# Fast Track Hip and Knee Replacement – Marginal Gains

Paul Partington
Arthroplasty Lead
Northumbria Trust

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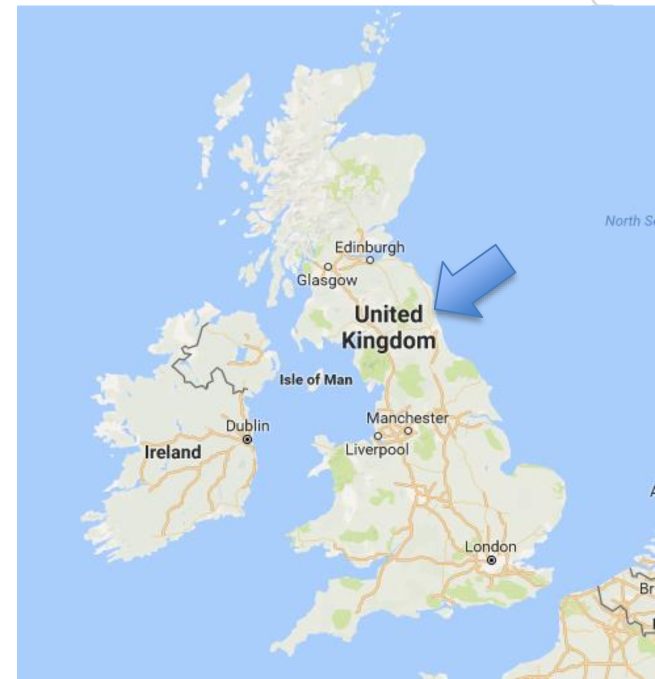

# Fast Track Northumbria

- How we did it
- Results
- Current innovations

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# How we did it

- Copy someone else's good ideas

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# Northumbria – Glasgow – April 08

- Physio
- Pre-assessment
- Surgeon
- Anaesthetists
- Pain team
- Ward  nurses
- Matron

- Manager

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# How we did it

- Copy someone else's good ideas

- Fundamentals – Team Effort
  - Change expectations
  - Anaesthesia
  - Pain control
  - Feedback

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# How we did it

- Copy someone else’s good ideas

- Fundamentals – Team effort
  - Change expectations
  - Anaesthesia
  - Pain control
  - Feedback
  - No change in surgery

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# Before Enhanced Recovery

- Pharmacological
  - General anesthesia (spinal /epidurals or general)

  Based on anesthetist preference and patient choice/consent
  - Patient controlled intra-venous analgesia (PCA)
  - No Tranexamic acid
- Procedural
  - I/V fluids till next day
  - Drains
  - Mobilisation next day
- Behavioral

  General patient and staff education

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# Before Enhanced Reco… y

- Pharmacological
  - General anesthesia (spinal /epi… neral)

  Based on anesthetist preferen… nt choice/consent
  - Patient controlled intra-… gesia (PCA)
  - No Tranexamic acid
- Procedural
  - I/V fluids till n…
  - Drains
  - Mobilis… ly
- Behavi…

  Ge… nt and staff education

Inconsistent - variation

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# Fast Track

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# Pre-operative

- Behavioral training: Length of stay
  - Early mobilisation and length of stay
    - Clinic discussion
  - Information pack and DVD.
  - Repeated
    - Pre-assessment
    - Ward staff

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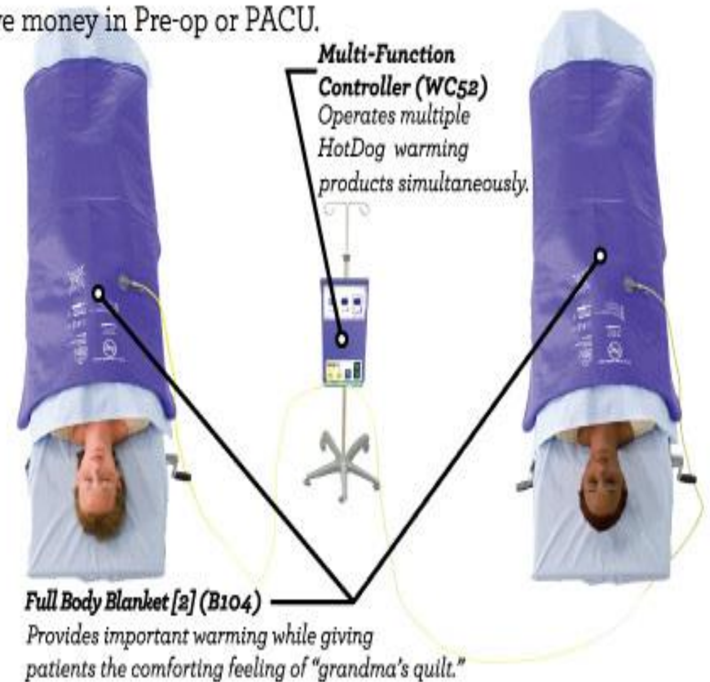
Admission:

- Staggered.
- Clear fluids up to 2 hours of surgery.
- Patient pre-warming.
  - NICE Guidance draft for every surgical patient – prevention of hypothermia.



# Peri-Operative measures

- Patient walk into operation theatre.

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**Anesthesia: all anaesthetists**

- Low dose spinal (0.25% chirocaine) + sedation / light GA
- Dexamethasone IV
- IV Paracetamol +/- 40 mg Parecoxib.
- Levobupicacaine (0.125%, 100 mls) into wide and layered field.
- Tunneled Epidural catheter with microbioligical filter into the joint (TKR only)

    20ml bolus after skin closure

    3 post operative boluses

    **AmbIT** pump (Summit Medical Products, Sandy, UT)

    Scrub and nursing staff training to use the pump.

