elderly patients. In trauma units, elderly patients experience similar geriatric issues to orthopaedic wards. There is an underutilization of geriatric services at many trauma units for such patients. Therefore, trauma units and the system within which they operate must be aware of and adapt to meet the needs of those they care for. This adaptation is multifaceted: prevention (which includes falls prevention and osteoporosis management in the community), ward environment, protocols, education, patient flow. These systems must be prepared and equipped to consider falls risk assessment and osteoporosis management. Geriatricians and allied health staff skilled in working with older patients must integrate with the existing processes to develop multidisciplinary evidence-based models of care. A significant proportion of patients with fragility fractures are managed in trauma units, and we can’t allow this to be a ‘blindspot’ for orthogeriatricians. We must identify fragility fractures within these units to prevent future fractures, in line with FFN goals. Literature review and data will be presented from a level 1 trauma centre, utilising the RPH State Trauma Registry. This will explore admitting teams, age breakdown and discharge destinations in 1581 elderly patients on the registry over a 1 year period.

Optimising pain control after hip fracture

Hawkes MS, Loh P-K.
York Teaching Hospital NHS Foundation Trust, York, United Kingdom

Introduction: Providing optimal analgesia is pivotal for ensuring effective recovery following hip fracture surgery. Delirium can be precipitated by pain itself as well as the medication used to treat it. Beyond regular use of paracetamol and increasing administration of nerve blocks, we noted that codeine phosphate (variable metabolism/effect) and tramadol can cause significant delirium despite the prescription of modest doses. NSAIDs are generally not suitable in this predominantly frail population.

Methods: Over the past 6 months, we have increasingly used fentanyl patches (6 micrograms/72 hours) in addition to regular paracetamol and oral morphine given as required to aid post-operative mobilization. Initially this was prescribed with caution in the early post-operative phase. As our multidisciplinary team found that fentanyl was well tolerated and effective, we prescribed it at an earlier stage of the patient journey. We have now moved to routinely prescribe a fentanyl patch for patients prior to surgery.

Results: Using fentanyl patches prior to surgery makes use of the waiting time for surgery to improve pain control for when the patients attempts early mobilization the day after surgery. We have had no cases of profound respiratory depression. A minority of patients have required an increased dose of fentanyl patch, up to 12 micrograms/72 hours, a few have needed 18 micrograms/72 hours. This decision is made by discussion between clinician, patient and therapy team on an individual patient basis. A small proportion of patients have had patches removed due to delirium, often this is due to multiple aetiology rather than just the opiate effect alone. Meaningful early mobilization – taking steps rather than just sitting out of bed or standing was previously rare and now our unit consistently records rates ~50%. Most patients are discharged with a fentanyl patch in situ with a request to the General Practitioner to review the ongoing analgesia requirement in the next couple of weeks with a view to downgrading or removing the fentanyl patch completely.

Conclusion: Fentanyl patches appear to be well tolerated and effective in controlling pain in hip fracture patients. Use of fentanyl patches along with use of other analgesia and nerve blocks is contributing to more effective early mobilization of patients after their surgery. Further analysis is required to consider the effect on length of stay and rates of return to usual residence.

Optimizing nutrition to improve the effectiveness of hip fracture care

Hawkes MS, Hanna P.
York Teaching Hospital NHS Foundation Trust, York, United Kingdom

Introduction: Nutrition is a key element of care for hip fracture patients as we aim to complete prompt surgery, early mobilization and continue daily post-operative therapy. Following a hip fracture, malnutrition is associated with impaired post-operative recovery and poorer overall outcomes. Poorly nourished patients display reduced muscular strength which may result in impaired mobility and delayed rehabilitation. Nutritional assessment on admission was added as one of 3 new standards to attain Best Practice Tariff for hip fracture in April 2016. The 2016 National Hip Fracture Database report stated that only 1 in 10 hospitals have a dietitian attending monthly governance meetings.

Methods: Multidisciplinary Quality improvement project to improve and optimize nutrition in hip fracture patients. Our team has maintained a clear focus on nutrition using board rounds, ward rounds and particularly the weekly MDT meeting which is attended by a Dietitian.

Results: All patients have a nutritional risk assessment completed on admission; those at high risk are automatically referred to the dietitian. All patients have a food chart completed until reviewed in the weekly MDT. All patients are offered a high protein supplement to suit individual tastes. Our team has developed an internal therapy standard that all patients will be weighed on the day after surgery as mobilisation is attempted. This is achieved routinely on weekdays, establishing a baseline weight and setting a timeline for weekly weights to be completed thereafter. At the weekly MDT, we review the nutritional risk scores, weight measurements and completion of food charts. For those at low risk, who are eating well, food charts are stopped, ensuring unnecessary paperwork is not continued. For those at risk, food charts are continued and our dieticians plans reviews and targets interventions. This also highlights those that have continued to lose weight despite optimized nutrition suggesting other potential underlying diagnoses. A date for the next weekly weight is set for all patients.

Conclusion: This multidisciplinary process provides useful clinical assessment for all patients, whilst targeting interventions for those at highest risk. Nutritional risk assessments, measurement of weight and food intake are simple clinical tools that can be used effectively to assist the MDT to improve patient care and outcomes.

Effect of orthogeriatric comanagement on mortality and rehospitalisation in patients with hip fracture

Rapp K, Buchele G, König H-H, Becker C.
Robert-Bosch-Hospital, Department of Clinical Gerontology, Stuttgart, Germany, Ulm University, Institute of Epidemiology and Medical Biometry, Ulm, Germany, University Medical Center Hamburg-Eppendorf, Department of Health Economics and Health Services Research, Hamburg, Germany

Introduction: To improve care in patients with fragility fractures orthogeriatric comanagement
and intensive early rehabilitation has been recently implemented in many German hospitals. The objective was to analyse the influence of this innovative health service approach on mortality and health service use.

Methods: Routine data of all patients with hip fractures treated between 2014 and 2016 in Germany and insured at Germany’s largest sickness fund (ADK) are used for the analyses. Patients treated in hospitals with orthogeriatric comanagement are compared with patients treated in hospitals without this new health care approach. Outcome measures are mortality, rehospitalisation and institutionalisation. Since the orthogeriatric comanagement focuses on old and frail people, analyses are restricted to patients aged 80 years and more. Multivariate analyses are applied.

Results: About 60,000 patients with a hip fracture are included in the analyses. Preliminary results show a clear reduction of mortality at 30, 60, 90 and 180 days in patients treated in orthogeriatric centres or in hospitals with orthogeriatric comanagement. Rehospitalisation rates are also reduced if orthogeriatric comanagement is available. The effects are observed in women and men and in patients with different degrees of disability.

Conclusion: Preliminary results show clearly better outcomes in patients experiencing orthogeriatric comanagement. The final results will be available soon.

PE-1-19
Tunnel neuropathy of the sciatic nerve as the cause of pain after total hip arthroplasty
Pilieva A.1, Alabut A.1, Sikilandia V.1, Piliev Z.2,2
Rostov State Medical University, Rostov-on-Don, Russian Federation; Clinical Hospital at Rostov-Main Station, Rostov-on-Don, Russian Federation

Relevance: The ratio primary to revision hip arthroplasty is approximately 1: 4, which indicates low survival of endoprostheses due to complications. Neuropathies of peripheral nerves, for example tunnel syndrome of the sciatic nerve (TSSN), as the causes of pain syndrome after hip arthroplasty, are considered extremely rare. As a rule, such pain is regarded as radicular segmental, or myofascial and measures to treat them are unsuccessful.

Methods: Patients of the traumatologic and orthopedic department with lumbosacral spine pathology experiencing gluteal pain syndrome irradiating to the hip joint were examined 2-3 months after primary total hip arthroplasty was performed. Differential diagnosis was carried out with segmental radicular pain, myositis, enthesitis and tendinitis of the gluteal muscles. In addition, patients underwent stabillometry and a forced flexion test was performed in the hip joint when rotated inwards. If a postural imbalance was diagnosed in the sagittal plane with a shift of the statokinesigram toward the operated extremity, as well as a positive functional test with forced flexion in the hip joint, which was combined with the presence of a painful tendon in the piniform muscle region, TSSN was assumed. The level of pain syndrome was assessed with a visual analogue pain scale (VAS).

Results: Assuming the presence of TSSN in the patient, after determining the local soreness point using percutaneous electroneurostimulation (ENMS) (current – 2-3 mA), a diagnostic blockade of anesthetic and glucocorticosteroid was performed under ENMS control with a current of not more than 1 mA. If the pain syndrome was reduced by more than 50% “on the needle,” the diagnosis of TSSN was considered correct. Next, physical therapy was corrected and standard medication was prescribed. The therapeutic blockade was carried out once a week until the pain syndrome disappeared. With a pain reduction of more than 3 points on the VAS, results were regarded as good.

Conclusion: TSSN can be one of the causes of the onset of pain after total hip arthroplasty in connection with a change in the anatomy of the joint region.

Abstracts
Concomitant fragility fractures of pelvis and hips:

Methods & Results: We report a case series of three elderly ladies admitted to our Trauma Center with these concomitant fragility fractures after a fall on level ground from September 2017 to January 2018. The average age was 82 (79-85). All of them were treated with percutaneous screw fixation of the pelvis with the aid of the 3D-navigation minimally invasive surgical technology and hip fracture surgery in the same session. Two of them received cemented hemi-arthroplasties and one of them received Gamma Nail Fixation for their hip fractures. All of them started immediate full weight bearing after the operation with satisfactory pain control. They were discharged uneventfully without any complications.

Conclusion: This report aims at promoting the awareness of concomitant fractures of pelvis and hip in patients resulting from low-energy trauma in the era of osteoporosis. Demonstrating the common yet easily missed associated sacral fractures in patients with pubic rami fractures which requires surgical fixation for improved healing. Introducing 3D-navigation minimally invasive surgery as a safe and effective surgical alternative in patients with fragility fractures of pelvis and acetabulum and treating both pelvis and hip fractures in the same operative session will improve the post-operative rehabilitation with better pain control and earlier full weight bearing and finally leading to better clinical outcome.

Introduction: Frailty hip fractures are very common conditions and the mainstay of treatment is early operation. Insufficiency or fragility pelvic fractures, on the contrary, are usually treated conservatively. Concomitant fragility fractures of pelvis and hips in elderly are rare associated conditions with diagnostic and management challenge in traditional orthopaedic practice.

Materials: Patients with persistent pain syndrome lasting for a year or more after TKA had diagnostic blockade of the femoral nerve performed. The study included patients with positive tunnel syndrome, without verterogenic pathology, during arthroplasty without tourniquet.

Results: The point of greatest soreness is located in a supine position through palpation along the medial surface of the thigh in the middle-third of the leg. Within the trigger point, a percutaneous nerve mapping is performed using a pen-electrode connected to the neurostimulator in the operating mode: current is set to 5 mA and pulse duration is 1 ms. In most cases, the nerve “point” located during mapping corresponds to the trigger point. A blockade is performed with a solution of anesthetic and hydrocortisone at the trigger point with a 50 mm long needle electrode connected to the neurostimulator in the operating mode: 1 mA of current and 0.1 ms impulse. The technique was applied in 8 patients who underwent TKA. The average period after surgery was 445.1 ± 67.6 days. The intensity of the pain syndrome before the blockade on the visual analogue scale (VAS) in patients was 6.7 ± 0.9 points, after the blockade – 2.1 ± 0.5 points. Patients were prescribed pharmacological therapy for neuropathy of the femoral nerve.

FRACTURE MANAGEMENT

PE-2-1
The diagnostic and management challenge for concomitant fragility fractures of pelvis and hips – a case series with literature review
Cheng L.Y.1, Lau J.C.K.1, Chui K.H.1, Tiu K.L.1, Lee K.B.1, Li W.1
1Queen Elizabeth Hospital, Department of Orthopaedics & Traumatology, Hong Kong, Hong Kong

Introduction: Frailty hip fractures are very common conditions and the mainstay of treatment is early operation. Insufficiency or fragility pelvic fractures, on the contrary, are usually treated conservatively. Concomitant fragility fractures of pelvis and hips in elderly are rare associated conditions with diagnostic and management challenge in traditional orthopaedic practice.

Methods & Results: We report a case series of three elderly ladies admitted to our Trauma Center with these concomitant fragility fractures after a fall on level ground from September 2017 to January 2018. The average age was 82 (79-85). All of them were treated with percutaneous screw fixation of the pelvis with the aid of the 3D-navigation minimally invasive surgical technology and hip fracture surgery in the same session. Two of them received cemented hemi-arthroplasties and one of them received Gamma Nail Fixation for their hip fractures. All of them started immediate full weight bearing after the operation with satisfactory pain control. They were discharged uneventfully without any complications.

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FRACrE MANAGEMENT

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PE-2-2
Comparison of a twin interlocking derotation and compression screw cephalomedullary nail (InterTAN) with a single screw derotation cephalo-medullary nail (Proximal Femoral Nail Antitrotation); a systematic review and meta-analysis for intertrochanteric fractures
Nherere L.1, Trueman P1, Honner A.1, Johnstone A.2
1Smith & Nephew, Hull, United Kingdom, 2Aberdeen Royal Infirmary, Aberdeen, United Kingdom

Background: Intertrochanteric hip fractures are common and devastating injuries especially for the elderly. Surgical treatment is the optimal strategy for managing intertrochanteric fractures as it allows early rehabilitation and functional recovery. The relative effects of internal fixation strategies for intertrochanteric fracture after operation remain limited to relatively small studies which create uncertainty in attempts to establish evidence-based best practices.

Methods: We conducted a systematic review and meta-analysis of randomized controlled trials (RCTs) and observational studies to assess the clinical effectiveness of two commonly used intramedullary devices; a twin screw integrated cephalomedullary nail (InterTAN) versus a single screw cephalomedullary nail (Proximal Femoral Nail Antitrotation) in patients with intertrochanteric fractures. The following outcomes were considered, revisions, implant related failures, non-unions, pain, Harris Hip score and intra-operative outcomes. Odds ratios or Mean differences with 95% confidence intervals in brackets are reported.

Results: Six studies met the inclusion criteria, 2 randomised controlled trials and 4 observational studies enrolling 970 patients with mean age of 77 years and 64% of patients were female. There was a statistically significant difference (p-value<0.05) for revisions OR; 0.27 (0.13 to 0.56), implant related failures OR; 0.16; (0.09 to0.27), proportion of patients complaining of pain OR; 0.50 ; (0.34 to 0.74). There was no difference in non-unions and Harris Hip score (p-value >0.05) There was a significant difference in blood loss and fluoroscopy usage in favor of PFNA while no difference in operating times were observed between the two devices.

Conclusions: Our meta-analysis suggests that a twin screw integrated cephalomedullary nail InterTAN is clinically more effective when compared to a single screw cephalomedullary nail Proximal Femoral Nail Antitrotation resulting in fewer complications, fewer revisions and fewer patients complain of pain. No difference has been established regarding non-unions and Harris Hip score. Intra-operative outcomes favour PFNA with less blood loss and fluoroscopy usage. Further studies are warranted to explore the cost-effectiveness of these and other implants in managing patients with intertrochanteric fractures.

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PE-2-3
The Pacetti’s line: an innovative radiological measurement to predict post-reduction displacement and conservative versus surgical management in dorsally displaced distal radius fractures
Pace V1,2, Lanzetti R.1, Coraffo A.2
1The Royal National Orthopaedic Hospital, Perugia, Italy, 2University of Perugia, Perugia, Italy

Distal radius fractures (DRFs) are a very common pattern of injury. This is especially true among elderly people. His treatment requires high costs, and it is time consuming because of big numbers. Treatment options’ guidelines are internationally recognised. High level of evidence with regards to the appropriateness of both conservative and surgical treatments is already available in the literature. Several radiological measurements are also validated in the literature.(radial height, radial inclination, volar tilt and ulnar variance).

We hypothesise that the newly named Pacetti’s line could predict the displacement of dorsally displaced distal radius fractures 1 or 2 weeks following reduction. The aim of the study is to introduce a new innovative radiological measurement with high level of prediction when deciding to treat a distal radius
In Japan hip fracture incidence was 150,000/year 1Serei Hamamatsu General Hospital, Bone & Joint Surgery, Mori S. 1
radius fractures. Riva’s line seems to need further development. The Pacetti’s line seems to be an ideal implementation to the already existing radiological measurements for distal radius fractures. Riva’s line was used to predict further displacement. In our experience the high level of prediction of further displacement was achieved by the use of the Pacetti’s line, and lower level of prediction for Riva’s line. In our experience the newly introduced Pacetti’s line seems to represent a very useful tool for all trauma teams dealing with distal radius fractures, providing simple, fast, efficient and reliable information with regards to the fractures’ characteristics and consequently to their most appropriate management. The Pacetti’s line seems to be an ideal implementation to the already existing radiological measurements for distal radius fractures. Riva’s line seems to need further development.

PE-2-5
Barriers and facilitators to implement FIC blocks for hip fracture patients administered by ambulance crew
van Kampen S.1, Day J.2, Charity J.3, Simpson G.4, Quantick M.5, Manzi S.1, Black S.1, Hewlett C.1, Logon S.5. 1University of Plymouth, Clinical Trials and Population Studies Department, Plymouth, United Kingdom, 2University of Exeter, Medical School, Exeter, United Kingdom, 3Royal Devon and Exeter Hospital NHS Foundation Trust, Orthopaedic Department, Exeter, United Kingdom, 4Royal Devon and Exeter Hospital NHS Foundation Trust, Anæsthetic Department, Exeter, United Kingdom, 5University of Exeter, Applied Healthcare Modelling and Analysis, Exeter, United Kingdom, 6South West Ambulance Service NHS Foundation Trust, Exeter, United Kingdom
Introduction: Fascia iliaca compartment blocks (FIC) can be an effective method of pain relief for patients with hip fractures. They can reduce side effects associated with other analgesics such as opioids and are endorsed by both NICE (2011) and the Association of Anaesthetists of Great Britain and Ireland (AAGBI 2013). In some UK hospitals, junior doctors and nurses are trained to perform FIC blocks on arrival in the Accident and Emergency (A&E) department. Studies have shown that FIC blocks can also be administered safely and effectively pre-hospital by trained paramedics. We sought to assess barriers and facilitators to implementing paramedic-administered FIC blocks in the Royal Devon and Exeter Hospital NHS Foundation Trust (RD&E).
Methods: The implementation strategy was developed through an iterative, collaborative and facilitative approach. This involved clinicians at the RD&E from Orthopaedics, Anaesthetics, and the Emergency Department (ED), as well as paramedics from the South West Ambulance Service NHS Foundation Trust, patient and public involvement representatives (PPI) and researchers. The Consolidated Framework for Implementation Research was used to guide explorative discussions with stakeholders and to collect and analyse information on anticipated and perceived barriers and facilitators.
Results: FIC was perceived as a simple technique to learn. Pre-existing training material could be adapted for paramedic use. Clinicians anticipated important patient benefits in terms of time to surgery and health outcomes, as well as reductions of hospital costs. Anaesthetists felt that clarification was required as to whether training non-clinicians to perform FIC out of hospital would be acceptable, and stressed that robust clinical governance, guidelines, and training should be in place. Paramedics were willing to learn the procedure and embed it into their routine practice. PPI representatives and ED staff required clarification of expected effects on scene time, time in ED and time to surgery.
Conclusion: Anaesthetists were willing to proceed with implementation upon receiving clarification from the AAGBI. To address concerns of PPI representatives and hospital staff regarding the effect on patient and hospital flows, it was decided to conduct a modelling exercise to map the care pathway of typical hip fracture patients in the RD&E hospital. We will continue to assess barriers and facilitators during implementation to inform future roll-out.

In Japan hip fracture incidence was 150,000/year in 2012, reached 3 times as in 1987. Now aged population over 65 years old reached more than 40% of total population last year. In Japan health care system has allowed additional medical charge for treating hip fracture using hip fracture community liaison network, where hip fractured patients receive surgery and initial care at 1st acute management hospitals, then move to 2nd recovery hospital for further rehabilitation, finally go to local physicians’ clinics or care units for maintenance rehabilitation and osteoporotic drug therapy. In west Shizuoka area (about 1 million of population) 8 management department. Studies have shown that FIC blocks can also be administered safely and effectively pre-hospital by trained paramedics. We sought to assess barriers and facilitators to implementing paramedic-administered FIC blocks in the Royal Devon and Exeter Hospital NHS Foundation Trust (RD&E).

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ensure it accurately represented the functioning of the existing clinical pathway.

Results: During the process mapping it became clear that many changes to the pathway could be tested and a greater level of facilitation was required to agree the pathway changes across departments and organisations. A one-day workshop was convened to redesign the clinical pathway using the computer simulation to live test changes to the pathway. The aim of the workshop was to develop a consensus on the changes to be made to the clinical pathway leading to a timeline for implementation. The simulation model, redesigned pathway, estimated improvements in efficiency (referral to treatment time, reduction in opioid use) and proposed timeline for implementation will be presented.

Conclusion: Simulation modelling can be used to redesign complex care pathways and act as a way for all stakeholders to engage in the redesign process. The increased engagement can improve the likelihood of the modelling outputs informing real world implementation. This approach can be generalised to the redesign of hip fracture clinical pathways nationally and internationally.

PE-2-7
Implementation of an online fracture risk assessment tool

Cullen L.1, Suic R.1, Linton D.1, Nijig T.1, Frankel L.1, Jain R.1, Weldon J.2, Bogoch E.1, Siede J.1

St. Michael’s Hospital, Musculoskeletal Health & Outcomes Research, Toronto, Canada, 1Osteoporosis Canada, Toronto, Canada, 2University of Toronto, Institute of Health Policy, Management & Evaluation, Toronto, Canada

Introduction: In Canada, the primary tool used to determine the 10-year fragility fracture risk is CAROC. A comparison of risk level reported from diagnostic imaging (DI) clinics after bone densitometry (DXA) and historical data collected through the Ontario Osteoporosis Strategy’s Fracture Screening and Prevention Program (FSPP) revealed a 18.7% rate of discordance. The purpose of this quality improvement (QI) project was to reduce the rate of discordance between the fracture risk reported by DI clinics and the calculated fracture risk based on both DXA and FSPP data.

