

4th Annual Cardiff Spinal Surgery Research Symposium July 2025

Holiday Inn, Castle St, Cardiff City Centre CF10 1XD

Confirmed Attendees:

Prof Michael J H McCarthy Consultant Spinal Surgeon (B)
Mr John Howes Consultant Spinal Surgeon (C)
Mr Alwyn Jones Consultant Spinal Surgeon (M)
Mr Francis Brooks Consultant Spinal Surgeon (C)
Mr Alexander Durst Consultant Spinal Surgeon (B)
Mr Savithru Prakash Consultant Spinal Surgeon (M)
Mr Joseph Wood Consultant Spinal Surgeon (C)
Mr Ravindra Nannapneni Consultant Neurosurgeon (C)

Mr M Williams Research – Judging the Presentations (B)
Ms Heather Jarvis Research – Judging the Presentations (B)
Ms Kayleigh Du Val Research - Judging the Presentations (B)

Mr David Lowes Neurosurgical Registrar (C)
Mr Ravi Vemaraju Spinal Fellow (C)
Mr Aniruddh Agarwal Spinal Fellow (B)
Mr Taofeek Adeyemi Spinal Fellow (B)
Mr Peter Rageeb Orthopaedic Registrar (C)
Mr Sunday Akeju Spinal Fellow (C)
Dr Abdullah Jumaa Hadid F1 (C)
Ms Francesca Fulthorpe Advanced Pain Management Practitioner (C)
Ms Joanna Hutchings Advanced Physiotherapy Practitioner (C)
Ms Mary Eggins Advanced Physiotherapy Practitioner (C)
Ms Cath Hare Advanced Physiotherapy Practitioner (C)
Ms Lizzy Jones Clinical Nurse Specialist (B)
Ms Bethany Watts Paediatric Clinical Nurse Specialist (C)
Ms Wendy Wade General Manager (B)
Ms Setareh Majidian PhD Student (B)
Ms Moiza Asif Medical Student (C)
Ms Sanjana Purbhoo Medical Student (B)
Ms Sarah Mohammed Medical Student (B)
Ms Ella Shore-Nye Medical Student (B)
Ms Nicole Tsz Lau Medical Student (B)
Mr Michael Wahba Medical Student (B)
Ms Miaya-Lyn Harman Medical Student (B)
Mr Louis Clayton Medical Student (B)
Ms Sophie Griffiths Medical Student (B)
Ms Katy Henderson Medical Student (C)

Mr S Meredith (Globus Medical) (B)
Mr R Hay (on behalf of Mighty Oak Medical) (B)
Mr S O'Reilly (Biedermann Motech) (B)
Mr S Evans (Paradigm Spine) (B)
Mr D Coleman (Silony Medical) (B)
Mr D Goodman (Hospital Innovations) (B)

(C = Conference only, B = Both, M = Meal)

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Agenda:

0930 Registration and Refreshments

1000 Introduction

Professor Michael J H McCarthy: Why on Earth Would You Want to do Spinal Surgery?

1030 Session 1

Dr Abdullah Jumaa Hadid: Spinal Surgery Major Trauma Service: A National Survey

Mr Ravi Vemaraju: Data Still Birth! A Closed Loop Audit Of Spinal Trauma Treated With Instrumentation

Mr Annirudh Agarwal: Radiological And Clinical Outcomes Of Interlaminar Endoscopic Decompression For Lumbar Spine Stenosis

Mr Peter Rageeb: Being A Spinal Registrar Isn't Easy

Ms Francesca Fulthorpe: Evaluating The Central Vale Early Intervention Pain Clinic

1130 Break

1200 Session 2

Mr Mat Williams: Spinal Research Portfolio Update

Mr Joseph Wood: An Introduction To Spinal Endoscopy

Mr Taofeek Adeyemi: Spinal Post Operative Notes Adherence To Royal College Of Surgeons' Guidelines

Setareh Majidian: Unlocking AI's Potential In Diagnostic And Treatment Decision-Making

1300 Buffet Lunch

1400 Session 3

Ms Jo Hutchings: An Audit Of NICE Guidelines NG59 Low Back Pain And Sciatica In Over 16s: Assessment And Management, Within The Integrated OP And Cmats Physio Service For CAVHB

Mr David Lowes: The Scoli List Then And Now

Miaya-Lyn Harman: Evaluating the use of PROMs in the spinal outpatient's department at University Hospital Wales

Ella Shore-Nye: 2 And 5 Year Revision Rates Following Primary Spinal Surgery

Sarah Mohammed: Preventing Pressure Sores in Spinal ICU Patients: A Re-Audit Following Guideline Implementation

Michael Wahba: Long Term Employment And Functional Outcomes Following Cervical Fractures And Fixation: Literature Review

1500 Break

1530 Session 4

Catherine Henderson: Is That Spine Definitely Fine? An Audit To Compare Whether Spinal Assessment In Trauma Patients At Prince Charles Hospital Meet The Standards Set By BOAST Guidelines.

Sanjana Purbhoo: The Impact Of The 20mph Speed Limit On Spinal Trauma Admissions To The Major Trauma Centre For Wales

Moiza Asif: Defining What Constitutes A "Healed" Spinal Fracture In A Patient Managed With Non-Operative Treatment

Nicole Tsz Lau: A Retrospective Review Of Cervical Spine Surgery In Cardiff Part 1

Sophie Griffiths: A Retrospective Review Of Cervical Spine Surgery In Cardiff Part 2

Louis Clayton: 3D-Printed Guides Versus Freehand Pedicle Screw Placement In The Surgical Treatment Of Paediatric Spinal Deformity

1630 Break

1700 Prizes and Photographs

1715 Drinks and Depart for Meal

1745 Wahaca Restaurant Cardiff City Centre

Spinal MTC National Survey

Prof. Michael McCarthy
Dr. Abdullah Jumaa Hadid
Dr. Kajanthini Suthaharan
Mr. Ravi Vemaraju

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Contents

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Methodology

Aim

Conclusions &
Suggestions

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Background

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Background and Aim

Spinal trauma care in Major Trauma Centres (MTCs) varies widely across the UK, particularly in team structure, consultant coverage, and access to intraoperative technology. These differences may impact the quality and consistency of care. This audit benchmarks the University Hospital of Wales (UHW) against national MTC practices to identify areas of alignment and improvement.

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Methodology

All UK MTCs were contacted via email and phone to gather data on spinal service configuration. Key metrics included consultant numbers and specialties, senior/junior team composition, orthogeriatric input, preferred technique for pedicle screw placement, and availability of navigation, robotics, and intraoperative imaging. UHW's practices were then compared against national trends.

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Questions on the survey

-How many consultants are on the MTC Spinal on-call rota for spinal trauma?
-The MTC Spinal on-call consultants are (Neurosurgeons, Orthopaedics, both)?
How many team members are on the middle grade covering spinal trauma? (Fellows / SpRs)
How many members at the junior grade covering spinal trauma? (ST 1-3 / FY 1-2)
Is the spinal unit covered by orthogeriatricians?
Preferred technique utilised in the unit to place pedicle screws in spinal trauma
Does the unit have navigation?
If yes, which system do you use?
Does the unit have a robot?
If yes, which system do you use?
Do you have O-arm or equivalent in theatre? If yes, which?

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Limitations

- **Limited Accessibility to Spinal Teams:**

Reaching spinal team members during working hours proved difficult due to clinical workload. Emails containing the survey were frequently overlooked or left unanswered.

- **Alternative Contacts Offered Limited Help:**

Attempts to contact other team members—including MTC coordinators, spinal nurse specialists, and junior doctors—often resulted in similar difficulties or uncertainty regarding specific survey questions.

- **Uncertain or Incomplete Responses:**

In some cases, the survey was completed by locum doctors or orthopaedic SPRs covering spinal services. This may have introduced inaccuracies, particularly around details of team structure and available systems.

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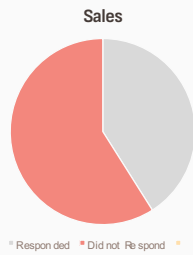
Responses

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Responses

Approximately 60% of MTC centres answered the survey



■ Responded ■ Did not Respond

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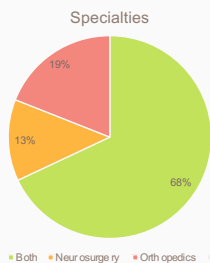
Staffing

| Metric | UHW | Other MTCs |
|--------------------------------|-----|------------|
| Consultants on call for Spines | 6 | 6-13 |
| Middle grades covering spines | 4 | 4-12 |
| Juniors covering spines | 2 | 0-9 |

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Specialty



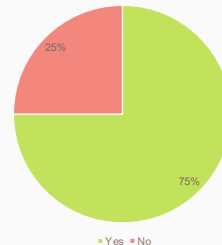
■ Both ■ Neurosurgery ■ Orthopaedics

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Orthogeriatric Cover

Cover by orthogeriatrics



■ Yes ■ No

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Preferred technique utilised in the unit to place pedicle screws in spinal trauma

- 55% of centres used Navigation
- 30% of centres used free hands with x-ray
- 15% of centres used other methods

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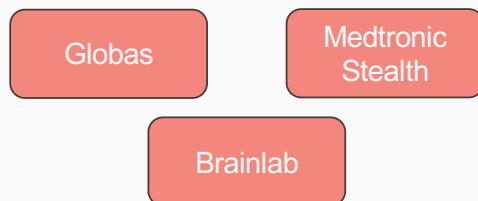
Navigation

- Does the unit have access to navigation system
- 78% of centres have access to Navigation
- 22% of centres didn't have it
- UHW Spinal team doesn't have access to navigation

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Systems used



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O-ARM use in theatre

- 70% used it
- 7% didn't use it
- 23% of responders weren't sure

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Conclusion

The benchmarking audit reveals two key areas where the University Hospital of Wales differs from national trends:

- **Junior Staffing Levels**
 - UHW has 2 Junior doctors (ST1-3/FY1-2) regularly covering spinal trauma.
 - The average across UK MTCs is approximately 4.7, indicating that UHW is staffed below the national average in this category.
 - This gap may affect continuity of care, out-of-hours support, and training opportunities for junior staff involved in spinal trauma pathways.
- **Access to Navigation Systems**
 - UHW does not currently have access to spinal navigation systems, whereas the majority of MTCs reported having some form of navigation, such as Medtronic Stealth or Globus platforms.
 - This may have implications for precision in instrumentation, particularly in complex trauma cases, and could limit opportunities for surgical trainees to gain experience with contemporary technology.

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Suggestions

These findings highlight the need to:

- Review junior doctor allocation to the spinal rota at UHW to ensure adequate coverage and support.
- Explore the feasibility and clinical value of adopting navigation technology to align with national practice and enhance surgical capability.

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Plan

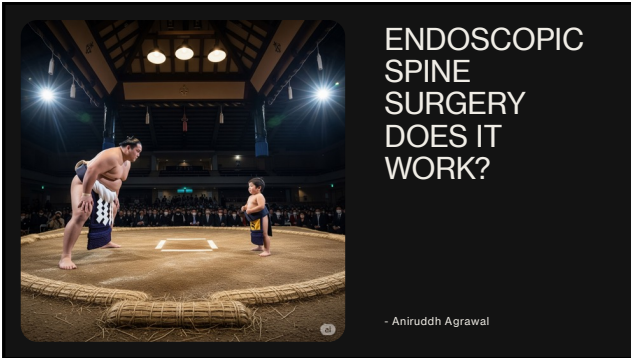
- 1 Apply for NHS.Net accounts to email consultants on other MTCs
- 2 Add more detailed questions regarding junior level doctors (Ward based vs Team based), wards covered while on call
- 3 Gather more extensive data from all MTC centres before representing the findings

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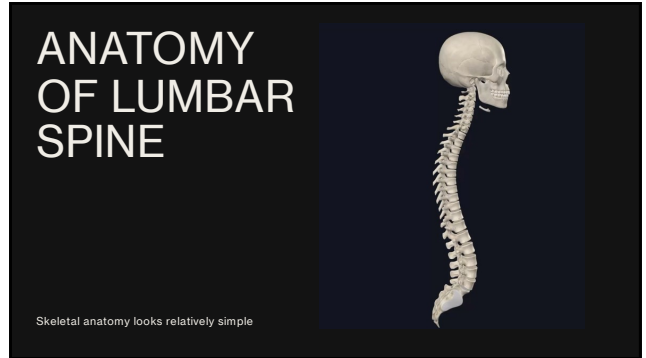
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THANK YOU!

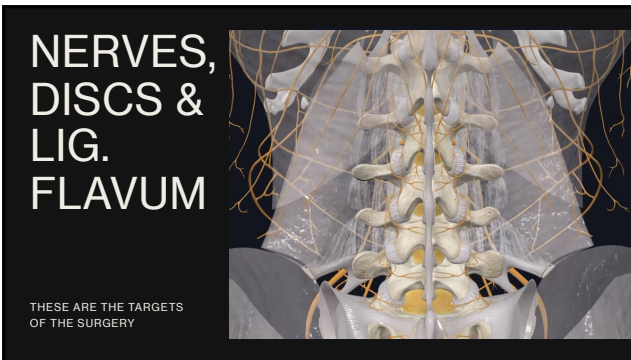
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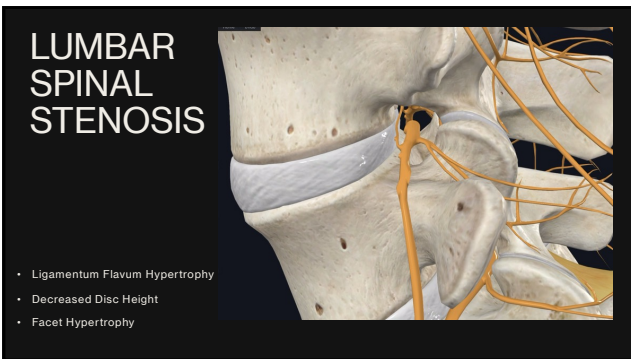
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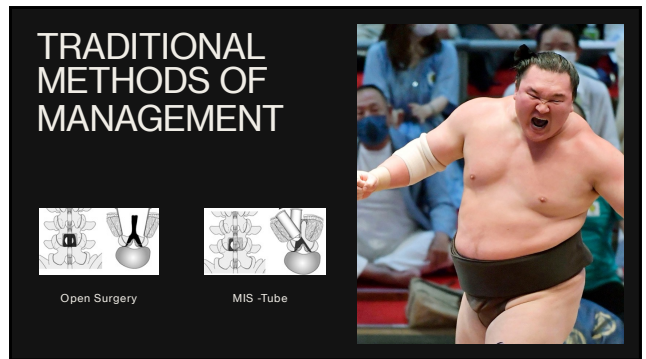
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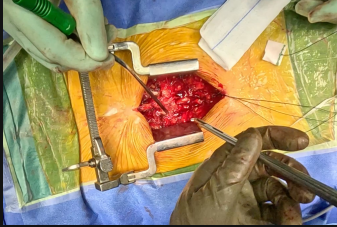
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Open Surgery

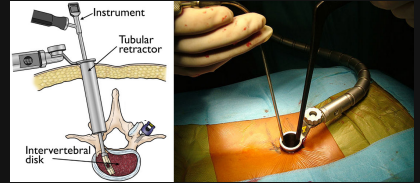
Single midline incision
Muscles split on either side
Bone reached and removed
Magnification – 0 (without microscope)
Field mostly red



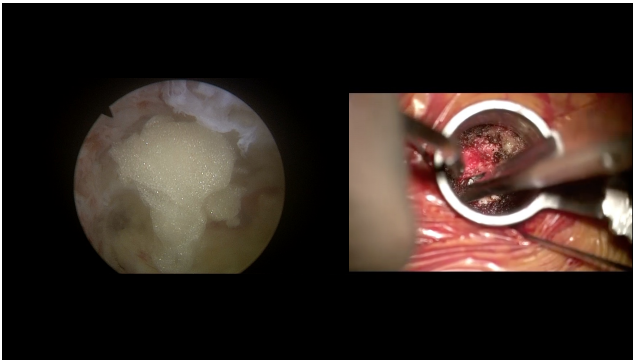
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Tube Surgery

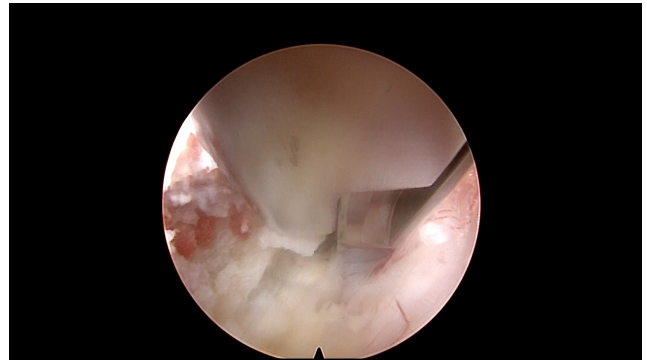
Smaller Incision
Muscle Splitting
Issues with Visualisation
1 suction and 1



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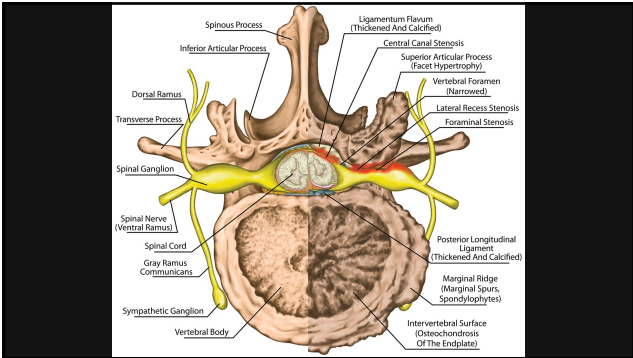
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WHAT IS THE
ENDOSCOPIC
PHILOSOPHY?