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# Peri-operative measures

- All surgeons
- Drains not used.
- Tranexamic acid as slow IV bolus at induction (periodically oral).

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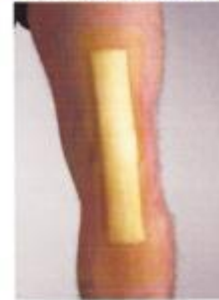
- Standardised wound dressing
  (Abuzakuk et al 2006 and Clarke et al 2009).

- TKA
  Single layered crepe bandage and a compressive cuff
  (Aircast Knee Cryo/Cuff: DJO UK Ltd., Guildford, Surrey, UK).

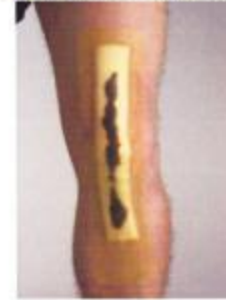
Northumbria Healthcare NHS

**How to care for your wound**

**These pictures show how the dressing works.**



Picture 1
Dressing covering the wound



Picture 2
A wound dressing in a few days
**This does not need Changing**

**Your wound will leak into your dressing as in Picture 2, and then will dry up, this is normal.**
**Your wound dressing should remain in place for at least 7days and up to 14 days**

The Community Nurses will only change the dressing if:-

- the dressing will not stay in place or attach to your skin
- it is not intact - that means the dressing is leaking onto your clothing or bed sheets.

**Please do not change the dressing yourself.**

**If you are concerned about your wound you can call us anytime on the numbers below:**

Wansbeck General Hospital Ward 7, 01670529107
Hexham General Hospital Ward 3, 01434 655474
North Tyneside General Hospital Ward 20, 0191 293 2559
Surgical Site Surveillance Nurses :
Wansbeck General Hospital, Gail Lowdon 01670 529431
North Tyneside and Hexham, Lindsay Stoetzel 0844 811 8111 ext 4667

**Please go to your GP to have your stitches removed.**
**If you are unable to go to the surgery the Community Nurse will be booked to remove your stitches around 14days after your operation. It may be longer at weekends.**

MRWT 09 PIL 452 Issued September 2009 Review September 2012

# Peri-operative measures

- **Post operative Analgesia:**
  - Gabapentin (300mg BD for ten days)
  - Oxycontin (5-20mg BD for two days) followed by
  - Codeine PO4 or Tramadol (50-100mg QID)
  - Naproxen 500mg BD for 4 weeks + Lansoprazole.
    Or nefopam.
- **As required**
  - Zopiclone
  - Oxycodone 5-10mg 2 hourly – max 40mg/ 24 hours.
  - Morphine sulphate IV.
  - Ondansetron
  - Cyclizine
  - Senna.
- **Thromboprophylaxis:**
  - Tinzaparin (innohep: LEO pharma A/S, Ballerup, Denmark)
    - 4500 IU s/c OD

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# Post operative

- Physiotherapy

  3-5 hrs post op.

  7 days physiotherapy (previously 5 days).

  Trained nursing staff mobilise patients out of hours.

  Hands off nursing

- Blood transfusion protocol
  - Routine administration at Hb of 70mg/dl
  - Patients with cardiovascular disease – at Hb Less than 90mg/dl.
  - Hb b/w 90 and 100mg/dl: oral iron

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# Typical Discharge medications

- Tinzaparin 4,500 IU
- 28 days for THR and 14 days for TKR
- Gabapentin
- Paracetamol.
- Codeine
- Naproxen.
- Docusate
- Senna.
- Morphine sulphate oral solution.

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# Post discharge

- Nurse specialist ring patients at home to check they are well.
- District Nurse review wounds 2/52 and ROC.
- Physiotherapy review select patients at home.

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# Results

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# Results in consecutive unselected 3000 Traditional Vs 3000 ER patients

## Malviya 2011 & S Khan 2014 Acta Orthopaedica

| Similar | Less |
|---|---|
| • 30 day<br>Return to theatre rate<br>MI<br>Stroke<br>GI Bleed<br>Pneumonia<br>• 60 day<br>PE<br>DVT | • Length of stay<br>3 days ER Vs<br>6 days Traditional<br>• Blood Transfusion<br>3 times less in ER Vs Traditional<br>• 30 days Death<br>5 ER Vs 16 Traditional |

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# ER of 3000 procedures

11,400 bed days less in ER group

Saving of 3.5 millions

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# Hip Replacement Observed Length of Stay (days) by Trust 2015