Methods: Process changes in the calculation of patient fracture risk assessment were introduced in two steps. First, an online risk assessment tool was added to the patient data collection system to allow FSPP coordinators to immediately check for discordance as bone mineral density (BMD) test results were entered into each patient profile. If discordance was present, FSPP coordinators contacted the reporting diagnostic imaging clinic to request that the reported risk be reviewed. Second, QI specific follow-up questions were added to the online risk assessment tool to capture any corrections made to the patient’s risk assessment and the reason for those changes. Aggregate data from these additional QI questions were fed back to the FSPP coordinators to identify frequent sources of discordance in order to align DXA reports with CAROC risk guidelines.

Results: With the introduction of the online risk assessment tool, the rate of discordance between the diagnostic imaging clinic reported fracture risk and the calculated fracture risk based on DXA and FSPP data was reduced to 8.8% (9.9% absolute reduction). Inclusion of the specific fracture risk QI questions produced a further reduction in the discordance rate to 7.4% for an overall absolute reduction of 11.3%.

Conclusion: The addition of both the online risk assessment tool and QI questions that captured any changes in the DI clinic reports of 10-year fracture risk successfully reduced the frequency of discordance between DI clinic reported fracture risk and fracture risk calculated with both DXA data and historical data captured by the FSPP.

PE-2-8
The effect of screw insertion time on pullout strength of a cement-augmented screw: An experimental study

Aarsong W1, Jomthanaporn K.1
Prince of Songkla University, Orthopaedics, Hatyai, Thailand

Background: Bone cement-augmented screws are commonly used in osteoporotic bone and as bone void fillers after curettage of bone tumor. However, there is no consensus on the pullout strength of the screws when inserted at different states of cement curing. The aim of this study was to compare the pullout strength of screw insertions during the working phase and after curing of the bone cement. Furthermore, we also compared 3 types of screws in each phase.

Methods: There were two experimental groups. In group 1 (n=30), screws were inserted during the working phase. In group 2 (n=30), screws were inserted after curing of the bone cement. Each group was further divided into 3 subgroups with respect to the type of screw: cortical screw (3.5 mm), cancellous screw (4.0 mm), and locking screw (3.5 mm). Axial pullout tests were then conducted at the rate of 5 mm/min and the maximum pullout strength for each screw was recorded and analyzed.

Results: The axial pullout strength was not significantly different after screw insertion during the working phase or after curing of the bone cement for either the cancellous or locking screw. However, inserting the cortical screws after curing of the bone cement had significantly less pullout strength compared to inserting the screws during the working phase. The locking screw achieved the maximum pullout strength in either insertion time.

Conclusion: Screw insertion times had no detrimental effect on pullout strength of either cancellous or locking screws used as cement-augmented screws.

Abstracts
Introduction: Treatment of these injuries of the distal tibia, regardless of selection and maximally correct surgical technique, leaves certain functional sequelae to the ankle joint.

Methods: The period of monitoring and analysis is from 2007 to 2017. The study included 65 respondents with multiple intra – articular fractures of the distal tibia. The average age of the patients was 44 years (22-64). Male respondents were 40 (61.5%) and 25 (38.5%) females. The right tibia was operated in 38 (58.5%) and left in 27 (41.5%) cases. There were 16 (24.6%) open and 49 (75.4%) closed fractures. According to the AO/OTA classification, there were Type B1-2 (9%), Type B2-4 (6%), Type B3-3 (4.6%), Type C1-12 (18.4%), Type C2-29 (44.6%), Type C3-17 (26%). ASAMI scoring system was used to estimate bone and functional results.

Results: Total healed was recorded in 61 cases (93.8%). There was also a small number of “pin site” and “pin tract” infections that were successfully resolved with antibiotics and pins extraction. The bony results according to the ASAMI classification, leaves certain functional sequelae to the ankle joint.

Conclusion: Ankle fractures in geriatric patients with diabetes mellitus remains a challenge according their treatment. Poor bone and soft tissue quality may lead to more complicated fracture patterns and further problems after the internal fixation. The purpose of this study is to analyze the postoperative functional outcomes and the complications rates of these fractures in geriatric patients with diabetes mellitus.

Material and Methods: Between 2015–2017 74 patients with diabetes mellitus (26 male – 48 female) with an average age 78 years old were treated for closed unstable ankle fractures. The fractures were classified by Weber: Type A 18 (24.4%) cases, Type B 34 (45.9%) cases and 22 (29.7%) patients Type C. Charlon comorbidity index was 0.43 ± 0.09. The median time until the operation was 3.2 days (mean time 1- 6 days). Internal fixation of the fractures of lateral malleolar was performed with locking plates (combination of locking and conventional screws), and sidewinder plate. Malleolar screws and tension band were the implants for the medial malleolar, while Trans -syndesmotic fixations were performed in 47(63.5%) patients. Post operative the patients were supported with a lower leg cast for 6 weeks without weight bearing.

Results: The mean follow-up was 17 months (range 12-28 months). The A.O.F.A. Score, radiographic parameters (post –operative displacement of the fractures, time to healing), readmission and reoperation, and complication rates were the measures to evaluate the outcomes. Radiological consolidation was 80 ± 20 days while the A.O.F.A. Score was 87.7. Complications were: 7 cases of infection, 4 cases with Type II vasculopathy, 2 cases with nonunion, 3 cases with Charcot and 4 cases of reoperation. Majority of complications and prolonging time to union of the fractures were recorded in patients with HBA.C over 70%.

Conclusion: Ankle fractures in geriatric patients with diabetes and in presence of systemic comorbidities have higher complication rates after operative treatment. For every 1% reduction in HBA.C, there is an estimated 25% to 30% reduction in the rate of diabetic complications. For this reason adequate control of blood glucose levels is an integral part of the management of diabetic patients with an acute fracture.

Secondary fracture prevention trial in an acute Hospital

Saeki Y.1, Shinkawado K.2,3, Nagao H.1, Okita Y.1, Okuda R.2, Osaki M.1, Hagino H.2,3
1Tottori University Hospital, Nursing, Yonago, Japan, 2Tottori University Hospital, Rehabilitation, Yonago, Japan, 3Tottori University, School of Health Science.Faculty of Medicine, Yonago, Japan

Introduction: We initiated a prospective study of a fracture liaison service (FLS) for secondary fracture prevention. We report the effect of FLS on fracture patients who received FLS up to 6 months after the fracture in our hospital.

Methods: Subjects were randomly assigned to an FLS (15) or non-FLS group (12). An Osteoporosis Manager (OM) (liaison) asked the FLS group to undergo bone densitometry for attending doctors and evaluated the risks for fracture and fall. OM then asked those with osteoporosis to undergo medical treatment and provided instructions for preventing secondary fractures using a prevention notebook. In the non-FLS group, OM only explained about the notebook and provided it to the subjects.

Results: There was an intergroup difference in the bone densitometry performance rate of fracture treatment (FLS group: 100%, non-FLS group: 33%). The medical treatment performance rate for osteoporosis in the FLS group was higher at 100% (58% in non-FLS) at the fracture treatment and 100% (67% in non-FLS) 6 months after the fracture. Medical treatment adherence between the start of fracture treatment and 6 months after a fracture was significantly higher in the FLS group: 100% vs 42% (non-FLS). The incidence of fracture was 0% in both groups with no intergroup difference. There was a statistically significant QOL reduction in the non-FLS group from before the fracture to 6 months after the fracture, whereas no QOL changes were found in the FLS group.

Conclusion: Given the higher bone densitometry and medical treatment performance rates in the FLS group, FLS might effectively prevent secondary fractures after a fragility fracture.

An audit of current clinical practice in St. Columcille’s Hospital, Loughlinstown regarding diagnosis of vertebral fractures

Marion M.L.1, Johnson K.1, Vulpie S.1, Doyle R.1
1St Columcilles Hospital, Loughlinstown, Dublin, Ireland

Introduction: We audited against ‘The Clinical Guidance for the Effective Identification of Vertebral Fractures’ as outlined by The National Osteoporosis Society as a standard. The purpose of this audit is to
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**PE-2-16**

**Fracture outcomes research database**

**Barr R.**, **McDonald S.**, **McAlinden M.**, **Hamilton M.**, **Bunting M.**, **McAuley E.**

Royal Victoria Hospital, Fracture Outcomes Research Unit, Belfast, United Kingdom

The Fracture Outcomes Research Database (FORD), based and administered by staff at The Royal Victoria Hospital in Belfast, was first established in 1999 to collect data on all inpatient fracture activity at that hospital. It has since evolved as a Regional system for Northern Ireland (NI) and also collects hip fracture data from the three other fracture units in Craigavon, Dundonald and Londonderry. The Unit fulfils several roles collecting, processing and producing information relating to Patient Statistics, Clinical outcomes, Treatment Advances and Developments, Research proposal and papers. Quality Improvement Initiatives, Multidisciplinary and Clinical Audit. While the data obtained is primarily used for audit and research it is also utilised by Trust Management and The Department of Health (NI) to produce performance management information enabling senior managers to make timely and effective decisions for the service and to facilitate planning for service development and quality improvement. The primary focus to date has focussed on clinical outcomes for the fractured Neck of Femur patients, representing the largest cohort of admissions to all Fracture Units. These outcomes are measured locally and are benchmarked regionally and nationally with particular attention to 30 day mortality which in 2017 and for the RHF is 5%. Since 2008 data has been submitted to and published in the National Hip Fracture Database, with the RHF recognised as one of the largest contributing fracture units in the UK, (506 NOF cases in 2017). Data quality has been recognised nationally, and the FORD team now participate in the multi-centred WHiTE Study where specifically health economic outcomes are recorded. Since our involvement in this research, the RHF has been the largest monthly contributor of hip fracture data nationally. The National Joint Registry also is contributed to through this system, producing yearly performance reports for Consultants. In recent years hip fracture data from FORD has been presented locally, regionally, nationally and internationally. In the coming years, with increasing emphasis on patient outcomes and the recognised importance of multi-centred collaboration we look forward to contributing further, not only on hip fractures but on all fragility fractures. Watch this space!

**PE-2-17**

**Post fracture mortality and rates of complication in geriatric patients with hip fracture and chronic kidney disease. One year follow-up**


General Hospital of Iraklion – Venizelios, Orthopaedic, Iraklion, Greece

Is general accepted that geriatric patients with chronic kidney disease (especially at final stage – hemodialysis) develop mineral bone disorders and often have a higher risk for hip fractures. Mortality and morbidity rates in this group of geriatric population after hip fracture at one year post fracture follow-up were 37.2% and 14% respectively. The purpose of this study is to analyze the rates of mortality, complications and functional outcomes in geriatric hip fractures with chronic kidney disease.

**Material and Methods:** Between 2014-2016, 54 patients with an average age 85.4 years old were treated for hip fracture. 30 patients had mild to severe chronic kidney disease and 24 were haemodialised. In the coming years, with increasing emphasis on patient outcomes and the recognised importance of multi-centred collaboration we look forward to contributing further, both on hip fractures and on all fragility fractures. Watch this space!

**Results:** Mean follow-up was 12 months (range from 6- 21 months). The results were analyzed on a base of four parameters: i) overall mortality (overall survival time was defined as the duration from the time of surgery to the death day), ii) incidence of surgical complications (mechanical complications 4 cases, infection 3 cases, periprosthetic fracture 3 case), iii) incidence of medical complications within 3 months post operatorly (which resulted readmission for treatment (acute renal failure), 2 case, pulmonary embolism 3 cases, deep venous thrombosis 1 case, acute respiratory disease 3 cases, iv) functional outcomes with Barthel index score and Parker mobility scale. Median Barthel was 65(range 25-95) and Median Parker mobility 4.9(range 2-9).

**Conclusions:** Falls and associated fractures are major cause of morbidity and mortality in geriatric patients. Hip fractures in patients with chronic kidney disease especially in final stage patients who are haemodialised, is happening 3-4 times more often than in general geriatric population due to increased bone loss. Mortality and complications rates in this group of patients one year postoperative increased dramatically.

**PE-2-18**

**Evaluating spine micro-architectural texture (Via Tbs) in the differently-aged female population of Ukraine**

**Povoroznyuk V.**, **Musiienko A.**, **Dzerovych N.**

Institute of Gerontology, AMS Ukraine, Department of Clinical Physiology and Pathology of Locomotor Apparatus, Kyiv, Ukraine

**Objective:** To create a reference database for the Trabecular Bone Score (TBS) including the Ukrainian women of different ages.

**Materials and Methods:** We examined 1066 women aged 40-89 years old (age – 62.47±9.57 years, height – 1.61±0.63 m, body weight – 73.48±6.27 kg) who were divided into the groups depending on their age: 40-44 years (n=33), 44-49 years (n=62), 50-54 years (n=95).
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(n=137), 55-59 years (n=169), 60-64 years (n=275), 65-69 years (n=180), 70-74 years (n=151), 75-79 years (n=76), 80-84 years (n=33), 85-89 years (n=12). TBS was assessed using TBS Insight (Med-Imaps, Pessac, France). Bone mineral density (BMD) of the lumbar spine (L-1-L-4) was measured by dual-energy X-ray densitometry (Prodigy, GE Lunar, Madison, USA).

Results: Age has a significant effect on the variability of the TBS (F=26.78; p<0.0001). However, the effect of age on BMD L-1-L-4 wasn’t detected (F=1.02; p=0.42). We determined the following parameters of TBS and BMD L-1-L-4 for the Ukrainian women depending on their ages: 40-44 years old – 1.174±0.114 and 0.993±0.201; 44-49 years old – 1.340±0.116 and 1.068±0.184; 50-54 years – 1.301±0.120 and 1.072±0.201; 55-59 years – 1.220±0.151 and 1.025±0.209; 60-64 years – 1.212±0.134 and 1.031±0.199; 65-69 years – 1.188±0.134 and 1.027±0.192; 70-74 years – 1.146±0.134 and 1.030±0.182; 75-79 years – 1.142±0.143 and 1.027±0.217; 80-84 years – 1.139±0.132 and 1.024±0.232; 85-89 years – 1.114±0.156 and 0.993±0.194.

Conclusions: The trabecular bone score is a significant predictor of age-related bone changes in women.

PE-2-19 The role of dynamic supine-sitting spinal radiographs in the management of vertebral fragility fractures admitted to hospital

Tom M.C., Ong T.I., Sivam J.L., Al-shafti H.T., Sahata O.I., Salem K.K.
Nottingham University Hospital NHS Trust, Department of Healthcare for Older People, Nottingham, United Kingdom, Nottingham University Hospital NHS Trust, Centre for Spinal Studies and Surgery, Nottingham, United Kingdom

Introduction: Supine spinal x-rays are done to investigate back pain. If a vertebral fracture (VF) is identified, standing x-rays are performed to determine segmental stability at the fracture level through dynamic loading of the spine. However, low-trauma/atraumatic VFVs are primarily a vertebral “body” injury and therefore mechanically stable. This study investigates the utility of dynamic spinal imaging in patients admitted to hospital with VFVs.

Methods: Over 12 months, patients with fragility VFVs 50 years of age and over were identified and data collected from hospital records on their characteristics, fracture details and hospital management. Changes on dynamic imaging were based on the final radiology report. Subsequent management was compared between patients who underwent dynamic spinal imaging (DI) and those who did not (non-DI). Patients with incomplete data or a history of malignancy were excluded.

Results: Of the 143 patients (67% female; mean (SD) age, 80.5 years (11.0)) identified, 51 patients (35.6%) had dynamic imaging. No significant difference in age and gender were identified between the groups, but patients who were admitted under or had input from the Spinal Team were more likely to have dynamic imaging. 5/51 (9.8%) had additional height loss on dynamic imaging. Patients that had dynamic imaging were more likely to have a spinal MRI; and spinal team review as inpatient and outpatient. However, surgical intervention was not significantly different between the two groups (DI vs non-DI). In the DI group, VF management (MRI/surgical intervention) was not affected by additional height loss on DI.

Conclusion: Dynamic spinal imaging has a low yield and does not result in a change in the management of inpatients with fragility VFVs. The value of dynamic spinal imaging in this cohort is questionable and should not be part of assessing patients with low-trauma/atraumatic VFVs where the cause is likely due to osteoporosis.

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PE-2-21 Treatment of multiple fractures of the humerus in the elderly with ilizarov device

Lalic I.1, Dulic O.2, Harhoji V.1, Gvozdenovic N.1, Lalic N.1, Lukic-Sarcanovic M.4
University of Novi Sad, Faculty of Medicine, Clinic for Orthopedic Surgery and Traumatology, Novi Sad, Serbia, “Clinical Center of Novi Sad, Clinic for Orthopedic Surgery and Traumatology, Novi Sad, Serbia, University of Novi Sad, Faculty of Medicine, Clinic for Pulmonary Diseases, Department for Oncology-Pulmology, Sr.Kamenicu, Serbia, “University of Novi Sad, Faculty of Medicine, Clinic for Anesteziology and Intensive Therapy, Novi Sad, Serbia

Introduction: Was to evaluate postoperative results of multiple closed fractures of humerus in the elderly using the methods of transosseous osteosynthesis.

Methods: In our clinic, in period from 2007 to 2017, 45 patients with various types of humeral fractures were treated. Of that number, 37 (82.2%) of them had multiple fractures and 8 (5.6%) segmental. The average age of the patients was 63 year (59-70). Right upper arm were present in 33 patients (73.3%) and fractures of the left in 12 (26.6%). There were men 17 (37,7%) and a woman 28 (62,3%). Osteopenia, confirmed by the DEXA method, had 18 women (64,2%) and osteoporosis was present in 10 cases (22,2%).

Results: Total healing wasoptained in 37 (82,2%) patients. We haved extended healing in 5 (11,1%) patients and pseudoarthrosis in 3 (6,5%). Further complications were noted: 12 pin site infections which have been successfully treated with antibiotics and frequent bandaging; 3 pin tract infections, 3 transient radial nerve lesions, 2 transient outage of sensitive functions of ulnar nerve and one iatrogenic pseudoaneurysm of brachial artery. Functional results were presented with Stewart-Hundley scale and based on it. We had 28 (62,2%) excellent, 11 (24,4%) good and 6 (13,3%) bad results.

Conclusion: Treatment of comminuted fractures of the upper arm in the elderly using methods of transosseous osteosynthesis with ilizarov device, is by observation of the author, good method with relatively minimal complications.

PE-2-22 Greater trochanteric fractures of the hip – Are they getting the attention they deserve?

Manoharan C.1, Khwaja M.1, Kumar S.1, Moores T.1, Roberts P.1
Royal Stoke University Hospital, Trauma and Orthopaedics, Stoke on Trent, United Kingdom

Introduction: Isolated greater trochanter fractures of the femur are relatively uncommon. They are commonly diagnosed on plain film radiographs and managed non-operatively with analgesia and mobilisation as possible. Recent studies have shown that greater trochanter fractures are often not isolated and can be associated with extension into the intertrochanteric neck of femur region, necessitating surgery. These occult fractures are best identified on Moth scans with even CT scans being inadequate. In addition, some fractures could propagate with mobilisation and follow-up imaging may be required to identify these. The aim of our study was to determine the investigations and management of this group of patients.

Methods: We retrospectively reviewed patient notes and images over a 2 year period, at a major trauma centre. Data was collected on fracture pattern, imaging modalities used for diagnosis, involvement of orthopaedic team, management and follow-up imaging. We excluded periprosthetic fractures.

Results: 24 patients of mean age 79 years with isolated greater trochanter fractures identified. 7 fractures (29%) and 17 avulsions. All diagnosed on plain films with 21 having subsequent CT and 1 an MRI to diagnose intertrochanteric extension. 50% discussed with orthopaedic department. 8 patients (33%) had follow-up imaging (6 plain films and 2 CT) after mobilisation. Only 2 patients were seen in fracture clinic, where 1 patient had surgery after CT revealed intertrochanteric extension. 9 patients discharged from accident and emergency on day of presentation and 4 discharged the next day. None admitted under orthopaedics.

Conclusion: Most patients with greater trochanter fracture are imaged with CT scans to determine occult
fracture. Fracture propagation is not adequately addressed with two-thirds of patients not receiving follow-up imaging. The modern orthopaedic surgeon has decreasing interaction with patients with such injuries. They are often managed by accident and emergency departments and medical doctors. Hence, adequately educating other professionals is essential. There is a need for guidelines on diagnosis and management with post-mobilisation imaging.

PE-2-23  
Cementation assessment in mortality following hemiarthroplasty  
Fleming T., MacDonald H., Williams A., Kempshall P., Bassett J.
1Gloucestershire Hospitals NHS Foundation Trust, Gloucester, United Kingdom, 2Gloucestershire Hospitals NHS Foundation Trust, Trauma and Orthopaedics, Gloucester, United Kingdom

Audit Standard: NICE Guidelines state cemented implants should be used in patients undergoing surgery with arthroplasty for hip fracture management. 

Aim: Bone Cement Implantation Syndrome is not well defined, but remains an important cause of post-operative morbidity and mortality. Both embolic and vasodilatory effects from cementation can cause significant physiological compromise in frail patients. We aim to retrospectively review cementation technique and documentation within our trust.

Methods: A total of 36 patients were identified as having post-operative mortality within 28 days of operation following Hemiarthroplasty, 18 before departmental education and 18 after. Documentation of cementation technique in the operation note, cause of death and Barrack grading of post-operative films were recorded.

Results: Documentation of cementation showed improvement after departmental intervention. Pulsed lavage documentation rose from 11% to 61% of cases, drying the femoral canal 11% to 50%, method of cementation 22% to 35% and whether pressurisation was used from 44% to 50%. A Barrack grade of B was most common in 45.8% of cases, C1 in 29.1% and C2 in 23%. There were no radiographs graded as A and only one grade D. 12 patients did not survive until post-operative radiograph. Bronchopneumonia was the most common recorded cause of death in 17 cases, ischaemic heart disease in 5 cases.