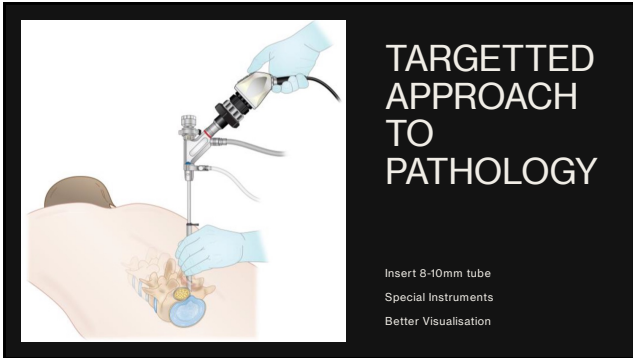
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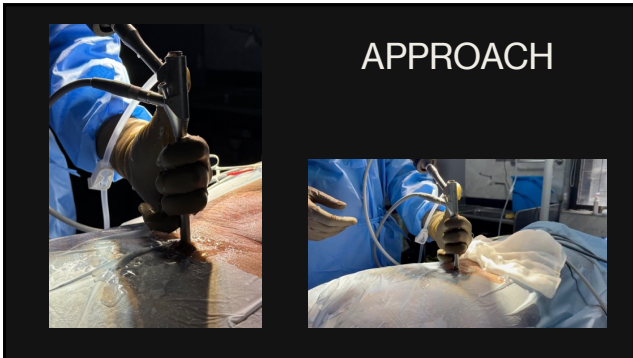
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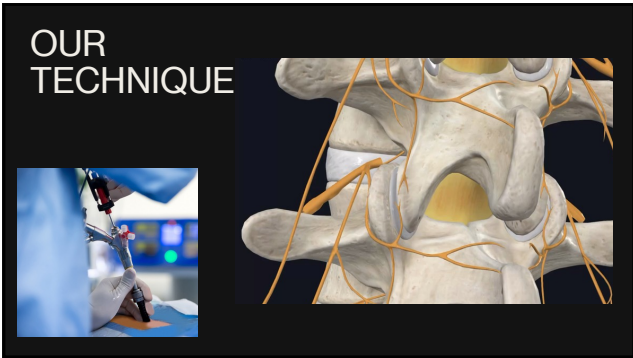
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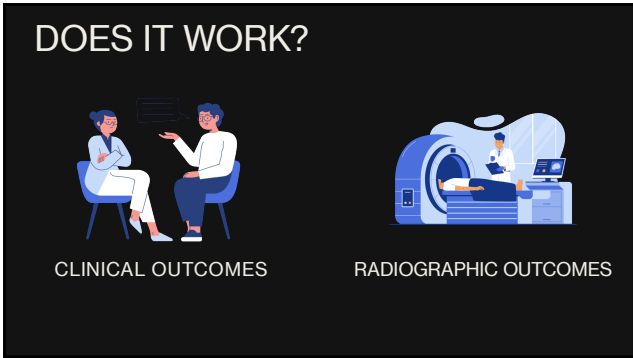
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Our Prospective Plan



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PATIENT DEMOGRAPHICS

98 PATIENTS (F/U n=77)

55.7 years

ONLY 1 STENOTIC LEVEL

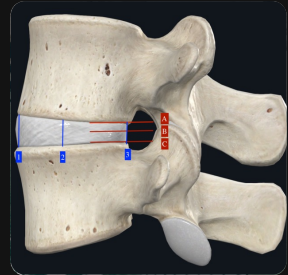
PAIRED T-TEST ($p < 0.01$)

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RADIOLOGICAL MEASUREMENTS



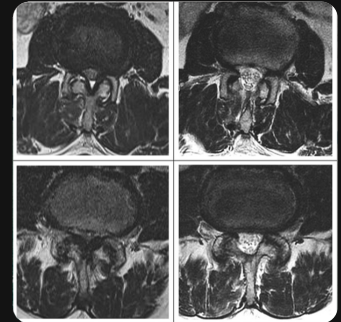
Canal Surface Area at levels A, B and C



Height of Discs at 1, 2 and 3

21

Example of MRI with Cross Sections



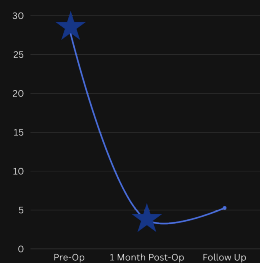
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CLINICAL RESULTS

Oswestry Disability Index

Statistically significant difference between pre and post op

No Statistical difference between post op and follow up



ODI SCORES

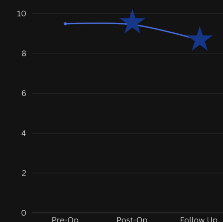
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RADIOLOGICAL RESULTS

DISC HEIGHT ASSESMENT

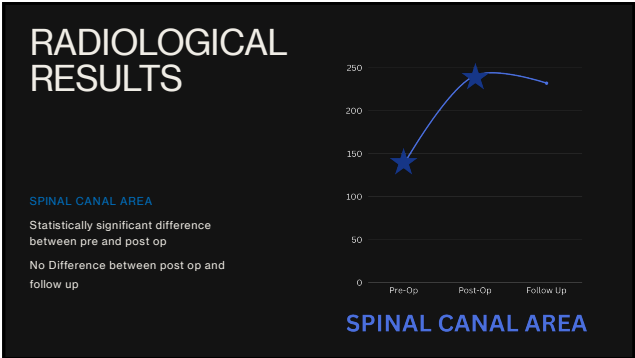
Statistically significant difference between post-op and follow up

HOWEVER! NO CLINICALLY SIGNIFICANT DIFFERENCE!



DISC HEIGHT

24



25

- ## IMPORTANT RESULTS
- 1) Disc height – no clinically significant change
 - 2) 70% improvement in canal surface area
 - 3) Maintenance of canal surface area at follow up
 - 4) Good Clinical Outcomes

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WHAT OTHERS SAY

27

Monoportal endoscopy has the least radiologic dural expansion for equivocal clinical outcomes

97 patients in 3 groups

| Variable | Microscopy Group | Biportal Endoscopy Group | Uniportal Endoscopy Group |
|---------------------------------|------------------|--------------------------|---------------------------|
| No. of patients | 33 | 37 | 27 |
| Sex: M/F | 12/21 | 15/22 | 11/16 |
| Age in yrs | 63.4 ± 11.1 | 66.7 ± 9.4 | 67.3 ± 9.9 |
| Dural expansion after op in mm* | 333.3 ± 72.8 | 323.4 ± 69.7 | 260.7 ± 45.5 |

Hsu DH, Lee DC, Park OK. Comparative analysis of three types of minimally-invasive decompressive surgery for lumbar central stenosis: biportal endoscopy, uniportal endoscopy, and microsurgery. Neurosurg Focus. 2015;45(5):E9. doi: 10.3171/2015.2.FOCUS.097. PubMed PMID: 26042854.

28

Monoportal endoscopy has equivocal clinical outcomes compared to microscopic and open decompression

Meta analysis
1727 patients in 10 Studies

Tang D, Mohtai TN, He Q, Li L, Liu X, Shi TH, et al. Comparison of clinical and radiologic outcomes of full-endoscopic versus microscopic lumbar decompression laminectomy for the treatment of lumbar spinal stenosis: a systematic review and meta-analysis. Ann Palliat Med. 2021;10(10):10100-46. Epub 20210315. doi: 10.2197/jpm.21.10a. PubMed PMID: 3405075.

29

Less post-op back pain, leg pain and lower complications No difference in operative time and ODI

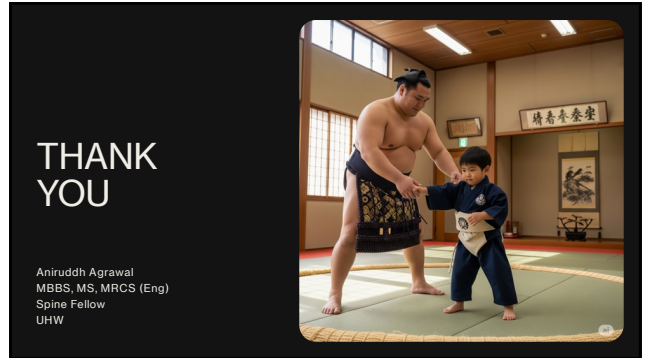
Meta analysis
994 patients in 9 Studies

Prasanna S, Mahapatra J, Ho JC, Anandharaj A, Kanchanasriwong J. Full-endoscopic (biportal or uniportal) versus microscopic lumbar decompression laminectomy in patients with lumbar stenosis: systematic review and meta-analysis. Eur J Orthop Traumatol. 2020;May;30(5):651-61. doi: 10.1007/s00132-019-03864-2. Epub 2019 Dec 20. PubMed PMID: 31882273.

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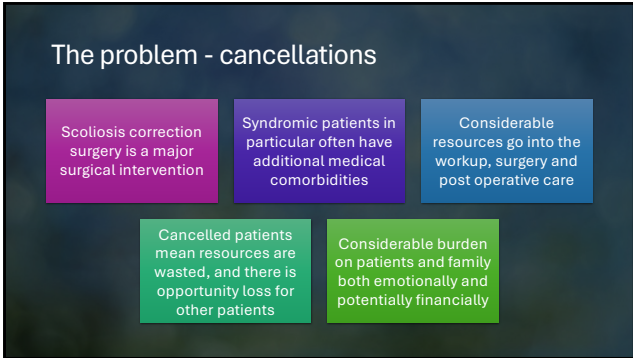
THANK
YOU

Aniruddh Agrawal
MBBS, MS, MRCS (Eng)
Spine Fellow
UHW

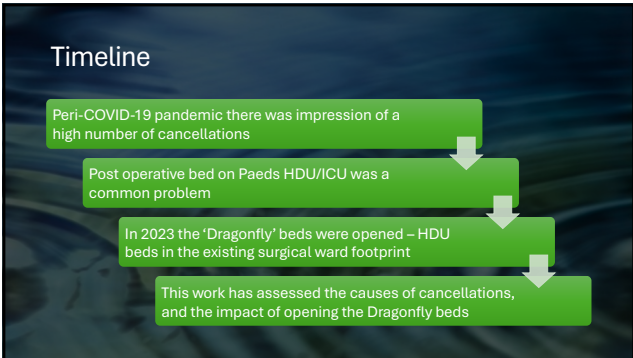
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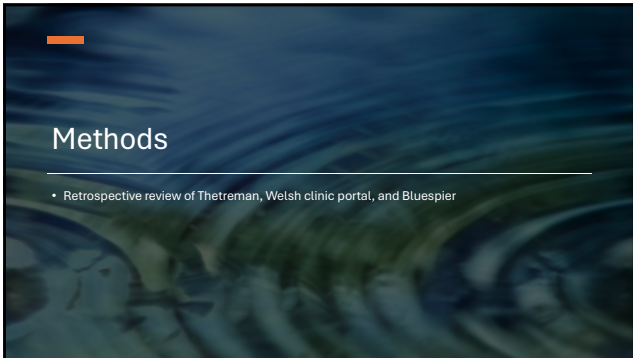
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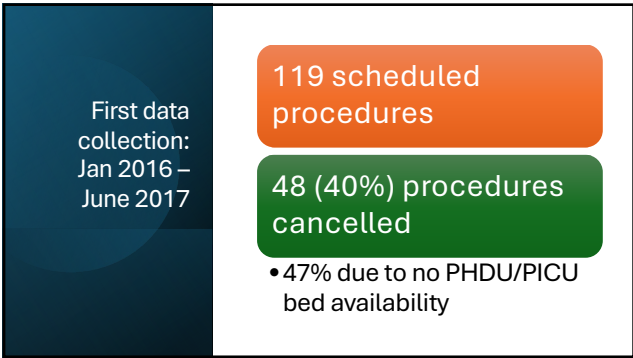
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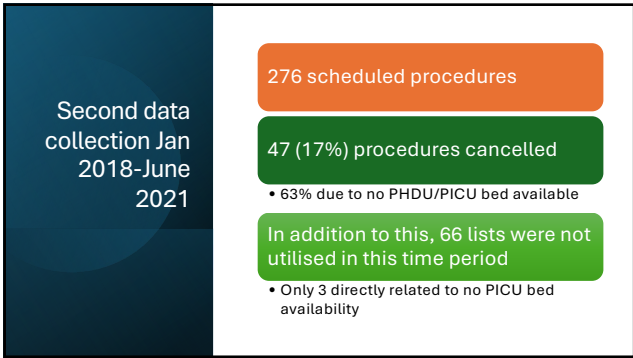
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Third data collection
May 2023-
April 2024

56 scheduled procedures

4 (7%) procedures cancelled

- 2 (50%) due to no PICU bed availability. No cancellations due to HDU bed availability

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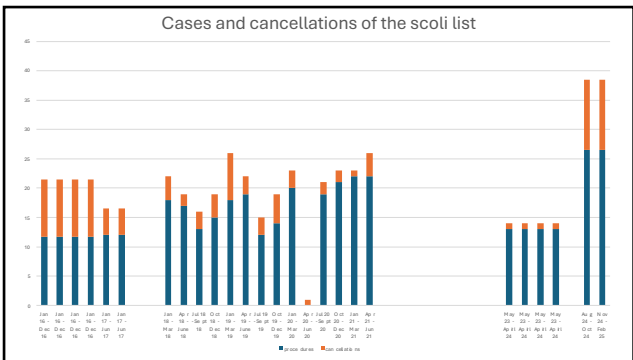
Fourth data collection August 2024 – Feb 2025

77 scheduled procedures

24 (31%) procedures cancelled

- 17% due to PICU bed availability
- Other cause for cancellations :
 - 2 – equipment not ready
 - 4 – no surgeon availability
 - 2 – no anaesthetist availability
 - 2 – patients not pre-assessed
 - 1 – patient unwell

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Limitations

- Retrospective data collected by different people
- Relys on accurate information inputted to bluespear/theatreman

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Discussion

- HDU bed availability no longer an issue
- PICU bed availability still accounts for some cancellations, but this has dropped from 40% to ~15 %
- Some room for improvement in avoidable causes of cancellation

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What have I learnt



- Progressing through training, the clinical management of patients becomes easier, the clerical management becomes harder
- Organisation of the Dragonfly beds would have been a big undertaking
- The more people who are involved, the more likely it is there will be an oversight

12

Many Thanks

- Prof. Ahuja
- Abdullah Hadid
- Zoe James
- Riaz Mohammed
- Pranav Shah
- Kajanthini Suthaharan
- Ravi Vemaraju

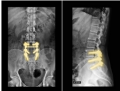



2 and 5 Year Revision Rates Following Primary Spinal Surgery


Elia Shore-Nye, 3rd Year Cardiff Medical Student

Tutor: Mr Alexander Durst, Consultant Spinal Surgeon

1

The aim of the service evaluation is to find the 2 and 5 year revision rates for common spinal operations that took place within the CAV Health Board.



Bwrdd Iechyd Prifysgol
Caerdydd a'r Fro
Cardiff and Vale
University Health Board

2 Year Follow Up: 01/01/2013 to 31/12/2022

5 Year Follow Up: 01/01/2013 to 31/12/2019

2

Methods

The Bluespier Database was cross referenced with Welsh Clinical Portal to determine whether a patient has had a revision surgery, following a primary spinal surgery that took place within the allocated time frame.

2 Year Follow Up: 01/01/2013 to 31/12/2022

5 Year Follow Up: 01/01/2013 to 31/12/2019

Revision rates of common spinal operations within a 2 and 5 year follow up period were calculated.

3

Inclusion and Exclusion Criteria

Inclusion Criteria 2 Year Follow Up

- Patient had primary spinal operation between 01/01/2013 and 31/12/2022 in the Cardiff and Vale NHS Health board.
- Revision operation is classed as another operation that took place within 2 years of the original operation.

Exclusion Criteria 2 Year Follow Up

- Patient has had prior spinal surgeries before 2013.
- Patient has died before 2 years has passed since their primary surgery.
- Insufficient evidence available on patient records to determine an accurate surgical history.

Inclusion Criteria 5 Year Follow Up

- Patient had primary spinal operation between 01/01/2013 and 31/12/2019 in the Cardiff and Vale NHS Health board.
- Revision operation is classed as another operation that took place within 5 years of the original operation.