12
10
8
6
4
2
0

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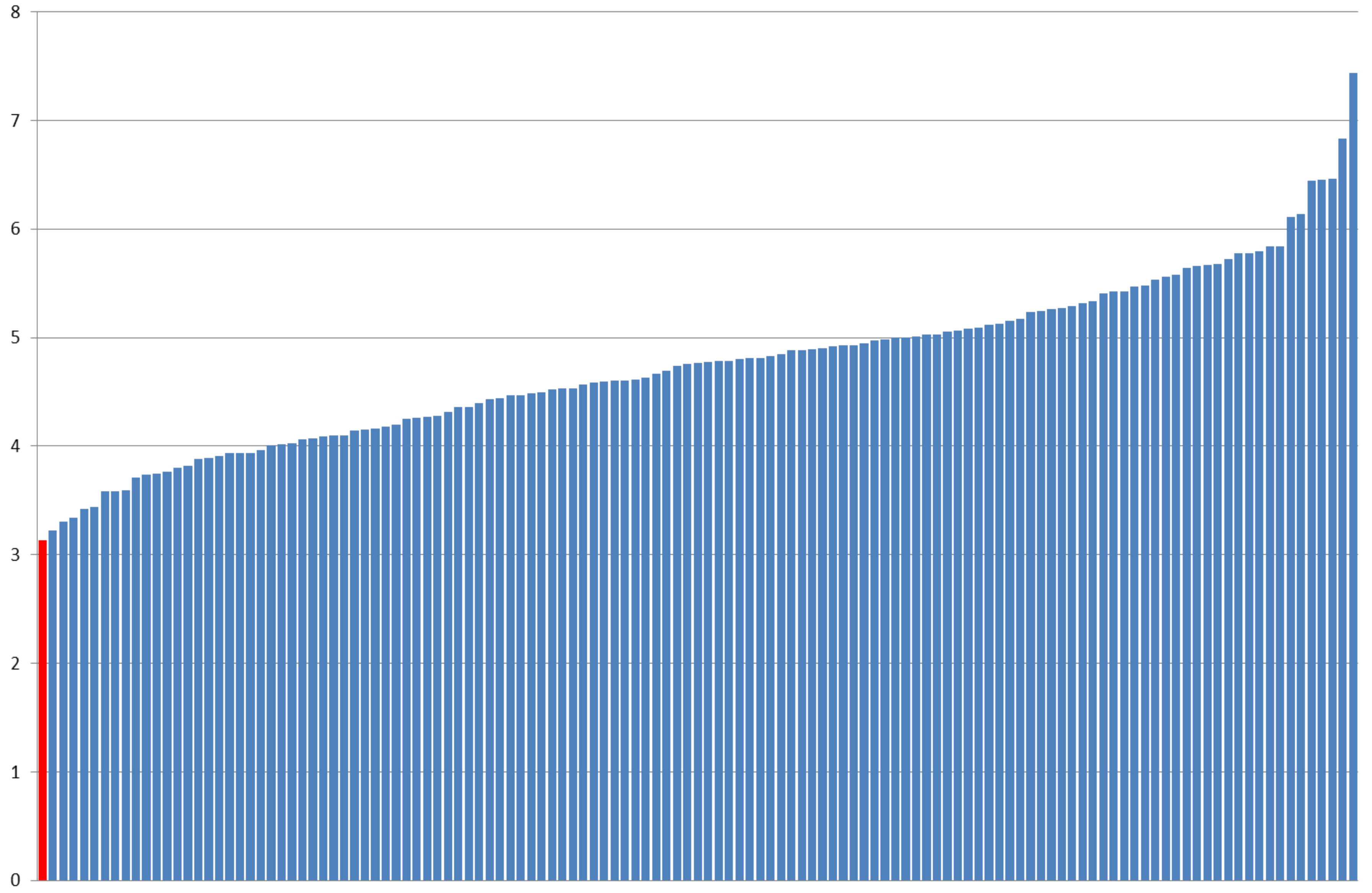

Knee Replacement Observed Length of Stay (days) by Trust 2015
8
7
6
5
4
3
2
1
0

# Additional Benefits

- Fewer deaths
- Fewer complications
- Better PROMS

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# Fewer Deaths and Complications

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| | 2005 | 2010 | 2015 | 2016 |
|---|---|---|---|---|
| N | 1168 | 1667 | 2030 | 394 |
| Mean LOS (days) | 9.5 | 5 | 3.1 | 2.9 |
| | | | | |
| **Factor (n, (%))** | | | | |
| Death in 30 | 11(1%) | 5(0.3%) | 3(0.1%) | 0 |
| Death in 90 | 14 (1.2%) | 11(0.6%) | 4(0.2%) | 0 |
| | | | | |
| DVT 60 days | 12 (1%) | 6 (0.4%) | 5 (0.2%) | |
| PE 60 days | 17 (1.5%) | 19 (1.1%) | 19 (0.9%) | |
| Stroke 30 days | 4 (0.3%) | 5 (0.3%) | 2 (0.1%) | |
| GI bleed 30 days | 6 (0.5%) | 11 (0.7%) | 4 (0.2%) | |
| Renal + HDU 30 | 3 (0.3%) | 17 (1%) | 39 (1.9%) | |
| MI 30 days | 11 (0.9%) | 6 (0.4%) | 0 (0%) | |
| Pneum 30 days | 14 (1.2%) | 13 (0.8%) | 4 (0.2%) | |

