# Welsh Orthopaedic Society Annual Meeting 2025

## Podium Presentation Session 3: Upper limb, General

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# Comparative Analysis of Patient Satisfaction and Cost-Efficiency of PRP Injections for Lateral Epicondylitis in Clinical vs. Operating Theatre Settings.

Mr.Aakaash Venkatesan

Ms.Nicola Vannet.

# Background

**Lateral Epicondylitis (Tennis Elbow):**

- A degenerative condition affecting the common extensor origin of the lateral humeral epicondyle.
- Prevalence: Approximately 1%–3% in the general population, with peak incidence in the fifth decade of life.

**Platelet-Rich Plasma (PRP) Therapy:**

- An autologous blood product rich in growth factors (e.g., PDGF, TGF-β, VEGF) that promote tissue healing.
- PRP injections have shown to reduce pain and improve function in patients with lateral epicondylitis.
- PRP injections have been associated with a significant reduction in the need for surgical intervention.
- Long-term studies indicate sustained improvements in pain and function with PRP compared to corticosteroids

J Orthop. 2018 Jan 31;15(1):239–241. doi: 10.1016/j.jor.2018.01.046

**Platelet rich plasma injections for lateral epicondylitis of the elbow reduce the need for surgical intervention**

Graham Hastie [1,*], Mazen Soufi [1], James Wilson [1], Bibhas Roy [1]

# Objective

**Primary Objective:**

- To **compare patient satisfaction** levels between **clinic-based** and **operating theatre-based** PRP injections for **lateral epicondylitis**.

**Secondary Objective:**

- To conduct a **cost-efficiency analysis** of PRP injections in both settings, focusing on:
  - Direct costs (staffing, consumables, facility use)
  - Indirect costs (administrative overheads, resource utilization)



Review > Orthop J Sports Med. 2022 Apr 8;10(4):23259671221086920.
doi: 10.1177/23259671221086920. eCollection 2022 Apr.

**Effectiveness of Platelet-Rich Plasma for Lateral Epicondylitis: A Systematic Review and Meta-analysis Based on Achievement of Minimal Clinically Important Difference**

# Methodology

- **Retrospective comparative Analysis.**

**Study Population:**

- Total of **30 patients** diagnosed with **lateral epicondylitis**
  - **Clinic-based group:** *n = 18*
  - **Theatre-based group:** *n = 12*