Exclusion Criteria 5 year Follow Up

- Patient has had prior spinal surgeries before 2013.
- Patient has died before 5 years has passed since their primary surgery.
- Insufficient evidence available on patient records to determine an accurate surgical history.

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Flow Chart Summarising Excluded Operations from 2013-2022 Data Set.

```


    graph TD
      A[5471 operations] --> B[4171 operations between 01/01/2013 - 31/12/2022]
      B --> C[4627 operations between 01/01/2013 - 31/12/2022]
      C --> D[4413 operations between 01/01/2013 - 31/12/2022]
      D --> E[4173 eligible operations (revision + primary) between 01/01/2013 - 31/12/2022]
      E --> F[3543 eligible primary operations 01/01/2013 - 31/12/2022]
      
      B -.-> B1[844 operations excluded - primary operation before 2013]
      C -.-> C1[214 operations excluded - patients deceased before follow up]
      D -.-> D1[242 operations excluded - insufficient medical records]
      E -.-> E1[628 revision operations]
  
```

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Results

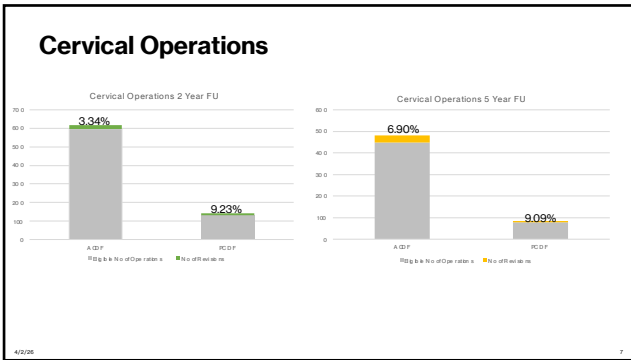


Categorised based on location and type of operation.



In bar chart as well as table format with a breakdown of the results.

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Cervical Operations

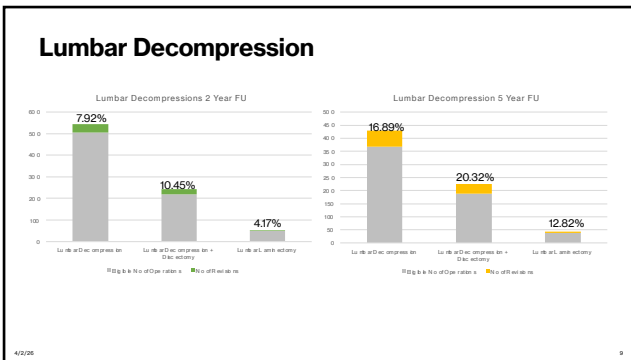
2 Year Follow Up

| Operation | Eligible No of Operations | No of Revisions | Revision Rate |
|--|---------------------------|-----------------|---------------|
| ACDF (Anterior Cervical Decompression and Fusion) | 598 | 20 | 3.34% |
| PCDF (Posterior Cervical Decompression and Fusion) | 130 | 12 | 9.23% |

5 Year Follow Up

| Operation | Eligible No of Operations | No of Revisions | Revision Rate |
|--|---------------------------|-----------------|---------------|
| ACDF (Anterior Cervical Decompression and Fusion) | 449 | 31 | 6.90% |
| PCDF (Posterior Cervical Decompression and Fusion) | 77 | 7 | 9.09% |

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Lumbar Decompressions

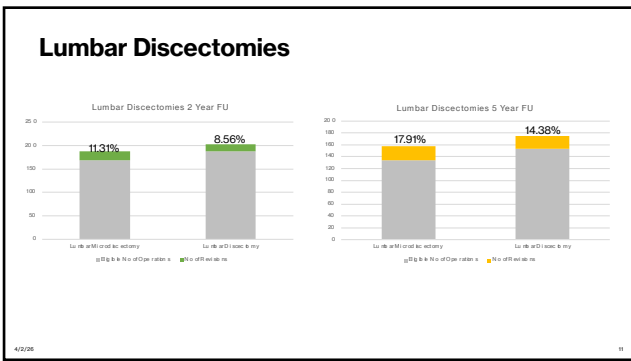
2 Year Follow Up

| Operation | Eligible No of Operations | No of Revisions | Revision Rate |
|-----------------------------------|---------------------------|-----------------|---------------|
| Lumbar Decompression | 505 | 40 | 7.92% |
| Lumbar Decompression + Discectomy | 220 | 23 | 10.45% |
| Lumbar Laminectomy | 48 | 2 | 4.17% |

5 Year Follow Up

| Operation | Eligible No of Operations | No of Revisions | Revision Rate |
|-----------------------------------|---------------------------|-----------------|---------------|
| Lumbar Decompression | 367 | 62 | 16.89% |
| Lumbar Decompression + Discectomy | 187 | 38 | 20.32% |
| Lumbar Laminectomy | 39 | 5 | 12.82% |

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Lumbar Discectomies

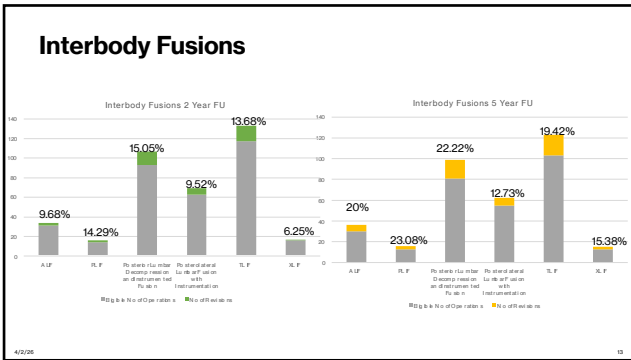
2 Year Follow Up

| Operation | Eligible No of Operations | No of Revisions | Revision Rate |
|------------------------|---------------------------|-----------------|---------------|
| Lumbar Microdiscectomy | 168 | 19 | 11.31% |
| Lumbar Discectomy | 187 | 16 | 8.56% |

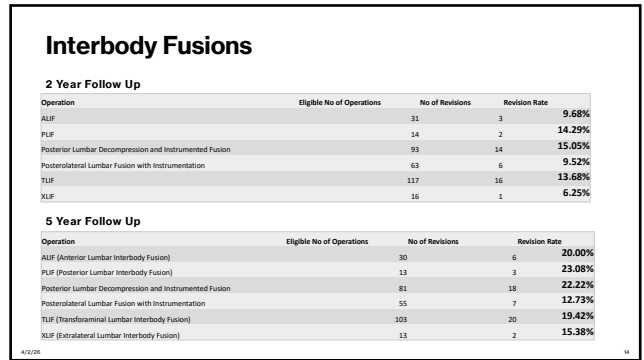
5 Year Follow Up

| Operation | Eligible No of Operations | No of Revisions | Revision Rate |
|------------------------|---------------------------|-----------------|---------------|
| Lumbar Microdiscectomy | 124 | 24 | 17.91% |
| Lumbar Discectomy | 153 | 22 | 14.38% |

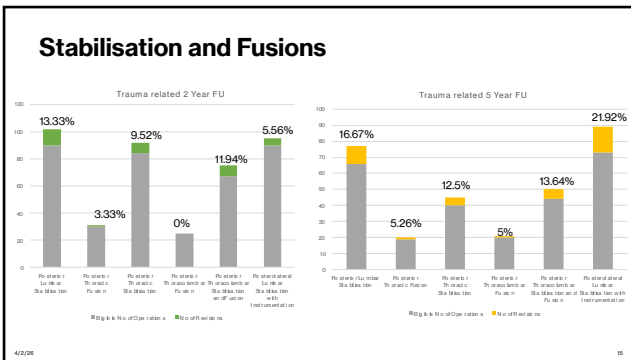
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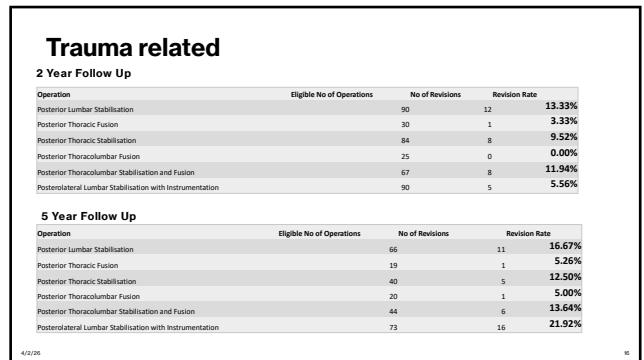
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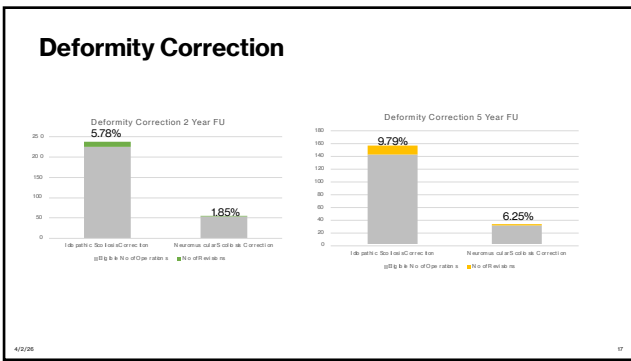
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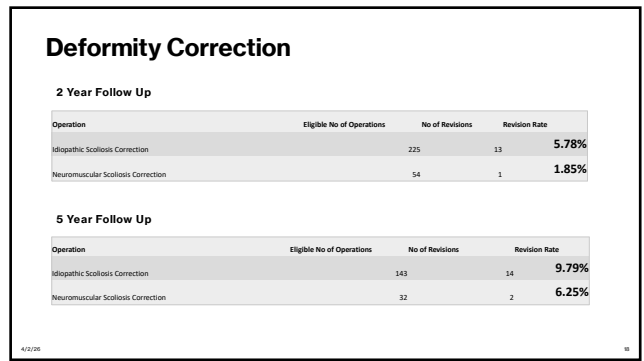
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Limitations

| | |
|-----------------------------------|--|
| Insufficient Documentation | There were patients who needed to be excluded due to insufficient documentation. As these patients' surgical history could not be confidently determined, they were excluded from the data as to reduce the risk of inaccuracy in revision rates. |
| Private Health Care | The accuracy of revision rates may be affected by a patients' choice to receive private health care. |
| Patients who move | If a patient has moved out of the Cardiff and Vale Health board, there may be no indication of this on their records and follow up information may be missing. |
| COVID-19 | The pandemic impacted all aspect of healthcare, and it is reasonable to assume that this could have altered revision rates and follow up treatment in ways we are unable to determined. |
| Risk Factors | Analysis into the risk factors associated with the patients who underwent revision operation has not been done as part of this service evaluation. Further analysis to identify contributing risk factors will provide interesting information on the potential causes of these revision operations. |

19

Thank you!

Any Questions?

20

Images

- <https://physioexamedit.com/blog/body-part-of-the-month-the-spine/>
- <https://atlanticspinespecialists.com/lumbar-spinal-fusion-surgical-treatment-for-chronic-low-back-pain/>
- <https://theiv.nhs.wales/files/cardiff-and-vale-university-health-board-lookup/>

21

The Central Vale Early Intervention Pain Clinic: An Evaluation

Francesca Fulthorpe - Advanced Pain Management Practitioner

1

What if there isn't a target for spinal intervention?

2



3



4



5

Clinic Aims

- Reduce inappropriate prescribing for persistent pain
- Improve quality of life for people living with persistent pain
- Improve patient experience
- Make primary care clinicians' lives easier

6

Clinician Feedback (n=11)

- 100% felt pain clinic had improved patient experience
- 100% felt the pain clinic had made clinician's lives easier

"We have had a number of chronic pain patients reduce their pain medication burden. This has been something we have struggled to achieve"

"A few very complex patients have been seen and they have had a good outcome, very comprehensive and professional assessment"

"Many patients have accepted someone independent and more specialised advising about non-pharmacological management options"

13

Clinician Feedback: What could have been better?

14

Patient Feedback (n=17)

- 100% felt they were always listened to
- 100% felt that staff were always kind and caring
- 100% felt that the person they saw today was the right person to help them understand and manage their pain
- 100% felt they were always involved in decisions about their care
- 88% gave their overall experience 10/10, 12% gave it 9/10

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Patient Feedback

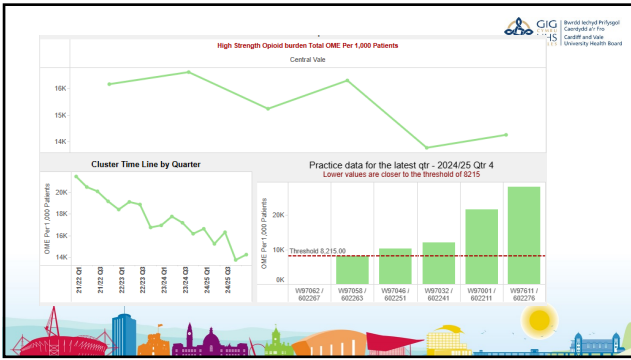
"I felt listened to and believed"

"I should have seen someone like you a long time ago"

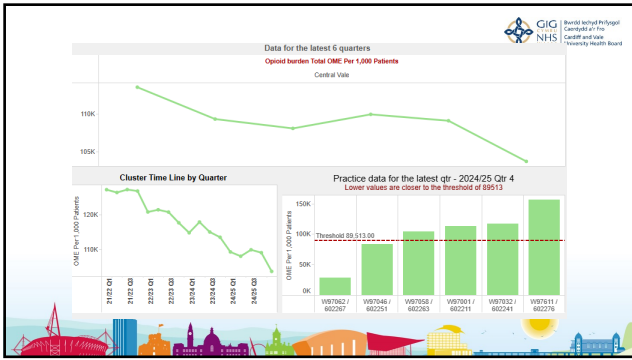
"So kind, you made me feel normal, we were amazed that we got an appointment so quickly and that you sorted us out"

"Everything was explained and discussed in detail, I left feeling all my questions/worries were answered"

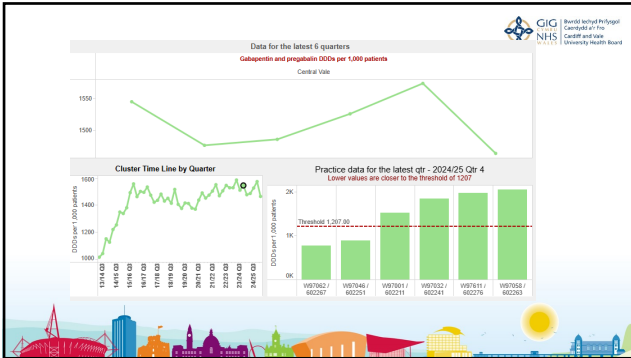
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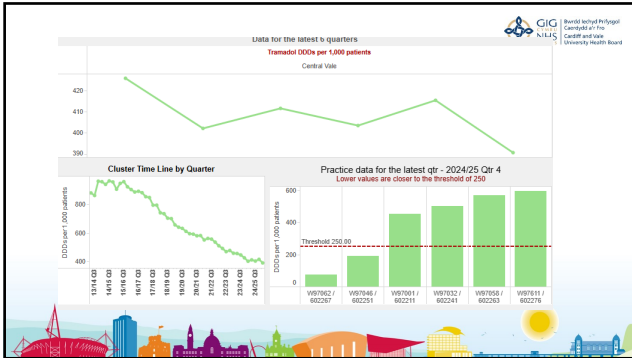
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Clinical Outcomes

Under each heading, please tick the ONE box that best describes your health TODAY.

MOBILITY

- I have no problems in walking about.
- I have some problems in walking about.
- I am confined to bed.

SELF-CARE

- I have no problems with self-care.
- I have some problems washing or dressing myself.
- I am unable to wash or dress myself.

USUAL ACTIVITIES (e.g. work, study, housework, family or leisure activities)

- I have no problems with performing my usual activities.
- I have some problems with performing my usual activities.
- I am unable to perform my usual activities.

PAIN/DISCOMFORT

- I have no pain or discomfort.
- I have moderate pain or discomfort.
- I have extreme pain or discomfort.

ANXIETY/DEPRESSION

- I am not anxious or depressed.
- I am moderately anxious or depressed.
- I am extremely anxious or depressed.

21

Wider Impact

- Interprofessional Learning
- Patient Education
- Conference

22

What next?