Conclusion: Bone Cement Implantation Syndrome is a significant phenomenon to consider in this frail population. Cementation technique is important to reduce post-operative morbidity and mortality, with documentation key to evidence this. We have shown improvement following departmental education in this matter.

PE-2-24  
A review of consent practice in hip fractures  
Matthews S., Fleming T., MacDonald H., Mutimer J.
1Gloucestershire Hospitals NHS Foundation Trust, Gloucester, United Kingdom

Audit Standard: The General Medical Council state in their guidance on Good Medical Practice, that when consenting doctors must share with patients the information they want or need in order to make decisions.

Aim: The British Orthopaedic Association (BOA) has endorsed consent guidelines and the use of patient information with the aim of improving informed consent and reducing litigation. We aim to analyse the consent process for hip fractures within our trust and compare that to the guideline universal consent form.

Methods: Consent forms for all fractured neck of femurs from June to August 2017 at our Hospital were retrospectively analysed and compared with published guidance.

Results: 34 hip fractures were identified by coding, with 17 notes available containing complete consent forms, 8 Dynamic Hip Screws and 5 Hemiarthroplasties. No cases contained all the items outlined by the guidance. There were no documented cases of patient information being supplied or copies of the consent form given to the patient or relatives. 65% of consent forms were deemed to be inadequate (>5 risks missing). Infection, neurovascular damage and venous thromboembolism were the only risks to be documented in every case.

Conclusion: This study highlights discrepancies of the consent process between patients. We feel the consent process should be standardised for all patients and encourage supplying copies of the consent form and printed patient information to patients or their relatives. This will improve both informed consent and allow an accurate record in the setting of litigation.

PE-2-25  
Prophylactic dual plate fixation for osteoporotic patient with interprosthetic fracture  
An KY.
Gwangju Veterans Hospital, Gwangju, Korea, Republic of

Patients with osteoporosis have a higher risk of fracture. Fractures may also occur in low stress force of daily life. In patients with prosthetic joint replacement, incomplete or complete fracture around the implant is difficult to treat. Especially when implant is inserted, it is difficult to fix the fracture piece. Patients with a history of revision knee arthroplasties in the ipsilateral bipolar hemiarthroplasty. Patients presented with pain in her thighs during daily life without any special history of trauma. Radiographs and CT scans showed interprosthetic fractures in the femur. We performed the dual plate fixation on the lateral and anterior sides to improve symptoms. We reported that treated an anterior and lateral side plate fixation for revision knee arthroplasty and a stress fracture between osteoporotic patients with 80 years old woman who had a hip joint replacement on the ipsilateral side.

Introduction: Distal radius fracture (DRF) affects patients of all ages, compromising working ability and quality of life. DRF incidence is lower in men and the clinical implications less studied. The aim was to describe time lost from work in men with DRF, exploring the impact of patient and fracture related variables, assessed over a 12 month period.

Methods: Men aged 20-65 yrs with a acute DRF were eligible for the study; 98 agreed to participate (response rate 39%). Mean age at fracture was 46 yrs (21-64); 88 were professionally active, 3 students, and 7 had retired early. Treatment was according to local treatment protocol.

Data included: Charlson Comorbidity Index (CCI), trauma level, complications, educational level and occupational demand; radiographic parameters measured pre/post treatment. Dislocation was defined as ulnar variance >2 mm and/or dorsal tilt >10°. Patients outcomes were: self-reported time lost from work (categorized into: 0-6 weeks, >7-12 weeks and >12 weeks); disability (Disability of the Arm, Shoulder and Hand, DASH), and global health (SF-36: PCS and MCS, EQ5D).

Results: Median number of weeks lost from work was 4 (range 0-52 w). 25 men reported no lost time; higher age, dislocation at initial radiographic evaluation, lower education and higher occupational demand were associated to time off work. Length of sick leave was not associated to dominant hand fracture; neither was dislocation of the fracture at initial or follow up. Men treated surgically had a tendency towards longer time off work (9 w) compared to those treated with a cast (5 w) or closed
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Reduction and cast (6 w), p=0.251. 56 men were seen on sick leave for 0-6 w, 24 for 7-12 w and 7 for 12+. Worse self-reported disability at 5-8 w (DASH) was associated with longer time off (median DASH 0-6 w: 11; 7-12 w: 23; >12 w: 27; p=0.027). Men with the shortest time off work had significantly higher PCS (45±7 vs 38±5, p=0.004) and EQSD-VAS (83±10 vs 68±23, p=0.008) at 6-8 weeks compared to the longest time off work. Similar difference was seen at 6 and 12 months after fracture between groups. A regression model including age, CCI, work demand, treatment method and DASH 6-8 w explained 34% of the length of sick leave.

Conclusion: Time off work following a DFR in men is highly variable. Self-reported disability and global health measurements were more correlated to time off work than objective measures such as radiographic result and treatment method.

PE-3-2
One year functional outcomes in older hip fracture patients
Fallon A.1, Jonsson A.1, Karpinski S.1, O’Hanlon S.1, Hurson C.1, Doyle R.1
1St Vincent’s University Hospital, Medicine for the Elderly, Dublin, Ireland, 2St Vincent’s University Hospital, Trauma and Orthopaedic Surgery, Dublin, Ireland

Introduction: Hip fractures in older patients are associated with significant morbidity. Comprehensive geriatric assessment and multidisciplinary rehabilitation has been shown to improve outcomes for this at risk group of patients, but functional decline is common both immediately following fracture and in the longer term.

Methods: Patients aged ≥60 years admitted with a hip fracture in 2016 were included. Demographic information, type of fracture and surgery, length of stay (LOS) and discharge destination are recorded on an internal hospital hip fracture database. Baseline clinical frailty score (CFS), functional recovery score (FRS) and new mobility score (NMS) are also recorded. Patients are followed up through a virtual clinic at one year.

Results: A total of 282 patients were admitted with a hip fracture in 2016; 16.3% (n=46) had died at one year. Of the remainder, 43.6% (n=103) had clinical frailty score (CFS), functional recovery score (FRS) and new mobility score (NMS) recorded at 12 months. Mean age was 82 years. 75.7% (n=78) were female. 79.6% (n=82) were admitted from home. 32.0% (n=33) had a prior diagnosis of dementia. Following their hospital admission, 15.5% (n=16) were discharged directly home. 61.1% (n=5) of those admitted from home were discharged to a nursing home. 58.2% (n=60) were discharged for off-site inpatient rehabilitation. At baseline, mean CFS was 4.4. This increased to 5.1 at 12 months; 10.7% (n=13) had a lower CFS recorded and 24.3% (n=25) an unchanged score. All patients with a baseline CFS of 1-4 (n=47) continued to live at home at 12 months. Baseline mean FRS was 68.3, decreasing to 57.7 at one year. This included 10.7% (n=13) with an increase in FRS and 10.7% (n=13) with no change. All those with FRS ≤78 (n=53) continued living at home at 12 months. Mean NMS was 5.5 at baseline and 4.5 at 12 months, with 9.7% (n=10) having an improved score and 29.1% (n=30) no change. All patients with NMS 7-9 (n=41) were at home at one year. A total of 71.8% (n=74) continued to live at home at one year.

Conclusions: A decline in mean one year clinical frailty score, functional recovery score and new mobility score was seen in this group, reflecting the morbidity associated with hip fractures. Assessing baseline functional status at the time of admission may help to optimise inpatient management and rehabilitation outcomes. Those with better baseline functional scores were more likely to remain living at home at 12 months.

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Introduction: Although overall outcomes post hip fracture have been improving recently, functional outcomes are poor, with hip fracture rehabilitation recognised as a central challenge in trauma services. A key strategy in improving hip fracture outcome is the implementation of national hip fracture databases, allowing health services to monitor standards of care. However, national databases often lack information regarding physiotherapy service provision and functional outcomes. This impairs the ability of health services to profile functional outcomes, assess barriers to rehabilitation and evaluate the impact of organisation improvements in hip fracture care on functional outcome. The Irish Hip Fracture Database (IHFD) was established in 2013 with a paucity of rehabilitation or functional outcome data. Aims: Incorporate evidence-based rehabilitation focussed data-fields into the IHFD.

Methods: The IHFD governance committee has 11 multidisciplinary members including health and social care. In 2015 a physiotherapy working group was established to examine the potential for inclusion of physiotherapy focussed datafields. This group comprised clinical, managerial and academic members. A pilot study identified feasible, evidence-based functional measures that could be implemented in a clinical setting, and be prognostically important. Using the Adapte process for guideline adaptation, an international guideline review informed physiotherapy service indicators.

Results: The proposed new measures were reviewed by the IHFD governance committee and the following 5 new fields were added to the IHFD from 1st January 2016 following engagement and education of physiotherapists, physiotherapy managers and IHFD data-collectors in the 16 trauma orthopaedic sites nationally.

Day one postoperative physiotherapy assessment: Yes/No
Day one postoperative mobilisation: Yes/No
Pre fracture function: New Mobility Score (Score 0-9)
Function day one postoperatively and day of acute hospital discharge: Cumulated Ambulatory Score (Score 0-6)

Conclusion: Rehabilitation data-fields were successfully added to the 2016 IHFD, enabling accurate profiling of Irish physiotherapy service provision and functional outcome post hip fracture. These data will be presented in the 2016 IHFD report. Continued commitment to rehabilitation focussed data collection will enable evaluation of hip fracture service enhancements on functional outcome.

PE-3-4
Relation between caregiver’s psychological wellbeing and patient’s functional outcome after the intervention
Elettreb S., Giunti C., Falaschi P.
1Faculty of Medicine & Psychology, Sapienza University of Rome, Rome, Italy, 2Fragility Fracture Network, Rome, Italy

Objective: Hip fracture (HF) is one of the major cause of loss of self-sufficiency in older patients. The majority of patients hospitalized with HF are discharged quickly after surgery and therefore the rehabilitation task of caregiving often falls on the shoulders of a caregiver within the family. Studies have focused in particular on the concept of burden, defined as “burden of care”, losing sight of the importance of assessing the positive aspects that characterize the state of health of an individual. Our study adopts a positive approach and aims to assess the relationship the functional outcome after the intervention of patients with HF and psychological well-being caregiver.

Conclusions: Time off work following a DFR in men is highly variable. Self-reported disability and global health measurements were more correlated to time off work than objective measures such as radiographic result and treatment method.
Method: The study was carried out on 39 elderly patients with HF (mean age: 84.4±6.2), hospitalized within the Geriatrics Division of Sant’Andrea Hospital in Rome, and their primary caregivers (mean age: 59.6±3.3; 48.7% of them living together with patients). Each participant, at the baseline and 2 months after the discharge, was given a socio-demographic questionnaire and the Psychological General Well-Being Index (PGWBI). SPSS 23.0 software was used to investigate the correlations between the CB and PGWBI of the caregiver of the patient and the functional outcome after the intervention of patients using ADL, IADL and a categorical scale going from non-dependent, independent with the need of aids, completely independent, without the need of aids, completely independent, independent with the need of aids, completely independent, whilst also correlating the subscale scores obtained from the various tests administered.

Results: In general, the total PGWBI scores and in particular the positivity were lower in the caregivers, lower after the discharge than during the hospitalization. The results showed significant correlations between caregiver’s psychological wellbeing and patient functional outcome (p<0.01), IADL (p<0.02) and ADL (p<0.01), patient’s psychological well-being. More precisely, lower levels of depressive disorders and of anxiety disorders and higher levels of health, vitality, positivity and self-control in the caregiver correspond to a better functional outcome in the patient (p<0.01).

Conclusions: These findings confirm the existence of a reflexive relationship between the caregiver’s psychological well-being and the patient’s recovery, highlighting once again the importance of the bio-psychosocial approach to both patients and caregivers, because improving the state of health of one boosts that of the other, and vice versa.

PE-3-5
Can ortho-geriatric patients perform pain scoring after hip fracture surgery?
Schmeling W.1, Buchheitler L.2
1Capital Region Hospital Bloxøerg, Dept. Orthopedic Surgery, Copenhagen, Denmark, 2Bloxøerg Hospital, Dept. Orthopedic Surgery, Copenhagen, Denmark

Introduction: Physical training after surgery, is important to maintain physical functioning. Postsurgical pain inhibits mobilization, increases morbidity, as infections and delirium, extending length of hospitalization. Elderly patients are reluctant to report pain and ask for analgesia, and pain measurement is rarely done. However, sufficient pain management is prerequisite for mobilization. The 11-point Numeric Rating Scale (0-10) and the 4-point Verbal Descriptive Scale (none, mild, moderate, strong) are valid and reliable pain scales for measuring pain intensity. In surgically department a common goal of pain management is ≤3 NRS (0-10)/mild pain VDS, at rest. To know if the goal are met, pain measurement is necessary, but elderly patients can have difficulties due to reduced cognitive skills.

Research Question: How many (%) ortho-geriatric patients were able, by self-report, to measure pain intensity at rest, using an enlarged edition of a 11-point Visual NRS (0-10) or a 4-point Visual VDS, or both?

Methods: A pilot study of 23 ortho-geriatric patients. Two trained nurses interviewed each patient once within postsurgical day 2, 3 or 4. The VDS-scale were introduced and patients asked to select the word that expressed the actual pain state. Hereafter the NRS were introduced and patients asked to select the number that represented the actual pain. To get an impression of the reliability of the answer, check questions were asked. To count the answer to the research question as reliable, the criteria were: consistency between the pain score on NRS and VDS as well as relevance of his answer to the check questions, and the 2 nurse’s agreement on this.

Results: 70% of the patients could self-report pain score by NRS. 80% could self-report pain score by VDS and 91% could use one of the two pain scales, 9% of the patients were unable to use any of the pain scales.

Conclusion: 91% could use at least one of the 2 pain scales to self-report pain intensity at rest.

PE-3-6
Translation and interrater reliability of the Spanish version of the Cumulated Ambulation Score (CAS-E)
Ariza-Vega P.1, Mora-Traverso M.2, Ortiz-Piña M.1, Ashe M.E.3,4,5, Kristensen M.7
1Rehabilitation and Traumatology Service, University Hospital of Granada and Department of Physiotherapy, University of Granada, Granada, Spain, 2Department of Physiotherapy and Public Health, University of Granada, Granada, Spain, 3Vista Nevada Nursing Home for older adults, Granada, Spain, 4The University of British Columbia, Vancouver, Canada, 5Centre for Hip Health and Mobility, Vancouver, Canada, 6Physical Medicine and Rehabilitation Research Centre, University of British Columbia, Vancouver, Canada, 7Department of Physiotherapy and Orthopedics, Hvidovre University Hospital, Copenhagen, Denmark

Introduction: The easily applicable Cumulated Ambulation Score (CAS) evaluating basic mobility is a national hip fracture (HF) registry score in Denmark, included in the national Irish HF database, and available in approved, English, Italian, Norwegian and Swedish versions. However, a Spanish version is not available, which seem highly relevant, with more than 100 million inhabitants in Spanish speaking countries. We, therefore, translated the CAS into Spanish (CAS-E) and examined the interrater reliability of this version in patient’s following acute hospital rehabilitation after surgery for a HF.

Methods: Translation of the CAS from English into Spanish followed international guidelines including approval of a back-translated version by one of the CAS developers. Reliability was examined in 60 consecutive patients with HF with a median age of 81.6 (SD 6.8) years; 46 women, 45 living in their own home, and 40 with a cervical femoral neck. Two occupational therapists scored each of the 3 CAS activities (bed, chair and walking) from 0 to 2, providing a total 1-day CAS score from 0-6 points. The 2 raters were blinded to each other’s ratings until end of the study, and the rater-order was randomized. Internal consistency was assessed using Cronbach’s α coefficient, relative reliability was evaluated using weighted kappa statistics, while absolute reliability was established using the standard error of measurement (SEM) and the minimal detectable change (MDC). The systematic between-rater bias was assessed using the McNemar-Bowker test.

Results: The total 1-day CAS score assessed by the two raters, within the first post-surgery week, reached an average (SD) of 3.3 (1.9) CAS points, and with no systematic between-rater bias. The Cronbach’s α for the CAS-E was 0.89 for both raters. The weighted Kappa was 0.87 for the total CAS, and ranged from 0.90 to 0.94 for the three CAS activities, while the observed agreement ranged from 87% to 97%. The SEM and the MDC for the total CAS (0-6) were 0.18 and 0.83 points, respectively.

Conclusions: We found excellent interrater reliability and low measurement error for the Spanish version of the CAS for assessment of the basic mobility status of patients with a HF in Spain. We suggest that the present and approved CAS-E version be used as the basis for adoption and further validation in other Spanish speaking countries.
Methods: The population sampled were post-operative patients with hip fractures, over 65 years old and currently in hospital on an Orthopaedic ward (n=30). The tool used to interrogate the above questions was modified from the ‘Pain Audit Tools’ from City of Hope and Pain Palliative Resource Centre. The tool was first piloted outside of the Orthopaedic wards and re-modified.

Results: 74% of patients reported an objective pain score of <5/10. 1 day post operatively. Medical Staff documented a pain assessment in 77% of cases and used an objective rating in 20% of these cases; Nursing Staff documented a pain assessment in 97% of cases and used an objective rating in 82% of these cases. Physiotherapists documented a pain assessment in 35% of their first appointments with patients; 40% of these used objective rating. Pain assessments decreased as patient’s length of stay increased. Medications Prescribed (n=30); 83% paracetamol; 36% OxyContin; 76% OxyNorm PRN; 56% additional pain medication. 70% of patients had evidence of a pain management plan charted in their pharmacetical notes.

Conclusion: Medical staff’s documentation of pain assessments decreases as length of stay increases. Nurses are the most likely to document a pain assessment. Physiotherapists are the least likely to document pain assessment. It was recommended that: 1) We establish a baseline for the acceptable percentage of patients on the ward to have a pain score <5/10. 2) Pain Assessment should be documented at more frequent intervals. 3) Objective Ratings should be used and documented more frequently. 4) Pain management plans should be documented for as close to 100% of patients as possible.
Disruptions, discontinuities & dispersions: An ethnography of disjunctures in acute orthopaedic wards

Cross L,1 Poland F.M,1 Hammond S,1 Backhouse T,1 Lambert N,2 Varley A,2 Penhale B,1 Sahota O,3

Lambert N.2, Varley A.2, Penhale B.1, Sahota O.3, of Medicine, Norwich, United Kingdom

Introduction: About one third of community dwellers tend to overestimate or underestimate their risk of falling. The anxious subgroup with low physiological but high perceived fall risk is vulnerable to fear-avoidance behaviour despite functional ability. Without adequate approaches, likely consequences are functional deterioration and loss of independence. In the rehabilitation process after hip or pelvic fracture disparities between perceived and physical fall risk are also expected to be of high relevance and not investigated so far. Especially the influences of cognitive impairment and the psychological dimensions of fear of falling are of high interest.

Method: Within a cross-sectional design at the end of inpatient rehabilitation, 280 patients (65 or older) after hip or pelvic fracture are assessed for cognitive function (MMSE-2), functional performance (Short Physical Performance Battery, SPPB), fall related self-efficacy (FES-I short), fear of falling (Fear of Falling Questionnaire-revised, FFQr), depression (MDRSS) and pain (WOMAC). A classification tree analysis is applied to divide the study population into four groups according to Deilbaere et al (2010) and based on the disproportion between perceived fall risk and objective fall risk due to reduced motor function of lower extremities. To explore further characteristics within and differences between the four groups, descriptive analysis is conducted, in particular with regard to cognitive function and fear of falling.

Results: Data for statistical analysis will be available in April 2018. They will be extracted from the baseline dataset of a randomized controlled trial as well as from an additional small cross-sectional study. The findings will contribute to a better understanding on how cognitive and psychological determinants interact with patients’ perceived and physical fall risk. This could help to select most adequate diagnostic instruments at the end of inpatient rehabilitation and, as a result, facilitate the implementation of tailored treatment strategies for the challenging period after return home.

• The randomized controlled trial has started in February 2015 and is expected to run until January 2019 (ISRCTN 69957266). This study is funded by the Federal Ministry of Education and Research of the Federal Republic of Germany and belongs to a series of projects for the prevention and rehabilitation of osteoporotic fractures in disadvantaged populations in Germany (PROFinQ2).

PREVENTION OF NEW FRACTURES

PE-4-1

Fracture liaison services: fragility fracture and falls prevention

Doyle A.1 Stephenson S.1

National Osteoporosis Society, Bath, United Kingdom

Introduction: The National Osteoporosis Society aims to ensure that every person aged over 50 who breaks a bone has access to a Fracture Liaison Service (FLS). FLS prevent secondary fractures using dedicated case-finding to identify patients with fragility fractures. Patients are assessed for osteoporosis and treated where appropriate. Patients have an assessment of their falls risk and may be referred to falls services. As well as expertise in falls risk assessment, FLS need close links with Falls Services to ensure that patients at risk of falls are thoroughly evaluated, that appropriate interventions offered, and patients receive seamless and holistic care.

Methods: A gap analysis tool was used to measure to what extent services were providing care to the two standards from the Clinical Standards for Fracture Liaison Services (NOS 2015) relating to falls. Standard 2 states that a patient’s need for a comprehensive falls risk assessment should be evaluated within three months of an incident fracture. Standard 5 states that patients identified as being at increased risk of falls will be referred for intervention to reduce future risk of falls. Data was collected at 110 sites across the UK between 2015 and 2018.

Results:

• Standard 2: 31% of sites did not offer a falls risk assessment within three months of incident fracture.

• Standard 5: 28% of sites did not have a system in place to refer patients (who had been identified as being at risk of falls) for intervention to reduce their falls risk.