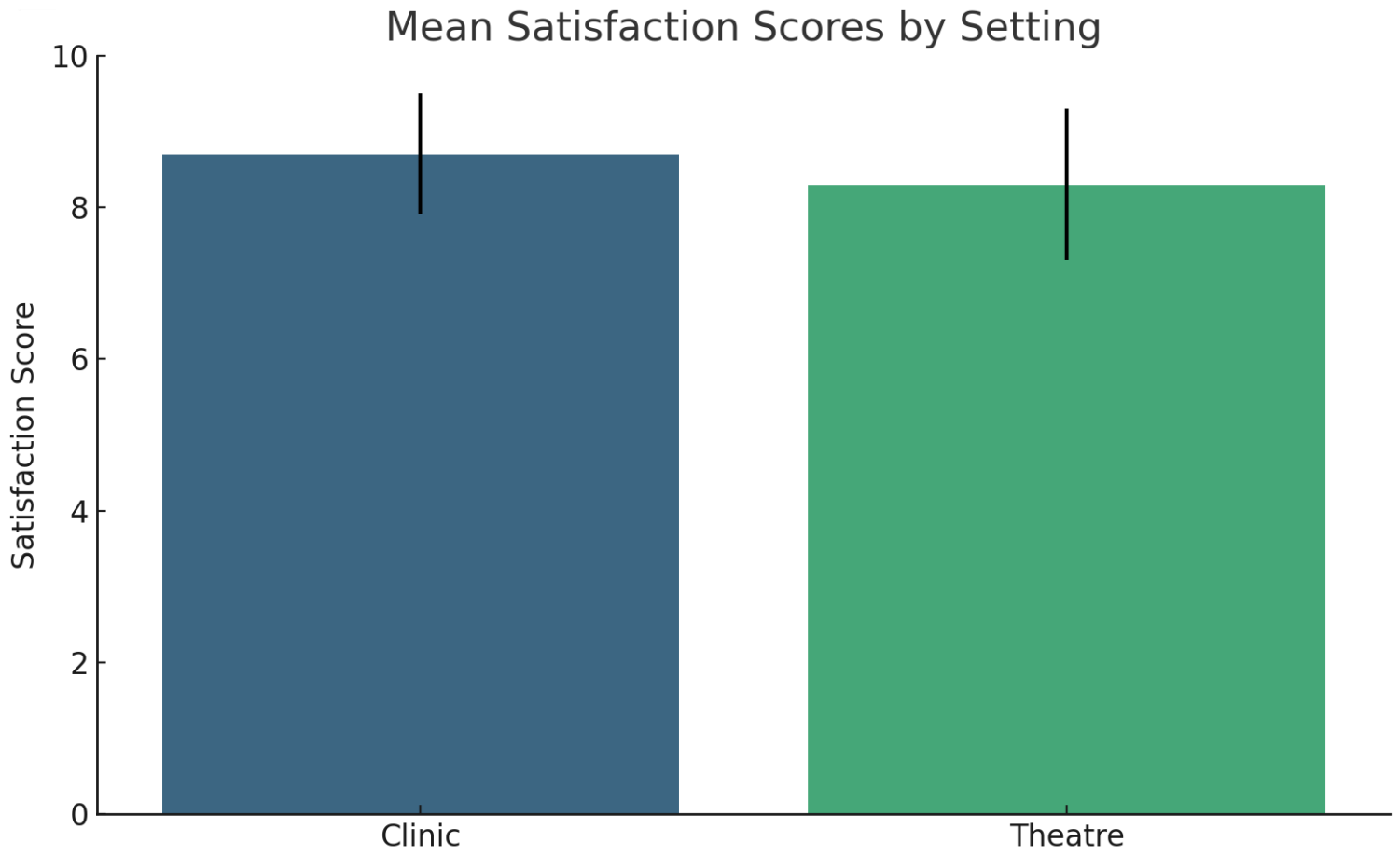
**Data Collection Tool:**

- Standardized **patient satisfaction questionnaire** assessing:
  - Appointment scheduling & convenience
  - Staff interaction
  - Pain management during procedure
  - Overall satisfaction

**Statistical Analysis:**

- **Paired t-tests**: Comparison of mean satisfaction scores
- **Chi-square tests**: Preference distribution between settings
- **Significance threshold:** $p < 0.05$

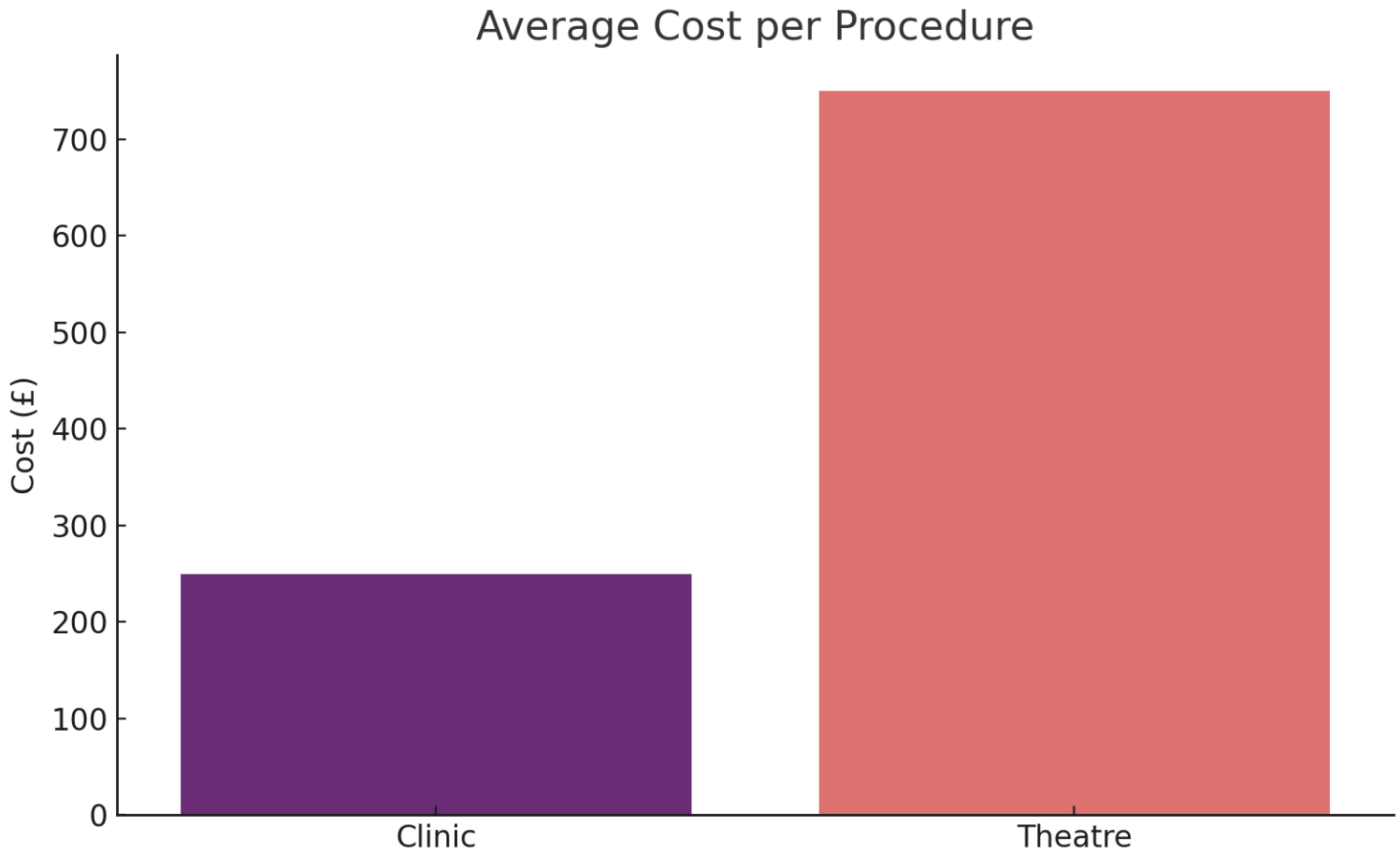
# Results




| Setting | Mean ± SD | p-value |
|---|---|---|
| Clinic | 8.7 ± 0.8 | |
| Operating Theatre | 8.3 ± 1.0 | 0.19 (NS) |

**Interpretation:** No statistically significant difference in patient satisfaction between clinic and theatre (p = 0.19).