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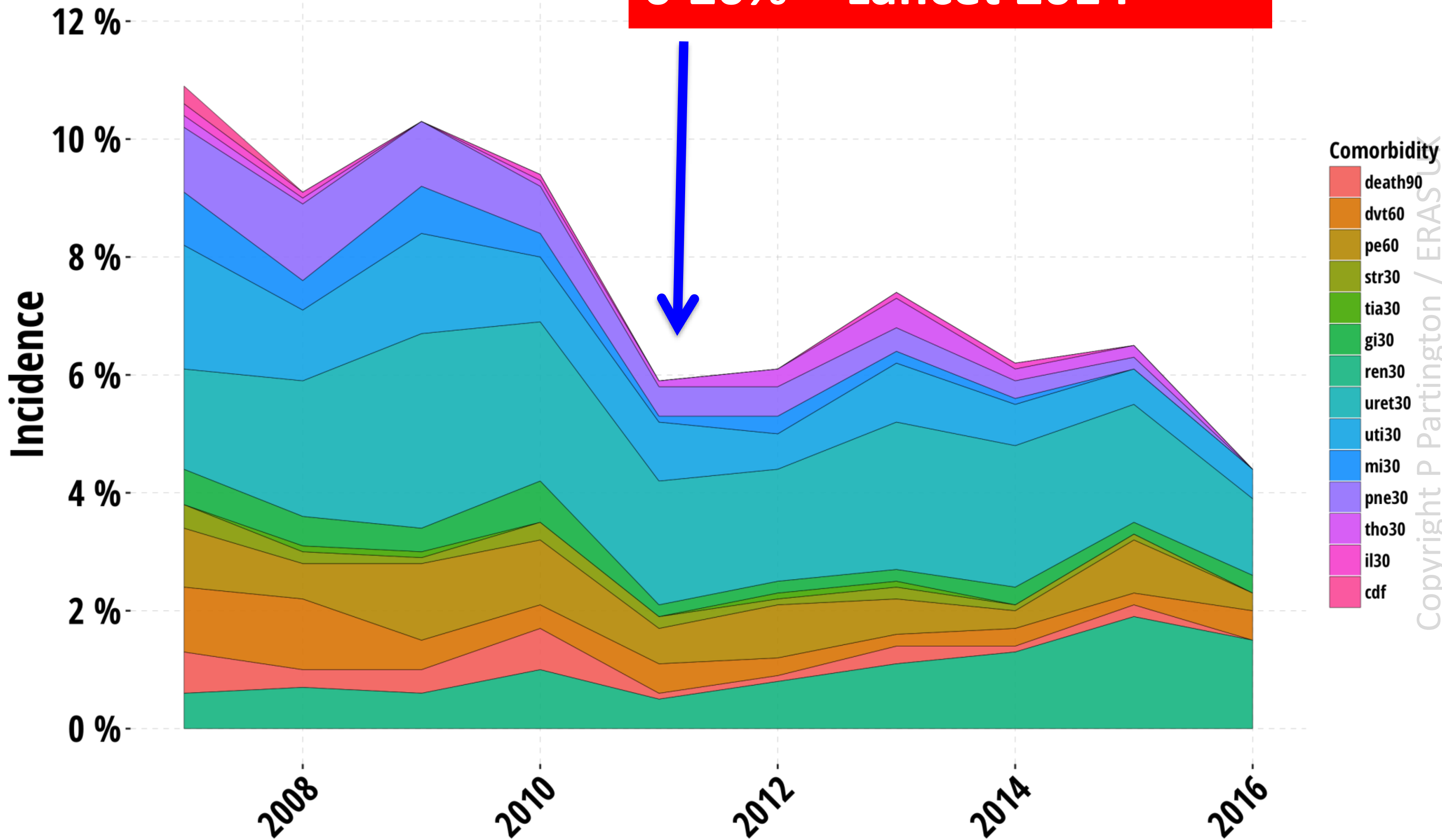
NORTHUMBRIA
45-day mortality in 2011-
0·20% - Lancet 2014
Incidence
12 %
10 %
8 %
6 %
4 %
2 %
0 %
2008
2010
2012
2014
2016
Comorbidity
death90
dvt60
pe60
str30
tia30
gi30
ren30
uret30
uti30
mi30
pne30
tho30
il30
cdf
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# Better PROMS

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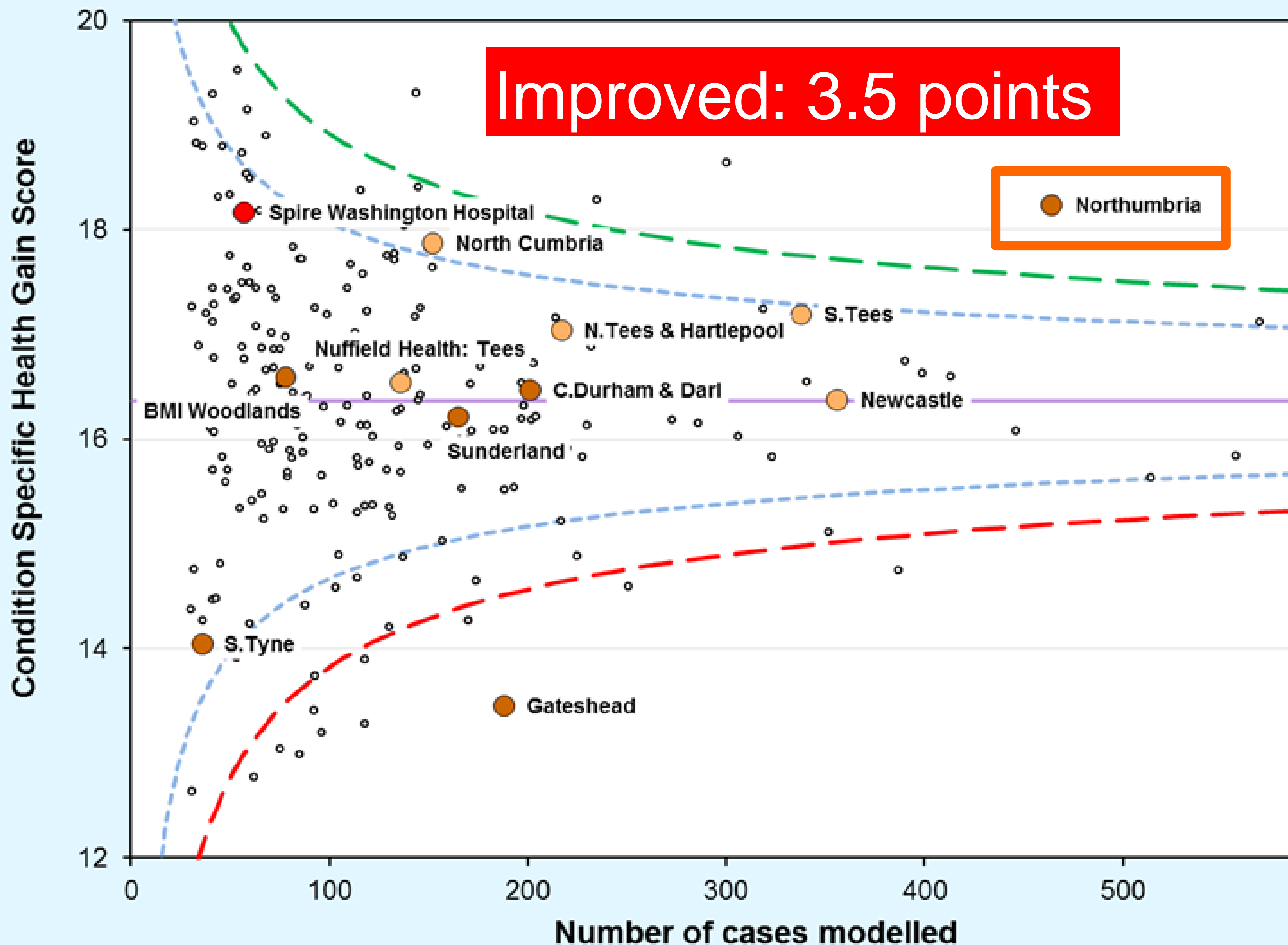