- Psychologist Recruitment
- 12-week exercise intervention
- Care Home Training
- Group Interventions
- Spread and Scale

23

References

- All Wales Medicine Strategy Group (2022) Analgesic Stewardship Guidance, available: awttc.nhs.wales/files/guidelines-and-pis/all-wales-analgesic-stewardship-guidancepdf/
- Ashworth, J, Green, D.J, Dunn, K.M, Jordan, K.P (2013) Opioid use among low back pain patients in primary care: Is opioid prescription associated with disability at six-month follow-up. Pain
- Derne, F, France, H.S, Thomas, E.T, Billip, M, Devito, N.J, Ferner, R.E, Cox, A.R, Heneghan, C, Aronson, J.K, Richards, G.C (2023) Preventable deaths involving opioids in England and Wales 2013-2022: A systematic case series of coroners' reports. Journal of Public Health
- Deyo, R, Von Korf, M, Duhkoop, D (2015) Opioids for low back pain. BMJ
- Joines, C.M.P, O'Day, R, Koes, B, Latimer, J, Maher, C.G, McLachlan, A, Billot, L, Shan, S, Lin C.C. (2023) Opioid analgesia for acute low back pain and neck pain (the OPAL trial) a randomised, Placebo-Controlled trial, The Lancet
- Kobus, A, Smith, D.H, Morasco, B.J, Johnson, E.S, Yang, X, Pertrik, A.P, Deyo, R.A (2013) Correlates of higher dose opioid medication use for low back pain in primary care. Journal of Pain
- NICE (2020) Low back pain and sciatica in over 16s: assessment and management, available www.nice.org.uk/guidance/ng59
- Public Health Wales (2023) Opioids: the leading factor in drug related deaths in Wales available phw.nhs.wales/news/opioids-the-leading-factor-in-drug-related-deaths-in-wales
- Roberts, A, Richards, G (2023) Is England facing an opioid epidemic? British Journal of pain
- Server for Prescribing Information Reporting and Analysis (SPIRA) All Wales Therapeutics and Toxicology Centre

24

Questions or Suggestions?

francesca.fulthorpe@wales.nhs.uk



Audit of NICE Guidelines NG59: Low back pain and sciatica in over 16s: assessment and management CAV Integrated OP physio service

Jo Hutchings
Advanced Physio Practitioner
Cardiff Spinal Surgery Research Symposium
11 Jul 2025

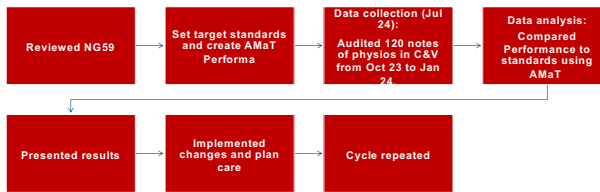
1

What is NG59? **NICE** National Institute for Health and Care Excellence

- NG59 are guidelines for assessing and managing low back pain and sciatica in people aged 16 and over
- Outlines physical, psychological, pharmacological and surgical treatments to help people manage in their daily life
- Aims to improve people's quality of life by **promoting the most evidence based, effective forms of care**

2

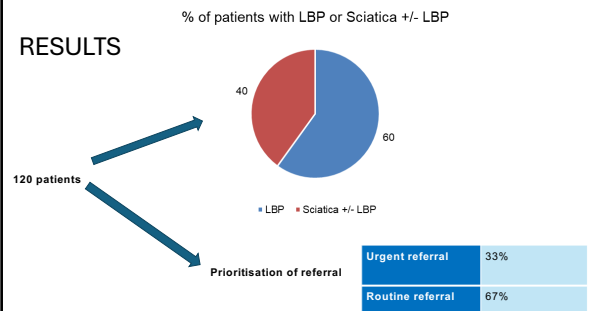
What did we do?



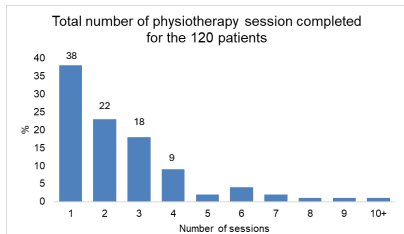
The steps in the audit cycle (BMJ 2012)

3

RESULTS



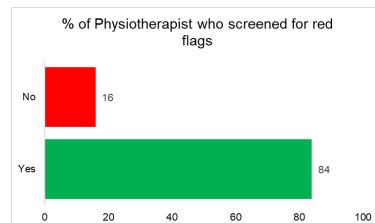
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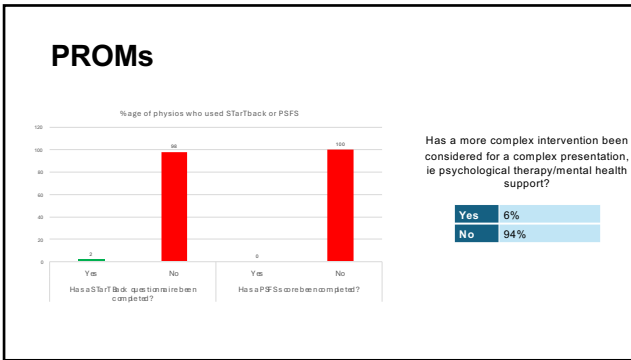
| | |
|---|---------------------------|
| Undergoing ongoing treatment with physio OP | Discharged from Physio OP |
| 21% | 79% |

5

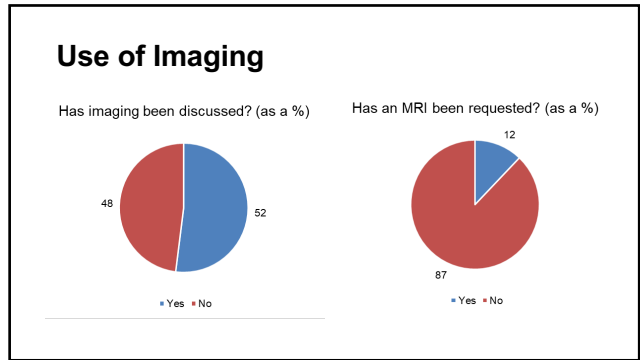
Documented Red flag screening



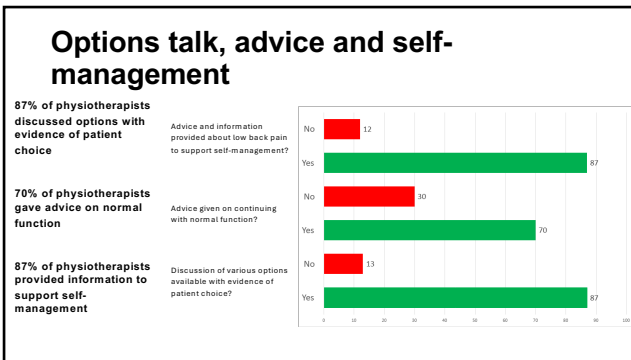
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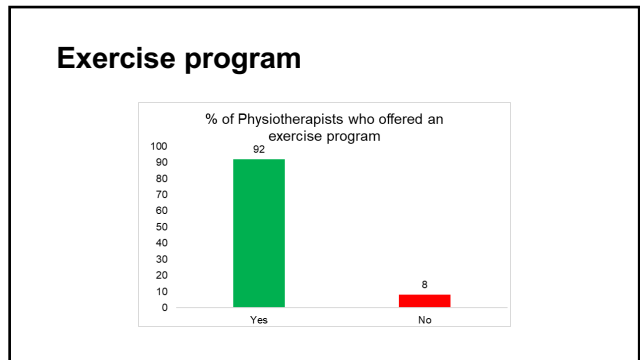
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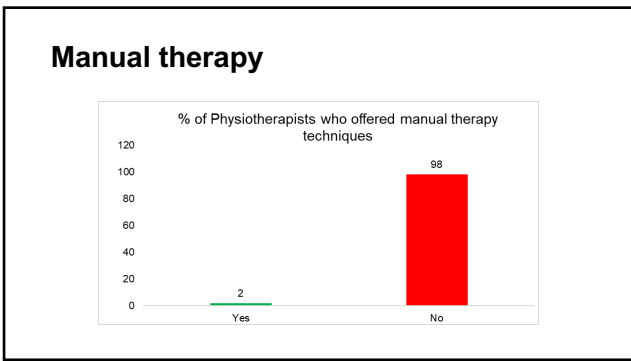
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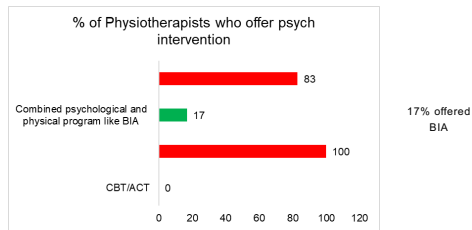
Alternative treatments

| Treatment | Was this treatment offered? | |
|------------------------|-----------------------------|----|
| | Yes | No |
| Corset or support belt | | X |
| Foot Orthotics | | X |
| Rocker Shoes | | X |
| Traction | | X |
| Acupuncture | | X |
| TENS | | X |
| Interferential Therapy | | X |

X = 100%

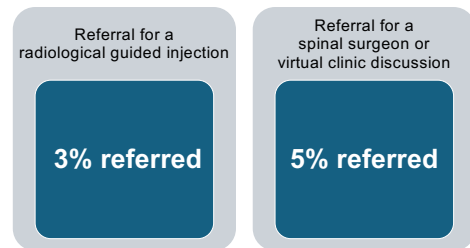
12

Combined Physical and Psychological Program (Back in Action)



13

Referrals for invasive management



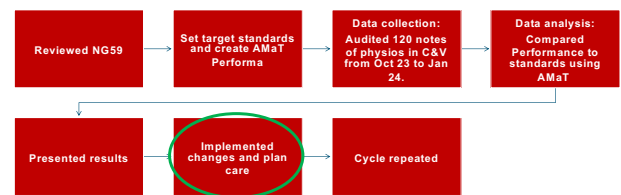
14

Summary

- Relatively low levels of referral for imaging and injection/surgical consideration
- Generally follow NG 59 recommendations for conservative care
- **Could improve on use of PROMs – SB helpful to explore yellow flags and ID patients who may benefit from CPPP**
- **Low use of manual therapy**

15

Current position




16

IS THAT SPINE DEFINITELY FINE?

An audit to compare whether spinal assessment in trauma patients at Prince Charles Hospital meet the standards set by BOAST guidelines.

Supervisors: Miss Aureola Tong (consultant foot and ankle surgeon, Prince Charles Hospital)
Mr Arash Ghoroghi (core surgical trainee, Prince Charles Hospital)



Project lead: Catherine Henderson (year 4 medical student, Cardiff University)



1


Introduction

Spinal injury? → Immobilisation + Imaging


2

Objectives



3

- 1 To assess whether current practise at Prince Charles Hospital adheres to the new BOAST guidelines
- 2 To identify any areas for improvement in current practise
- 3 To use this audit as a pilot study with the intention of making this a multicentre project
- 4 To develop an intervention to improve current practise

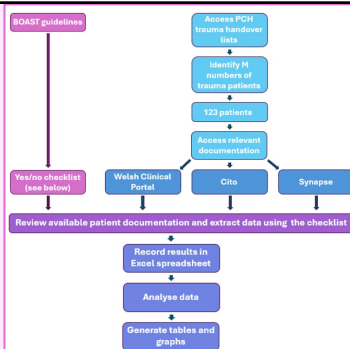


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Method




5



```

    graph TD
      BOAST[BOAST guidelines] --> Checklist[Yes/no checklist see below]
      BOAST --> Access[Access POH trauma handover lists]
      Access --> Identify[Identify M numbers of trauma patients]
      Identify --> Patients[123 patients]
      Patients --> Documentation[Access relevant documentation]
      Documentation --> Welsh[Welsh Clinical Portal]
      Documentation --> Cito[Cito]
      Documentation --> Synapse[Synapse]
      Checklist --> Review[Review available patient documentation and extract data using the checklist]
      Welsh --> Review
      Cito --> Review
      Synapse --> Review
      Review --> Record[Record results in Excel spreadsheet]
      Record --> Analyse[Analyse data]
      Analyse --> Generate[Generate tables and graphs]
  
```



6

Standards for Practice

1. A spinal immobilisation protocol (including collars, log rolling and patient transfers) must be in place across all trauma networks and apply to all prehospital and hospital services.
2. Spinal injury should be assumed in all patients and spinal immobilisation and precautions must continue until excluded by clinical assessment and appropriate imaging.
3. For patients with cervical spondylosis or ankylosing spondylitis, their usual spinal position must be maintained and supported while immobilised.
4. The following should heighten the index of suspicion for spinal injury, and their presence or absence should be documented:
 - Age and comorbidities (including osteoporosis and ankylosing spondylitis)
 - Mechanism of injury
 - Pain or neurological symptoms on sitting, standing or walking if no other symptoms or signs are present.
 - Inability to rotate the cervical spine 45 degrees if no other symptoms or signs are present
 - Pain, tenderness and neurological features with the patient supine and log rolled
5. If general clinical or neurological assessment is abnormal, spine precautions must continue until discussion with the regional spinal service as defined by the Spinal Cord Injury (SCI) BOAST: <https://www.boa.ac.uk/resources/boast-the-management-of-traumatic-spinal-cord-injury.html>
6. Cervical Tomography (CT)
 - Multidetector CT remains the initial modality for imaging a traumatic spine injury. A slice thickness of 0.5mm is optimal for the cervical spine, and 2.5mm to 3.2mm for the remaining spine
 - Fracture, subluxation or ligamentous injury of the cervical spine requires CT angiography to exclude blunt vertebral artery (VA) or vertebral artery (VA) injury
 - Whole-body trauma CT (pan-scan) should include cervical spine imaging
 - Brain CT for head injury should include occipital to T4 with sagittal and coronal reconstructions
7. Magnetic Resonance Imaging (including Axial, Sagittal, Coronal reconstructions with STIR T1 and T2 sequences) is an alternative in any patient with:
 - Contraindications to ionising radiation (e.g. pregnancy)
 - Suspicion of or inability to exclude injury due to clinical status (e.g. unconscious)
 - Ambiguous CT findings
 - Neurological symptoms or signs or suspected spinal cord injury (See SCI BOAST: <https://www.boa.ac.uk/resources/boast-the-management-of-traumatic-spinal-cord-injury.html>)
 - Spinal arthritis with pain or indeterminate CT appearances
8. An initial report of spine imaging by a suitably qualified radiologist should be available within one hour and a definitive report within 24 hours of injury.
9. The presence of a fracture or dislocation on any view of the spine requires a further view to be taken to confirm the degree of stability of the fracture and to plan the appropriate management. Such views of collar bases, including flange bases, are not considered essential.
10. A list of relevant spine imaging follow-up arrangements must be included in the final report and made available to the


no ankylosing spondylitis patients in sample

audit focus on assessment NOT management and follow up

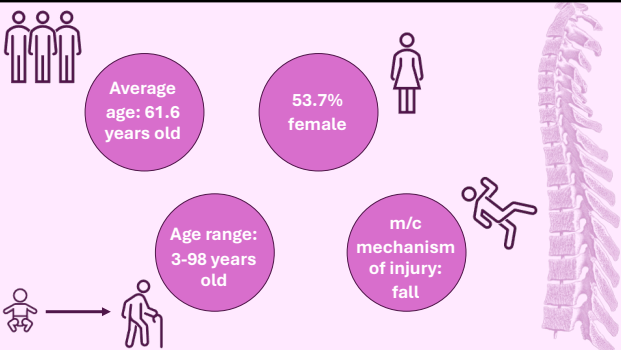


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Sample demographics



8




Average age: 61.6 years old

53.7% female


Age range: 3-98 years old

m/c mechanism of injury: fall



9

Results and discussion




10

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11

Part A: initial assessment



12

Standards for Practice


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2. Spinal injury should be assumed in all patients and spinal immobilisation and precautions must continue until excluded by clinical assessment and appropriate imaging.
3. For patients with cervical hypoxia in ankylosing spondylitis, their usual spinal position must be maintained and supported whilst immobilised on scene.
4. The following should heighten the index of suspicion for spinal injury, and their presence or absence should be documented:
 - Age and comorbidities (including osteoporosis and ankylosing spondylitis)
 - Mechanism of injury
 - Pain or neurological symptoms on sitting, standing or walking if no other symptoms or signs are present.
 - Inability to rotate the cervical spine 45 degrees if no other symptoms or signs are present
 - Pain, tenderness and neurological features with the patient supine and log rolled
5. A general practice should have a protocol in place to ensure that cervical collar reconstructions are performed in a timely manner.
6. Computed Tomography (CT)
 - Multidetector CT remains the initial modality for imaging a traumatic spine injury. A slice thickness of 0.5mm is optimal for the cervical spine, and 0.5mm to 1.0mm for the remaining spine.