# Results




| Setting | Average Cost (£) | p-value |
|---|---|---|
| Clinic | £250 | |
| Operating Theatre | £750 | <0.01 (***) |

**Interpretation:** Clinic procedures are significantly more cost-effective ($p < 0.01$).

| Category | Type | Cost (£) | Description |
|---|---|---|---|
| **Direct Costs** | | | |
| Surgical Staff (Surgeon, Nurse, Anaesthetist) | Direct | £180 | Includes salaries for time spent during the procedure |
| Consumables (Syringes, PRP kits, gloves) | Direct | £120 | Medical and sterile consumables used during the procedure |
| Medication (local anaesthetic, analgesics) | Direct | £30 | Drugs used before, during or after the injection |
| Equipment Use (PRP centrifuge, tools) | Direct | £40 | Equipment depreciation and sterilization costs |
| Subtotal (Direct) | | £370 | |
| | | | |
| **Indirect Costs** | | | |
| Theatre Space/Overheads | Indirect | £200 | Utility, maintenance, cleaning, and operational overheads for theatre use |
| Admin and Scheduling Staff | Indirect | £50 | Booking, patient communication, paperwork, etc. |
| Recovery Area and Nursing | Indirect | £70 | Time in post-op area, nursing supervision, monitoring |
| Facility Costs (lighting, heating, security) | Indirect | £60 | General hospital overheads allocated per case |
| Subtotal (Indirect) | | £380 | |

# Cost Analysis

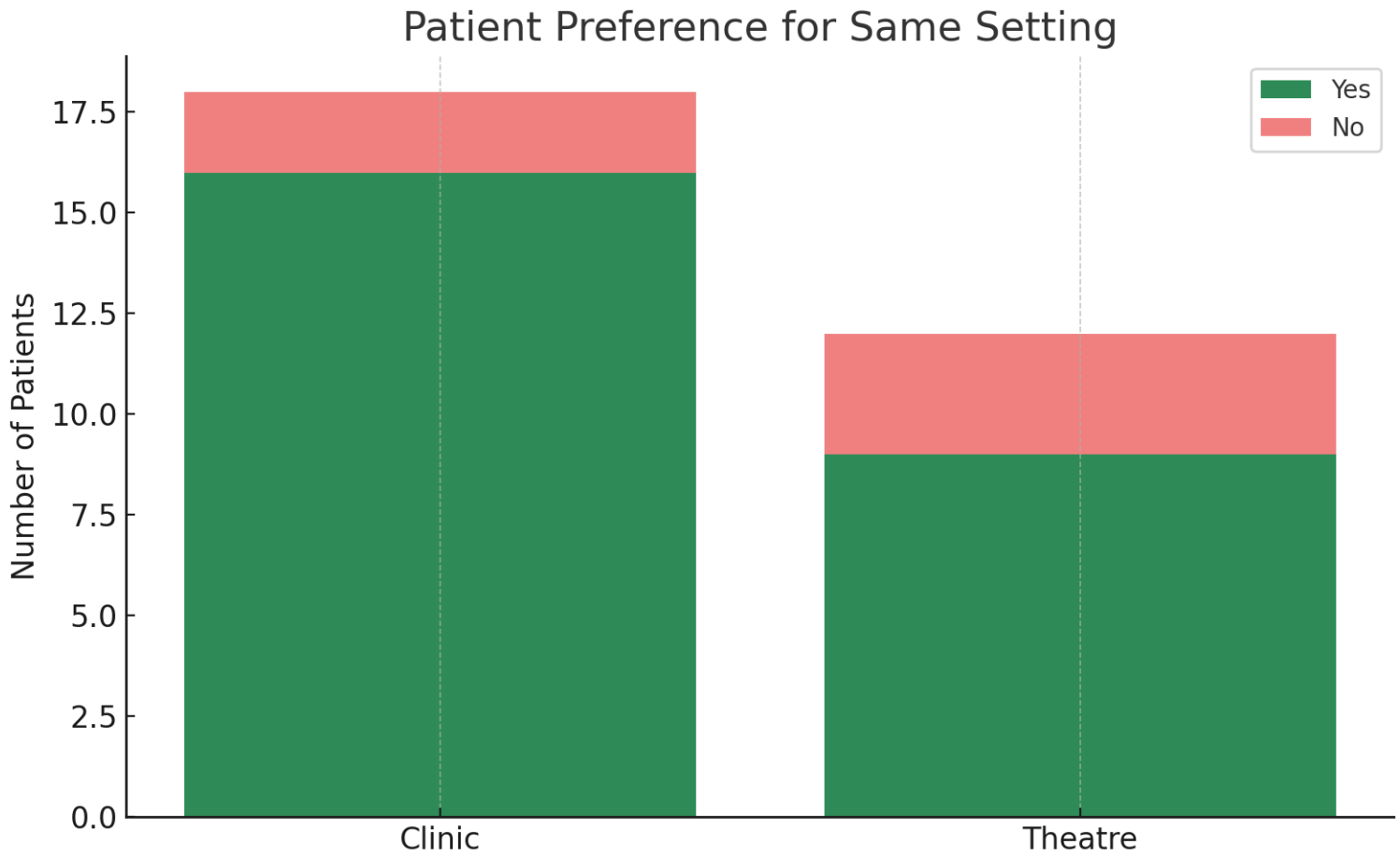
**Day Case Surgery Cost Breakdown (Approx. Total: £750)**