Conclusion: Timely treatment of fragility fractures and intervention to prevent falls is essential to prevent further fractures. While they supply the clinical expertise for FLS, some clinicians have been reluctant to conduct falls risk assessment due to the perception that it places excessive demands on practitioner time or is outside their remit. However, without falls risk assessment as part of the evaluation of future fracture risk, the clinical benefit of the FLS (fractures prevented) will not be fully realised. Where services operate to national clinical standards and deliver collaborative care planning, future risk of falls is reduced by up to 30%. Gap analysis highlights a significant minority of sites that should review their current clinical pathway in respect of falls risk assessment and referral to fully implement the standards and address the challenge of falls-related fragility fractures.
Abstracts

PE-4-2
Fragility fractures the experience of the Department of Geriatrics acute care of the “Foundation Richiedei of Palazzozzo S/O”
Mediati A.1, Scaglione L.1, Colasio W., Arcangelii A.1
Foundation Richiedei/Reparto Geriatria Per Acuti. Geriatria Per Acuti. Palazzozzo S/O, Italy

Introduction: Bone fragility especially in elderly populations, has a high socio-economic cost, due to the increased risk of fragility fractures in different sites of the skeleton. Many risk factors for fragility fractures such as falls, sarcopenia; malnutrition, drug taking and reduced motility have a high prevalence in the elderly population.

Methods: All patients admitted to the Department of Acute Geriatrics (UGA) of Palazzolo S/O (Italy) in the years 2011-2018, have evaluated the number and the body localization of the incoming and outgoing fractures to correlate with the following risk factors: number of medications taken, presence or lack of intellectual deficit or dementia, dysphagia; and with the following protective factors: Vitamin D, calcium, bisphosphonates intake before the fracture match.

Results: On 4997 patients, average age 84 years, hospitalized at our UCA from the first of January 2011 to 31st January 2018, 285 (5.71%) had fractures so distributed: rib fractures 91 (31.93%); vertebral fractures 67 (23.51%); hip fractures 49 (17.19%); facial bones fractures 21 (7.36%); scapula fractures 21(7.36%); clavicle fractures 18 (6.32%); humer fractures 17 (5.93%); colles fracture 1 (0.36%). Of these 285 patients with new fracture diagnosis the years 2011-2018, have evaluated the number and distribution of diagnostic imaging reports for prevalent vertebral fracture in conjunction with our radiology department. A customized export of MRI, CT and plain x-ray reports in patients 50+ years old containing the search term ‘fracture’ was created, with ‘no fracture’ excluded. A FLS clinical nurse specialist (CNS) triaged reports 2-3 months post-reporting (to capture any interim referrer-initiated management). Fractures due to malignancy or high trauma were excluded, as was imaging ordered by osteoporosis or spinal surgery specialists, as latter clinic patients are screened by FLS.

Results: There were 691 reports in 619 patients. This was out of a total of 44,205 reports representing a 1.6% detection rate. Of the 619 patient reports, 151 fractures were deemed possibly osteoporotic (24% of the reports), 96 of these had already been seen, referred or treated for osteoporosis or spinal surgery specialists, as latter clinic patients are screened by FLS.

Conclusion: Fragility fractures are a subject of great importance and growth, and are often the first sign of osteoporosis. Falls in the elderly are one of the main causes of morbidity, disability, institutionalization and death. Even minor head in fact frequently lead to fractures thus making it manifest a criticality almost always related to a lack of protective factors or to an amenity of risk factors. Fragility fractures in geriatric competence impose therefore a multidisciplinary and a multidimensional care.

PE-4-3
Outcomes of screening radiology reports for incidental vertebral fracture
Kennedy O.1, Powell J.1, Wallace-Williams Q.1, Dockery P.1
Guys’s a St. Thomas’ Hospitals, Department of Ageing + Health, London, United Kingdom

Background: Vertebral fractures are strongly predictive of future fracture risk so their identification is important for fracture liaison services. National guidance advises on improving terminology for radiologists in reporting, but the management of said reports requires organization at a local level.

Methods: We devised an automated screening of diagnostic imaging reports for prevalent vertebral fracture in conjunction with our radiology department. A customized export of MRI, CT and plain x-ray reports in patients 50+ years old containing the search term ‘fracture’ was created, with ‘no fracture’ excluded. A FLS clinical nurse specialist (CNS) triaged reports 2-3 months post-reporting (to capture any interim referrer-initiated management). Fractures due to malignancy or high trauma were excluded, as was imaging ordered by osteoporosis or spinal surgery specialists, as latter clinic patients are screened by FLS.

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Conclusion: Screening of radiology reports for vertebral fracture identification is worthwhile, however considerable fine-tuning of automated reporting systems is needed for it to remain a time-efficient exercise and to capture the expected improvement in reporting rates. There is vast underreporting of spinal fractures as the term ‘fracture’ that we observed, compared to expected rates in the literature. Work is ongoing to improve both issues.

PE-4-4
Preventing future fragility fractures in patients with hip fractures: our journey to ensuring no one is missed
Pafferty M.1, Cannon E.1, Fallon N.1, Steen C.1, Moher N.1, Reynolds A.1, McMahan G.1, Casey M.1, Lannon R.1, McCarroll K.1
St James Hospital, Dublin, Ireland

Introduction: The Irish Hip Fracture Database (IHFD) collects data regarding standards of care for patients in Ireland sustaining hip fracture. BlueBook Standard 5 states that all patients in Ireland presenting with a fragility fracture should be assessed to determine their need for bone protection therapy to prevent further osteoporotic fractures. The IHFD reported that 24 (16%) patients admitted to our unit did not have a bone health assessment. We aimed to investigate how and why we failed to assess bone health in more that one tenth of patients with hip fractures and implement a plan to ensure no patients were missed in the future.

Methods: Our Bone Health and Osteoporosis Unit has been dedicated to ensuring patients with hip fractures are linked in with our service. For over a decade systems have evolved to ensure all patients are assessed including recording all hip fracture patients and their bone health management in a database. We obtained complete Bone Health Database (BHD) and IHFD for 2016. We excluded patients under the age of 60 from the BHD. We then compared entries in both. Following the identification of missed patients we reviewed medical records and bone health records to clarify patient history and inclusion with the bone health service.

Results: 175 patients with hip fractures were recorded in the IHFD. Of the 24 documented not to have had a bone health assessment 14 were recorded in the BHD and followed up after discharge. 4 died during the hospital admission. 6 patients had no record in the BHD. 3 had greater trochanter fractures and did not have surgery and all were inpatients under MedEAI at the time of fractures and bone health was assessed, managed and followed up by the primary team. We have introduced a number of changes including clarifying and strengthening our patients identification systems to ensure inclusion of greater trochanteric fractures and patients who did not proceed to theatre are including and provided education to colleagues regarding the role of our service to safety net.

Conclusion: Accurate patient identification and data collection is essential when participating in a national audit as is ongoing quality improvement in our service.
Introduction: Falls are a major public health issue, given its prevalence and social impact. This study aimed to (1) characterize fallers in the adult Portuguese population as well as (2) identify falls determinants.

Methods: Our data of 7403 adults (≥18 years) was retrieved from phase 1 survey of EpiReumaPt, a representative sample of adult Portuguese population. We analyzed sociodemographic variables and the presence of chronic diseases, which was evaluated by self-report. Anxiety/depression symptoms were assessed using The Hospital Anxiety and Depression Scale (HADS). Fall was defined by the presence of a self-report fall in the previous 12 months to the interview. Univariate and multivariable Logistic regression models were used to assess fall determinants. Analyses were conducted in Stata v13.

Results: The estimated prevalence of falls in the Portuguese population is 24.1%. Women are at 212 times higher risk of fall than men (95% CI 1.79 – 2.51) and there’s also a progressive increasing association between age and falls, with people with 75+ years having greater odds of falling (OR=1.86 95% CI 1.49 – 2.31). Different chronic health conditions were identified as major determinants of falls in the Portuguese population. Neurolgic (OR=1.17 – 2.32) and rheumatic (OR=1.44 95% CI 1.18 – 1.74) disease were significantly and independently associated with falls. Similar results were found for presence of anxiety (OR=1.33 95% CI 1.04 – 1.71) or depression (OR=1.61 95% CI 1.20 – 2.15) symptoms.

Conclusion: Our results show a perspective of the determinants of falls in the Portuguese population, allowing us to know that women and elders are at greater risk. We have showed that some chronic diseases are associated with falls, in particular musculoskeletal and mental diseases. Implementing specific and adapted prevention strategies might reduce the number and complications of falls ultimately improving Portuguese overall health.

Keywords: falls; determinants; Portuguese population.

Abstracts
Introduction: Globally, the most effective model of preventing re-fractures associated with osteoporosis is Fracture Liaison Service (FLS). Its main objectives are the identification of patients, assessment of re-fractures risks, diagnosis and initiation of osteoporosis therapy.

Methods: In October 2016 – July 2017 FLS embraced 85 patients (including 84 women), whose average age was 73 years (39-95), who have had low-energy fractures of different localization and are undergoing treatment in the City Clinical Hospital N13. The patients were divided into groups depending on the fracture localization and age. The individual fracture patients were divided into groups depending on the treatment in the City Clinical Hospital N13. The first evaluation of the implementation of the FLS in the Moscow City Hospital № 13 is feasible and relevant. It is necessary to expand measures for the prevention of osteoporosis among the elderly population, such as timely diagnosis and compensation of vitamin D deficiency, recommendations for adequate calcium dietary intake, and conducting workshops of preventing osteoporosis for patients at risk.

Results: The total number of patients was 313. Two patients were excluded due to insufficient data. The average age was 81.9 years. 31.5% (n=98) patients had a diagnosis of osteoporosis, a previous fragility fracture or both. 38% (n=38) of these potentially eligible patients were on bone protection. Of the patients with previous fragility fractures 66% (n=54) were not on bone protection. Of the total cohort, 23% (n=72) had known osteoporosis, of these 48% (n=34) were not on bone protection. 17% (n=55) of patients had both previous fracture and osteoporosis and 28 (51%) of these were not on bone protection.

Conclusion: Almost one third of patients presenting with hip fractures have hip fractures with known osteoporosis and/or a previous history of fragility fractures. Secondary prevention in osteoporosis for these patients is suboptimal. Implementation of a fracture liaison service and continuous quality improvement among healthcare professionals could improve the prescription rates of secondary prevention and potentially prevent some hip fractures.

Introduction: There were three thousand six-hundred and twenty-nine admissions with hip fractures in the Republic of Ireland in 2016. There are significant costs associated with acute hospital stay, rehabilitation and social care, proportionally a small amount is invested in pharmacological management and secondary prevention of osteoporosis. A bone health assessment is a blue book standard after hip fracture and was achieved for 57% of patients after hip fractures in 2016. The National Osteoporosis Foundation recommends treatment with anti-resorptive agents for patients with confirmed osteoporosis on DXA and for patients with neck of femur or vertebral fractures.

Conclusion: The uptake of fracture risk assessment and BDT amongst patients with prostate cancer receiving ADT remained low. Optimising bone health assessment and initiating management of osteoporosis is key to minimise adverse effects of ADT on bone health.
SPE-4-11
Safety of denosumab in treatment of elderly patients with osteoporotic fractures: Descriptive study of elderly patients attending falls and balance clinic in a regional hospital, Singapore
Mohaya U.1, Tan E.1, Wen R.1, Su S.1, Ng P.1, Dathode P.R.1
1Khoa Teck Puat Hospital, Geriatric Medicine, Singapore, Singapore, 2Khoa Teck Puat Hospital, Nursing, Singapore, Singapore, Singapore

Introduction: Denosumab is a RANK-ligand inhibitor used for treatment of osteoporosis in patients in whom first-line agents are ineffective, poorly tolerated, or contraindicated. Hypocalcemia is a well-reported serious adverse effect of denosumab, particularly in those with chronic kidney disease. There is no information on safety of the drug specific to elderly patients. There is also no clear recommendation on vitamin D and calcium supplementation and monitoring of calcium levels in patients treated with denosumab for osteoporosis. The study aimed to examine the safety of denosumab in an elderly population with osteoporotic fractures, to review the calcium level changes post denosumab, and to study the average dose of vitamin D and calcium supplements to maintain vitamin D levels in therapeutic range. Our study shows that vitamin D dose of at least 1000 IU daily is needed to keep vitamin D in therapeutic range in patients who are vitamin D replete.

Method: Fifty-six patients treated with denosumab were retrospectively reviewed. Corrected calcium (cCa) levels before and 10-14 days after treatment were studied. All had their vitamin D replaced and maintained on vitamin D to achieve a desired range of 30-50 ug/L.

Result: 77% of patients had hip fractures and 80% were 75 years and above (Range: 67-90). 26.7% had creatinine clearance (CrCl) of <35 ml/min. Hypertension (55%) and diabetes (27%) were the commonest comorbidities present. There was no significant difference in pre- and post-denosumab mean cCa levels in our cohort (2.34 and 2.28 mmol/L) from their baselines. It had no statistical difference (p=0.956) and no adverse clinical symptoms. Majority (85%) of patients were maintained on calcium and vitamin D3 1000 IU daily to obtain the desired level of vitamin D >30 ug/L (mean 39.6). Vitamin D deficient patients (< 20 ug/L) were loaded with 8 doses of weekly ergocalciferol 50,000 IU with calcium carbonate 1250 mg daily.

Conclusion: Although the study is limited by its retrospective nature and small sample size, our results show that denosumab can be given safely to elderly patients with osteoporotic fractures who are vitamin D replete and on adequate vitamin D and calcium supplements to maintain vitamin D levels in therapeutic range. Our study shows that vitamin D dose of at least 1000 IU daily is needed to keep vitamin D in therapeutic range in patients who are vitamin D replete.

SPE-4-12
Clinical effectiveness of fracture liaison service in Japan: 6-month result of a prospective randomized study
Okudo R.1, Osaki M.1, Hagiya H.1
1Tottori University, Yonago, Japan, 2Tottori University Hospital, Yonago, Japan

Introduction: It has been shown that a fracture liaison service (FLS) is effective in the prevention of fragility fractures. However, there are limited studies evaluating the effectiveness of FLS in Asians. Moreover, no research has been conducted evaluating the efficacy of FLS in Japanese people. The purpose of this study, SPLICE: Secondary Fracture Prevention by Liaison Service was to elucidate the effectiveness of FLS in Japan. In this study, we evaluated the results of FLS at 6 months after the primary fracture. Methods: SPLICE is a 2-year randomized prospective comparative study conducted among patients with fragility fractures. The 147 subjects (mean age 77 ± 8.1, 25 males and 122 females) were enrolled (18 were hip, 16 were distal radius, 3 were proximal humerus, 100 were spine, and 20 were other site fractures) and randomized to the intervention group (FLS, n=72) or the non-intervention group (non-FLS, n=75). In the FLS, the liaison nurse asked the attending physician to measure bone mineral density to assess the fracture risk and the fall risk in subjects and then asked the physician to provide drug therapy to the subjects who were diagnosed with osteoporosis. In addition, the physician instructed the subjects to keep a diary for the prevention of secondary fractures.

Results: Among the 147 subjects, 41 were already receiving treatment for osteoporosis before the onset of fracture to be investigated in this research and 56 had history of fragility fracture(s). The percentage of subjects who underwent bone mineral density measurement was 90% and 68% at time of the initial fracture (P=0.00), but it decreased to 49% and 29% at 6 months after fracture (P=0.02) in the FLS and the non-FLS, respectively. One subject had experienced subsequent fracture in the FLS, compared to three subjects in the non-FLS until 6 months after the primary fracture (P=0.62). Change in the QOL score during the 6 months was -0.06 and -0.13 in the FLS and the non-FLS, respectively, thus showing a difference between the two groups (P=0.04).

Conclusion: The percentage of subjects who underwent bone mineral density measurement improved and the deterioration of QOL was somewhat prevented at 6 months after fracture with the FLS intervention. Therefore, it was shown that the fracture liaison service was an effective intervention for the treatment of Japanese patients with fragility fractures.
Conclusion: The SSA tool has been a valuable resource providing local service sites understanding of their needs in establishing implementing and latterly monitoring progress of their FLs, highlighting areas to focus their efforts for successful implementation. The use of the SSA tool has also provided valuable information for ACI in monitoring the state-wide efforts to meet the directive of the NSW government.

Reference:

Abstracts

PE-4-14
Vitamin D2 (Ergocalciferol) supplementation in fragility hip fracture patients: A randomized controlled trial
Chotiyarnwong P, Phusunti S, Unnanuntana A.1 Mahidol University, Orthopaedic Surgery, Bangkok, Thailand

Introduction: Hypovitaminosis D can be found in the majority of fragility hip fracture patients. In Thailand, only native form of vitamin D supplementation for hospital use is vitamin D2 (ergocalciferol). With limitation to the measurement of serum 25(OH)D D level available in our country due to number potential laboratory and cost of investigation. The objective of this study is to compare an effective and safe of vitamin D2 supplementation between high and low dose that can restore serum 25(OH) D to sufficient level available in our country due to number potential

Methods: A randomized-controlled trial study was conducted in fragility hip fracture patients who was admitted in Siriraj Hospital between June 2016 and July 2017. Patients were randomly into two groups, a low-dose group with vitamin D2 supplementation at 20,000 international units (IU) per week and a high-dose group with vitamin D2 supplementation at 60,000 IU/week for 12 weeks. All patients received 1,000 mg of calcium carbonate supplementation. Proportion of patients who were achieved sufficient vitamin D level (25(OH) D 30 ng/ml), serum calcium level, and functional score were compared between two groups.

Results: One hundred and fifty-nine patients were included in this study. 71 patients were loss to follow up. After 12 weeks, 85% of patients who received high-dose vitamin D2 supplementation can restore serum 25(OH) D to sufficient level, compared with low-dose group (49%) (p<0.001). No differences in calcium level and functional score were observed between groups. Only one patient in the high-dose group had asymptomatic hypercalcemia (calcium level change from 9.4 to 10.6 ng/ml) without any report of adverse effect.

Conclusion: Vitamin D2 supplementation in fragility hip fracture patients for 3 months can increase serum 25(OH)D D level. By the same token, vitamin D2 supplement at 60,000 IU/week has effective and safety to restore vitamin D level in fragility hip fracture patients.

Abstracts

PE-4-15
Reducing delays in commencing osteoporosis treatment post hip fracture
Mulvihill L1, Byrne C1, McGlenny J1, McGreery C1
1 Mater Misericordiae Hospital, Medicine for the Elderly, Dublin, Ireland. 2 Mater Misericordiae Hospital, Dublin, Ireland

Introduction: Osteoporotic hip fractures are a major cause of mortality and morbidity in the elderly. Those patients who survive hip fracture are at major risk of future fractures. The treatment of osteoporosis is often delayed while awaiting further investigations, such as DEXA (Dual Energy X-ray Absorptiometry) scans. Commencing treatment for osteoporosis within 90 days of hip fractures reduces risk of further fractures. Beginning osteoporosis medication for hip fracture while in hospital will greatly increase the number of patients meeting standards of care. We aimed to audit the number of patients who had delayed osteoporosis treatment while waiting for DEXA scans.

Methods: All patients discharged from the Mater Misericordia Hospital in 2016 with hip fractures were identified using HIPE date. Using PatientCentre, the hospital’s electronic patient record system, we were able to determine which of these patients had a DEXA scan after the date of their admission with hip fracture. We also reviewed the results of these DEXA scans and compared them to any prior DEXA scans they had performed.

Results: 214 patients were admitted in 2016 with a hip fracture. 18 (8.4%) had DEXA scans performed after the date of their admission and a further 2 (0.93%) of the patients are currently listed for DEXA scans in the coming months. Of the 18 scans performed, 11 have been reported to show osteoporosis and 7 were reported as displaying osteopenia. Of note 2 of the patients identified as having osteoporosis on post fracture DEXA scans also had pre-fracture DEXA scans diagnosing osteoporosis.

Conclusion: These findings suggest that osteoporosis treatment is being delayed in some patients. Early treatment has been linked with reduced mortality and lower risk of further fractures. All patients with a fragility fracture should be commenced on osteoporosis treatment while in hospital thus avoiding unnecessary delays in treatment. We plan to highlight the importance of early commencement of osteoporosis medications with the orthopaedics and medical teams managing these patients and re-audit in the future.

Abstracts

PE-4-16
Recognition and treatment of osteoporosis in an outpatient geriatric population
Hannan E, Mulvihill L, Byrne C, McGlenny J, Duggan J
1 Mater Misericordiae University Hospital, Dublin, Ireland

Introduction: Osteoporosis is a common condition in the older population. Unfortunately this is also an undertreated condition. Missed opportunities for initiation of treatment are often identified in patients presenting with fragility fractures. We examined the rates of recognition and treatment of osteoporosis in our Geriatric Medicine outpatient department.

Methods: Medical notes for all patients > 65 years of age attending a Geriatric Medicine outpatient clinic over a 30 day period in December 2017 were reviewed. Laboratory investigations were also reviewed.

Results: 124 patient charts were reviewed. 29% (n=36) of all patients fulfilled criteria for a diagnosis of osteoporosis. However osteoporosis was not documented in the past medical history in 22% (n=8) of these cases. 61% (n=22) of patients with osteoporosis were on active treatment with a bisphosphonate or monoclonal antibody. Of the 39% not on osteoporosis treatment, contraindications to treatment were not readily identifiable. 66% (n=24) of patients with osteoporosis were prescribed Vitamin D replacement. One third of those patients who were not prescribed Vitamin D replacement were Vitamin D insufficient, or had not undergone Vitamin D measurement. Bone health was addressed in 27% (n=34) of all patients reviewed in our outpatient clinic, and in 49% (n=22) of patients identified as being at increased risk of falls. Denosumab was the most frequently prescribed osteoporosis treatment, accounting for 58% (n=14) of treated patients. Calcichew D3 Forte was the most frequently prescribed Vitamin D replacement, accounting for 36% of patients treated for Vitamin D deficiency.