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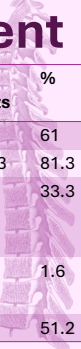
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- Mechanism of injury
- Pain or neurological symptoms on sitting, standing or walking if no other symptoms or signs are present.
- Inability to rotate the cervical spine 45 degrees if no other symptoms or signs are present
- Pain, tenderness and neurological features with the patient supine and log rolled



13


Part A: initial assessment

| Criteria | N.o of patients | % |
|---|-----------------|------|
| Age and comorbidities | 75/123 | 61 |
| Mechanism of injury | 100/123 | 81.3 |
| Pain/neurological symptoms on sitting/standing/walking if no other symptoms/signs | 41/123 | 33.3 |
| Presence or absence of an inability to rotate the cervical spine 45 degrees | 2/123 | 1.6 |
| General clinical/neurological assessment | 63/123 | 51.2 |



14

Part B: imaging



15

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 - Pain or neurological symptoms on sitting, standing or walking if no other symptoms or signs are present.
 - Inability to rotate the cervical spine 45 degrees if no other symptoms or signs are present
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7. Magnetic Resonance Imaging (including Axial, Sagittal, Coronal reconstructions with STIR T1 and T2 sequences) is an alternative in any patient with:
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 - Suspicion of, or inability to exclude injury due to clinical status (e.g. unconscious)
 - Ambiguous CT findings
 - Neurological symptoms or signs or suspected spinal cord injury (See SCI BOAST: <https://www.boa.ac.uk/resource/boast-the-management-of-traumatic-spinal-cord-injury.html>)
 - Spinal ankylosis with pain or indeterminate CT appearances

6. Computed Tomography (CT)

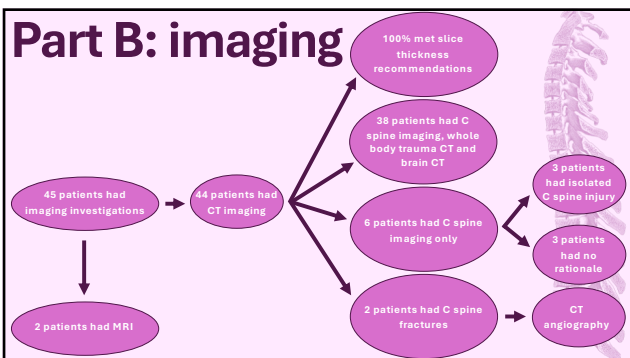
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- Spinal ankylosis with pain or indeterminate CT appearances




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Part C: imaging reports



18

Standards for Practice

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2. Spinal injury should be assumed in all patients and spinal immobilisation and precautions must continue until excluded by clinical assessment and appropriate imaging.
3. For patients with cervical symptoms/injury, speed of their spinal position must be maintained and supported unless contraindicated.
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 - Age and comorbidities (including osteoporosis and ankylosing spondylitis)
 - Mechanism of injury
 - Pain or neurological symptoms on sitting, standing or walking if no other symptoms or signs are present
 - Inability to rotate the cervical spine 45 degrees if no other symptoms or signs are present
 - Pain tenderness and neurological findings with the patient supine and log rolled
5. If general clinical or neurological assessment is abnormal, spine precautions must continue until discussion with the regional spinal service as defined by the Spinal Cord Injury (SCI) BOAST: <https://www.boast.ac.uk/resources/boast-the-management-of-spinal-cord-injury/>

8. An initial report of spine imaging by a suitably qualified radiologist should be available within one hour and a definitive report within 24 hours of injury.

- Whole-body trauma CT scans should include cervical spine imaging
- Brain CT for head injury should include cervical spine imaging
- Magnetic Resonance Imaging including Axial, Sagittal, Coronal reconstructions with STIR T1 and T2 sequences is an alternative in any patient with:
 - Contraindications to knowing radiation (e.g. pregnancy)
 - Suspicion of, or inability to rotate injury due to clinical case (e.g. unconscious)
 - Abnormal CT findings
 - Neurological symptoms or signs or suspected spinal injury (See SCI BOAST: <https://www.boast.ac.uk/resources/boast-the-management-of-spinal-cord-injury/>)
- Initial analysis with pain or intolerable CT appearance

8. An initial report of spine imaging by a suitably qualified radiologist should be available within one hour and a definitive report within 24 hours of injury.

19

Part C: imaging reports

44 patients had CT scans

Time of injury recorded in 27 cases

24 patients

3 patients did not p/c at the time of injury

N.o of reports available <1hr of injury: 24

N.o of reports available <24hr of injury: 21

| Time to Report | Number of Patients |
|---------------------------|--------------------|
| Available <1hr | 24 |
| Available <24hr | 21 |
| Not p/c at time of injury | 3 |

20

Interesting observation

| Criteria | N.o of patients | % |
|--|-----------------|------|
| Report of spine imaging available within 1hr of ED arrival | 32/44 | 72.7 |
| Report of spine imaging available within 24hrs ED arrival | 42/44 | 95.5 |

| Time to Report | Percentage |
|-----------------|------------|
| Available <1hr | 72.7% |
| Available <24hr | 95.5% |

21

Limitations

- Retrospective study design
- Don't have other hospitals compliance

22

Conclusions

23

1. To assess whether current practise at Prince Charles Hospital adheres to the new BOAST guidelines → **Poor adherence to BOAST 2025 guidelines at Prince Charles Hospital**
2. To identify any areas for improvement in current practise → **Inadequate documentation**
3. To use this audit as a pilot study with the intention of making this a multicentre project → **Multicentre project is required**
4. To develop an intervention to improve current practise → **Intervention is required**

24

Recommendations



25

Standardised spinal assessment protocol

Targeted clinician education

Multicentre project

Re-audit



26

Many thanks to...

Miss Aureola Tong
(consultant foot and ankle surgeon)

Mr Arash Ghoroghi
(core surgical trainee)

... for being the most marvellous mentors and supporting me with this project! 😊



27

Thank you for listening!

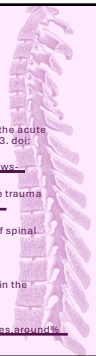
Any questions?



28

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29

3D-PRINTED GUIDES VS FREEHAND PEDICLE SCREW PLACEMENT IN THE SURGICAL TREATMENT OF PAEDIATRIC SPINAL DEFORMITY

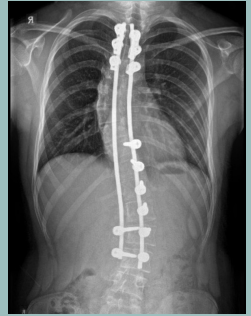
BY LOUIS CLAYTON

With special thanks to Michael McCarthy, Aislyn Jones, Sophie Griffiths and Nicole Lou

1

BACKGROUND

- Paediatric spinal deformities
- Freehand Vs 3D-printed guides (3DPGs)
- The pros and cons?
- Current challenges
- The importance of accurate and efficient screw placement



Jones J. Idiopathic scoliosis with posterior spinal fusion. Case study. Radiopaedia.org <https://doi.org/10.5334/rtr.89552>

2

AIMS & METHODS

AIMS: TO COMPARE THE SURGICAL, CLINICAL AND RADIOLOGICAL OUTCOMES

HYPOTHESIS: IMPROVED ACCURACY AND EFFICIENCY, WITH SOME DRAWBACKS

PICO FRAMEWORK:

Patient/Problem
Investigation
Comparison
Outcome(s)



TIMEFRAME

This study used cases from a 7 year period between 2018 and 2025



WHERE

University Hospital of Wales



WHO

Inclusion/exclusion criterion



OUTCOMES

Clinical, radiological and surgical parameters

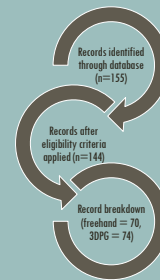


NUMBER OF CASES

N = 144 (freehand = 70, 3DPG = 74)

3

METHODS



4

RESULTS – CLINICAL OUTCOMES

| OUTCOMES: | P-VALUE: |
|--|----------|
| Age On Day of Surgery | 0.412 |
| Operation Time | 0.492 |
| Blood Loss | 0.528 |
| Length of Post-Operative Hospital Stay | 0.011 |
| CT Dose DLP | <0.001 |
| Post-Operative CT Required? | 0.731 |
| Return to Theatre (RTT) 3/12 | 0.592 |

5

RESULTS – CLINICAL OUTCOMES

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6

RESULTS – RADIOLOGICAL OUTCOMES

| OUTCOMES: | P-VALUE: |
|--|----------|
| Pre-Operative Cobb Angle | 0.565 |
| Post-Operative Cobb Angle | 0.591 |
| Change in Cobb Angle | 0.810 |
| Malplaced Screws on Post-Operative Imaging | 0.045 |
| Long Screws on Post-Operative Imaging | 0.032 |
| % of Screws Missed | 0.281 |
| Image Intensifier Dose | 0.282 |

7

RESULTS – RADIOLOGICAL OUTCOMES

| OUTCOMES: | P-VALUE: |
|--|----------|
| Pre-Operative Cobb Angle | 0.565 |
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8

RESULTS – SURGICAL OUTCOMES

| OUTCOMES: | P-VALUE: |
|-----------------------------------|----------|
| Number of Levels Instrumented | 0.210 |
| Time per Screw | <0.001 |
| Time per Level Instrumented | 0.137 |
| Total Number of Screws | <0.001 |
| Screws Malplaced Intraoperatively | 0.054 |
| Osteotomies | 0.069 |

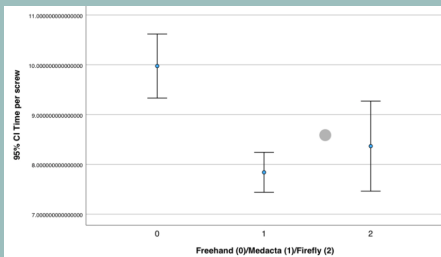
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10

A GRAPH TO SHOW THE TIME TAKEN PER SCREW IN FREEHAND VS 3D PRINTED GUIDE APPROACHES



11

DISCUSSION & CONCLUSION

| FREEHAND: | 3D-PRINTED GUIDES: |
|--------------------------|--|
| Lower radiation exposure | Less time per screw (efficiency) |
| | Less malplaced screws on post-operative imaging (accuracy) |
| | Less long screws on post-operative imaging (accuracy) |
| | Shorter post-operative hospital stay*** |

12

SO, WHAT'S NEXT?

- Comparison of 3D guide systems (Medacta Vs Firefly)
- Is there potential to combine 3D guides with robotics
- Cost, access and learning curve considerations

13

THANK YOU! ANY QUESTIONS?

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14

Evaluating The Use Of PROMs In The Spinal Outpatient's Department At University Hospital Wales

Milaya Harman (1), Prof M McCarthy (2)
 (1) Cardiff University Medical school
 (2) University Hospital Wales, Department of Spinal surgery

1

Introduction

Patient reported outcome measures (PROMs) assess health, disability and quality of life. They provide a holistic view of patients and assess treatment outcomes.

In UHW, patients respond to PROMs using the online British Spine Registry. The most recent annual review showed:

- ▶ 53% preoperative forms completed
- ▶ 28% postoperative forms completed

How can completion rate be improved?

2

Objectives

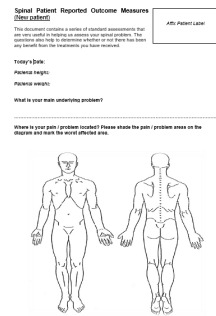
To analyse PROMs data from patients attending the spinal outpatients' department at UHW

To understand whether PROMs are useful and assess if in person, paper questionnaires yield a higher completion rate

3

Methods

- ▶ A prospective study
- ▶ Patients were given a paper questionnaire to complete
- ▶ A variety of PROMs were used: EQ5D VAS, NDI, ODI, GAD7, PHQ9, and questions about demographics and life satisfaction
- ▶ Responses manually recorded in excel and analysed using SPSS statistics
- ▶ A literature search was conducted



4

Results- Sample analysis

100 patients, mean age of 56

36.1% of patients had to cut down on their usual activities

Only 2% reported their quality of life as very good. 48.5% reported it as bad or very bad.

5

Results- Sample analysis

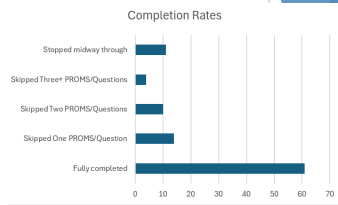
- ▶ A selection of the PROMs were compared to normative data.
- ▶ They were significantly worse than the normative ($p < 0.05$).

| PROMs | Sample (n) | Normative (n) | T score | P value |
|----------|------------------|---------------------|------------------------------|----------|
| EQ5D VAS | 44.67 (SD 24.77) | 82.5 (SD 17) | -14.73 | <0.00001 |
| NDI | 48.4% (SD 24.6) | 33% | 5.008 | <0.00001 |
| GAD7 | 10.79 (SD 6.49) | Women= 3.2 Men= 2.7 | Women= 10.908 Men= 11.627 | <0.00001 |
| PHQ9 | 13.06 (7.26) | Women= 3.1 Men= 2.7 | Women= 12.802 Men= 13.316 | <0.00001 |

6

Results- Completion

- ▶ 85% of the forms were completed either fully or with only 1 or 2 questions missed.
- ▶ Most common skipped questions were the BRS and PHQ.



7

Discussion

- ▶ Spinal patients at UHW had worse PROMs scores than average
- ▶ Literature has described an association between worse PROMs scores and recovery
- ▶ Therefore: PROMs can be useful to:
 - ▶ help predict recovery
 - ▶ Assess success of surgery/treatment
- ▶ Paper questionnaires filled out in clinic have a **higher completion rate** than PROMs answered online using the BSR
 - ▶ Practicalities of forms

8

Areas for improvement

- ▶ All patients who attended the outpatient's department were asked to complete a form
 - ▶ Most patients were new, some were follow up
- ▶ If further work was done on this project, I would investigate new patients and follow up patients separately. I would also like to follow up with the new patients, to see how their PROMs scores progress.

9

Conclusions

Spinal patients at UHW have worse PROMs scores than the average population
Useful to implement

In person, paper questionnaires yield higher completion rates

10

References

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11

Thank you

12

Long Term Employment and Functional Outcomes following: Cervical Fractures and Fixation

Literature Review - Michael Wahba

1

Introduction

- Of all blunt force/polytrauma patients 10% have spinal fractures, one-fourth of which are located in the cervical spine.
- Of the cervical spine injuries due to the neurovascular anatomy of 50% develop spinal cord injuries the cervical region.
- Falls account for the most common cause, followed by motor vehicle accidents, biking, and driving.
 - Mortality ranges from 5-10%
- These injuries can be devastating - up to 10% of trauma patients with cervical fractures sustain neurological deficits.

These segments are susceptible to injury because they transmit significant motion and weight whilst housing both the spinal cord and vertebral arteries. The result is long-term disability, loss of work capacity, and social and financial hardship.

The average incidence of cervical spine fractures ranges from 4-17 individuals in every 100,000 per year, within general western populations

2

AIMS & Rationale

- To evaluate: Long-term functional recovery following cervical fractures and fixation
- To evaluate: Long-term employment outcomes following cervical fractures and fixation
- To identify: Positive and negative predictive factors influencing RTW rates
- To address: The current gaps in literature

Why was this important:

- Return to work is a crucial and measurable outcome reflecting not just physical recovery, but social reintegration, economic independence, and psychological well-being
- Existing literature disproportionately emphasizes short-term outcomes such as hospital length of stay and complication rates, and ignores long-term outcomes.
- Cervical spine injuries are commonly cited in disability benefit applications, workers' compensation claims, and litigation related to motor vehicle accidents or workplace trauma.
- Quantifying Economic Damages and Loss of Future Earnings

3

Methodology

- Search strategy:** A structured search was conducted primarily using PUBMED, MEDLINE, and EMBASE, focusing on studies related to long-term outcomes following cervical fracture fixation.
- Search criteria:** keywords such as "traumatic spinal injury," "long-term outcomes," "functional outcomes," "return to work," "employment," "long-term-employment," and "return to work."
- Filters:** were applied to prioritize primary studies, systematic reviews, cohort studies and meta-analyses published within the last 20 years. Furthermore, some references were chosen manually from the bibliographies of relevant articles.

| Stage | Details |
|----------------|--|
| Identification | <ul style="list-style-type: none"> Databases searched: PubMed, MEDLINE, Embase, Google Scholar Years covered: 2004-2025 |
| Screening | <ul style="list-style-type: none"> Title and abstract screening conducted Duplicates removed Exclusion: Paediatric studies, short-term thoracolumbar studies, irrelevant outcomes |
| Eligibility | <ul style="list-style-type: none"> Full-text articles assessed for relevance Inclusion: Adult patients with cervical fractures (≥ spinal cord injury), predictors for return-to-work Minimum 6-month follow-up with employment or functional outcomes |
| Included | <ul style="list-style-type: none"> Final studies included: 13 peer-reviewed articles Study types: Retrospective cohorts, prospective studies, meta-analyses, reviews |

4

| Conservative- Non-operative management | Surgical Management (Operative) |
|--|---|
| <p>Conservative (Nonoperative)</p> <p>Indications: Stable, well-aligned fractures in neurologically intact patients</p> <p>Technique: External immobilisation for 6-12 weeks, using a hard collar or Halo Vest. Strict compliance and frequent monitoring</p> <p>Pros: Avoids surgery and anaesthesia; good for comorbid patients; cost-effective; stable fibrous healing is often achieved</p> <p>Cons: Discomfort; skin sores; muscle deconditioning; halo risks (dietary issues, mortality); risk of delayed surgery due to impaired healing/fusion</p> <p>Outcomes: Functional outcomes often turn out similar to those after surgery for comparable injuries - multicentre study of elderly odontoid fractures found no difference in long-term neck disability or recovery between surgical and collar-treated groups. (De Bonis et al. 2019).</p> | <p>Surgical (Operative)</p> <p>Indications: Unstable, displaced, or neurologically compromised fractures; SIC 2-5; failed conservative care</p> <p>Technique: C1-C2 posterior fusion, anterior odontoid screw, occipital-cervical fusion; C3-C7 anterior cervical discectomy and fusion (ACDF)</p> <p>Pros: Immediate stability; allows earlier mobilisation. Fusion rates are higher than nonoperative care (e.g. 80% vs 37% for odontoid fractures in one series (Harris et al. 2021))</p> <p>Cons: Operative risks: infection, anaesthesia, bleeding. Longer hospital stay with adjacent higher in-hospital complications, e.g. pneumonia and wound-site infections (Jiang et al. 2024)</p> <p>Outcomes: Higher fusion, the surgery group had significantly lower mortality rates 5.52% vs 9.6% (De Bonis et al. 2019), however, long-term function is often comparable when injury and age are matched.</p> |

5

Employment Outcomes Post-Injury and Surgery

Return-to-Work (RTW) Rates: Highly variable across studies (range ~37% to 80%)

| Study | RTW Rate | Follow-up Duration | Notes |
|----------------------------|----------|--------------------|--|
| Tang et al. (2024) | 58% | Meta-analysis | >11,000 spinal surgery patients |
| Alhabeeb et al. (2024) | 38% | 2-year follow-up | Saudi centre; 173 surgically-treated traumatic spine fractures. 59% of that group were neurologically intact |
| Keihanian et al. (2023) | 79% | 3-year follow-up | Iranian cohort; mixed fractures + SCI. 75% returned by 10 months |
| Jaffe et al. (2024) | 52% | 5 years | RTW dropped from pre-injury 79%; avg. income lost: CAD \$20,275/year |
| Ramakrishnan et al. (2011) | 78.7% | 2 years | Shift to self-employment (from 9% to 64.6%) |

6

Functional Outcomes – Short-Term vs Long-Term

Short term outcomes: 3-6 months

- Acute phase:** Patients typically have severe neck pain, muscle spasms, and very limited motion immediately after surgery.
- By ~3 months, most fractures show solid healing on imaging and immobilisers can be removed; gradual reactivation of daily tasks begins.