# Cost Analysis

| Category | Type | Cost (£) | Description |
|---|---|---|---|
| **Direct Costs** | | | |
| Clinician Time (Consultant/GP) | Direct | £60 | Based on 30–45 mins of clinician's time, includes prep and injection |
| Nursing/Support Staff | Direct | £30 | Assistance during injection and prep |
| Consumables (PRP kit, syringes, gloves) | Direct | £100 | Kit-specific items including tubes, centrifuge disposables, etc. |
| Medication (local anaesthetic, etc.) | Direct | £20 | Lidocaine or equivalent, antiseptic, etc. |
| Equipment Use (Centrifuge, tray, etc.) | Direct | £10 | Allocation for wear/tear, cleaning, and usage of clinic equipment |
| **Subtotal (Direct)** | | £220 | |
| | | | |
| **Indirect Costs** | | | |
| Clinic Space Overhead (lighting, rent, cleaning) | Indirect | £15 | Facility and environmental costs apportioned to the session |
| Administrative Support (booking, records) | Indirect | £10 | Patient scheduling and data entry overhead |
| General NHS Trust Overhead Allocation | Indirect | £5 | Miscellaneous costs (IT systems, insurance, staff training) |
| **Subtotal (Indirect)** | | £30 | |

- **PRP Injection in Clinic Setting – Cost Breakdown (Approx. Total: £250)**

# Results




| Setting | Preferred Same Setting (%) | p-value |
|---|---|---|
| Clinic | 93% | |
| Operating Theatre | 80% | 0.03 (*) |

**Interpretation:** Patients preferred the clinic setting significantly more (p = 0.03).

# Conclusion

**Comparable Satisfaction:**

- Patient satisfaction was **high in both groups**, with no statistically significant difference *(Clinic: 8.7 ± 0.8 vs Theatre: 8.3 ± 1.0; p = 0.19)*

**Significant Cost Savings:**

- Clinic-based PRP injections were **3× more cost-efficient** *(£250 vs £750; p < 0.01)*
- Savings were driven by reduced staffing, facility overhead, and equipment needs.

**Patient Preference:**

- **93% of clinic patients** would choose the same setting again
- Highlights strong preference for **convenient, low-resource settings**

**Service Delivery Implication:**

- Clinic-based delivery offers a **viable, patient-centred alternative**
- Supports NHS goals for **resource optimization** and **value-based care**

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# A Comprehensive® Approach to Shoulder Arthroplasty

Mr. Niall Hill - Mr. Peadar Antaine Mac Suibhne - Mr. Jerry Sam
Miss Emma Poyser - Mr. Hemang Mehta
Miss Nicola Vannet - Mr. Huw Pullen
Aneurin Bevan University Health Board

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# Background

- All surgeons use the **Z-B Comprehensive®** shoulder arthroplasty platform – TSA & rTSA.
- Benefits to this include:
  - Uniformity allows less of a learning curve for trainees and scrub staff
  - Less variability in “on-the-shelf” equipment
  - Ease of revision in the case of “on-call” interventions
  - Reduced work for Central Sterile Supply Department (CSSD) in sterilising numerous trays from varying implant systems

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# Background

- Various stem lengths.
  - Nano, Micro, Mini, Standard, Long.
- Accommodates surgeon philosophies
  - Bone stock preservation
  - Peri-implant fracture risk
  - Stress shielding
- Allows revision from aTSA to rTSA



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# Study Design & Methods

- Retrospective review of shoulder arthroplasty cases between 01/01/2019 to 01/01/2024. N= 183
- Included all **elective** and **trauma** cases where the Z-B Comprehensive platform was used.

- Exclusion criteria:
  - Other platforms

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# Anatomic TSA

**Cohort**
- 84 patients. F = 65% M = 35%
- Median Age = 69 (IQR = 13)

**Imaging**
- MRI = 32% (N=27)
- “Positive” findings = 48% (N=13)

**Implant**
- Nano = 19
- Mini = 65

**OSS**
- Median 19.5 (IQR = 16) – Pre-op
- Median 44 (IQR = 11) – Post-op

# Reverse TSA

**Cohort**
- 99 patients. F = 75% M = 25%
- Median Age = 76 (IQR = 8)

**Imaging**
- MRI = 3.1% (N=3)

**Implant**
- Mini Stem = 95
- Trauma Cemented Stem = 4

**Indication**
- Cuff OA = 55.55% (N=55)
- Trauma = 34.34% (N=34)

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## Anatomic TSA

| | |
|---|---|
| Infection | 1.19%<br>• N = 1 |
| Peri-Implant Fracture | N = 0 |
| Dislocation | N=0 |

## Reverse TSA

| | |
|---|---|
| Infection | 1.01%<br>• N = 1 |
| Peri-Implant Fracture | 4.04%<br>• N = 4 |
| Dislocation | 1.05%<br>• N = 1 |

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# Dislocation / Instability

## Anatomic TSA

- Subscapularis failure
  - Reported at 6 weeks - repaired
- No dislocations

## Reverse TSA

- Single dislocation
  - Revised next day to increased offset
- No reported clinical instability

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# Revision from TSA to rTSA

- Two primary TSA cases required revision to a rTSA:
  - Infection N=1
    - Rheumatoid Arthritis patient – subsequently diagnosed post-primary TSA
    - Long history of CS injections in the community
    - Retrospectoscope – ?MRI evidence of signal change in the cuff
  - Rotator cuff failure N=1

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# Imaging – Yes, or No?

- Number of MRIs performed in the rTSA group = 3 (3.1%)
- Number of MRIs performed in the aTSA group = 27 (32%)

- “Positive findings”
  - Cuff attenuation
  - Intra-substance tendinous delamination
  - Thomazeau & Goutallier classification being abnormal

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# Imaging – Yes, or No?