Conclusion: Despite review occurring in a dedicated Geriatric Medicine outpatient clinic, diagnosis of osteoporosis was not consistently documented in patient records. Osteoporosis treatment was not prescribed for all patients with known osteoporosis. Where treatments were not prescribed, contraindications to osteoporosis treatment were not highlighted. Bone health was not consistently addressed in all patients at increased risk of falls and fractures. Further education is needed to ensure a consistent approach to diagnosis and treatment of osteoporosis in our patient population.
Audit of BOAST guidelines concerning fracture liaison services at a District General Hospital (DGH)

Zhang V.1, Ross S.1, Swaminathan R.1
Tameside General Hospital, Trauma and Orthopaedics Department, Ashton-Under-Lyne, United Kingdom

Objectives: Frailty fractures (FF), caused by underlying osteoporosis, are a leading cause of mortality and morbidity in the United Kingdom (UK), resulting in a great financial burden on the National Health Service (NHS). These injuries are often progressive, highlighting the importance of secondary prevention. Fracture Liaison Services (F LS) are effective at reducing the risk of subsequent frailty fractures in the elderly. The British Orthopaedic Association Standards for Trauma (BOAST) outline guidance for FLS organisation and implementation.

Methods: This audit focused on measures applicable in a fracture clinic setting. Over 4 weeks, patients aged over 50 presenting to fracture clinic with frailty fracture were tracked for the following outcomes: GP awareness, patient education or any other action.

Results: From 31 patients included, only 3% of GPs had been informed. No patient had been given any information on osteoporosis or frailty fractures. Only 1 patient’s letter made reference to concerns regarding balance to be addressed by the GP but no other initiated intervention had been documented.

Conclusion: There is definite room to improve the secondary prevention of FF at this DGH. The fracture clinic setting is normally busy and frantic, but it is an ideal opportunity for simple measures to be implemented, or at least as a feeder into a formal FLS. Currently this service is lacking, and is in discussion to be implemented. Until then, GP awareness and patient education should be a minimum, which will look to be addressed before re-audit.

Bone health compliance in patients presenting with frailty fracture

McKeag A.1, Larkin J.1, O’Connor M.1
Cappagh National Orthopaedic Hospital, St Mary’s Rehabilitation Unit, Dublin, Ireland

Background: The National Clinical Programme for Older People recommend that all older adults identified as being frail or at risk of frailty should have a timely comprehensive geriatric assessment performed and documented. Within the active rehabilitation unit specialist assessment and rehabilitation of patients over 65 years old is designed to determine a frail older person’s medical conditions, mental health, functional capacity and social circumstances. Organised and led by consultant geriatrician to enhance health and functional outcome and to maximise the patient potential. The key focus is that the patient is central to the process and we aimed to facilitate patients safe return home. In the selected period patients admitted to the rehabilitation unit had a range of different diagnoses. By far the greater proportion of the patients were orthopaedic or fall related. Given this, specialist assessment and secondary prevention of fall and fracture guided by best-practice standards is an important concept to improve patient outcomes.

Method: To assess the compliance of bone protection following discharge from the rehab unit and to establish compliance post discharge if first dose was administered in a timely fashion and if there was a possibility of the patients converting to be a frailty status by discharge.

Results: 157 patients were admitted for rehabilitation in the selected period. A comprehensive falls assessment was completed on all patients with careful consideration for bone protection. A total of 77% (n=121) were prescribed medication for bone protection, 36% (n=57) on Denosumab and 41% (n=64) oral medication. Of all fall related injury and frailty fracture 94% (85/90) were commenced on treatment. Only one-third of those prescribed Denosumab had received first dose within six months despite current practice of patient education and GP communication.

Conclusion: We are identifying the patients that require bone protection, but a gap has been identified in patients receiving recommended therapy and therefore need to put in place a strategy to overcome this and to build upon standards to compare and develop new initiatives to improve services delivered within the unit.

A study of bilateral non-simultaneous hip fractures in the context of an ageing population

Moham K.1, Elliott P.1, Morialty A.1, Hadidi O.1, Hogan N.1, McCarthy T.1
Department of Trauma & Orthopaedics, Saint James’s Hospital, Dublin, Ireland

Background: Hip fractures are a significant cause of morbidity and mortality in the elderly population. Patients presenting with non-simultaneous bilateral hip fractures are increasingly numerous. The objective of this study was to investigate non-simultaneous bilateral hip fractures in an Irish patient cohort.

Methods: A retrospective study of patients that sustained a neck of femur or a periprothetic hip fracture between January 2007 and December 2010 was undertaken. Demographic data of age, sex and type of fracture were recorded. Additionally, in patients with a previous contralateral hip fracture, the age of initial fracture, the type of first and second fracture and the time between fractures was noted.

Results: A total of 749 hip fractures were treated during this time, of which 630 were over the age of 60, with a mean age of 79.9 years (60-99). There were 457 neck of femur fractures and 173 periprosthetic fractures. Of this cohort, 40 patients had a previous contralateral hip fracture, with a mean time interval between fractures of 45.33 months. The average age at first and second fracture was 79.3 and 83.3 years respectively, and 25% of second fractures presented within 1 year following the first. In total, 67.5% of fractures presented with the same fracture type in both incidences.

Conclusion: Our findings show that 2nd hip fractures occur at similar anatomical location in most patients, on the contralateral side. Early identification of this patient cohort on first admission is of paramount importance in prevention of subsequent hip fractures.

Fragility fractures in nursing facilities in Japan

Yamamoto N.1, Tokahashi H.E.2
1Niigata Rehabilitation Hospital, Orthopedic Surgery, Niigata, Japan, 2Niigata Rehabilitation Hospital, Niigata, Japan

Background: Fragility fractures in nursing facilities were common incidents and it often lead to diminished daily activity or poor mobility in old people. Our objective was to describe the fragility fractures in long stay nursing facility residents.

Method: This study was performed in 6 care facilities which had totally 630 beds and cared long-stay residents. We analyzed the incident reports recorded for 3 years from April 2011 to March 2014.

Results: Seventy-one residents (8 men and 63 women) mean aged 86.5±12 y.o. with fragility fractures were identified in this periods. Fractures were occurred in 37 hip(52.1%), 5 pelvis(7.0%), 4 vertebras(5.6%), 4 radius end(5.6%), 2 tibia(4.2%), 2 clavicula(2.8%), 2 rib(2.8%), 2 metacarpus(2.8%), and others. 41.1% of fracture residents were received laxatives, but only 11.3% were treated by osteoporosis medications. 37 patients of hip fracture residents were admitted acute hospitals and 34 patients were conducted surgery. 32 patients were returned to original care facilities after operation with 26±1.66 days hospital stay. During this fracture treatment, all facilities were keeping the empty beds for fracture residents until their returning.

Discussion: Residents staying Care facilities in Japan were rarely received osteoporotic medication even after hip fracture, because most of facilities
Research in Fragility Fractures

**PE-5-1** Does the frailty index influence the outcomes on morbidity and mortality of fracture neck of femurs in elderly patients?  
Rajeveć A.1, Anić J.2  
1Queen Elizabeth Hospital, Trauma and Orthopaedics, Gateshead, United Kingdom  
2University of Novi Sad, Clinic for Orthopedic Surgery and Traumatology, Novi Sad, Serbia

Introduction: Frailty is a complex syndrome which affects the energy, physical ability, cognition and general health. Hip fractures are associated with causes and consequences of frailty such as osteoporosis, frequent falls, low body mass index, multiple medications and cognitive impairment. A host of factors such as age, pre fall general health and function, fracture pattern, anaemia, post-operative mobility level and pain influence the outcome.

The aim of our study is to assess the usefulness of ASA grade and Edmonton frailty score in the outcome of treatment of fracture neck of femurs in elderly patients.

Methods: 480 patients admitted with fracture neck of femur were included in the study. The mean age was 79.23 years. Three hundred patients had ASA grade 3, 140 patients had ASA grade 2 and 40 patients had ASA grade 1. The frailty index was calculated using Edmonton scoring index. Two hundred and twenty two patients had mild score, 70 patients had moderate and 190 patients had severe frailty score. All patients were followed up 4 weeks and one year after the surgery.

Results: One hundred and fifty patients with ASA grade 3 had severe frailty score. 130 patients with ASA grade 3 and 40 patients with high frailty score had peri-operative morbidity. The 82 patients (43%) who died within one year had ASA grade 3 and high frailty scores. 190 patients (73%) with moderate to high frailty scores were able to mobilise outdoors. The average stay in the hospital was 18 days for patients with high frailty scores. Fifty patients with high frailty index had complications such as wound infection, pneumonia and one patient had deep vein thrombosis.

Conclusion: The patients with high frailty scores have got more chance of developing wound infection and lower respiratory tract infection. The mortality rate is 43% in patients with high frailty index for one year. In conclusion patients with high frailty index has got higher incidence of mortality and morbidity following fracture neck of femur.

**PE-5-2** Multi-state analysis of semi- and total hip arthroplasty for hip fracture in Sweden  
Ljungqvist L.1, Nemes S.1, Crundall P.1, Lind D.1, Bülow E.1, Rolfsson O.2, Rogmark C.3  
1Glangwili General Hospital, Trauma & Orthopaedics, Carmarthen, United Kingdom, 2University of Gothenburg, Gothenburg, Sweden, 3Prince Philip Hospital, Orthopaedics, Larnia, United Kingdom

Introduction: Hip fractures are a common problem in the ageing population. Hip arthroplasty is the main treatment option for displaced neck of femur fractures. There is a significant difference between the hip fracture population and the elective hip arthroplasty population with regard to demography, life expectancy and functional demands. The influence of age at time of surgery, sex, comorbidities, hospital type and socio-economic factors in hip fracture patient outcomes is not fully understood.

Methods: Using prospectively collected information of a linkage database comprising information from the Swedish Hip Arthroplasty Register, Statistics Sweden and the National Board of Health and Welfare we identified an influence of sex, hospital type and marital status between the risk of revision and risk of dying. The choice of implant (hemi-arthroplasty versus total hip arthroplasty) has got higher incidence of mortality and morbidity following fracture neck of femur.

Conclusion: Using a multi-state analysis and 3 possible states in the longitudinal follow up after hip arthroplasty surgery due to hip fracture we identified an influence of sex, hospital type and marital status between the risk of revision and risk of dying. The choice of implant (hemi-arthroplasty versus total hip arthroplasty) has a major impact on the outcomes. This is likely partially due to a selection bias.
PE-S-3  
**Risk factors of hip fracture, independent of bone health with older adults in Iceland**

Skuladottir S.1, Hjaltadottir I.1, Launer L.1, Harris T.2, Caserotti P.1, Cotch M.1, Lang T.1, Eiriksdottir G.1, Steingrimsdottir L.1, Haldorsdottir T.1

1Faculty of Food Science and Nutrition, University of Iceland, Reyjavik, Iceland. 2The Icelandic Gerontological Research Institute, Reykjavik, Iceland. 3National University Hospital of Iceland, Reykjavik, Iceland. 4National Institute of Aging, Maryland, United States. 5National Eye Institute, Maryland, United States. 6Faculty of Medicine, University of California, California, United States. 7Erlingsskóli, Iceland. 8King’s College, London, United Kingdom. 9University of Iceland, Reykjavik, Iceland.

**Introduction:** Hip fractures are a serious health problem at older age. In terms of preventive measures much attention has been devoted to identify risk factors for osteoporosis, less is known about risk factors that contribute to fracture risk independent of bone health.

**Aim:** In a large prospective study of Icelandic older adults we aimed to identify factors that would predict fracture risk independent of bone health.

**Methods:** Study of 5764 participant with mean age 77y at baseline from the Age, Gene/Environment Susceptibility-Reykjavik Study (AGES-Reykjavik) 2002-2006. Extensive clinical measurements were recorded at baseline and information on factors was prospectively recorded over a mean follow-up period of 7.2 years. Associations between baseline characteristics of participants and later fractures, adjusted for age and bone mineral density of the femoral neck, were examined using Cox-regression. Adjustments were reported as Hazard Ratios (HR) per one standard deviation (SD) increase in the risk factor under consideration.

**Results:** A total of 144 men and 342 women had hip fracture over the follow-up period of 7.2 years. Hip fracture cases were significantly older (80 vs 77y, p<0.001) and had reduced bone mineral density of femoral neck (212 vs 252 mcg/cm2, p< 0.001). For males higher hemoglobin concentrations were associated with lower risk of fractures (HR 0.75; CI 0.57, 0.98) and better balance (HR 0.70; CI 0.58, 0.84). Worse performance in time up and go test was, however, associated with increased risk of fractures (HR 1.39; CI 1.19, 1.62). As for males, higher hemoglobin concentration were associated with lower fracture risk among females (HR 0.87; CI 0.77, 0.98) and the same was observed for more leg strength (HR 0.78; CI 0.67, 0.91) while worse performance in the time up and go test was associated with increased risk (HR 1.13, CI 1.00, 1.26). Balance was not associated with fracture risk among females.

**Key Conclusions:** Among these Icelandic older adults, higher leg strength, hemoglobin concentrations and better performance in time up and go test were all associated with lower risk of hip-fractures, independent of bone health.

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PE-S-4  
**Factors associated with functional recovery at one-year follow up in the elderly following hip fracture surgery in Changi General Hospital (CGH), Singapore: A prospective cohort study**

Chit Lwin S.1, Lau A.2, Goh K.S.3, Varman S.D.2, Lau A.1, Chow W.L.1

1Changi General Hospital, Orthopaedic Surgery, Singapore, Singapore. 2Changi General Hospital, Health Services Research, Singapore, Singapore. 3Changi General Hospital, Orthopaedic Surgery, Singapore, Singapore. 4Changi General Hospital, Geriatric Medicine, Singapore, Singapore.

**Background:** Hip fractures are among the most common causes of disability in the elderly. The magnitude of functional recovery following hip surgery varies widely, with heterogeneity of tools used to measure mobility outcomes. Our study examined the functional recovery and factors associated with regained mobility at 12-month post discharge from Changi General Hospital (CGH) following hip-fracture surgery in the elderly.

**Methods:** This prospective cohort included 329 consecutive elderly (~65 years old) admitted with a single fragility hip fracture who underwent surgery in CGH from December 2014 to November 2015, against a control group (n=351) from January 2013 to December 2013 with one-year follow-up after surgery.

**Results:** Demographic profiles of both groups were comparable, with mean age of 81 years and female preponderance. 53.2% sustained trochanteric and 46.8% sustained neck of femur fracture. Comorbidities are significantly higher in ValuedCare cohort. Patients who underwent surgery within 48 hours from time of decision to admit increased from 18.8% to 48% in ValuedCare (p<0.001). Program achieved 25% reduction in average length of inpatient stay (LOS) with median LOS of 10 days (p<0.001), significantly reduced post-operative complications such as delirium (10% vs 4%), pneumonia (13% vs 4%), urinary tract infections(26% vs 5%), and pressure sores (11% vs 0.3%). No significant differences were observed between control and ValuedCare patients in terms of readmission within 30 days (7.6% vs 10%) and 180 days (22% vs 22%), mortality at 30 days(0.2% vs1.2%) and one-year (7.8% vs8.8%) respectively. Under ValuedCare, 35% of patients regained their pre-fracture mobility (New Mobility Score) and 57%
regained pre-fracture self-care status at 12-months follow-up. Majority of patients did not perceive pain or anxiety at 6 and 12-months follow-ups.

**Conclusion:** The preliminary findings showed significant improvement in time to surgery, average LOS and complications. Further evaluation is needed to identify factors influencing functional outcomes after hip fracture.

**PE-5-6**

**Quality of life and factors that affect in osteoporotic hip fracture patients: a hospital-based prospective study in Thailand**

**Anphansap T.1, Sujarekul P.1**

Police General Hospital, Orthopedic, Bangkok, Thailand

**Background:** The aim of this study was to report the Health-Related Quality of life (HRQOL) over the first year after osteoporotic hip fracture and to identify the factors associated with HRQOL in Police General Hospital in Thailand.

**Study design:** A prospective cohort study.

**Methods:** 193 subjects who had osteoporotic hip fracture were recruited, which will be assessed during the pre-injury recall and at 3, 6 and 12 months of follow-up period after the fracture. HRQOL was measured as Thailand health state utility values (THSU), which derived from EQ-5D-3L. Factors associated with the change in QOL were analyzed using Repeated measure ANOVA model.

**Results:** 136 patients with a hip fracture were included for analysis. Their mean age was 82 ± 11 years old. The mean (SD) THSU values and EQVAS at twelve months follow-up period were lower than before the fracture (0.680(0.105) vs 0.55(0.183) and 85(10.5) vs 79(19.2)). The mean (SD) of THSU and EQVAS, compared before and after the fracture was estimated at -0.13(0.164) and -6(14.7)[p-value 0.01]. The positive influences on the change in QOL were younger than 80, the positive influences on the change in QOL were analyzed as articulated by Sandelowski.

**Conclusions:** There was a decline in HRQOL after osteoporotic hip fracture and after 3 months after hip fracture, HRQOL increased but did not return to pre-fracture levels. To maintain and improve HRQOL, closer attention should be paid to patient age, BMI and choice of treatment.

**Keywords:** Quality of life, Osteoporotic hip fracture, Thailand

**PE-5-7**

**Long-term experiences of pain after a fragility fracture**

Gheorghita A.1, Webster F.1, Thielke S.1, Sale J.1

University of Toronto, Toronto, Canada, 1Puget Sound VA Medical Center, Seattle, United States, 1St. Michael’s Hospital, Toronto, Canada

**Introduction:** Little is known about long-term pain after a fragility fracture.

**Objective:** We characterized perspectives on long-term pain among men and women who had sustained a fragility fracture.

**Methods:** We conducted a secondary analysis of qualitative data from 67 individuals recruited in three primary studies (47-89 years old; 55 women, 12 men). Eligible individuals from the primary studies were those who had reported pain related to their fracture beyond six months. Data about reported pain were re-analyzed using qualitative descriptive analysis as articulated by Sandelowski.

**Results:** Thirty-four individuals (47-89 years old; 4 men; 8 had sustained a vertebral fracture) reported pain related to their fracture in the primary studies. Thirty-one (91%) participants had sustained a fragility fracture at least one year previously (range: 1-13 years). Participants described long-term pain beyond typical fracture healing times, generally unrelieved by analgesics, which affected their mobility, functional activity, independence, sleep and energy. Health care providers were perceived to under-estimate timelines regarding the decrease of post-fracture pain and to not manage that pain. Participants reported that pain management was inadequate and that they developed their own strategies to respond to it.

**Conclusions:** Pain continues to influence many patients’ lives more than one year after a fragility fracture. Patient narratives could be useful to help health care providers to better recognize and manage this long-term consequence of fractures.

**PE-5-8**

**Factors contributing to prolonged length of stay for ortho-geriatric patients: Perspective from Asian population**

Nguyen M.H.1, Ruan X.C.1, Sebastian P.A.1, Moon K.1, Foo W.C.1, Yip K.F.1, Seow D.C.C.1

Singapore General Hospital, Geriatric Medicine, Singapore, Singapore, 1SingHealth Residency, Internal Medicine Residency, Singapore, Singapore

**Introduction:** Given the global ageing population, there has been an increasing emphasis on the holistic care of elderly patients with fragility fractures. Evidences support an ortho-geriatric approach to the management of these patients with improvement in outcomes. Our study aimed to evaluate the factors contributing to prolonged length of stay for ortho-geriatric patients.

**Methods:** All patients aged 60 and above, who presented with hip fracture to our tertiary hospital from July to October 2017, were evaluated through a comprehensive geriatric assessment, with documentation of demographics, clinical and surgical parameters. Exclusion criteria include those with high velocity trauma, pathological, pelvic, shaft of femur and pathological fractures. Institutional review board approval was obtained. Statistical analysis was performed using Statistical Package for the Social Sciences statistics version 23.0.

**Results:** Out of 118 patients, 19 (16.1%) were conservatively managed while 99 (83.9%) had surgery of either the neck of femur fracture (60.6%) or intertrochanteric fracture (39.4%). From our univariable linear regression model, time to surgery of either the neck of femur fracture (b 0.01, 95% CI 0.01, 0.01, p<0.001), pre-morbid institutionalization (b 3.2, 95% CI 0.1, 6.3, p=0.042), impaired liver function (b 7.5, 95% CI 0.7, 14.3, p=0.039) and peripheral vascular disease (b 11.0, 95% CI 5.4, 16.7, p<0.001) predisposed patients to prolonged length of stay. These patients tend to have increased risk of surgical readmissions (b 12.3, 95% CI 2.0, 22.5 p=0.020) and placement issues to nursing homes or shelter homes (b 2.8, 95% CI 0.2, 5.4, p=0.036).

**Conclusion:** Ortho-geriatric patients with poor pre-morbid status had prolonged hospitalization stay with increased risk for surgical readmissions, institutionalization and poor post-discharge functional status.

**PE-5-9**

**Caregiver educational courses: a tool useful to decrease caregiver burden and implement hip fracture knowledge**

Elevato E.1, Batista De Lima M.E.1, Foschi P.1

Faculty of Medicine o Psychology, Sophia University, Rome, Rome, Italy, 1Fracture Care Network Rome, Italy

**Introduction:** The level of family caregivers’ mental health has been shown to be an important predictor of care recipients’ institutionalisation and a risk factor for care-recipient mortality. Caregiver burden and its associated stress impact negatively upon caregivers’ perceived general physical and mental health and have been negatively correlated with the functional status of elderly family members 1 month after discharge following hip-fracture surgery.

**Methods:** The study was carried-out on 398 caregivers of patients with hip fracture (HF; mean age: 46.2, from 28 to 69 years). They were administrated educational courses, consisting of 12 hours of frontal presentations and 30 hours of teledidactics. Each participant was given a socio-demographic questionnaire and, at the baseline
and post-hoc, the Caregiver Burden Inventory (CBI) and a questionnaire to assess knowledge on HF. A questionnaire was also administered to assess their satisfaction on the intervention.