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# Current Innovations

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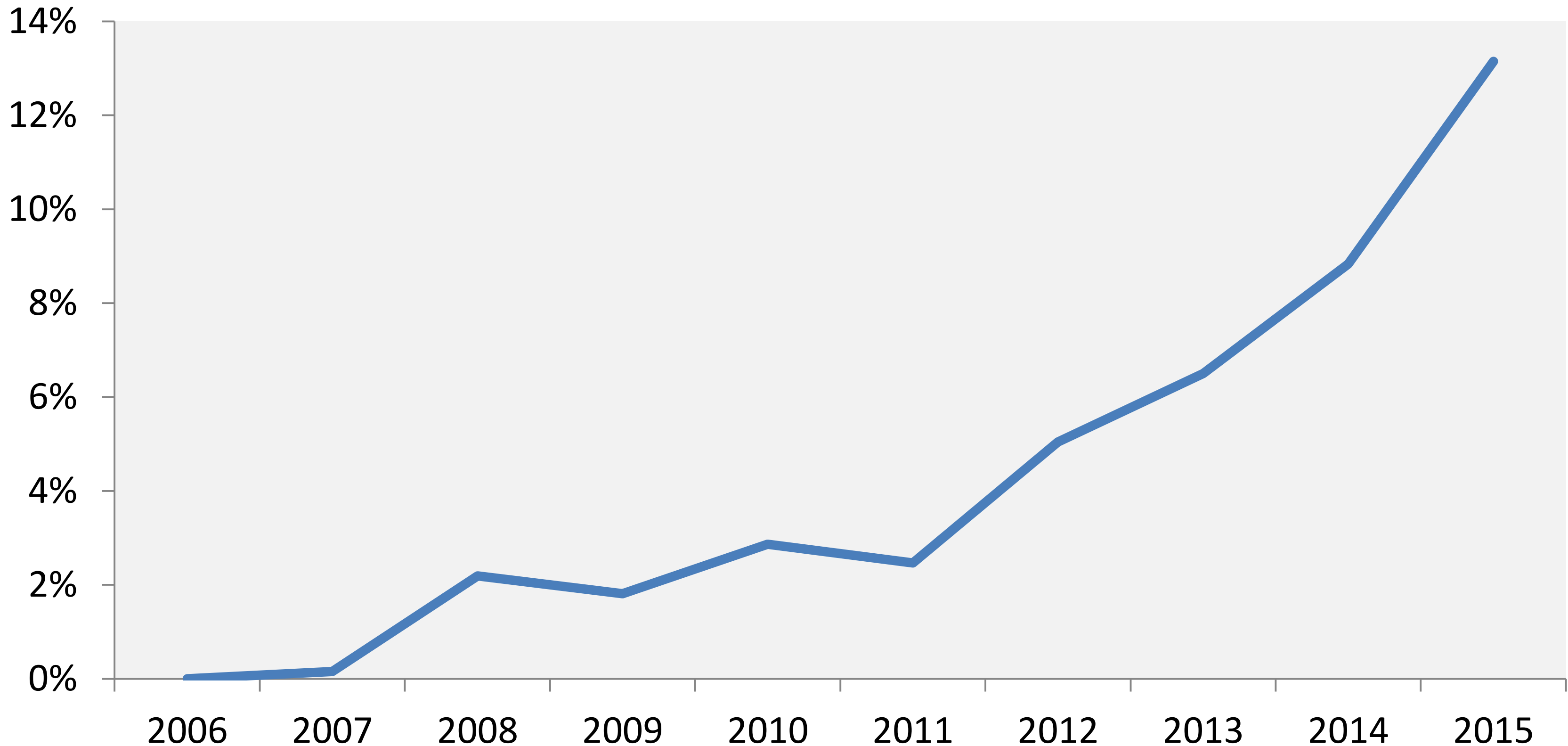
# AMBULATORY HIPS

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Can we discharge on day 0?

# Realisation

- Many patients
  - Operation afternoon
  - Home next morning

- Not far to move to
  - Operation morning
  - Home afternoon / evening

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# PATIENT CHARACTERISTICS FOR EARLY DISCHARGE

| | DAY 1 DISCHARGE | LENGTH OF STAY >2 |
|---|---|---|
| AGE | 63.1 | 68.2 |
| SEX | 53.5% MALE | 39.4% MALE |
| CHARLSON SCORE (MEAN) | 0.32 | 0.42 |
| 1ST THR | 5.1% | 94.9% |
| 2ND THR | 9.5% | 90.5% |

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■ HIP

# Which patient characteristics influence length of hospital stay after primary total hip arthroplasty in a 'fast-track' setting?