- Number of MRIs performed in the rTSA group = 3 (3.1%)
- Number of MRIs performed in the aTSA group = 27 (32%)

- Low number of revisions from aTSA to rTSA = ?Good patient selection?
- Low number of MRI scans = ?Good decision making based on clinical findings?

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# Conclusions

- Imaging findings - cuff attenuation in the TSA group is not an absolute contra-indication to performing an anatomic TSA.
- Mini stem doesn’t have a higher peri-implant fracture risk compared to longer stem options.
- Mini stem does not have higher rates of humeral stress shielding than the Nano humeral implant.

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# The use of a plate-in-a-box system as a solution to individually packed sterile implants in the fixation of distal radius fractures

M JONES, **O AMBLER**, S TOLLEY, I D RUSSELL

Contents

BACKGROUND

METHOD

AIM

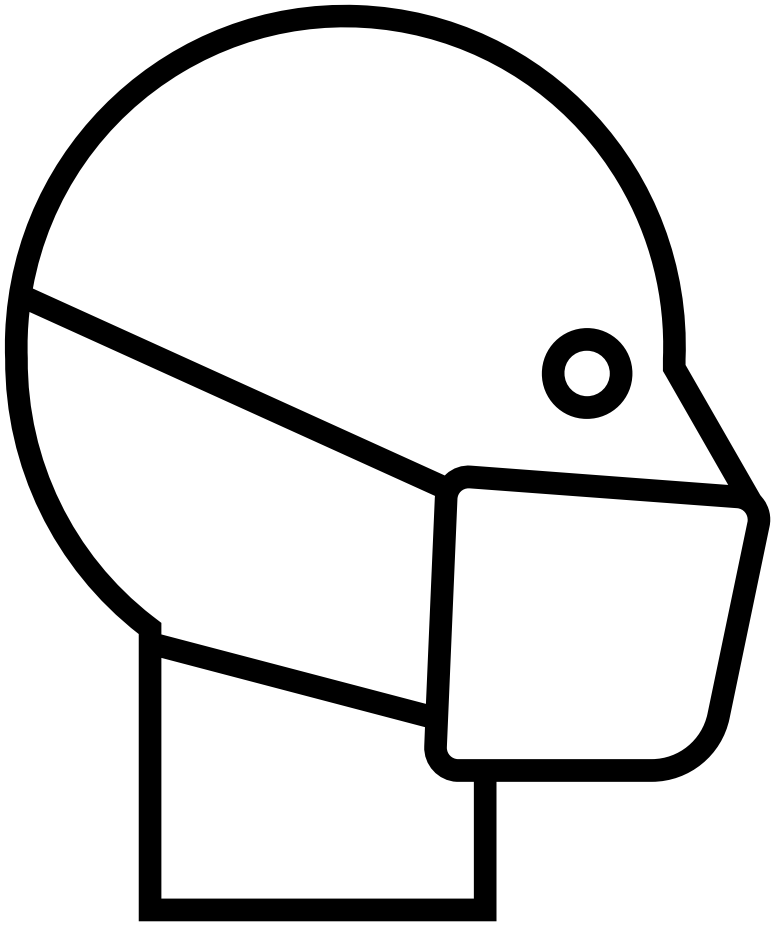
RESULTS

CONCLUSIONS



# Background

- Volar locking plates can be used to fix displaced or unstable distal radius fractures
  - Provide stability and permit early mobilisation
- Changes in Medical Device Regulation (MDR) have driven a shift towards individually sterile-packed implants



# Background

Surgical concerns include:

- Reduced preparation efficiency
- Increase in operative time
- More costly stock management

Aim: To establish whether a plate-in-a-box system is a usable option in the fixation of distal radius fractures

# Methods

Retrospective review of patients who underwent acute, isolated distal radius fracture fixation over a four-year period in a day surgery unit, using Stryker VariAx Xpress system.

Usability assessed by:

- reviewing tourniquet times
- assessing storage space requirements





# Results

# Results

390 (96%) fractures fixed with Xpress system

Tourniquet time was 46 minutes compared to 70 minutes using individually packed screws (Z = -4.31, p =0.00001)

Routinely performing of 5 distal radius fracture fixations performed per list




# Results

Takes up 80% less space than traditional sterile packed system

Portable (can be taken to peripheral hospitals)

| Pros | Cons |
| --- | --- |
| Significant reduction in tourniquet time | Recyclying concerns |
| Shorter wait for HSDU | |
| Portability | |
| Dorsal plates now available | |

# Conclusions



# Questions

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# Comparison of Prepackaged Vs Re-sterilisable Orthopaedic Implants

A comparative study on screw retrieval time, cost efficiency and waste generation

# Background

Sustainable Surgery
&
Climate Change

Pre-packaged & Re-sterilisable Implants

Concerns regarding clinical and surgical outcomes from BSSH

# Aims

01

Compare screw retrieval times between pre-packaged and re-sterilisable implants

02

Compare plastic waste generation

03

Survey surgeon satisfaction regarding use of both implant categories

# Methods

- Three-week observational study
- Compared two similar distal radius plating systems: re-sterilisable **IXOS** and pre-packaged **APTUS**
- Inclusion criteria: Adult patients with closed distal radius fracture requiring ORIF,  patients received implant based on surgeon's preference

## *Screw Retrieval Time*



Time measured from upon request to handing screw on screwdriver to surgeon using stopwatch

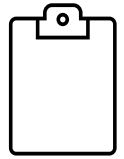
## *Plastic Volume Generation*



All plastic waste collected, and weighed on electronic scales, measurements in grams