Intermediate outcomes: 3 year

- Most neurologically intact patients are back to near-normal function.
- Typically experience mild residual neck pain or stiffness, but these are minor – manageable with intermittent therapy or pain relief.

Long-term outcomes: 2-5 years

- In one retrospective study following subaxial fractures and fixation, **51.4%** of patients improved by at least one AIS Impairment Scale (AIS) grade and **15.5%** improved by two or more AIS grades on long-term follow-up (Frede et al. 2016).
- A 5-year follow-up study of 168 patients assessing functional outcomes using standardised measures (the Activity Measure for Post-Acute Care), found that on average, patients had **only mild-to-moderate limitations in mobility and daily activities** (Filiberto et al. 2022).
- However, following Jefferson burst fractures and surgical fixation, patients' **self-assessed health-related quality of life** at follow-up was **significantly below** both population norms and their pre-injury perception (Dvorak et al. 2005).

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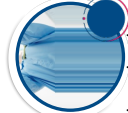
Key Predictors of RTW & Functional Recovery

Positive predictors:

- Health and support:** Full coverage health insurance coverage and strong social support network positively influence RTW (Keihanian et al. 2023).
- Higher education level:** Higher education was strongly associated with greater RTW rates, since those individuals often had jobs with lighter physical demands compared heavy manual labour.
- Male sex:** Males more likely to RTW than females (meta-analysis: 68% of men vs 42% of women returned after spine surgery (Tang et al. 2024)).
- Surgical outcome:** In operative cases, shorter operative time and less blood loss are linked to higher RTW rates – each additional 100 ml blood loss and hour of surgery was associated with a significant reduction in RTW odds (suggesting more complex surgeries = worse outcomes) (Alhabeeb et al. 2024).

Negative predictors:

- Severity of spinal cord injury:** This is arguably the most critical factor. If a patient has a **complete SCI**, their chances of returning to their prior employment (especially if it was physical work) are slim to none.
- Fear of disease progression:** Worrying that work will aggravate their illness, will reduce the possibility of patients returning to work.
- Older Age:** Younger patients tend to heal faster and have fewer comorbidities, and importantly, they are often at a stage of life where work and career are a priority (they need to get back to work to support families or advance careers).



8

Gaps in the Literature & Future Perspectives

- Limited High-Quality Evidence and Heterogeneity:**
 - Most outcome studies for cervical fractures are **Level IV case series** with small sample sizes.
 - Existing studies often lump diverse injuries together (e.g. any "spinal fracture").
- Outcomes Measures Variability:**
 - Many reports rely on non-standardized or subjective outcomes, surgeon reported "success" outcomes.
 - Return-to-work definitions vary (any job vs. pre-injury job, full time vs part-time).
- Short Follow-up or Loss to Follow-up:**
 - Long term data (5+ years) are relatively scarce. Some studies report 3-year outcomes but not beyond.
- Prospective Cohort Studies/ Service evaluation:**
 - Long-term cohort studies for cervical spine fractures to track standardized outcomes (pain, function, RTW, QoL).
- Standardise Outcome Measures:**
 - Use validated PROMs (QoL measures: SF-36, Neck Disability Index) and clear definitions (e.g. RTW = return to pre-injury job vs any employment) to improve comparability.
- Qualitative Research: Consider patients' perspectives**
 - Qualitative studies on barriers to return to work or quality of life challenges, such as psychosocial factors like fear of re-injury or workplace discrimination, need exploration.
- Include SCI Patients**
 - Specifically study patients with cervical fracture + SCI for tailored post-op reintegration measures.

9

Conclusion- Clinical Implications

- Holistic Rehab & Support:** Treat recovery as multidisciplinary – physical healing and social/vocational reintegration.
- Patient Counselling:** Use evidence-based data to set realistic expectations. Reassure neurologically intact patients of a generally good prognosis but also prepare them for some persistent symptoms.
- Policy/System Changes:** Advocate for workplace accommodation programs and insurance policies that facilitate gradual return.
- Disability Benefits & Compensation Mapping:** Results from future studies would identify what types of **disability benefits and compensation** patients with cervical fractures (with or without SCI) may be eligible for.

Thanks for listening

10

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11

Defining what Constitutes a 'Healed' Spinal Fracture in a Patient Managed with Non-Operative Treatment

MOIZA ASIF, MR. SAVITHRU PRAKASH
CARDIFF SCHOOL OF MEDICINE

1

Background



- There is no national standard which defines a "healed" spinal fracture
- The "healing" is based on clinicians' expertise
- This can lead to inconsistent management across the UK
- Delays/discrepancies in care

2

Project Aims

- Explore clinical and imaging features clinicians use to define healed fractures
- Identify common trends through a national survey
- Compare with existing literature
- Assess consensus on healing times

3

Methodology

Created a survey using Google Forms

Questions based on literature + supervisor input

Sent to 130 clinicians (spinal surgeons & radiologists)

Responses obtained: 32

Responses were analysed using graphical summaries generated by Google Forms

Defining what constitutes a "healed" spinal fracture in a patient managed with non-operative treatment

I am a third year medical student doing an SSC on Spinal Fractures and their Healing Times. As there is no clear definition for what defines a 'healed' spinal fracture, I am trying to collect data to be able to get a consensus on what different Spinal Surgeons and Radiologists think a healed fracture is. The project is aimed to assess patients with and without osteoporosis. I would really appreciate if you could complete the survey below by informing me about your practice. This will help me in my research to come up with a definition for a healed but conservatively managed spinal fracture. Thank you!

In your experience, what defines a healed spinal fracture clinically? *

- Resolution of Pain at fractured site
- Resolution of Tenderness over the Spinous process of Fractured Vertebrae
- No Pain on Axial Loading of The Spine
- No Percussion Tenderness
- Independence with Activities of Daily Living (ADL)

4

Results

Clinical Findings

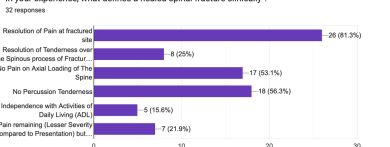
Common clinical signs used to identify healed fractures:

- Resolution of pain- **Most common**
- No percussion tenderness
- No pain on axial loading of the spine

Preferred healing timeframe: **3-6 months**

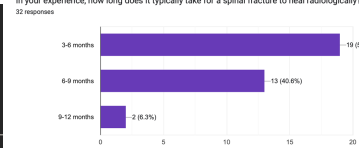
5

In your experience, what defines a healed spinal fracture clinically? 32 responses




| Clinical Sign | Count | Percentage |
|---|-------|------------|
| Resolution of Pain at fractured site | 28 | 81.3% |
| Resolution of Tenderness over the Spinous process of Fracture | 8 | 25% |
| No Pain on Axial Loading of The Spine | 17 | 53.1% |
| No Percussion Tenderness | 19 | 59.3% |
| Independence with Activities of Daily Living (ADL) | 5 | 15.6% |
| Pain remaining (Local/Severe/Compared to Presentation) but... | 7 | 21.9% |

In your experience, how long does it typically take for a spinal fracture to heal radiologically? 32 responses



| Healing Timeframe | Count | Percentage |
|-------------------|-------|------------|
| 3-6 months | 19 | 59.4% |
| 6-9 months | 13 | 40.6% |
| 9-12 months | 2 | 6.3% |

6



Results Radiological Findings

X-Ray:

- Arrest of progressing kyphosis
- Arrest of progressive vertebral body height loss

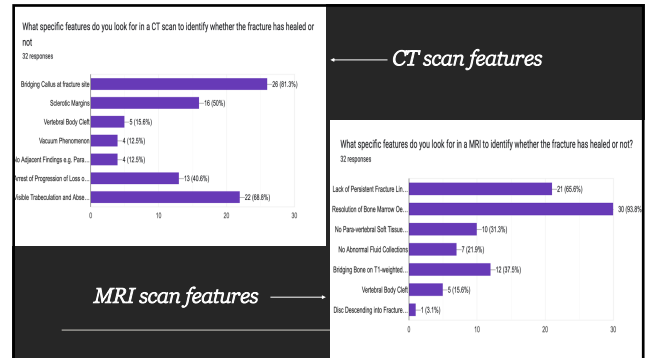
CT:

- Bridging callus
- Visible trabeculation

MRI:

- Resolution of bone marrow oedema
- Loss of persistent fracture line

7



8

Comparison with Literature

Literature supports these key signs:

- Absence of fracture line
- Bridging callus
- Resolution of oedema

• **Matches expert responses!**

9

Fracture formation was scored according to the Lane-Sandhu score by two independent radiologists.

| Points | Callus and fracture line |
|--------|--|
| 0 | No callus tissue, fracture line clear |
| 1 | 25% callus tissue, fracture line still clearly visible |
| 2 | 50% callus tissue, fracture line blurred |
| 3 | 75% callus tissue, fracture line barely visible |
| 4 | 100% callus tissue, no remaining fracture line visible |

Lane-Sandhu score

10

Limitations



- Small sample size (32 responses)
- Radiologists underrepresented
- Limited statistical power

11

Conclusion



- Clear patterns of clinical and radiological signs are present despite no formal guidelines
- Resolution of pain, bridging callus formation and absence of a fracture line were the most commonly associated features of a healed spinal fracture
- The results support the need for national criterion to guide assessment and management
- Survey will be refined and redistributed to build a more accurate and representative consensus

12

Thank you!



· Any questions?

A Retrospective Review of Posterior Cervical Spine Surgery in Cardiff from 2013-2023 (Part 1)

Miss T K Lau, Miss S J Griffiths, Prof M J McCarthy, Mr I Chopra, Mr A Jones, Mr P Davies, Mr S Ahuja, Mr S James, Mr F Brooks, Mr N Moideen, Mr J Howes



1

Why Study Cervical Spine Surgeries?

- Cervical spine pathologies can cause pain, motor weakness and sensory loss, negatively impacting quality of life
- Surgeries are becoming more common due to ageing populations
- Posterior approaches are associated with higher infection rates and complex revisions. (1)

2

Our Objectives


- Frequencies of different anterior and posterior cervical spine procedures
- Rates, reasons and patterns of revision surgeries


3

Methods Overview

Anonymised surgical data collected (BlueSpier + Welsh Clinical Portal).



Microsoft Excel for cleaning and filtering 

SPSS for statistical analysis: 

4

Posterior Cervical Decompression (PCD)

- Involves removing bone (lamina) or soft tissue to relieve pressure on the spinal cord or nerves.

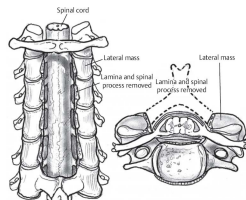


Figure 1: Posterior cervical decompression approach. Shows surgical exposure through posterior neck. Source: NeupsyKey, 2023.

5

Posterior Cervical Fusion (PCF)

- The stabilisation of cervical spine using rods, screws, and bone grafts.

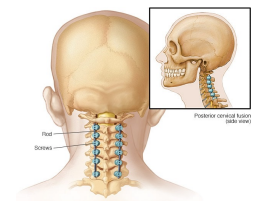


Figure 2: Post-operative cervical posterior fusion with screws and rods. Depicts posterior instrumentation for spinal stability. Source: Mayo Clinic, 2015.

6

Posterior Cervical Decompression and Fusion (PCDF)

- Combines decompression with fusion in a single operation.

7

Primary Surgeries – procedures

- Total posterior approach-related primary surgeries: 282
- PCDF: 133 (47.2%)
- PCF: 49 (17.4%)
- PCD: 38 (13.5%)
- Occipitocervical fusions: 13 (4.6%)
- Other: 41 (17.3%) – including combined (done with both anterior and posterior approach, posterior procedures which extends to the thoracic or lumbar region, excision of lesion, haematoma evacuation.

8

Elective vs Non-Elective

- Elective: 187 surgeries (66.3%)
- Non-Elective: 95 surgeries (33.7%)

9

Primary Surgery – Age

- Mean: 62.71 years
- Youngest: 18
- Oldest: 94

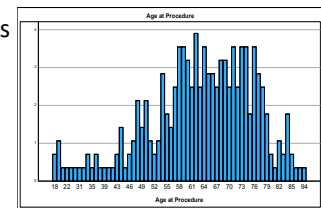


Figure 3. Age distribution of primary posterior cervical surgeries in Wales from 2013-2023

10

Indications for Primary Surgery

- Degenerative (disc disease, cervical stenosis etc): 171 (60.6%)
- Trauma: 84 (29.8%)
- Tumour: 10 (3.5%)
- Inflammatory (ankylosing spondylitis): 7 (2.5 %)
- Infection: 6 (2.1%)

- Congenital: 2 (0.7%)
- Iatrogenic: 1 (0.4 %)
- Idiopathic: 1 (0.4 %)

11

Approach for Primary Surgery

- Posterior neck only: 252 (89.4%)
- Anterior neck with Posterior neck: 20 (7.1%)
- Posterior neck with Posterior thoracic: 5 (1.8%)

12

Was there a revision?

- No: 256 (90.8%)
- Yes: 26 (9.2%)

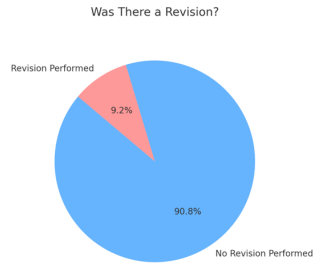


Figure 4. Proportion of cases requiring revision surgery.

13

Independent t-Test: Age at Procedure vs Revision Surgery

Objective:

- To assess if there is a significant difference in patient age between those who required revision surgery and those who did not.

Group comparison:

- No revision group: Mean age = 63.17 years (n = 256)
- Revision group: Mean age = 58.15 years (n = 26)
- Patients who underwent revision were significantly younger than those who did not.
- Mean difference = 5.02 years
- 95% CI = 0.514 to 9.522 years

14

Revision vs Procedure types

- Posterior Occipitocervical Fusions (23.1% revision), appear to carry higher revision risks
- PCDF (10.5% required revision) and PCF (8.2% revision)
- The low revision rate in PCD (2.6% revision rate)

15

Revision Surgeries Overview

- 26 patients out of 282 patients needed revision surgeries
- Total revision surgeries: 32

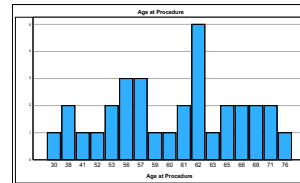


Figure 5: Age distribution of revision posterior cervical surgeries in Wales from 2013-2023

16

Revision Surgeries—Procedures

- Wound washout: 10 (31.2%)
- ACDF: 7 (21.8%)
- Extension of PCDF: 5 (15.6%)
- Removal of metalwork (ROM): 3 (9.3%)
- The following procedures has 1 procedure (3.1%) each:
 1. Cervical foraminotomy,
 2. Extension posterior occipitocervical fusion
 3. Revision of screw
 4. posterior occipitocervical fusion
 5. wound debridement
 6. wound debridement + washout + ROM
 7. wound washout + Halo application + ROM
 8. wound washout + cervical laminectomy + ROM
 9. wound debridement + PICO application

17

Revision Surgeries—Indications

- Wound infection: 14 (43.8%)
- Continued Pathology: 4 (12.5%)
- Adjacent Segment Disease: 3 (9.4%)
- Metalwork failure: 3 (9.4%)
- New symptom (e.g. deformity/neurology/ pain): 3 (9.4%)
- Inadequacy of primary procedure: 2 (6.3%)
- Wound Dishiscence: 1 (3.1%)
- Failure of fusion: 1 (3.1%)
- Trauma: 1 (3.1%)

18

Revision Surgery Timing

- Immediate (<24h): 0 (0%)
- Early (1–30 days): 12 (37.5%)
- Delayed (31–90 days): 4 (12.5%)
- Late (>90 days): 16 (50.0%)

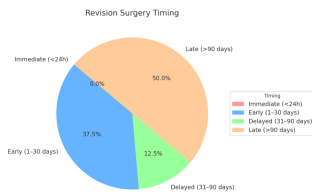


Figure 6: Timing of revision procedures post-surgery.