Results: 52% of our sample was composed of family caregivers, 89% were females and 92% had Italian citizenship. The mean age of patients was 81.92 years (from 72 to 99), with 88.4% of the patients being females. At the baseline, the mean hip fracture knowledge score was 12.3/21, while after the intervention 18.2/21. The mean CBI score was 28.85 at the baseline and 26.4 after the intervention. 95% of participants declared to have a high level of satisfaction regarding the course.

Conclusions: These findings confirm the usefulness of caregiver educational courses in order to decrease caregiver burden and implement knowledge on HF.

PE-5-10 Development and internal validation of a prognostic model to predict functional outcome 6 months after unstable ankle fracture in older adults

Keene D.1, Vauder K.1, Mistry D.1, Willett K.1, Soares W.1, Costa M.1, Lamb S.1, Collins G.1

1University of Oxford, Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences, Oxford, United Kingdom. 2University of Warwick. Warwick Clinical Trials Unit. Coventry, United Kingdom.

Introduction: Overall prognosis for functional recovery after ankle fracture in older people is worse for younger adults. However, there is limited evidence about which combination of candidate prognostic factors predict functional outcome. A prognostic model has the potential to inform anticipated recovery, and identify people who may benefit from additional monitoring or rehabilitation. We aimed to develop and internally validate a prognostic model to enable prediction of functional outcome at 6 months after unstable ankle fracture. Predictors were injury and socio-demographic variables collected at baseline in the acute hospital setting and at 6-week follow-up clinics. The primary outcome was self-reported ankle function (Olerud and Molander Ankle Score [OMAS], 0-100, higher scores indicate better function) six months after injury. Single imputation was used to manage missing data. Models were developed using multivariable linear regression. Internal validation to correct for optimism was done by bootstrapping 200 resampled datasets to adjust the models for overfitting.

Results: The model using baseline data included the predictors: alcohol consumed per week (units), EQ-5D-3L VAS score, sex, pre-injury walking distance and walking aid use, smoking status, and perceived health status. Adjusted R² for the baseline model was 0.22. A second model, incorporating baseline and 6-week follow-up data, included similar baseline variables (except EQ-5D-3L VAS), plus the 6-week predictors: presence of radiological malalignment, injured ankle dorsiflexion and plantarflexion range of motion, and 6-week OMAS and EQ-5D-3L scores. The mean optimism corrected performance was 0.26, representing the mean adjusted R² value the final baseline and 6-week model achieved in other datasets from the same distribution.

Conclusion: Prognostic models that utilised a range of routinely collected clinical data in the acute hospital setting, and at routine follow-up clinics 6 weeks later, did not provide good predictions of self-reported ankle function at 6 months after injury. These findings question the value of these clinical data to inform prognostic decision-making. Further research to investigate additional potential predictors such as psychosocial factors is recommended.

Methods: The development dataset included 620 clinical trial participants aged 60 years or over that were treated surgically or conservatively for unstable ankle fracture. Predictors were injury and socio-demographic variables collected at baseline in the acute hospital setting and at 6-week follow-up clinics. The primary outcome was self-reported ankle function (Olerud and Molander Ankle Score [OMAS], 0-100, higher scores indicate better function) six months after injury. Single imputation was used to manage missing data. Models were developed using multivariable linear regression. Internal validation to correct for optimism was done by bootstrapping 200 resampled datasets to adjust the models for overfitting.

Results: The model using baseline data included the predictors: alcohol consumed per week (units), EQ-5D-3L VAS score, sex, pre-injury walking distance and walking aid use, smoking status, and perceived health status. Adjusted R² for the baseline model was 0.22. A second model, incorporating baseline and 6-week follow-up data, included similar baseline variables (except EQ-5D-3L VAS), plus the 6-week predictors: presence of radiological malalignment, injured ankle dorsiflexion and plantarflexion range of motion, and 6-week OMAS and EQ-5D-3L scores. The mean optimism corrected performance was 0.26, representing the mean adjusted R² value the final baseline and 6-week model achieved in other datasets from the same distribution. Prognostic models that utilised a range of routinely collected clinical data in the acute hospital setting, and at routine follow-up clinics 6 weeks later, did not provide good predictions of self-reported ankle function at 6 months after injury. These findings question the value of these clinical data to inform prognostic decision-making. Further research to investigate additional potential predictors such as psychosocial factors is recommended.

Objective: The age-adjusted incidence rate of hip fracture in Japan has been increasing from 1998 to 2006; however, a recent survey found that it became plateau. The purpose of this study was to investigate the recent trend in the incidence of hip fracture in Tottori Prefecture, Japan.

Methods: Tottori Prefecture is located in mid-western Japan and its population was 569,579 in 2016. A survey of all hip fractures in patients 35 years old and over in 2016 was performed in all hospitals in Tottori Prefecture. Registration information included gender, age, date of fracture, type of fracture, and treatment. Patients residing in other prefectures were excluded. The age- and gender-specific incidence rates (per 100,000 person-years) were calculated based on the population of Tottori Prefecture in each year. We compared the data with the results of the same previous survey dividing into trochanteric and neck fractures.

Results: Registered numbers of patients in 2016 were 284 and 943 for men and women, respectively. The mean age- and gender-specific incidence rates of all hip fractures showed no increase compared with those in 2004-2006. The fracture type-specific
incidence rates of neck fractures in 2016 for both genders 85 years and over were much higher than those in 2004-2006 although those of trochanteric fractures in 2016 were lower than those in 2004-2006.

Conclusion: The incidence for trochanteric fractures has been decreasing for both genders recently; however, neck fractures among high-aged population is still increasing in Tottori, Japan.

PE-5-13  
**Pilot study: Investigating the impact of diabetes mellitus on the outcome of hip fracture surgery**

*Galweath A.*, *Clynn S.*, *Coleman C.*, *Murphy C.*

Galway University Hospital, Trauma and Orthopaedics, Galway, Ireland. *National University of Ireland, Galway, Galway, Ireland*

**Introduction:** A large literature base demonstrates that individuals living with diabetes mellitus (DM) are at a higher risk of post-operative complications following hip fracture surgery, and have a higher mortality rate than non-diabetic patients. To date, this has never been shown in an Irish population.

**Aim:** To quantify the impact DM has on hip fracture patients in a single University Teaching Hospital.

**Methods:** The HIPE dataset of fragility fractures occurring in GUH between 2014 and 2015 were analysed and cross referenced with hospital laboratory system and public databases. The resultant data categorized patients by age, gender and DM status. Comparisons were conducted evaluating post-operative length of stay (LOS) and mortality rates.

**Results:** A database of 440 individuals was created including 319 females and 121 males, with a mean age of 82 (range 65-102) years. The PLOS was comparable in all groups with the age of the patient being the primary influencing factor. An extended PLOS correlated with a decreased chance of long term survival following fracture repair. A trend toward increased occurrence of sub-trochanteric fractures was observed in diabetics with fewer periprosthetic and intertrochanteric fractures in the same cohort. Diabetic patients had a significant increase in post-operative mortality at two years compared to non-diabetics.

**Conclusion:** The presence of diabetes did not appear to directly impact a patient’s PLOS following surgery or increase the need for a re-operation, but appears to influence the primary location of the fracture. This observation will support further investigation into the mechanical and biochemical changes occurring in the femur in individuals living with diabetes.

**PE-5-14**  
**Fragility fracture and risk of entry into long-term care in older adults**


Chung-Ang University, Red Cross College of Nursing, Seoul, Korea. Republic of *Seoul National University Bundang Hospital, Rehabilitation Medicine, Seongnam, Korea, Republic of*

**Background and Objectives:** Fractures significantly affect the maintenance of functioning in older adults. Little is known about the relation with long-term care and fracture incidence. We sought to examine the incidence rate changes of long-term care entry due to fracture experiences and fracture sites in older adults.

**Research Design and Methods:** We did longitudinal data analysis of Korean National Health Insurance Service-Senior cohort study. Data on older adults aged ≥65 years in a cohort study in 2009 with a sample size of 447,276, excluding individuals who were already in long-term care service in 2008, were analyzed using Cox proportional hazard models and Kaplan-Meier survival curves. We examined the incidence rate and relative hazard ratios for long-term care entry after fractures.

**Results:** Of the total cohort of participants who entered long-term care (n=71,706), 20.5% experienced fractures. The incidence rate of long-term care entry was approximately 2.5 times higher among participants who experienced fractures compared to those who did not. The hazard ratio of long-term care entry was high when participants experienced fracture, regardless of chronic diseases, and lower extremity fractures were found to be more likely to lead to patient’s entering into long-term care.

**Discussion and Implications:** Fracture, especially lower extremity fractures, increased the incidence rate of long-term care entry among older adults. The enormous care burden due to long-term care of older adults may be reduced through interventions addressing the risk factors of fractures.

**PE-5-15**  
**High prevalence of osteopenia and osteoporosis in hip fracture patients under 60 years. A prospective study with bone mineral density assessment at the time of the fracture**

*Røgremik C.*, *Stram Rønquist S.*, *Viberg B.*, *Tange Kristensen M.*, *Floodrose Madsen C.*, *Åkesson K.*, *Overgaard J.*, *Palm H.*

Lund University, Dept. of Orthopaedics, Malmo, Sweden. *Lund University, Skane University Hospital, Dept. of Orthopaedics, Malmo, Sweden. Kolding Hospital – part of Hospital Lillebaelt, Department of Orthopaedic Surgery and Traumatology, Kolding, Denmark. *Physical Medicine and Rehabilitation Research – Copenhagen (PMR-C), Hvidovre Hospital, University of Copenhagen, Departments of Physiotherapy & Orthopaedic Surgery, Hvidovre, Denmark. *Odense University Hospital, Department of Orthopaedic Surgery and Traumatology, Odense, Denmark. *University of Southern Denmark, Department of Clinical Research, Odense, Denmark. *Hvidovre Hospital, University of Copenhagen, Departments of Physiotherapy & Orthopaedic Surgery, Hvidovre, Denmark*

**Introduction:** 2-11% of hip fracture patients are nonelderly. High energy trauma has been suggested as the main cause for their hip fractures and their risk of osteoporosis has been regarded as low. No study has assessed bone mineral density (BMD) at the time of the fracture in all study patients. This is the first report from a larger study investigating the epidemiology of hip fractures in non-elderly, fracture treatment, bone health, surgical and patient-reported outcome. BMD is measured with DXA at the time of the fracture.

**Methods:** A prospective multi-centre cohort study of hip fracture patients 18-59 years, 2 years follow-up. Patients with an acute non-pathological hip fracture are invited to participate in the study regardless of medical, cognitive or functional status. Data is retrieved from medical records, radiographs and interviews. The study was approved by local ethical committees.

**Results:** 118 patients (70 men) has been included, with a mean age of 51 (30-59). The types of fracture are evenly distributed between intra- (n=62) and extracapsular (n=56) hip fractures (p>0.05). 79 patients (67%) had low energy trauma, whilst 39 (33%) had a higher energy trauma (p<0.05). 73 (62%) were classified as ASA I-II and the remaining 45 (38%) as ASA III-IV (p<0.05). Of the patients assessed with DXA (n=100), it showed osteoporosis in 55 patients, osteoporosis in 24, 21 patients had normal BMD. Patients classified as ASA I-II more often had intracapsular fractures (60%), whereas ASA III-IV patients mostly had extracapsular fractures (60%), (p<0.05). Low energy was the main trauma mechanism in both ASA groups, but differed in proportions: ASA I-II 59% and ASA III-IV 80%, (p< 0.05). After low energy trauma, there were 41 intra- and 38 extracapsular fractures, and after higher energy trauma, 21 and 18 (p>0.05). There were no sex differences regarding trauma mechanisms, fracture types or ASA grade. There was no difference between fracture types or trauma mechanisms regarding the rate of osteopenia/-porosis. The rate of osteopenia/-porosis was the same regardless of gender, age and ASA grade.

**Conclusion:** The trauma mechanism was mostly low energy. Healthier patients are more prone to intracapsular fractures. Extracapsular fractures are more common in sicker patients. Regardless of age, sex, trauma, fracture type or ASA grade, osteopenia/-porosis is common. Hence it is of importance to assess all for BMD. (Updated results will be provided at the meeting).
Introduction: The purpose of this study is to analyze quality of life (QOL) and pain in patients with osteoporotic vertebral fractures (OVF) who were hospitalized and received conservative treatment.

Methods: Between April 2012 and March 2016, 248 patients were diagnosed with OVF and received conservative treatment in our institution. We excluded patients who were admitted to the hospital later than 15 days after injury, those with multiple vertebral fractures at one time, and those who required surgical treatment. A total of 86 patients (average age 81±7.7 years, 67 females and 19 males) who could be examined using EuroQOL-5D (EQ-5D), a method of evaluating health-related QOL, at hospitalization were enrolled in this study. We evaluated the QOL of OVF patients using EQ-5D and pain was evaluated using a visual analog scale (VAS). The evaluations were performed from hospitalization until 1 year after injury. All patients were hospitalized and received conservative treatment of 2 weeks of bed rest, followed by initiation of walking rehabilitation wearing Jewett orthotics.

Results: The number of patients that could be evaluated by EQ-5D immediately after injury and at 1 month, 2 months, 3 months, 6 months, and 1 year after injury was 86, 37, 24, 65, 23, and 16, respectively. Average utility values calculated using the EQ-5D results were 0.30, 0.63, 0.62, 0.65, 0.68, and 0.73, respectively. Average VAS values were 72.8, 24.0, 16.3, 21.5, 19.2, and 21.3, respectively.

Discussion: The utility value estimated using EQ-5D evaluations of healthy 80-84-year-old Japanese patients was reported as 0.775±0.173. The utility value of patients whose vertebral body bone fused after conservative treatment improved early (at one month after injury) and gradually improved to that of healthy people, over one year. VAS values also improved at 1 month, like the utility values. The VAS values were highest 2 months after injury, after which they remained unchanged at 1 year. If the vertebral body bone fused successfully, patients’ low back pain improved about until 2 months and was maintained at 1 year after injury.

Conclusion: The QOL of OVF patients whose vertebral body bone fused successfully after conservative hospital treatment continued to gradually improve over 1 year. Patients’ pain improved at 2 months after injury, after which it was maintained.

Is Parkinson’s disease associated with worse outcomes following hip replacement after hip fracture? 

Pallot J.1, Mohaddes M.2,3,4, Odin D.1, Nemes S.2,3,4, Nuotio M.S.5

1Prince Philip Hospital, Department of Trauma and Orthopaedic Surgery, Llanelly, United Kingdom, 2Gothenburg University, Institute of Clinical Sciences, Department of Orthopaedic Surgery, Gothenburg, Sweden, 3University of Gothenburg, Swedish Hip Arthroplasty Register, Gothenburg, Sweden, 4Lund University, Skane University Hospital, Department of Orthopaedics, Scania, Sweden, 5Seinajoki Central Hospital, Department of Trauma and Orthopaedic Surgery, Llanelly, United Kingdom

Introduction: The prevalence of Parkinson’s disease (PD) is increasing across the globe. Patients diagnosed with this condition have a significantly increased risk of sustaining hip fractures. This study aimed to establish whether patients with PD had worse outcomes following hip replacement surgery (HR) in terms of risk of mortality or revision.

Materials and Methods: Patients who underwent HR surgery following acute hip fracture between 1999-2012 with PD (n=1483) were identified using datasets available through the Swedish Hip Arthroplasty Register (SHAR). A control group was generated, with 1:3 matching for sex and age. Risks of revision and mortality were compared at points over the 14-year study period, using Kaplan-Meier and Log-rank testing. p-values<0.05 were considered statistically significant.

Results: Risk of mortality did differ at 30 days (p=0.034), at 1 year (p=0.002) and at 7 years (p<0.001) with increased mortality for PD patients (p<0.001). Risk of revision did not differ at 30 days (p=0.16). At 1 and 7 years, revision was higher for PD patients (p=0.007). Overall, indications for revision observed in the PD group were predominantly for dislocation/instability.

Discussion/Conclusion: Patients with PD had worse outcomes following total or hemiarthroplasty following hip fracture, with increased risks of revision and long-term mortality. In order to improve outcomes in this patient population further investigations are needed to analyse the reason for increased revision. With an expected further increase in prevalence of Parkinson patients with hip fractures a true multidisciplinary approach has to be considered to improve outcomes.

Mini Nutritional Assessment Short Form (MNA-SF) is superior to Nutritional Risk Screening 2002 (NRS2002) in predicting short-term hip fracture outcomes

Helminen H.1, Luukkaala T.2,3, Saarnio J.1, Nuotio M.S.5

1Seinajoki Central Hospital, Department of Surgery, Seinajoki, Finland, 2Pihlajamaa Hospital District, Research and Innovation Center, Tampere, Finland, 3University of Tampere, School of Health Sciences, Tampere, Finland, 4Oulu University Hospital, Department of Surgery, Oulu, Finland, 5Seinajoki Central Hospital, Department of Gastrointestinal Medicine, Seinajoki, Finland

Introduction: Malnutrition is common among older hip fracture patients and associated with negative outcomes. There is no gold standard to assess nutritional risk in this patient group. The aim of this study was to test the predictive power of the Mini Nutritional Assessment Short Form (MNA-SF) and Nutritional Risk Screening 2002 (NRS2002) in hip fracture outcomes.

Methods: Data were collected on population-based prospective sample of consecutive hip fracture patients aged 65 years and over and treated in Seinajoki Central hospital. Nutritional status according to MNA-SF and NRS2002 was assessed on admission. Outcomes were postoperative complications, length of stay (LOS), readmissions, one- and four-month mortality and changes in living arrangements four months post hip fracture. The differences in the outcome variables between the categories of the MNA-SF and NRS2002 were statistically tested. A p-value of <0.05 was considered statistically significant. Multivariate logistic regression analyses were conducted to examine the associations of the MNA-SF and NRS2002 with changes in mobility and living arrangements. A multivariate Cox proportional hazards model was constructed to examine the association of the two nutritional screening tools with one- and four-month mortality after adjusting for age, gender, American Society of Anesthesiologists (ASA) scores, fracture type, prefracture mobility and living arrangements.

Results: At baseline 18 (7%) patients were malnourished and 108 (41%) at risk of malnutrition according to MNA-SF. According to NRS2002 21 (4%) patients were at severe risk and 56 (21%) patients at moderate risk of malnutrition. Malnutrition as measured by the MNA-SF, but not as measured by the NRS2002, was associated with four-month mortality (hazard ratio [HR] 4.37; 95% confidence interval[Ci] 1.77-10.8). Only the MNA-SF predicted LOS and readmissions. Neither of the instruments predicted changes in mobility level and living arrangements.

Conclusions: The MNA-SF seems to work distinctly better than the NRS2002 for predicting short-term outcomes in older hip fracture patients. Our findings suggest that the NRS2002 does not take sufficient account of the impaired functional capacity and mental health associated with poor nutritional status in older hip fracture patients representing the frail and multimorbid geriatric patient.
Method: The prevalence of hypovitaminosis D and meta-analysis looking at ethnic differences in ethnicity and no systematic reviews. Very few studies specifically comparing vitamin D with approximately one billion people worldwide hypovitaminosis D is becoming globally prevalent. Introduction: Vitamin D has an essential role in bone metabolism by helping to regulate calcium and phosphorus absorption as well as helping maintain the normal structure and function of skeletal muscle. Hypovitaminosis D is becoming globally prevalent with approximately one billion people worldwide being vitamin D deficient or insufficient. There are very few studies specifically comparing vitamin D and ethnicity and no systematic reviews. The objective was to perform a systematic review and meta-analysis of the prevalence of hypovitaminosis D.

Method: A systematic literature review was conducted of the MEDLINE (Medical Literature Analysis and Retrieval System Online), Embase, and Cochrane databases concerning vitamin D-binding protein, genetic polymorphisms and ethnic differences in dietary intake and metabolism of vitamin D and other minerals.

Conclusion: African Americans have a greater prevalence of hypovitaminosis D compared to the Caucasian population. Despite this difference, the black population typically have a higher bone mineral density and lower risk of sustaining fragility fractures. There are a number of factors, which are likely to play a role in this difference including vitamin D-binding protein, genetic polymorphisms and ethnic differences in dietary intake and metabolism of vitamin D and other minerals.

Adherence and perceptions of calcium and vitamin D intake in individuals with a fragility fracture who have received two modes of bone health education

Introduction: Calcium and vitamin D are essential to proper bone health. Inadequate intake of these nutrients increases risk of osteoporosis and fragility fractures. It is believed that previous fracture(s) and exposure to education will lead to increased adherence to calcium and vitamin D guidelines in diet and supplementation. Currently, examination of calcium and vitamin D intake and patient perspectives on these intakes in individuals with a fragility fracture are limited.

Objective: Our objective was to identify adherence to calcium and vitamin D recommended dietary allowance (RDA) and to determine whether dietary perceptions helped to explain adherence in individuals with a fracture who had received two modes of bone health education.

Methods: Qualitative interviews by telephone were conducted in individuals who had reported previous fracture(s), were prescribed medication for osteoporosis and were exposed to two types of education (education session and an information booklet). Participants were asked to talk about calcium and vitamin D dietary intake, supplement use, and their perceptions of achieving calcium and vitamin D RDAs. Transcripts were analyzed to develop estimations for calcium and vitamin D intake. A thematic approach was used to explore factors that influence consumption and perception of meeting calcium and vitamin D RDA.

Results: Thirty-two patients (93% female; 58–89 years old) were identified and interviewed. Calcium and vitamin D RDA were met or exceeded by 69% and 94% of participants respectively. Of those who met calcium RDA, only 19% met recommended levels through diet alone. In patients who perceived they were achieving calcium RDA (n=20), 75% met or exceeded requirements and 95% of patients who perceived they were achieving vitamin D RDA (n=19) also met requirements with diet and supplements. Regardless of whether they met calcium and vitamin D requirements, over 40% of participants believed that a healthy diet led one to achieve his/her RDA rather than a calcium- and vitamin D-rich diet.