Carboard weight excluded

## *Surgeon Satisfaction*

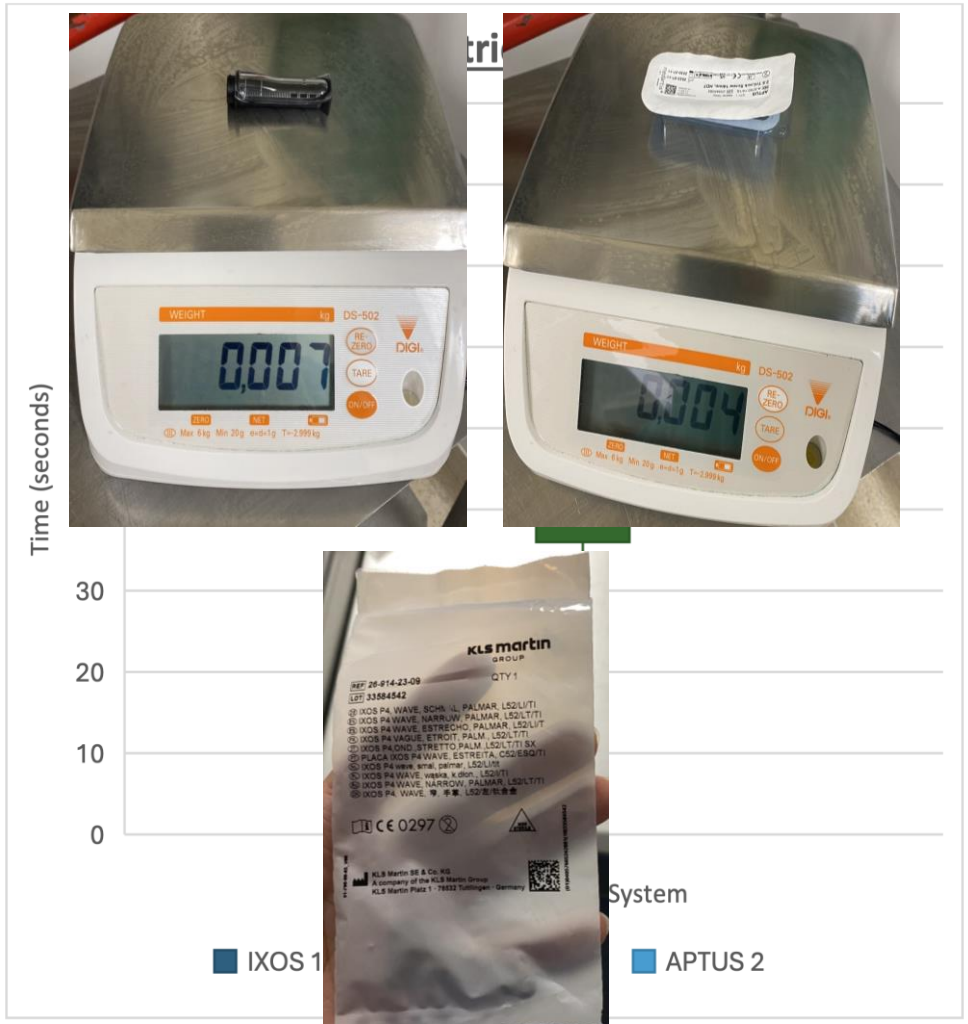


Online survey to orthopaedic registrars and consultants

# Results – Screw Retrieval

Four DRF requiring ORIF observed: 2 IXOS and 2 APTUS

| | Re-sterilisable Implant | Prepackaged Implant |
|---|---|---|
| Mean Screw Retrieval Time | **11s and 17s** | **54s a**nd **60s** |
| Plastic Waste Generated | <1g | 11g |
| Survey Results | Total of 6 participants:<br>➢ All preferred use of re-sterilisable implants<br>➢ 4/6 associated RIs with better surgical times, convenience and reduced implant package wasting | |



# Discussion

Our study suggest re-sterilisable implants:

- Intra-operative efficiency & Patient Safety
- Environmentally Sustainable
- Cost-Effective
- Preferred by Surgeons



LIMITATIONS



NEXT STEPS

# Data Table Summary

| Factor | APTUS (Pre-Packaged) | IXOS (Re-Sterilisable) | Key Takeaways |
|---|---|---|---|
| **Retrieval Time** | 57 seconds | 14 seconds | IXOS is significantly faster, saving **43 seconds per screw** |
| **Cost per Screw** | £15 more expensive | £15 savings per screw | IXOS is more cost-effective |
| **Waste per Screw** | 11g | Less than 1g | IXOS is more sustainable |
| **Efficiency & Preference** | Longer retrieval time (57s) | Faster retrieval (14s) | IXOS improves surgical efficiency and is preferable for small bone fixation |

# Thank you!

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# Why Not Ortho?