19

Conclusion

- Wound complications are the leading cause of revision surgery in posterior approaches. Stricter perioperative infection control protocols needed
- Many patients have their revision surgeries late, post-operative complications might appear late, follow-up appointments over a longer period of time are needed.

20

- Certain posterior procedures may have higher revision likelihood. Targeted audits can help identify risks and areas for improvement.

21

Acknowledgements

I would like to thank Mr M. McCarthy for his guidance throughout this project and Ms Sophie Griffiths for her support with data collection. I am also grateful to Cardiff University for providing me with the opportunity to undertake this project.

I would also like to thank all the consultants who made this project possible by sharing anonymised surgical data. These include Mr I. Chopra, Mr M. McCarthy, Mr A. Jones, Mr P. Davies, Mr S. Ahuja, Mr S. James, Mr F. Brooks, Mr N. Moideen, and Mr J. Howes.

22

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Figure 1

Neupsy Key. Posterior cervical decompression [Internet]. [place unknown]: NeupsyKey; [cited 2025 Jul 5]. Available from: <https://neupsykey.com/posterior-cervical-decompression/>

Figure 2

Mayo Clinic. Cervical posterior fusion – labelled diagram [Internet]. Rochester (MN): Mayo Clinic; 2015 [cited 2025 Jul 5]. Available from: https://www.mayoclinic.org/-/media/kcms/gbs/patient-consumer/images/2015/11/03/12/25/mcdc7_cervical_posterior_fusion-8col.jpg

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23



24


Being a Spinal Registrar is not Easy




Peter Rageeb MRCS, MSc
T&O Spinal Registrar
University Hospital of Wales

1

Joining the Spine Team UHW



- Started spinal rotation with enthusiasm (and nerves!)
- Highly collaborative and supportive team
 - Busy Centre- Great opportunity for exposure
- MTC all Wales – South Wales Spinal Network
- 1st 3 Months → Paediatric Spines
- 2nd 3 Months → Adult Spines

2


The Team is Different!!



- Spinal Surgeons are great Surgeons, but they are different.
- Lovely Nurse practitioners
- Theatre Scrub team is also different.
- Don't forget we have Neurosurgeons
- Free morning coffee treat from the boss
- Too many meetings.

3


Job Description




- Spinal Registrar! – Also, Cover the T&O Oncalls
- In fact:
 - SHO
 - Senior Fellow
 - Secretary
 - Email Referrals.

4


My Recent Experience in Spinal Surgery- 5 Months



COMBINED ON-CALLS T&O AND SPINES, INCLUDING AMBER: 42 SHIFTS




THEATRES: 14(6 WERE CANCELLED)



CLINICS: 7

5

Operating Experience



- From Retractors to Suction to Closing Skin!
 - Lumbar decompressions/ Fusions
 - ALIFs
 - ACDFs and posterior fusions
 - Complex deformity and trauma cases

6

MDT Meetings



Weekly



Radiology, Oncology and PT

7

Nutshell- What I have done



LOGBOOK CASES: 20
SPINE CASES: 11
ORTHOPAEDIC CASES



RESEARCH/AUDITS:
NIL



2 ORTHOPAEDIC
COURSES



SYMPOSIUM/
PRESENTATION



LEADERSHIP COURSES



TEACHING: ATLS
INSTRUCTOR- MEDICAL
STUDENT TEACHING

8

It was not Easy

- Complex Cases
- Long Surgical Procedures
- Long working hours
- Teamwork and Collaboration
- Pressure and Stress



9

Reflections and Takeaways

Spinal surgery has challenged me technically and intellectually.

High precision, high responsibility.

I've developed a deeper appreciation for patient-centred, multidisciplinary care.

The work is demanding, but the outcomes can be life-transforming.

"You may not remember every patient, but they'll always remember how you made them feel."

10

Thank You



Thank you to spine team for your support




Happy to take any questions!

11

DATA STILLBIRTH: ANALYZING CODING GAPS IN SPINAL TRAUMA SURGERY

4th Annual Cardiff Spinal Surgery Research Symposium
 R. Vemaraju, S. Prakash (lead)
 July 2025




1

INTRODUCTION & BACKGROUND

- Despite significant spinal trauma surgical activity, the Welsh health dashboard showed zero cases last year.
- This discrepancy prompted an investigation into coding practices and data capture.

| Financial Year | Anterior | Fracture | Posterior | Unspecified |
|----------------|----------|----------|-----------|-------------|
| 2018/19 | 184 | 0 | 52 | 0 |
| 2019/20 | 88 | 0 | 39 | 0 |
| 2020/21 | 57 | 0 | 16 | 0 |
| 2021/22 | 61 | 0 | 35 | 0 |
| 2022/23 | 33 | 0 | 16 | 0 |
| 2023/24 | 25 | 0 | 33 | 0 |
| 2024/25 | 10 | 0 | 15 | 0 |

| Financial Year | Anterior | Fracture | Posterior | Unspecified |
|----------------|----------|----------|-----------|-------------|
| 2018/19 | 29 | 0 | 8 | 0 |
| 2019/20 | 12 | 0 | 16 | 0 |
| 2020/21 | 13 | 0 | 11 | 0 |
| 2021/22 | 15 | 0 | 3 | 0 |
| 2022/23 | 17 | 4 | 0 | 0 |
| 2023/24 | 23 | 0 | 4 | 0 |
| 2024/25 | 10 | 0 | 5 | 0 |




2

INTRODUCTION & BACKGROUND

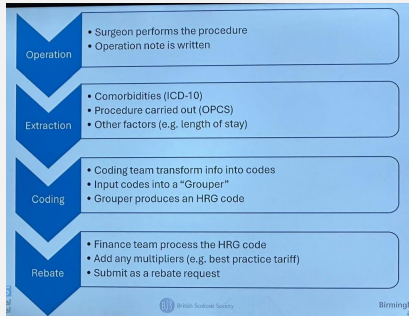
- Despite significant spinal trauma surgical activity, the Welsh health dashboard showed zero cases last year.
- This discrepancy prompted an investigation into coding practices and data capture.

| Financial Year | Anterior | Posterior | Unspecified |
|----------------|----------|-----------|-------------|
| 2018/19 | 0 | 0 | 6 |
| 2019/20 | 0 | 0 | 4 |
| 2020/21 | 0 | 0 | 3 |
| 2021/22 | 0 | 0 | 4 |
| 2022/23 | 0 | 0 | 6 |
| 2023/24 | 0 | 0 | 3 |
| 2024/25 | 0 | 0 | 0 |

| Financial Year | Discectomy and Decompression | Fracture | Fusion |
|----------------|------------------------------|----------|--------|
| 2018/19 | 229 | 0 | 88 |
| 2019/20 | 205 | 0 | 72 |
| 2020/21 | 142 | 0 | 28 |
| 2021/22 | 122 | 0 | 32 |
| 2022/23 | 64 | 0 | 15 |
| 2023/24 | 55 | 0 | 10 |
| 2024/25 | 18 | 0 | 3 |



3



```


    graph TD
      A[Operation] --> B[Extraction]
      B --> C[Coding]
      C --> D[Rebate]
  
```

- Operation**
 - Surgeon performs the procedure
 - Operation note is written
- Extraction**
 - Comorbidities (ICD-10)
 - Procedure carried out (OPCS)
 - Other factors (e.g. length of stay)
- Coding**
 - Coding team transform into codes
 - Input codes into a "Grouper"
 - Grouper produces an HRG code
- Rebate**
 - Finance team process the HRG code
 - Add any multipliers (e.g. best practice tariff)
 - Submit as a rebate request

4

OBJECTIVE


- Investigate the reasons behind the underreporting of spinal trauma surgeries.
- Perform a retrospective analysis of coding practices for spinal trauma surgeries during FY 2023/2024.



5

STUDY DESIGN


- Retrospective analysis of coding data.
- Identification of key issues.
- Implementation of prospective interventions to improve coding accuracy.



6

KEY TAKEAWAYS

- Accurate coding is essential for proper hospital reimbursement.
- Dedicated audits and review can improve data capture.
- Investment in staff and infrastructure is critical to prevent data loss.




WOODGROVE BANK 13

13

RECOMMENDATIONS

- Multidisciplinary approach is needed for improvement.
- Regular audits and targeted training.
- Improving IT infrastructure and staffing in coding departments.




WOODGROVE BANK 14

14

ACKNOWLEDGMENTS

- Prof. M. McCarthy
- Prof. S. Ahuja
- Mr. A. Jones
- Mr. I. Chopra
- Mr. S. James
- Mr. F. Brooks
- Mr. A. Durst
- Mr. S. Prakash
- Mr. J. Howes
- Mr. J. Wood




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15

ACKNOWLEDGMENTS

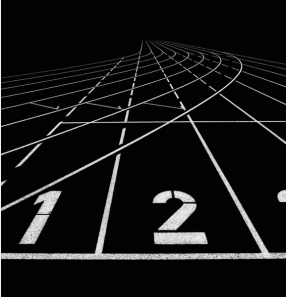
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- Mr. I. Chopra
- Mr. A. Durst
- Mr. J. Howes
- Mr. S. James
- Mr. A. Jones
- Prof. M. McCarthy
- Mr. S. Prakash
- Mr. J. Wood



WOODGROVE BANK 16

16

Discussion




WOODGROVE BANK 17

17

THANK YOU

WOODGROVE BANK 18


18



Impact of the 20mph Speed Limit on Spinal Trauma Admissions to the Major Trauma Centre for Wales

Sanjana Purbhoo¹, Michael McCarthy²

¹Cardiff University School of Medicine
²University Hospital of Wales



1

Background

- Motor vehicle collisions (MVCs) are a common cause of spinal trauma
- Introduction of new speed limit in Wales on 17th September 2023
- Aim to reduce incidence, related injury and burden on NHS

2

Current Literature

- Injury probability increases with crash speed
- Limited studies on effectiveness of speed limits
- Insufficient literature on 20mph speed limits and spinal trauma

3

Aims

1. To assess the number of MVC-related spinal trauma admissions to the MTC for Wales 1-year before and 1-year after implementation of the new 20mph speed limit.
2. To analyse the data including demographics, mechanism of injury, management and location.

4

Methods

Study Design

SWTN database produced for all patients admitted to the MTC from 17/09/22-04/01/25 with mechanism of injury recorded as 'vehicle incident'.

1. Patients admitted between 17/09/22-16/09/23 = 'pre-20mph'
2. Patients admitted between 17/09/23-01/01/25 = 'post-20mph'

Inclusion Criteria

Patients admitted to the MTC with 'vehicle incident' and who sustained spinal trauma.

5

Results

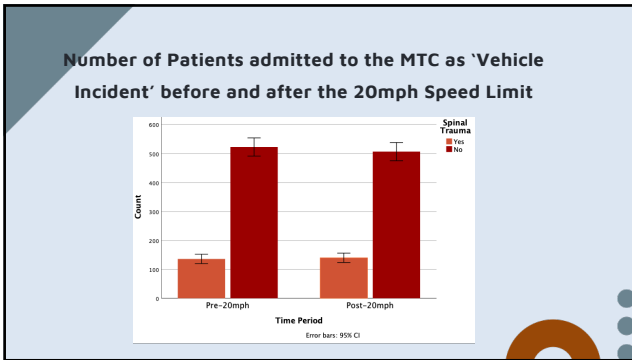
- 1,306 patients admitted with 'vehicle incident'
- 306 patients sustained spinal trauma
- 276 patients included in study
- 136 patients admitted pre-20mph
- 140 patients admitted post-20mph

6

Results

| Variable | Pre-20mph (n=136) | Post-20mph (n=140) |
|-------------------|---------------------------|--------------------|
| Age | Paediatric (<18) | 3% |
| | Adult (18 ≤ x ≤ 64) | 78% |
| | Geriatric (≥65) | 19% |
| Gender | Male | 74% |
| | Female | 26% |
| Anatomical region | Cervical | 18% |
| | Thoracic | 28% |
| | Lumbar | 27% |
| | =2 regions | 24% |
| | =3 regions | 3% |
| Road user | Car | 45% |
| | Motorbike | 24% |
| | Bicycle | 7% |
| | Pedestrian | 15% |
| Management | Other | 9% |
| | Conservative | 84% |
| | Surgical | 12% |
| | Conservative and surgical | 4% |
| | | 2% |

7



8

- # Conclusions
- 20mph speed limit has had no significant impact on spinal trauma admissions to the MTC for Wales
 - Road safety campaigns and stricter police enforcement are required to improve driver compliance with speed limits
 - Further studies over a longer period would be beneficial

9

References

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10

Thank You

11

Preventing Pressure Sores in Spinal ICU Patients: A Re-Audit Following Guideline Implementation

Sarah Mohamed, Michael McCarthy




1

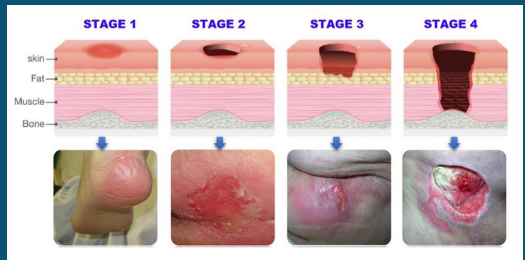
Background

What are Pressure Sores?

- 'An area of skin and the tissues below that are damaged as a result of being placed under pressure sufficient to impair its blood supply.'
 - Occurs in patients confined to bed or chair (e.g. SCIs).
- Graded from 1 to 4 based on **tissue depth**.
 - Commonly affected sites:
 - Occiput
 - Sacrum
 - Heels



2



STAGE 1 **STAGE 2** **STAGE 3** **STAGE 4**

Labels: skin, Fat, Muscle, Bone

3

Pressure Sores in Spinal Patients

- 2022 audit in UHW:** 15.5% of spinal patients admitted to ICU developed pressure sores
 - Common causes:
 - Immobility
 - Spinal precautions
 - Co-morbidities.
 - No standardised manual handling protocols at the time
 - New guidelines introduced in **July 2023** to improve care and reduce incidence.

4

Moving and Handling Guidelines For INITIAL Management Of Acute Spinal Injuries

For All Cases: See Spinal Collar / Brace Form And Spinal Clearance Form

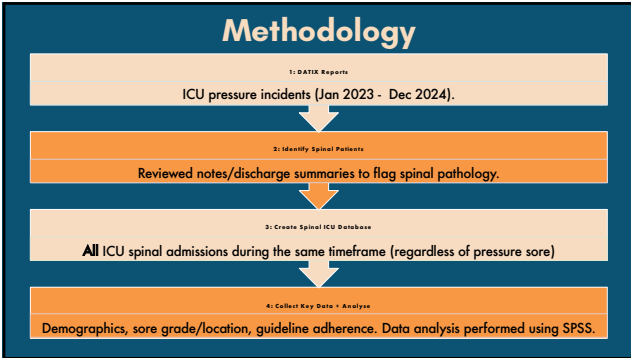
| | | | | |
|--|---|--|---|---|
| Spinal Plan - E <input type="checkbox"/> Unconscious / Unable Assess Fully ventilated and sedated | Spinal Plan - D <input type="checkbox"/> Unstable Fractures awaiting surgery / Initial management of ALL CORD INJURIES | Spinal Plan - C <input type="checkbox"/> Unstable Fractures managed in Collar or Brace / not fit for surgery | Spinal Plan - B <input type="checkbox"/> Stable Fracture Managed in Collar or Brace | Spinal Plan - A <input type="checkbox"/> Minor / Stable Spinal Fractures |
| E1 - Cervical No collar required Cervical blocks / sand bags to maintain position Can tilt to 30 degrees | D1 - Cervical Collar on at all times Collar care - saline with head hold Can tilt to 30 degrees | C1 - Cervical Collar on at all times Collar care - saline with head hold Can tilt to 30 degrees on back / side | B1 - Cervical Collar on at all times Collar care - saline or sitting (no head hold) Can sit up to 90 degrees in bed | No Collar or Brace Sitting up - no restrictions Normal rolling |
| E2 - Thoraco-Lumbar Can tilt to 30 degrees Rolling: 5-person log roll Extubation / Weaning Assess Neurological Status when able See Spinal Clearance Form | D2 - Thoraco-Lumbar No brace in bed Can tilt to 30 degrees Rolling: T4 above: 5-person log roll (no head hold) T5 below: 4-person log roll (no head hold) | C2 - Thoraco-Lumbar No brace in bed Can tilt to 30 degrees on back / side Rolling in collar: Roll in spinal alignment (no head hold) T4 above: 5-person log roll (head hold) T5 below: 4-person log roll (no head hold) | B2 - Thoraco-Lumbar No brace in bed Can sit up to 90 degrees in bed without brace Brace fitted in sitting or standing position Rolling: Roll in spinal alignment (no head hold) | Staff: Collar Tilt to Injury Block Sit to Patient Label: Name / Gender: Separation: |

5

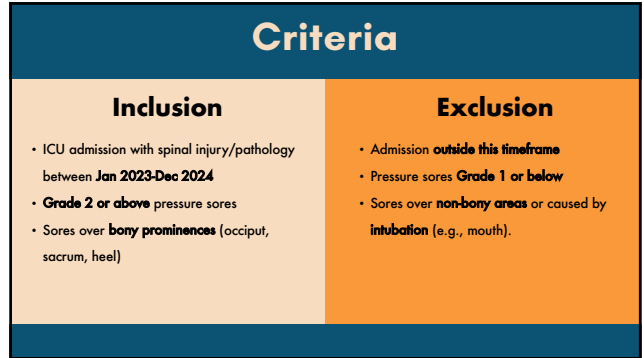
Aims

- To assess the impact of protocol changes on pressure sore incidence.
- To examine pressure sore frequency in spinal ICU patients.
- To analyse patient demographics and relevant risk factors.