Conclusion: Our results suggest that most individuals with a fracture who received bone health education achieved daily calcium and vitamin D requirements with diet and supplements. Those who did not meet calcium RDA often had lower intake due to insufficient understanding of a calcium-rich diet and optimistic perceptions.
In all questionnaires except EQ-5D the recovery rate was 83.6% at first visit, 51.9% at 3 weeks, 41.4% at 3 months and 40.7% at 6 months. The health score in SF-36 was 38.8 at first visit, 35.9 at 3 weeks, 33.3 at 3 months and 32.3 at 6 months. The pain intensity score, EQ-5D, SF-36 and JOABPEC were evaluated.

Methods: All the patients aged ≥60 years admitted from 1 January 2016-7 February 2017 with an acute fragility hip fracture and they were managed on the Integrated Hip Fracture Program. The objective was to assess the change of the mental condition after the fracture and clarify the reason of long lasting after the fracture and fear for falling, might also relate to those bad conditions. The purpose of this study is to assess the change of the mental condition after the fracture and clarify the reason of long lasting after the fracture and fear for falling, might also relate to those bad conditions. Pain, ADL and QoL were evaluated by JOABPEC and were diagnosed having acute osteoporotic vertebral fracture were enrolled in this study. Pain, ADL and QoL were evaluated by JOABPEC. The purpose of this study is to assess the change of the mental condition after the fracture and clarify the reason of long lasting after the fracture and fear for falling, might also relate to those bad conditions.

Introduction: The osteoporotic vertebral fracture is the most frequent type of osteoporotic fractures. The prognosis of this fracture has been believed good but we found mostly of the patients had suffered lowered ADL and QoL over the year. The postural change after the fracture might relate to that worsened condition, but also the mental problem, for example depression after the fracture or fear for falling, might also relate to those bad conditions. The purpose of this study is to assess the change of the mental condition after the fracture and clarify the reason of long lasting after the fracture and fear for falling, might also relate to those bad conditions.

Results: A total of 20 patients were enrolled in this study. Mean age was 79.4. The mean mental score of JOABPEC was 78.6% at first visit, 47.1% at 3 weeks, 38.5% at 3 months and 45.5% at 6 months. In all questionnaires expect EQ-5D the recovery rate of mental component was worse than the pain and physical function component. The other study has reported improvement of the mental components after this fracture was worse than the other osteoporosis fractures. Before this study the mental component of this fracture has not been focused on, but the fear of falling, kinesiophobia or depression might occur after the fracture and those might have important impact on ADL and QoL after the fracture.

Conclusions: The other study has reported improvement of the mental components after this fracture was worse than the other osteoporosis fractures. Before this study the mental component of this fracture has not been focused on, but the fear of falling, kinesiophobia or depression might occur after the fracture and those might have important impact on ADL and QoL after the fracture.

Conclusion: There was an 18% one year mortality rate in this hip fracture patient cohort. Nursing home residence, dementia and higher baseline frailty scores may be associated with increased risk. Organised orthogeriatric inpatient care for those admitted with hip fractures may result in a lower mortality rate.

Introduction: Hip fractures are associated with significant morbidity and a one year mortality rate of 34-36%. Factors such as older age, residing in a nursing home and poor baseline mobility have been associated with higher one year mortality. Specialist geriatric care perioperatively has been shown to improve outcomes. We aimed to review characteristics of older hip fracture patients presenting to a South Australian teaching hospital and to examine one year mortality rates.

Methods: All patients aged ≥60 years admitted from 1 January 2016-7 February 2017 with a hip fracture were included. Information on demographics, fracture and surgery type, baseline clinical frailty score (CFS) and functional recovery score (FRS, length of stay and discharge destination is prospectively collected on an internal hospital hip fracture database. Patients are followed up in a virtual clinic at 6 months and one year. Data was analysed using excel.

Results: 311 patients aged ≥60 years were admitted with hip fractures from 1 January 2016-7 February 2017. Mean age was 82 (60-104 years). 73.9% (n=230) were female. To date, 300 patients have been followed up at one year. 12-month mortality rate was 18.0% (n=54). 76.7% (n=23) died during admission. 30-day mortality rate was 6.8% (n=23), of whom 19 were inpatients at the time of death. 6-month mortality rate was 12.2% (n=38). Those alive at 12 months had a mean age of 81 years, compared with a mean age of 86.3 years in those who died. Survivors were more likely to be admitted from home; 82.5% (n=203) vs 51.9% (n=28), and less likely to have a diagnosis of dementia; 29.6% (n=73) vs 50.0% (n=27). 58.5% had CFS recorded on admission. Surviving patients were less frail, with a mean score of 4.9 compared to 6.4 in those who died. Baseline FRS score was recorded in 51.8%, with a mean of 71.1 in patients alive at 12 months and 38.3 in those who died; lower scores indicate poorer functional status. 37.0% (n=20) of patients who died at one year had a diagnosis of delirium recorded on discharge documentation compared to 19.5% (n=48) of those surviving. Of the patients alive at one year, 71.5% (n=176) were living at home. The prognosis of this fracture has been believed good but we found mostly of the patients had suffered lowered ADL and QoL over the year. The postural change after the fracture might relate to that worsened condition, but also the mental problem, for example depression after the fracture or fear for falling, might also relate to those bad conditions.

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Poster Presentations
Introduction: Implementation of the IHFCP resulted in reduction in time to surgery, hospital length of stay, and 30-day readmission rate, conservatively managed hip fractures and improved function.

Results: Age was negatively correlated to BMD, TBS and CSI. BMI was found to be negatively correlated to CSI (r=-0.56; P<0.001) and TBS (r=-0.02; P<0.001). Age, BMD, TBS and CSI were negatively associated with the history of previous fragility fractures (p<0.01). When using multiple linear regression models, CSI and TBS were found negatively correlated to the history of previous fracture fractures even after accounting for age and BMI.

Conclusion: Facing conflicting evidence, this study goes with the importance of considering TBS and CSI during daily clinical practice in Lebanon, as they may independently identify patients with higher risk of fractures when BMD values are borderline.

Introduction: Trabecular bone score (TBS) is a recently-developed analytical tool that performs dual X-ray absorptiometry (DXA) images, and thereby captures information relating to trabecular microarchitecture. Compressive strength index (CSI) of the femoral neck is a parameter that integrates the information of bone mineral density (BMD), femoral neck width (FNW), and body weight. CSI is considered to have the potential to improve the performance of assessment for hip fracture risk. This study evaluates the correlation between TBS, CSI and age, body mass index (BMI) and fractures in Lebanese post-menopausal women.

Material and Methods: This is a cross-sectional study. A representative sample of the Lebanese post-menopausal females aged between 50 and 90 years was composed. A total of 4035 females participated in this study. Age, height, weight and BMI were assessed in all patients. All had a DEXA scan (osteodensitometry) where BMD, TBS and CSI were measured and noted. History of previous fragility fractures was also registered. The correlation between TBS, CSI and Age, BMI, BMD, and history of fractures was analyzed.

Results: Age was negatively correlated to BMD, TBS and CSI. BMI was found to be negatively correlated to CSI (r=-0.56; P<0.001) and TBS (r=-0.02; P<0.001). Age, BMD, TBS and CSI were negatively associated with the history of previous fragility fractures (p<0.01). When using multiple linear regression models, CSI and TBS were found negatively correlated to the history of previous fracture fractures even after accounting for age and BMI.

Conclusion: Facing conflicting evidence, this study goes with the importance of considering TBS and CSI during daily clinical practice in Lebanon, as they may independently identify patients with higher risk of fractures when BMD values are borderline.

Introduction: Sarcopenia is a very common, but undertreated geriatric syndrome comprising pronounced muscle mass and strength/performance loss. Conflicting results about the association of sarcopenia and risk of falling and subsequent fractures are available in the literature. This study aims to define predicting factors of sarcopenia in Lebanese patients aged above 65 years, and to explore the correlation between sarcopenia and the 10 years risk of fracture in the analyzed population.

Material and Methods: This is a cross-sectional study where 137 and 64 previously healthy women and men respectively, aged 65 years and above, were included. In each patient, weight, length, body mass index, and bone mineral density (via DEXA-scan) were assessed and recorded. Each patient had his/her grip strength evaluated and his/her FRAX score calculated. Three questionnaires were also completed by each participant: SARC-F for sarcopenia diagnosis; SPPB, a composite tool for evaluating physical performance; and GPAQ, used to assess the usual level of physical activity. Many correlations were tested to define predicting factors for sarcopenia and the correlation between sarcopenia and the 10 years risk of fracture in the studied population.

Results: In women, there were 78 patients (around 57%) with sarcopenia according to handgrip strength evaluation. Weight, GQAQ score, SPPB score and SARC-F scores were considered as predictive of sarcopenia. Furthermore, handgrip strength was negatively correlated to the ten year hip (r=-0.230; p<0.01) and major osteoporotic fractures (r=-0.248; p<0.01) probability.

Conclusion: In face of conflicting conclusions drawn in the available literature, this study reinforces the idea that strength training and adequate nutritional intake form the basis of successful sarcopenia treatment. This would even have a major role in reducing 10 years fracture risk in patients aged 65 years and above, probably by reducing the risk of falling.
Management of acute osteoporotic vertebral fractures in Irish Hospitals

Cunningham C.1, Collogher C.1, Hughes E.1, Mc Gowan M.1, Fitzgerald M.1, Blake C.1

1UCD, Public Health, Physiotherapy Sports Science, Dublin, Ireland, 2AMNCH Hospital, Physiotherapy, Dublin, Ireland

Introduction: Despite the high prevalence and significant consequences of osteoporotic vertebral fractures (OVF’s), high quality research is lacking with no clear consensus on optimal clinical pathways. The objective of this study is to explore the current orthopaedic and physiotherapy management of OVF patients in acute Irish hospitals.

Methods: A cross sectional survey was designed to capture the current inpatient management of OVF’s by orthopaedic doctors and physiotherapists in acute Irish hospitals. The survey was first distributed to orthopaedic specialist registrars (SPR’s) at a national training day attended by a majority of SPRs in Ireland and online survey distribution to inpatient orthopaedic physiotherapists is imminent. All survey data were entered onto SPSS and analysed using descriptive statistics.

Results: SPR’s (n=49) across 15 hospital sites were entered onto SPSS and analysed using multivariable logistic regression. The study included 1053 patients, covering 80% of all hip fracture surgeries in Iceland in the study period. Of those admitted, 72% were women. Men waited significantly longer (p<0.003) on average for surgery (21.5 hours) than women (18.9 hours). Mortality within 12 months after surgery was 36% amongst men vs. 21% for women (Odds Ratio (OR) 2.30, 95% Confidence Interval (CI) 1.66-3.18). Higher mortality rates were also observed in the older age groups compared to 67-79 years old, i.e. 80-89 years: OR 1.80 (95% CI 1.25-2.60) and 90-109 years: OR 4.52 (95% CI 2.91-7.0). Waiting time for surgery was not associated with 12-months mortality risk after adjusting for other factors.

Conclusion: Although women constitute the majority of elderly with hip fractures, men were at higher risk of death within 3 and 12 months after surgery in our study. Studies are needed to examine factors affecting the gender difference in mortality post hip fracture surgery. Improving the care already at the ED might be one way to lower mortality.

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Poster Presentations

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Introduction: Worldwide hip fracture accounts for significant socioeconomic costs, morbidity and mortality. The burden of hip fracture is expected to grow dramatically in middle income countries as life expectancy increases. However, the research and evidence guiding practice for hip fracture care is overwhelmingly drawn from high income countries in Europe and North America. We sought to replicate the UK World Hip Trauma Evaluation (WHITE) comprehensive cohort study in a University Teaching Hospital in Cape Town, South Africa. The study objectives were to understand approximately the number of cases of hip fracture, whether staff and patients would be willing to participate in a study of this kind and the ability to follow up these patients.

Method: Between January and February 2018 the process of the WHITE cohort study was attempted at Groote Schuur Hospital, Cape Town. All adult patients presenting with fractures of the proximal femur were screened and approached to participate in the study. On agreeing to participate, each patient was asked about pre-injury health related quality of life, care, mobility, co-morbidities and residential status. Each patient was followed up at 4 months in the study. On agreeing to participate, each patient was asked about pre-injury health related quality of life, care, mobility, co-morbidities and residential status. Each patient was followed up at 4 months in the study.

Results: At the time of abstract submission the database had complete risk factor profile following assessment by the FLS CNS whilst attending their orthopaedic fracture clinic. The remainder were missed due to staff leave and would have had request to GP or bone health clinic to assess. Falls risk factors as follows: 50-64y (n=1,045), 65y+ (n=948), 2 or more falls in last year, 20% (22.9%), 259 (27.3%), Calt/balance impairment: 124 (12.3%), 219 (23.8%), Impaired vision: 39 (3.9%), 63 (6.8%), Urinary incontinence: 31 (3.1%), 84 (9.1%), Dizziness reported: 129 (12.8%), 141 (15.3%), Alcohol excess: 69 (6.6%), 41 (4.4%), Sedative medications: 70 (6.9%), 63 (6.8%), Hypotensive medications: 232 (22.9%), 412 (45.0%), *p<NS; ps.05 for remainder. We do not have data on subsequent interventions and outcomes of the group.

Conclusion: Though risk factors for future falls are less common in younger than older adults with fragility fracture, the prevalence of risk factors, in particular potentially modifiable factors in younger supports targeted assessment and intervention in all-aged fragility fractures. Further work is needed to determine benefit and uptake of interventions to reduce falls risk in younger fracture patients.

PE-5-33
Falls risk factors in younger vs. older adults with fragility fracture.
Mambiravana T., Pownell L., Kennedy D., Wallace-Williams Q., Dockery F.
Gay’s w. St. Thomas Hospitals, Department of Ageing & Health, London, United Kingdom

Background: Most international guidelines agree that a multifactorial falls risk assessment is warranted in older patients with fragility fracture. The cut-off for ‘older’ age is not defined the UK national Fracture Liaison Service Database (FLS-DB) advises triage for falls risk in all fragility fractures age 50+. We report on falls risk factors in younger vs. older patients in our own FLS to determine numbers of younger patients who might require multifactorial intervention.

Methods: Consecutive fragility fractures aged 50+ who had complete falls risk profile on local database were assessed, comparing those age above or below 65 years.

Results: N=1,993 of 2,968 fractures (67%) on the database had complete risk factor profile following assessment by the FLS CNS whilst attending their orthopaedic fracture clinic. The remaining were missed due to staff leave and would have had request to GP or bone health clinic to assess. Falls risk factors as follows: 50-64y (n=1,045), 65y+ (n=948), 2 or more falls in last year, 20% (22.9%), 259 (27.3%), Calt/balance impairment: 124 (12.3%), 219 (23.8%), Impaired vision: 39 (3.9%), 63 (6.8%), Urinary incontinence: 31 (3.1%), 84 (9.1%), Dizziness reported: 129 (12.8%), 141 (15.3%), Alcohol excess: 69 (6.6%), 41 (4.4%), Sedative medications: 70 (6.9%), 63 (6.8%), Hypotensive medications: 232 (22.9%), 412 (45.0%), *p<NS; ps.05 for remainder. We do not have data on subsequent interventions and outcomes of the group.

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Pelvic fractures are common in older people. Those treated in hospital are usually managed under Geriatric Medicine. However, there is limited data describing this specific cohort of patients. Using electronic hospital records over 3 months, data was collected and analysed on consecutive patients admitted with pelvic fractures to medical wards for older people. 24 patients with a mean age of 87 years (standard deviation of 9.4) were admitted over this period. Majority of patients were female (83%, n=20). The average BMI was 22.1. 67% of patients (n=16) had AMT of ≤7 and 83% (n=20) had polypharmacy on admission. The median number of comorbid conditions was 3 and most had ≥2 pelvic sites fractured (n=19, 79%). 75% of patients had had x-rays performed; the rest had additional imaging. Only one patient was operatively managed. FRAX scores: 79% (n=19) had more than 20% for major osteoporotic fracture and 88% (n=20) had more than 5% for hip fracture – 79% patients (n=19) had both. Despite their high-risk for future fractures (50% known diagnosis of osteoporosis, significant FRAX scores; 75% had a fall), only 50% had a bone health assessment. 63% were living at home with no formal care package and 71% (n=17) were independently mobilising with walking aids. After a mean duration in hospital of 16 days (standard deviation of 5.3), 33% of patients were discharged home directly while the rest were discharged to either a care home (33%) or another hospital (25%) for rehabilitation. 54% had a hospital-related complication such as kidney injury (16.7%), delirium (16.7%) and infection (16.7%). There were two inpatient mortalities. 54% were re-admitted and 33% died in 3-month post-discharge review. Pelvic fractures are associated with worse inpatient and post-discharge clinical outcomes. This is a multimorbid cohort needing significant post-fracture rehabilitation care.

PE-5-36
Long-term result of cementless bipolar hemiarthroplasty for femoral neck fracture in elderly patients: at least 10 years follow-up
Nishi M.1, Okano I.1, Sawada T.1, Midonikawa N.1, Inagaki K.2
1Ohta-Nishinouchi Hospital, Orthopaedic Surgery, Koriyama, Japan, 2University of Shawa School of Medicine, Orthopaedic Surgery, Tokyo, Japan

Introduction: Hemiarthroplasty (HA) is a common procedure for displaced femoral neck fracture in elderly patients. Regarding the use of cement, cemented and cementless HAs were reported to have comparable results in short-term. Although some researchers reported the long-term result of cemented HA, the information about cementless HA was limited. The aim of this study is to assess the long-term outcome of cementless HA for femoral neck fracture in elderly patients.

Methods: We conducted a retrospective review of 234 consecutive intracapsular fracture patients treated surgically between January 2001 and December 2007. Of these cases, 206 cases underwent HA. We assessed the existence of pain, ambulatory status, residential status, and post-operative complications of the elderly patients who were followed-up at least 10 years.

Results: 33 cementless HA cases followed up at least 10 years were identified. Total seven cases were excluded (missing data: 4, high-energy trauma: 1, the age of initial injury was under 60: 2). Analysis showed almost similar results. It seems that surgical delay (>48h) affects 6 months and 1 year mortality and the patients outcomes.

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Introduction: Hemiarthroplasty (HA) is a common procedure for displaced femoral neck fracture in elderly patients. Regarding the use of cement, cemented and cementless HAs were reported to have comparable results in short-term. Although some researchers reported the long-term result of cemented HA, the information about cementless HA was limited. The aim of this study is to assess the long-term outcome of cementless HA for femoral neck fracture in elderly patients.

Methods: We conducted a retrospective review of 234 consecutive intracapsular fracture patients treated surgically between January 2001 and December 2007. Of these cases, 206 cases underwent HA. We assessed the existence of pain, ambulatory status, residential status, and post-operative complications of the elderly patients who were followed-up at least 10 years.

Results: 33 cementless HA cases followed up at least 10 years were identified. Total seven cases were excluded (missing data: 4, high-energy trauma: 1, the age of initial injury was under 60: 2). Analysis showed almost similar results. It seems that surgical delay (>48h) affects 6 months and 1 year mortality and the patients outcomes.

Conclusion: Pelvic fractures are associated with worse inpatient and post-discharge clinical outcomes. This is a multimorbid cohort needing significant post-fracture rehabilitation care.

PE-5-36
Long-term result of cementless bipolar hemiarthroplasty for femoral neck fracture in elderly patients: at least 10 years follow-up
Nishi M.1, Okano I.1, Sawada T.1, Midonikawa N.1, Inagaki K.2
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axial spondyloarthritis (axSpA), an IA which predominantly affects men, and so prevalence figures are largely unknown. The aim of this study is to investigate the prevalence of low BMD in axSpA and explore relationships.

Methods: A detailed assessment was performed on axSpA patients, including demographics, clinical characteristics, and laboratory investigations. Disease severity was assessed with validated tools measured on a 0-10 scale – higher scores reflect more severe disease. BASDAI (disease activity), BASMI (spinal mobility) and BASFI (function). BMD was assessed using DXA of the spine, hip and radius. The WHO criteria were used to classify low BMD.

Results: One hundred and four patients with axSpA were consecutively recruited: 77.9% (n=81) male, 98.1% (n=102) Caucasian, mean (SD) age 51 (12) years, disease duration 26 (13) years. The mean (SD) BASDAI was 3.9 (2.2), BASMI was 4.3 (1.9) and BASFI was 3.8 (2.5), reflecting mild to moderate disease burden. A history of fracture was present in 42.3% (n=44) of the cohort, with only 3 fragility fractures. Of the cohort, 42.3% (n=44) had osteopenia and 16.3% (n=17) had osteoporosis. Low BMD was most prevalent at the spine, with 44% of the cohort affected, followed by the femoral neck (30.1%, n=22). Low BMD at the radius was uncommon (< 10% of the cohort). Only 6.4% of the cohort had a prior diagnosis of osteoporosis and only 39.4% had a previous DXA.

Female gender, higher BASFI, lower BMI and lower urate levels were significantly associated with bone loss at both the spine and the hip. Other measures of disease severity had no impact on low BMD. Additionally, longer disease duration was associated with spine BMD loss. Non-obese patients were more likely to have low BMD than obese patients (62.3% vs 40%, OR 2.5, p=0.04).

Conclusion: Low BMD is common in this axSpA cohort, with over 58.6% affected. Most cases of low BMD were undiagnosed prior to this study and less than half of the cohort had ever had a DXA, suggesting a continued low awareness of the risk of osteoporosis in a male-dominated disease.
Results: There was a total of 284 referrals to the Dietitian from the ED and AMAU from February 2016. Where recorded (n=269), 22% of Dietitian referrals in ED/AMAU were documented (n=199), 23% of those referred to the Universal Screening Tool scores. Where recorded to the Dietitian were at high risk of malnutrition (n=269), 34% of those referred to the Dietitian from the ED and AMAU from February 2016. Where recorded (n=269), 34% of those referred to the Dietitian were at high risk of malnutrition.