## Investigating Perceived Barriers to a Career in Trauma & Orthopedics

*Miss H Wise (Presenting), Miss J Craven, Miss A Tong*

Cardiff University

Royal Glamorgan Hospital, Llantrisant, United Kingdom

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# Background

Highly competitive specialty

Gender disparity

Specialty choice begins early

# Increased diversity equals:

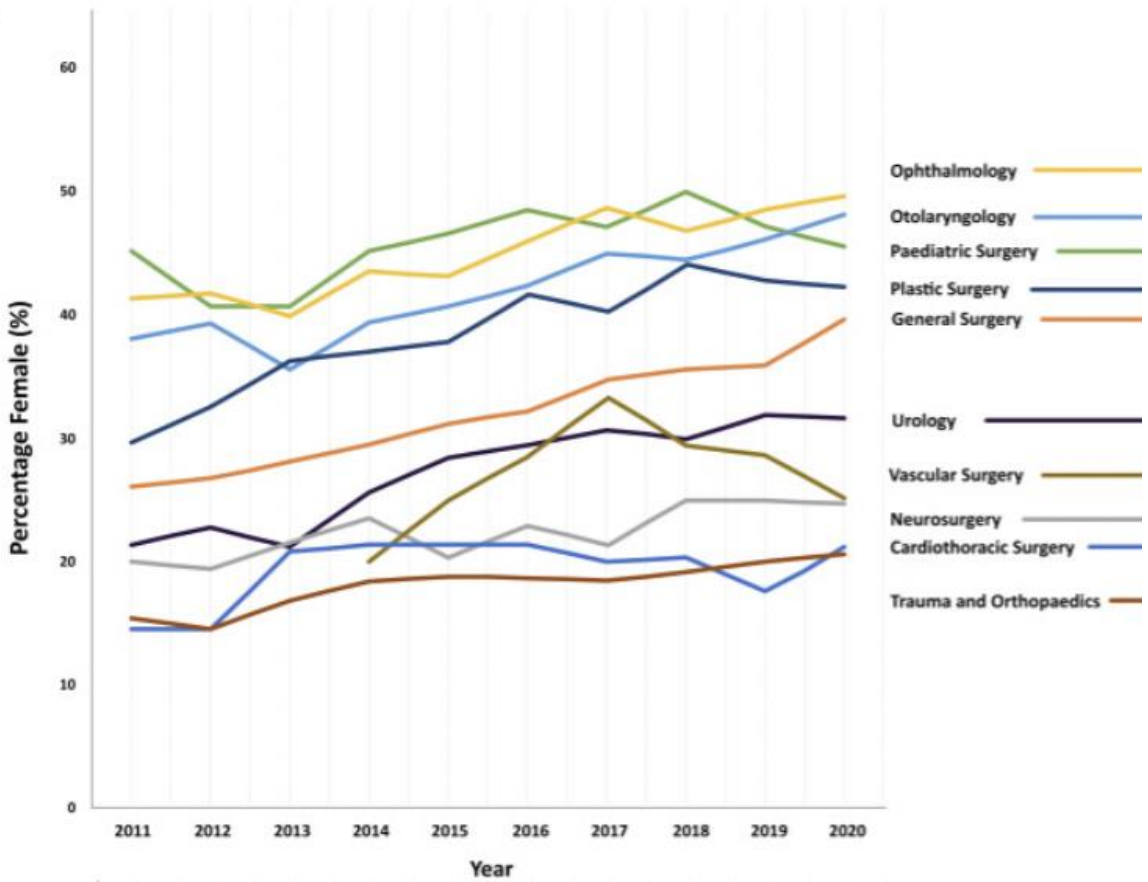
Enhances innovation

Better patient care

Increase surgical outcomes

More inclusive surgical community

a)

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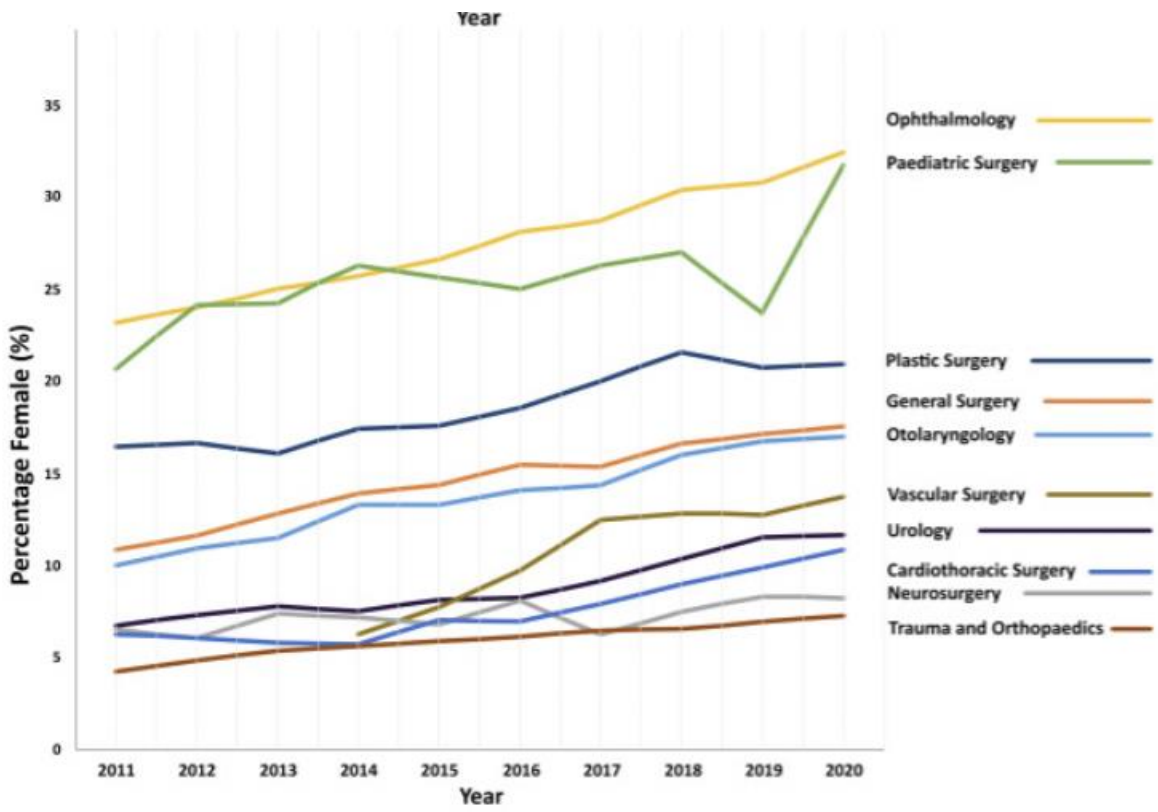