Y. M. den Hartog,
N. M. C. Mathijssen,
G. Hannink,
S. B. W. Vehmeijer

**After implementation of a 'fast-track' rehabilitation protocol in our hospital, mean length of hospital stay for primary total hip arthroplasty decreased from 4.6 to 2.9 nights for unselected patients. However, despite this reduction there was still a wide range across the patients' hospital duration. The purpose of this study was to identify which specific patient**

*'...Age (OR 2.46), living situation (living alone vs cohabiting OR 2.09) significantly associated with increased length of stay...'*

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Acta Orthopaedica 2011; 82 (6): 679–684 

# Why still in hospital after fast-track hip and knee arthroplasty?

Henrik Husted[1,4], Troels H Lunn[2,4], Anders Troelsen[1,4], Lissi Gaarn-Larsen[4], Billy B Kristensen[2,4], and Henrik Kehlet[3,4]

*'...Pain, dizziness, and general weakness were the main clinical reasons for being hospitalized at 24 and 48 hours postoperatively...'*

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# Day surgery- message

- Clinic consultation
  - Sow the seeds of fast track & day case surgery
  - "How long will I be in hospital?"

- Pre-op / consent / post op. ward round
  - 'You might get home today'
  - 'Blood clots may kill, which is why we will get you out of bed as soo'

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# AMBULATORY HIPS

- **CRITERIA FOR DAY 0**
  - YOUNG
  - NO SIGNIFICANT CO-MORBIDITIES
  - (PREVIOUS THR WITH SHORT LENGTH OF STAY)
  - LIVE WITHIN ACCEPTABLE DISTANCE FROM BASE SITE
- **PLAN**
  - OFFER POSSIBILITY IN CLINIC
  - 1$^{ST}$ ON LIST
  - FAST TRACK MOBILISATION AND ANALGESIA
  - TRANSPORT ORGANISATION
  - SAFETY NET FOR EARLY REVIEW

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# First planned patient

- Mid sixties, female

- Keen to go home on the day of operation
  - Clinic
  - Pre-assessment
  - Ward

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# The day came

- 1st on the list
- Low dose spinal
- Standard surgery
  - LA infiltration etc
  - No drains (of course)
  - Early mobilisation
  - Discharged (bloods OK, physio happy, not too far)

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# Follow-up

- Delighted patient
  - Happy with her hip
  - Happy with experience
  - No complications

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# Follow-up

- Delighted patient
  - Happy with her hip
  - Happy with experience
  - No complications

  - Admits she was very, very keen not to stay in hospital and leave her dog at home alone for the first time ever…

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# 2015

- Breeding programme for puppies
- Issue puppy at the time of entering waiting list
- Reinforcement in PAC
  - Emphasise need to not leave puppy home alone for even one night
- Reinforcement on the ward

- Result- day case joint replacement surgery!

# 2016

- Progress

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# 2016

- Progress
- Day case surgery without puppies

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# 2016

- Progress
- Day case surgery without puppies
- Puppy project abandoned

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# 2016

- Progress
- Day case surgery without puppies
- Puppy project abandoned

on / ERAS UK

# 2016

- Progress
- Publicity
  - Expectation
    - Patients
    - Staff
    - GPs etc

## New hip and home ... on the same day

A Northumberland man has become only the second person in the county to have a hip replacement operation and go home the same day.

Builder and keen golfer Len Smith has suffered from wear and tear in his joints over many years.

Having already had both his knees replaced at Wansbeck hospital, he was continuing to suffer chronic pain in his left hip. His consultant orthopaedic surgeon Paul Partington advised that a full hip replacement would be necessary and to Len's surprise, that this could be done without the need to stay in hospital overnight.

Len, from Beadnell in north Northumberland, came into Wansbeck hospital for the procedure in April. He had a spinal anaesthetic to numb the lower half of his body so he was fully awake and talking to the surgeon and anaesthetist during the operation. Once back on the ward, Len was keen to get out of bed and start his recovery as soon as possible.

"People couldn't believe it when I got straight up," Len said.

"When Mr Partington phoned the ward to see how I was, the staff said 'if we knew where he was we'd tell you!' I was out with the physiotherapist and I asked if I could walk further.

"He told the staff I might as well go home if I was already up!"

Commenting on the operation and his choice to have a day-case procedure Len said: "I'm active with work and my golf. I was just keen to get it done and get back to normal. Obviously the surgeon has to select patients carefully but he knew I was fit and determined.

"The pain in my hip which I had been enduring 24/7 over many years was unbearable and much worse than the initial pain I felt after the operation.

"I was out and about the next day and on the golf course the following Monday. Eight weeks in I've never looked back. Eventually the other hip will need doing but I've no hesitation in having it done this way again. It's fantastic."

Mr Partington said: "We carried out our first day-case hip replacement last year and we're planning for this to become increasingly regular.

"We already have a national reputation for short length of stay following joint replacement with our fast-track techniques, and hopefully day-case surgery will become more and more common when we can reliably identify good candidates.

"Len was suitable as a highly-motivated, fit patient who was keen to have his surgery as a day-case. Other important factors were that he did not live too far away and had support from his wife who was happy with the idea of same day discharge.

"We'd encourage patients to consider this option because if they are otherwise fit and well, they can be in and out of hospital quickly and start their recovery in their own surroundings."

The trust has one of the largest orthopaedic departments in the region with short waiting times and surgeons recognised as some of the best in the UK. Since last June, around 3,000 people have chosen to have their planned orthopaedic procedure at Wansbeck General Hospital.