Conclusion: Malnutrition increases a patient’s risk of serious but potentially avoidable complications (IrSPEN, 2015). Nutrition screening on admission is recommended for the early identification of those at risk of malnutrition whom may warrant nutrition support (HIQA, 2016). The number and types of referrals received outlines the requirement for a system where care of the hip fracture patient was set the task of setting up an orthogeriatric liaison nurse practitioners (NP) which possibly led the prolonged periods of stay in care. These specialist nurses were encouraged all disciplines and grades to develop ideas for improvement.

Methods: Using the Scottish Hip Fracture Standards they identified and targeted specific areas of improvement. Adherence to the hip fracture audit standards has been demonstrated to lead to better outcomes as a recent study written in part by one of the specialist registrars from the unit. They used the audit standards to drive improvement in hip fracture care within the unit. They aimed to improve all audit categories, which cover all aspects of the patients journey from Emergency Department to rehabilitation. The nurse practitioners have helped drive forward the change to collaborative multidisciplinary approach to patient centred care rather than single individuals working incohesively. They set up regular multidisciplinary hip fracture meetings involving and encouraging staff from all disciplines to discuss areas where they could drive improvements in care. They used the model for improvement to drive tests of change.

Results: Qualitative feedback showed that staff on the ward valued this approach. They were more aware of the challenges faced by the elderly hip fracture patient and felt they had more ownership of the quality of care provided on the ward. By encouraging other team members to attend the hip fracture meetings, it has helped enhance a better understanding of what the hip fracture standards are about and this has helped improve education and motivation on the unit. Perhaps the clearest indicators of the impact of the NP’s are shown in the nationally collected hip fracture audit data.

Conclusion: Implementation of specialist nurse practitioners have shown to improve the hip fracture patients journey. They provide a vital link between medical and nursing staff, enhancing the care of the hip fracture patient and ensuring information is consistently shared and acted upon. It has encouraged all disciplines and grades to develop ideas for improvement.

PE-6-6

The prevalence of a previous osteoporotic fracture in patients admitted with hip fracture in orthopedic unit of the Federal University of São Paulo, Brazil

Bruno L. M.1, Frazao J. E.1, Cocca L. F.1; Barbosa P.1; Souza J.1, Meio Almada Filho C.1; Orthogeriatric Group, Federal University of São Paulo, Gericatric, São Paulo, Brazil. 1Federal University of São Paulo, São Paulo, Brazil

Introduction: Since 2016, a group of Geriatricians, Orthopedics and Anesthesiologist of Federal University of São Paulo, a public health service, created a protocol to guide the approach of elderly with hip fracture in our Hospital. Now, the first results are being analyzed and one of perceptions is about previous osteoporotic fractures. A second hip fracture reportedly occurs in 2-10% of elderly patients who have already suffered an initial hip fracture. Therefore, the aim of this study is to know the prevalence of previous osteoporotic fracture in our group of patients, the lack of treatment and the follow up with bone densitometry.

Methods: This is a cross-sectional study that analysed the medical record of the patients over 60 years old who were admitted in the orthopedic ward with a hip fracture from January of 2015 to December of 2017. The exclusion criteria was patients who had a secondary hip fracture, like high energy trauma, tumors or metastasis. Osteoporotic fractures were define fragility fractures or low-trauma fractures, mainly affecting the humerus, pelvis, distal radius and vertebra.

Results: During this period, 177 medical records were analyzed: 35.6% (63) patients had a knowing previous osteoporotic fracture and from this group, 30% (19) were submitted a pharmacological treatment (p=0.01) and 16% (10) had access a bone densitometry to follow up. (p=0.153). 11% (20) from all the 177 patients evaluated were underwent a bone densitometry.

Conclusions: The diagnosis of osteoporosis is performed through bone densitometry or through a fragility fracture. In the present study, we intuit that the prevalence of previous osteoporotic fractures is greater than that demonstrated by the subdiagnosis of vertebral fractures in our population. It is alarming that only 30% of patients with established osteoporosis had access to pharmacological treatment and also had a difficult to follow up with bone densitometry, fundamental for the identification of therapeutic failure. Then, we conclude that a task force must be created in the public health system of São Paulo to prevent the second fracture and your consequences.

PE-6-5

Major Trauma Audit (MTA): Importance of improving data quality

Brent L1; Deasy C2

1National Office of Clinical Audit, Dublin, Ireland, 2Cork University Hospital, Cork, Ireland

Introduction: Trauma care is complex and challenging. Each and every part of this journey impacts on whether the patient lives or dies and what injuries they will live with for the rest of their lives. The care of critically ill patients with severe injuries requires a multi-disciplinary, multi-institutional, coordinated and integrated system of trauma care. One of the key factors underpinning the success of an integrated trauma system is high-quality data to facilitate local, regional and national quality assurance and improvement initiatives. Almost half of major trauma patients are aged over 65 and the most common mechanism of injury is a ‘low fall’.

Methods: MTA collects information on seriously injured patients treated in trauma receiving hospitals throughout Ireland. Data is collated from across the patient journey from injury to recovery including pre-hospital records, hospital clinical records including radiology, surgical operation reports, hospital administration information systems and the Hospital-In-Patient-Enquiry (HIPE) information system. All data is directly entered onto the secure TARN portal for injury coding and analysis. In Ireland there are 26 trauma receiving hospitals.

Abstracts
**Abstracts**

**PE-6-6**  
**Necessity of “Osteoporosis Liaison Service” in all wards in regional central hospital**  
Hando T.1, Yasuoka Prefectural Central Hospital, Rehabilitation, Takamatsu, Japan

**Introduction:** Our hospital is a regional central hospital with 530 beds, and 13000 patients/year are being hospitalized. Three rehabilitation doctors including me cover all wards. While Osteoporosis Liaison Service (OLS) by 9 “osteoporosis coordinators” is already functioning at 2 orthopedic wards, there are many patients left in other wards without consideration about osteoporosis even if they have vertebral fracture (VF). In addition, artificial intelligence (AI) will support imaging diagnosis and find numerous FVs from CT data. As an additional information, doctors of collagen disease and breast surgery have already prescribed medicine of osteoporosis for outpatients.

**Conclusion:** Patients mentioned above were the maximum number for me and some error occurred on the management schedule. We have so much thing to do with osteoporosis patients in each ward, that we should expand OLS into all wards in the regional central hospital.

**Method:** Because 2 nurses of respiratory ward and digestive ward will be registered as “osteoporosis coordinator” this April, I have begun positive approach to osteoporosis in these wards and some other wards. From Aug. 2017 to Jan. 2018, if I found a Vf on CT sagittal image of the rehabilitation patient, I recommended them DXA and medication of osteoporosis.

**Result:** There were 91 patients who had Vf on CT sagittal image including 30 male patients (74.7±8.8y.o.) and 61 female patients (75.0±7.6y.o.). At respiratory ward, I prescribed peri-operative rehabilitation for 40 lung cancer patients. Among them, 21 patients had Vf. Adding COPD patients and chemotherapy patients, osteoporosis treatment was suggested to 27 (M6, F21) patients.

At digestive ward, 30 (M18, F12) patients had Vf. As for gastric cancer patients, “Working group for better prognosis of gastric cancer patients” was launched last summer by surgeons, nurses and nutritionists. This group agreed my trial because gastrectomy is a risk factor of osteoporosis. Out of 46 (M28, F18) gastrectomy patients, 18 (M12, F6) patients had Vf. There were many slim male patients, and so their wives may also be good targets of OLS. At cardiovascular ward, I could concern only 13 patients who had Vf. Most aortic valve stenosis patients had severe vascular calcification and spinal deformity. At gynecologic wards, doctors just have begun to consider positive osteoporosis treatment. As an additional information, doctors of collagen disease and breast surgery have already prescribed medicine of osteoporosis for outpatients.

**Conclusion:** The improvements in data quality and completeness show that MTA as a national clinical accreditation score was 96%.

**Introduction:** In 2016 the MTA National Report 2014/2015 was published. In 2014 22 hospitals participated detailing 3288 individual patient cases, in 2015 this increased to 24 hospitals and 2957 cases. In 2016 all 26 hospitals were included with in excess of 4426 cases. The data completeness was 67% in 2014 and 55% in 2015. In an effort to further improve this NOCA engaged with data coordinators regularly via teleconference, sent hospital and hospital group reports, focused on matching transfer cases, worked with HIPE to develop a hospital patient list for each site and is work is ongoing to adjust the denominators. Following these efforts 74% completeness was achieved in 2016 and the data accreditation score was 96%.

**Conclusion:** The contracture of the digits causes disability frequently in instrumental activities of daily in geriatric patients especially in late stage of the disease. Both techniques (needle osteopenotomyc–open dermofascietcomy) had advantages and disadvantages and should be personalized to each patient according their functional requirement, and the severity of comorbidities.

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Results: The HADS scale assessment showed increased anxiety in 26 (31.32%) patients. Sub-clinically expressed anxiety was seen in 11 (13.25%) patients, the duration of the disease was 11.45±7.15 years. Clinically expressed anxiety was detected in 18 (21.68%) patients with osteoarthritis of large joints. Sub-clinically expressed depression was revealed in 13 (15.66%) patients, the average duration of the disease lasting 14.63±8.38 years. Depressive disorders were detected in 16 (19.28%) patients with a duration of the disease 8.90±5.30 years and intermediate alexithymia was detected in 10 (12.04%) patients with a duration of the disease lasting 14.63±8.38 years. The intensity of the pain syndrome in patients with OA before total arthroplasty was 6.06±2.95 points. A significant correlation between pain intensity and anxiety was assessed using a visual analogue scale (VAS).

Introduction: Randomized controlled trials have demonstrated that a restrictive red blood cell (RBC) transfusion strategy lowers transfusion frequency without affecting mortality. However, the external validity of these trials has not been tested in a large cohort. The purpose was to estimate the effect of introducing a National Clinical Guideline (NCG) for a restrictive haemoglobin transfusion threshold on transfusion frequency and mortality in hip fracture patients.

Method: A consecutive cohort study of hip fracture patients >65 years old residing in the southern region of Denmark was conducted using prospectively gathered data from registers during two separate 1-year time periods. The first period from 01.10.2012 to 30.09.2013 included 1,494 patients and used a liberal transfusion threshold, whereas the second period from 01.10.2015 to 30.09.2016 including 1,414 participants used a restrictive threshold from the NCG. Participant data for age, sex, body mass index (BMI), Charlson comorbidity index (CCI), type of fracture, time to surgery or medication. Overall RBC transfusions decreased from 42% to 30% (p<0.001). The 30-day mortality rate (95% CI) was 9% (8;11) in the RG and 13% (11;14) in the LG (p<0.008), whereas the adjusted relative mortality risk was 0.72 (0.57;0.91). The 90-day mortality rate was 15% (13;17) in the RG and 19% (17;21) in the LG, whereas the adjusted relative mortality risk was 0.78 (0.65;0.94).

Conclusion: These data suggest that the introduction of a NCG on restrictive blood transfusion leads to lower transfusion frequency in hip fracture patients. Even though this reduction is associated with decreased mortality at both 30 and 90 days, it may be explained by other issues than restrictive transfusion strategy. There has been an improvement in the mortality of hip fracture patients in Denmark and we suggest that a restrictive transfusion strategy does not lead to increased mortality.

TP 7-2
Minimal effect of implant position in osteosynthesis of a femoral neck fracture with parallel implants
Nyholm A.M., Palm H., Sandholdt H., Troelsen A., Gromov K., DFDB collaborators
Copenhagen University Hospital Hvidovre, Orthopedics, Hvidovre, Denmark. 2Copenhagen University Hospital Hvidovre, Clinical Research Center, Hvidovre, Denmark

Introduction: The purpose of this study was a) to estimate the incidence of reoperation and b) to estimate the effect of the osteosynthesis on risk of reoperation within the first 12 months following osteosynthesis with parallel implants in femoral neck fractures (FNF).
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Methods: 1206 consecutive surgeries for a primary FNF performed with parallel implants between December 2011 to November 2015 with complete data and follow up, and available x-rays were collected from the Danish Fracture Database. Data included age, gender, surgical delay, fracture classification and American Society of Anaesthesiologists score (ASA). Fracture displacement, posterior tilt, number of implants, posterior distance, calcaneal distance, tip-cartilage distance, angulation of the implants and cortical index were measured on the pre- and postoperative x-rays. Data on vital status and secondary surgeries were collected from the Civil Registral System. The possible effect of the included variables on the risk of reoperation was evaluated using Cox regression analysis.

Results: Median age was 73.3 (range 21-102) and 69% were female. 2 implants were used in 997 patients and 3 in 209. 157 (13%) patients underwent a relevant reoperation within 1 year and 228 (19%) died. Mean and median time to reoperations was 140 and 116 days. Patients younger than 70 years more often underwent reoperation (18.0% vs. 9.8%) but died less frequently (74% vs. 26.3%) compared to patients older than 70 years. Female patients were revised more frequently than men, however, more men died in the follow up period. Increasing age, female gender, high ASA score and displaced fracture depend on the quality of care provided by the ward’s multidisciplinary teams.

Methods: In May-October 2017 the Chartered Society of Physiotherapy led work by over 580 physiotherapists – providing data for 5,989 (78.6%) of the 7,621 people who the National Hip Fracture Database recorded as presenting to 127 hospitals during this period. To capture the patients’ experience of therapy physiotherapists were asked: “For how long was the patient mobilising or receiving physiotherapy?” for each day in the first week after surgery.

Results: On average each patient received 118 minutes of physiotherapy in the first week – 27 minutes on the day after surgery reducing to 14 minutes by the end of the week. This required over three and a half hours of staff time – two hours of this being trained physiotherapist time. Staff time varied across the country – from less than an hour in some units, to several hours in others. On average half (48.6%) of people who were admitted from their own home or sheltered housing were able to return there directly from the acute ward. Acute wards which provided more therapy were more likely to get patients up on the day after surgery, less likely to transfer them to another ward for rehabilitation, and returned more patients straight home.

Conclusion: Hospitals should look beyond their usual focus on prompt anaesthesia and surgery, and examine the intensity of the rehabilitation they are providing, using the Hip Sprint results for each unit available at www.ffiap.org.phfis. However, the amount of therapy a patient receives is not just a matter of the availability of physiotherapists. Units which provide high quality peri-operative surgical, anaesthetic and medical care will minimise the number of patients who are too unwell to receive therapy.

Abstracts

TP 7-3
Investment in physiotherapy after hip fracture – results of the 2017 Physiotherapy ‘Hip Sprint’ Audit

Johannsen A.1, Liddicoat M.1, Boulton C.1, ten Hove R.2
1National Hip Fracture Database (NHFD), Royal College of Physicians, London, United Kingdom, 2Trauma Unit, University Hospital of Wales, Cardiff, United Kingdom

Introduction: Hip fracture anaesthesia and surgery are now so successful that nearly all patients can expect prompt and effective repair of their injury, and most will be able to get out of bed the day after operation. However, frail and older patients’ subsequent recovery of mobility and independence depends on the quality of care provided by the ward’s multidisciplinary teams.

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Abstracts

TP 7-4
Decreased grip strength and dynamic body balancing in women with distal radial fractures

Fujita K.1, Koburagi H.1, Nimura A.2, Kato R.2, Okawa A.1
1Tokyo Medical and Dental University, Orthopedic Surgery, Tokyo, Japan, 2Tokyo Medical and Dental University, Functional Joint Anatomy, Tokyo, Japan, 3A Kyosai Research Institute, Tokyo, Japan

Introduction: Patients with distal radial fractures (DRF) are at risk for future fragility fractures, however, their physical characteristics and tendencies for falls are not well studied. In this study, we aimed to study the physical characteristics of female patients with distal radial fractures and compared them with those of women without fractures.

Methods: This case-control study was approved by IRB and performed at eight hospitals and included 128 female patients with DRF who underwent surgery, with their DRF signifying their first fragility fracture (fracture group). Concurrently, 128 age- and sex-matched participants who lived near the hospital and had no history of fragility fractures were selected as controls (control group). All participants underwent assessments of grip strength and a body balancing ability test. Measurements were assessed twice in the fracture group, at 2 weeks and 6 months postoperatively, and once in the control group. The body balancing ability test included four assessments: Functional Reach Test, Timed Up and Go test (TUG), 2 Step test (2ST), and Timed Uni-pedal Stance test. Participants also completed questionnaires about general health quality, physical activity, and comprehensive health information, including treatment for compromised balance or osteoporosis. The values in the fracture group were compared to those in the control group, by using Student’s t test. Logistic regression analyses were used for the odds ratios.

Results: There were no significant differences (p>0.05) in age, height, body weight and anamnesis between the groups. Relative to the control group, the fracture group demonstrated reduced grip strength in all age groups at both assessments. Additionally, in DRF subjects, prolonged TUG was observed at 2 weeks postoperatively in all age groups and at 6 months in those aged 55-74 years, while 2ST was significantly reduced at both assessments in those aged between 65-74 years. Logistic regression analyses demonstrated that alcohol consumption, higher values of TUG and grip strength were significantly positively correlated with fracture risk.

Conclusion: Women with DRF demonstrated reduced grip strength and dynamic body balancing ability as measured by TUG at 2 weeks and 6 months postoperatively. Reduced grip strength and dynamic body balancing ability were identified as significant risk factors for DRF; suggesting these measurements can be useful screening tools to identify future fracture risk.
Social deprivation predicts a range of adverse health outcomes; however, its impact on outcomes following a hip fracture is not established. We examined the effect of area-level social deprivation on outcomes following hospital admission with a hip fracture in England. We used English Hospital Episodes Statistics linked by NHS Digital to the National Hip Fracture Database (04/2011-03/2015) and Office for National Statistics mortality data, to identify patients admitted with hip fracture, aged 60+ years. Deprivation was measured using quintiles of the Index of Multiple Deprivation; Q1-least deprived; Q5-most deprived. Associations between deprivation and 30-day mortality and emergency 30-day readmission are described using logistic regression, adjusted for age. Mean length of stay (LOS) in NHS acute and rehabilitation hospitals ('superspell') and total NHS bed occupancy within 1-year post-fracture were calculated; their associations with deprivation were estimated using linear regression. We identified 218,907 hospital admissions with an index hip fracture over 4 years. Median [IQR] age 84[78-89] years; 72.6% female. Overall 30-day mortality was 7.8% (n=17,072/218,907). Among survivors, age-adjusted mean superspell was longer in the most deprived vs. least deprived quintile (Q5:16[5:15.7-17.4] days; Q1:14.7 [14:13.2], p<0.001). The 30-day readmission rate was higher in those most deprived 17.5% (Q5:n=6,062/34,693) compared to those least deprived 14.2% (Q1:n=5,744/40,377), age-adjusted OR 1.32[1.27,1.38], p<0.001. A similar trend was observed when assessing mean 1-year NHS bed occupancy (Q5:25[23.9-26.4] days; Q1:21.8[21.0-22.6], p<0.001). Greater deprivation is associated with higher 30-day mortality and among those who do survive, longer hospital stays and a greater need to be re-admitted to hospital once discharged. The extent to which the configuration of English hospital services, rather than patient case-mix, explains these apparent health inequalities remains to be determined.

TP 7-6
Planning for end of life care among people presenting with hip fracture in the UK – data from the National Hip Fracture Database
Johansen A.1, Rawlinson P.1, Boulton C.1, Hannaford J.1, Liddicoat M.1, Rajyaguru S.1, Wakeman R.1
1National Hip Fracture Database (NHFD), Royal College of Physicians, London, United Kingdom; 2Trauma Unit, University Hospital of Wales, Cardiff, United Kingdom; 3‘City Hospice, Cardiff, United Kingdom

Introduction: Mortality following hip fracture has reduced markedly over the decade since the National Hip Fracture Database (NHFD) was established in 2007. However, the typical patient is an 82 year old woman with more than one significant comorbidity, the most common of which is dementia. As a result appropriate end of life care will always remain a key aspect of the support orthopaedic and orthogeriatric teams must provide to patients and their families.

Methods: Since January 2017 the NHFD has asked all the hospitals in England, Wales and Northern Ireland to review the care offered to people who died as an inpatient following hip fracture. This requirement is intended to stimulate investigation, so the root cause of death can be identified and used to inform local clinical governance and quality improvement processes. In addition, we ask that clinical teams identify patients who die following attempted cardiopulmonary resuscitation (CPR), and those in whom the end of life has been anticipated and managed following appropriate discussion of care priorities with the patient, their family and their carers.

Results: Of 65,535 over 60 year old people who presented during the 2017 calendar year, a total of 4,541 (6.9%) died as an inpatient. In 14.9% of cases this followed active treatment including CPR, in 74.3% the patient’s death had been anticipated and appropriate end of life care was already in place. However, rates of CPR showed dramatic variation – ranging from 0% in some units, to more than 50% in 10 (5.7%) of the 176 hospitals. A further 10.8% of all people who died did not receive CPR, but their death did not appear to have been so clearly anticipated with a move to an appropriate focus on end of life care.

Conclusions: Alongside performing root cause analyses of inpatient deaths clinical teams should consider the appropriateness of CPR in individual cases. Hospitals which we identify as having unusually high and unusually low rates of CPR might wish to examine their policies for identifying patients’ wishes and the appropriateness of ‘do not attempt CPR’ decisions. Such questions will be of relevance across these hospitals, since hip fracture should be considered as a marker condition for the multidisciplinary care offered to all frail and older inpatients.
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Scientists Organisation
FFN – Fragility Fracture Network
Central Office
Schaffhauserstrasse 550
8052 Zurich, Switzerland

Editors
Congress Chair
Emer Ahern, Conor Hurson
FFN President
Paolo Falaschi

MCI Deutschland GmbH
MCI | Germany – Berlin
Amira Hussein
Markgrafenstraße 56 | 10117 Berlin
T: +4930 204590
F: +4930 2045950
E: ffn-congress@mci-group.com

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