6



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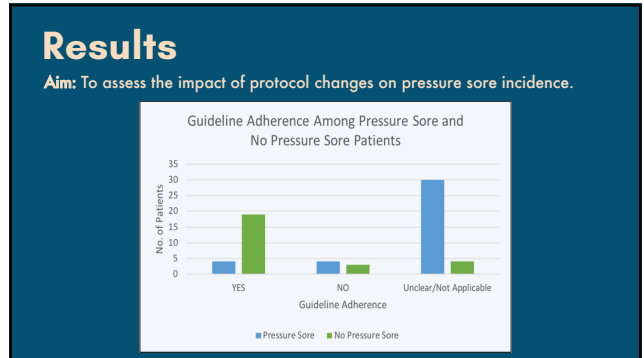


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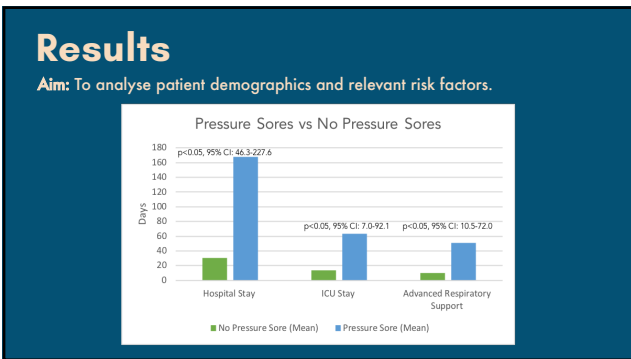
Results

- **84 Spinal ICU patients** included
- **12 patients (14.3%)** developed pressure sores
- Most common locations:
 - **Occiput** (35.3%)
 - **Sacrum & heel** (23.5% each)
 - **Lower neck** (5.9%)

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Conclusions

- Spinal ICU patients remain **at high risk** for pressure sores.
- Pressure sore incidence slightly reduced (15.5% → **14.3%**) after guideline implementation.
 - **Improved outcomes and compliance** seen in those adhering to guidelines.
 - **Limitations:**
 - **30 patients** with unclear documentation or not under spinal precautions.
- **Occiput = most common sore site** → collar care may need review.

12

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2. National Pressure Injury Advisory Panel. Pressure Injury Stages - National Pressure Ulcer Advisory Panel [Internet]. npiap.com. 2016. Available from: <https://npiap.com/page/PressureInjuryStages>
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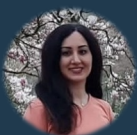
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Thank
you!

14


Unlocking AI's Potential in Diagnostic and Treatment practices



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1


The AI Boom in Healthcare – But How Is It Used in Practice?



2

Previous research

| | | |
|--|---|-----------------------------------|
| | Evaluating diagnostic performance: AI vs. clinicians (accuracy, specificity, recall). | AI vs. Clinician |
| | Exploring how discrepancy resolved between AI diagnosis and clinicians' insight. | AI-Clinician collaboration |
| | Exploring how intra-professional groups make sense of AI and how it reshapes their roles. | Role identity |



3

Research questions

RQ1)

How do clinicians make-sense the potential of AI in disease diagnosis and treatment?

RQ2)

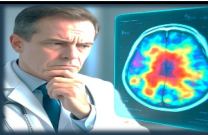
How are the perceived AI's potential actualized in disease diagnosis and treatment?

4

Methodology


Semi-structure interview with clinicians

- ✓ Alan Turing Institute
- ✓ NHS Fellowship in Clinical AI
- ✓ Orthopaedic Research UK
- ✓ British Society of Breast Radiology
- ✓ Royal College of Radiology (RCR)
- ✓ ...



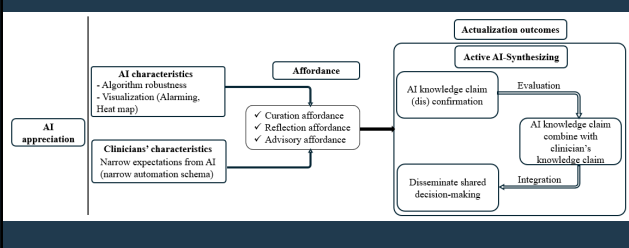
Analysis

Thematic analysis of ~25 interviews
Qualitative coding using Nvivo12

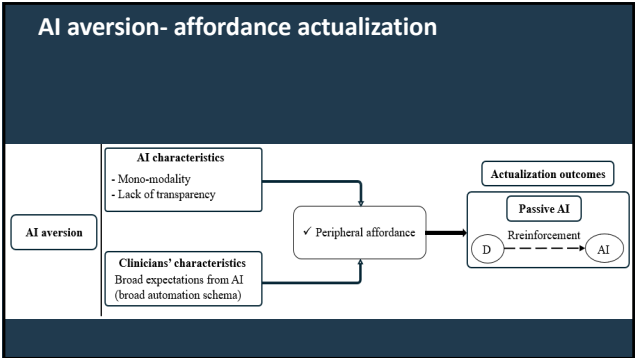


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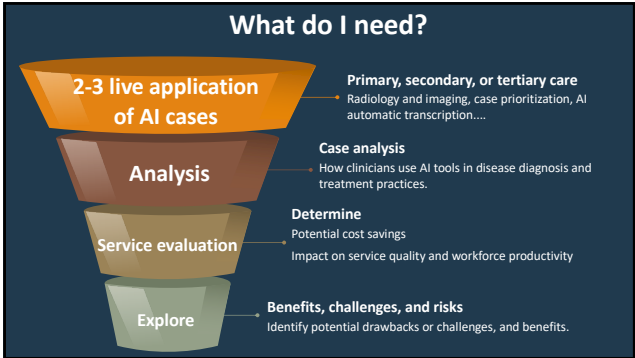
AI appreciation- affordance actualization



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9

A Retrospective Review of Cervical Spine Surgery in Cardiff – Anterior Approach

Miss S J Griffiths, Miss T K Lau, Prof M J McCarthy, Mr I Chopra, Mr A Jones, Mr P Davies, Mr S Ahuja, Mr S James, Mr F Brooks, Mr N Moideen, Mr J Howes

1

Introduction

- Cervical spine pathologies can cause pain, motor weakness and sensory loss, negatively impacting quality of life
- Surgeries are becoming more common due to ageing populations
- Posterior approaches are associated with higher infection rates and complex revisions¹
- **Similar studies have found revision rates between 1.2% and 7.9%²⁻⁷**

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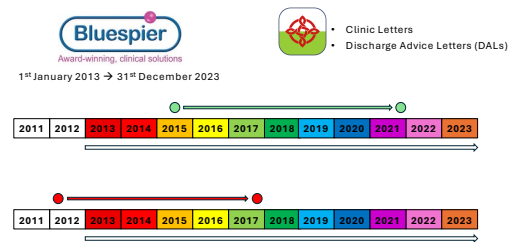
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Aims

- To categorise primary cervical spine surgical procedures carried out within a 10-year period
- To identify rate, cause and timing of revision surgery

3

Method



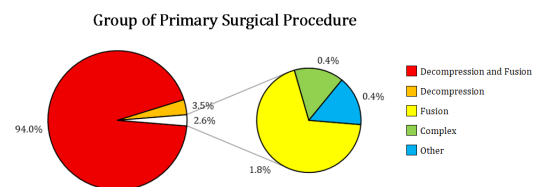
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Results

- 796 patients had primary operations, 846 surgical procedures included overall.
- 42 patients (5.3%) had at least one unplanned revision
- 50 revision procedures took place
- Maximum number of revisions for a single patient was 3
- Mean age at primary procedure was 54 years (SD±13.0, range 18-94)

5

Anterior Approach - Procedures



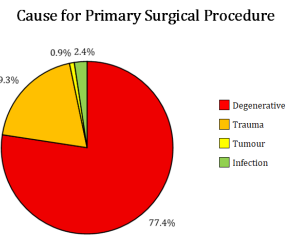
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Anterior Approach – Approach and Timing

- 772 (97.0%) anterior approach
- 20 (2.5%) combined anterior and posterior approach
- 4 (0.5%) anterior approach and incision to approach another aspect of the spine
- 618 (77.6%) procedures were elective
- 178 (22.4%) procedures were non-elective

7

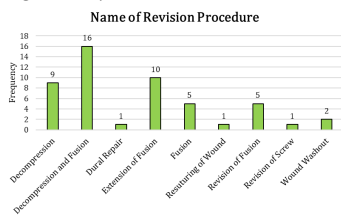
Anterior Approach – Cause for Surgery



8

Anterior Approach – Revisions

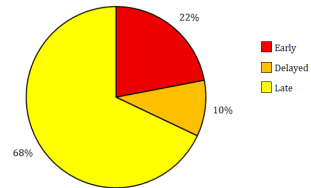
- Mean time between primary and revision operation is 909 days (SD±920, range 3-3150)



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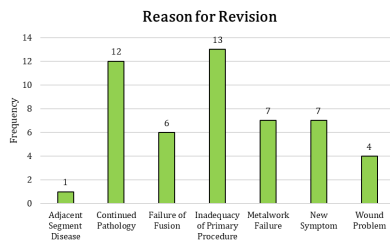
Anterior Approach – Revisions

Timing for Revision



10

Anterior Approach – Revisions



11

Anterior Approach - Conclusions

- The rate of revision for an anterior approach is 5.3%
- Approximately three quarters of primary operations were elective
- The most common reason for revision surgery to take place was an inadequacy of the primary procedure
- Most revision surgeries took place more than three months after the primary operation

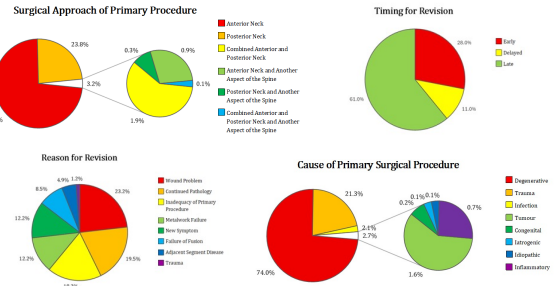
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Combining Both Approaches

- 1057 patients had primary operations, 1153 surgical procedures included overall
- 68 patients (6.4%) had at least one unplanned revision
- 82 revision surgeries took place
- Maximum number of revisions for a single patient was 4
- 60 patients (5.7%) underwent a primary procedure to a different aspect of the spine during the same period
- Mean age at primary procedure was 56 years (SD±13.8, range 19-94)

13

Combining Both Approaches



14

Conclusions

- The rate of revision in our hospital was 6.4%
- Of the patients who had cervical spine surgery, 5.7% also required surgery to a different aspect of the spine
- The most common reason for revision surgery to take place was wound problems
- Most revision surgeries took place more than three months after the primary operation

15

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16

Spinal Post operative notes adherence to Royal College of Surgeons' Guidelines

Taofeek Adeyemi

Fourth Annual Cardiff Spinal Surgery Research Symposium July 11th 2025

1

What's the big deal about operation notes?



2

Background

- Operative notes play a pivotal role in providing a comprehensive account of surgical procedures.
- These medical records are indispensable for the immediate postoperative management of patients and long-term follow-up care.



3

Background

Aim: To assess compliance with RCS guidelines on operative notes

Objectives:

- To give evidence based assurance that standards are maintained
- To identify any areas of concern with surgical note documentation
- To ensure a consistent pattern of documentation



4



Good Surgical Practice

The Royal College of Surgeons of England

- Date and time
- Elective/emergency procedure
- Names of the operating surgeon and assistant
- Name of the theatre anaesthetist
- Operative procedure carried out
- Incisions
- Operative diagnosis
- Operative findings
- Any problems/complications
- Any extra procedure performed and the reason why it was performed
- Details of tissue removed, added or altered
- Identification of any prosthesis used, including the serial numbers of prostheses and other implanted materials
- Details of closure technique
- Anticipated blood loss
- Antibiotic prophylaxis (where applicable)
- DVT prophylaxis (where applicable)
- Detailed postoperative care instructions
- Signature

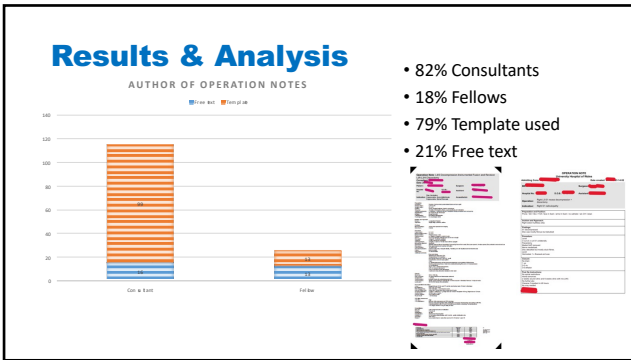


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Methodology

- Blue spier was used to extract information from post-operative notes of adult and paediatric spinal patients operated in the first quarter of 2025
- In total 141 patients operative notes were reviewed against the RCS checklist
- Data was gathered, analysed and presented

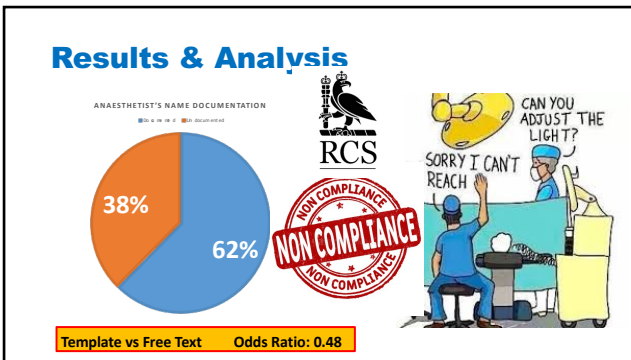
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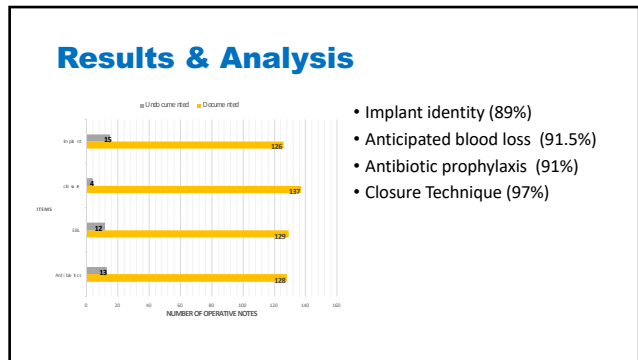
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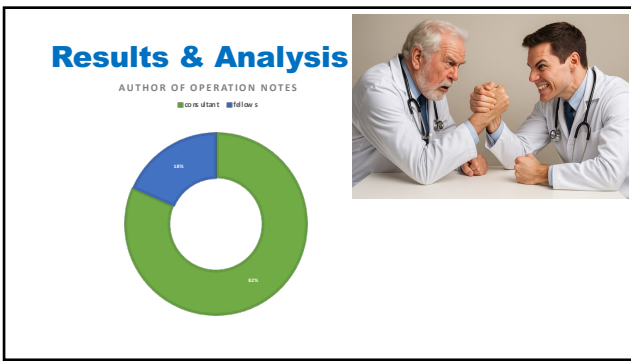
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Limitations

- Use of ambiguous terms
- ICT limitations
- Complexity of coding



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Take home message

- There is an acceptable rate of compliance with RCS guidelines
- Increase awareness of RCS guidelines
- Consistency with documentation
- More detail evaluation taking into consideration specificity in entering key detail to aid audit and research.



14