Expert help and support is available round the clock to get patients up on their feet as soon as possible and back home quickly with the right support in place. For extra peace of mind, the trust runs a 24-hour dedicated helpline to help answer patients' questions about their wound or rehabilitation after leaving hospital.

Consultant orthopaedic surgeon Paul Partington

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# 2016

- To date
  - Hips
  - Knees
  - Revision hip
  - Scheduled in diary

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# Increase Numbers – how?

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# Discharge Hurdles

- Physiotherapy
  - Mobility
  - Stairs/Steps
  - Hip precautions
- OT
  - Transfers
  - Self care etc.
- Xray
- Blood tests
- Dry wound

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# Discharge Hurdles

- Physiotherapy
  - Mobility
  - Stairs/Steps
  - **Hip precautions**
- OT
  - Transfers
  - Self care etc.
- **Xray**
- Blood tests
- **Dry wound**

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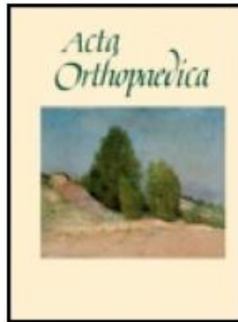
# Hip Precautions



Acta Orthopaedica

ISSN: 1745-3674 (Print) 1745-3682 (Online) Journal homepage: http://www.tandfonline.com/loi/iort20

## Removal of restrictions following primary THA with posterolateral approach does not increase the risk of early dislocation

**Kirill Gromov, Anders Troelsen, Kristian Stahl Otte, Thue Ørsnes, Steen Ladelund & Henrik Husted**

**To cite this article:** Kirill Gromov, Anders Troelsen, Kristian Stahl Otte, Thue Ørsnes, Steen Ladelund & Henrik Husted (2015) Removal of restrictions following primary THA with posterolateral approach does not increase the risk of early dislocation, Acta Orthopaedica, 86:4, 463-468, DOI: 10.3109/17453674.2015.1028009

**To link to this article:** http://dx.doi.org/10.3109/17453674.2015.1028009

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Published online: 09 Mar 2015.

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# Do We Need Hip Precautions after primary total hip replacement?

Jane Harrison

With thanks to
Dr Daniel Skinner and Mr Giles Stafford

Agile Conference October 2015

BGS Autumn Conference 2015

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An NHS Treatment Centre operated through a Partnership between: St George's Healthcare NHS Trust; Kingston University Hospital NHS Trust; Croydon Healthcare NHS Trust and; hosted through Epsom & St Helier University Hospitals NHS Trust

# Precautions Vs No Precautions

| | Precaution | | No Precaution | |
|---|---|---|---|---|
| | Operations | Dislocations | Operations | Dislocations |
| Inpatient | 3289 | 10 | 1156 | 0 |
| Discharge - 6/52 | 3289 | 16 | 1156 | 4 |
| 6/52 – 6/12 | 3289 | 13 | 1156 | 0 |
| 6/12- 12/12 | 3289 | 9 | 1156 | 2 |

3289 Operations

48 Dislocations

Rate of 1.46%

1156 Operations

6 Dislocations

Rate of 0.52%

BGS Autumn Conference 2015

# Precautions Vs No Precautions

BGS Autumn Conference 2015

Chart legend: Precautions; No Precautions

Y-axis: Incidence of Dislocation (%) — 0 to 1 (0, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1)

X-axis: Time Points — Inpatient - 6/52; Post 6 Weeks

# Hip Precautions - now

- Move any way, avoid extremes
- No need for higher furniture
- Stop using walking aids when they fell able
- Sleep on side, into bed either side
- Avoid testing ROM, allow to return naturally
- Allow bending

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# Anticipated problems

- Uncertainty while new guidance beds in
- Physiotherapy folklore outside Trust
- Patient folklore, previous hip, friends

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# Anticipated problems

- Uncertainty while new guidance beds in
- Physiotherapy folklore outside Trust
- Patient folklore, previous hip, friends

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# Anticipated problems

- Uncertainty while new guidance beds in
- Physiotherapy folklore outside Trust
- Patient folklore, previous hip

- Who / what do we blame when a hip dislocates?

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# Xrays

- Trip to Xray on day of surgery
  - On bed / chair
  - Porter
  - Time off ward
    - Physio / practice mobilisation
    - Analgesia refinement
    - OT
    - Blood tests
    - Transport planning
  - Moving and handling in Xray
  - Delays in Xray for other patients

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# X-rays

- Why?
  - Fractures
  - Dislocations
  - Education
  - Reflection
  - Future reference

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# X-rays

- Why?
  - Fractures
  - Dislocations
  - Education
  - Reflection
  - Future reference

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Q1. Do we all review all of our Xrays, before the patient is discharged home?

Q2. When was the last time you took a patient back to theatre, or changed their post operative regime after X-ray in a *primary, cemented joint replacement?*

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Current Concepts Review

# Intraoperative Periprosthetic Fractures During Total Hip Arthroplasty

## Evaluation and Management

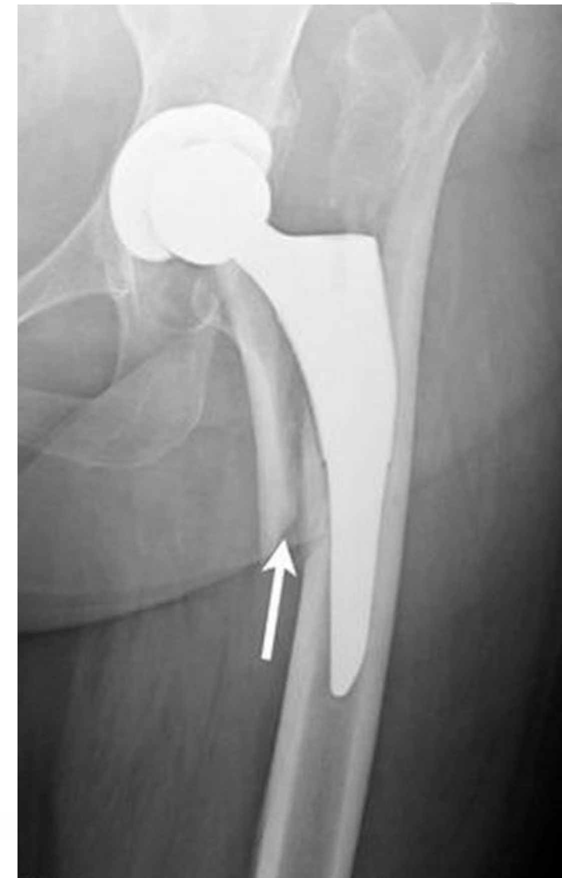
By Darin Davidson, MD, MHSc, Jeffrey Pike, MD, Donald Garbuz, MD, MHSc, FRCSC, Clive P. Duncan, MB, MSc, FRCSC, and Bassam A. Masri, MD, FRCSC


- Intraoperative periprosthetic fractures are becoming more common given the increased prevalence of revision total hip arthroplasty and increased use of cementless fixation.
- Risk factors for intraoperative periprosthetic fractures include the use of minimally invasive techniques; the use of press-fit cementless stems; revision operations, especially when a long cementless stem is used or when a short stem with impaction allografting is used; female sex; metabolic bone disease; bone diseases leading to altered morphology such as Paget disease; and technical errors at the time of the operation.
- Appropriate treatment of intraoperative periprosthetic fractures does not compromise the long-term results of total hip arthroplasty unless the bone damage precludes stable fixation of the implant.


Total hip arthroplasty is a highly successful procedure with a high likelihood of excellent long-term results and a relatively low risk of complications. One of the major complications of total hip arthroplasty is periprosthetic fracture. Although both postoperative and intraoperative fractures occur, it is the former that have received the greatest attention in the literature. Despite this, the prevalence of intraoperative periprosthetic fractures is increasing[1-16]. It is imperative that the modern reconstructive hip surgeon be familiar with the classification and treatment of these complications. Only intraoperative fractures will be considered in this review.

hip arthroplasty. In one study, an intraoperative femoral fracture was encountered during 1% (238) of 23,980 primary total hip arthroplasties compared with 7.8% (497) of 6349 revisions[2], and subsequent studies have demonstrated similar results[13,21-24]. In the study mentioned above[2], the rate of periprosthetic fracture during primary total hip arthroplasty was 5.4% (170 of 3121) when a cementless femoral component was used compared with 0.3% (sixty-eight of 20,859) when a cemented stem was used. Other studies demonstrated a prevalence of intraoperative fracture of 1.2% (seven of 605) when a cemented stem was used and 3% (thirty-nine of 1318) when a cementless femoral component was used[15,24]. The variability in

- Risk factors
  - MIS
  - Cementless stems

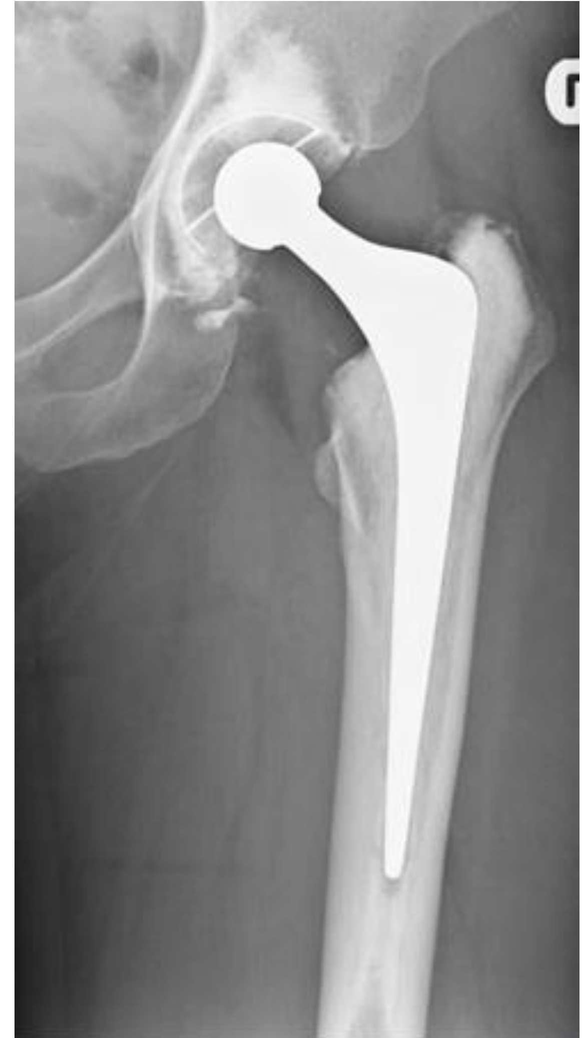


# Proposal

- No post operative Xray for THR or TKR
  - *Cemented primary* joint replacements (GIRFT)

    [We only do cemented hips]
  - No intra-operative concerns

- X-ray at follow up & discharge appointment



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# Summary

- Easier than you think
- Established expectation
- Surgeon
  - Sow the seed
- Remove obstacles / delays
- Most important person
  - Ward Nurse Practitioner
    - Supportive encouragement and reassurance

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