# Comparison to other specialties

Newman TH, Parry MG, Zakeri R, et al. Gender diversity in UK surgical specialties: a national observational study. BMJ Open 2022;12:e055516. doi:10.1136/ bmjopen-2021-055516

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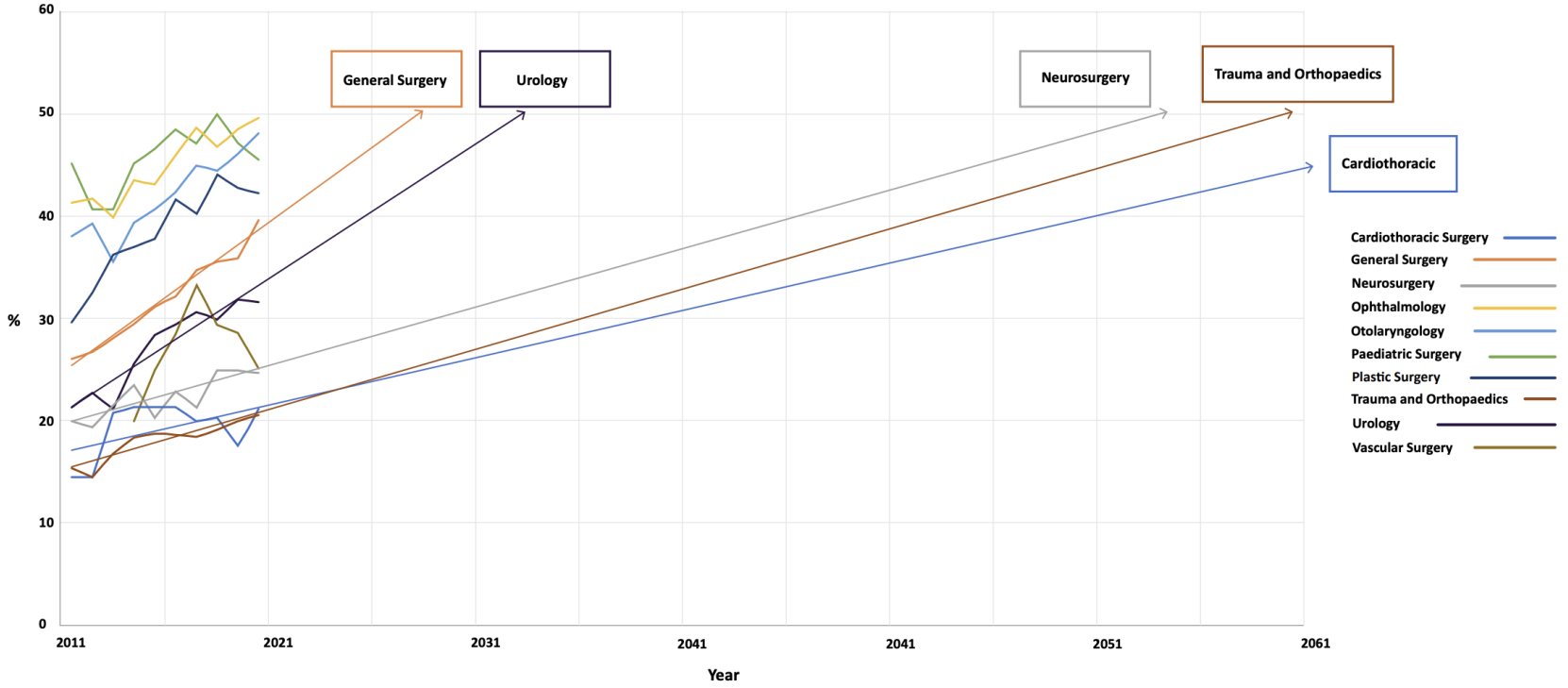


**Figure 3** Projection of trends to estimate time to parity for female registrars in surgical specialties.

# Projected parity

Study by Kings College published in the BMJ open 2021

Newman TH, Parry MG, Zakeri R, et al. Gender diversity in UK surgical specialties: a national observational study. BMJ Open 2022;12:e055516. doi:10.1136/ bmjopen-2021-055516

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# Aims

## Primary

Explore attitudes of medical students

## Secondary

Understand influence of gender

# Methods



DESIGNED SURVEY



OBTAINED ETHICAL APPROVAL



DISSEMINATED TO MEDICAL STUDENTS



RESULTS ANALYSED

# Results sections

Baseline demographics

Interest in surgery

Important factors for career choice

Perceived barriers to orthopedics

# Results

- Survey collected 54 responses
- Response rate of 45%
- Mean age= 18.9 years (range 18-22)
- 67% female (n=36) 33% male (n=18)

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# Surgical and orthopedic career choice

| Are you considering… | All | | Male | | Female | |
|---|---|---|---|---|---|---|
| | Yes | No | Yes | No | Yes | No |
| A career in surgery? | 36 (67%) | 18 (33%) | 14 (78%) | 4 (22%) | 22 (61%) | 14 39%) |
| A career in orthopedics? | 33 (61%) | 21 (39%) | 13 (72%) | 5 (28%) | 20 (56%) | 16 (44%) |

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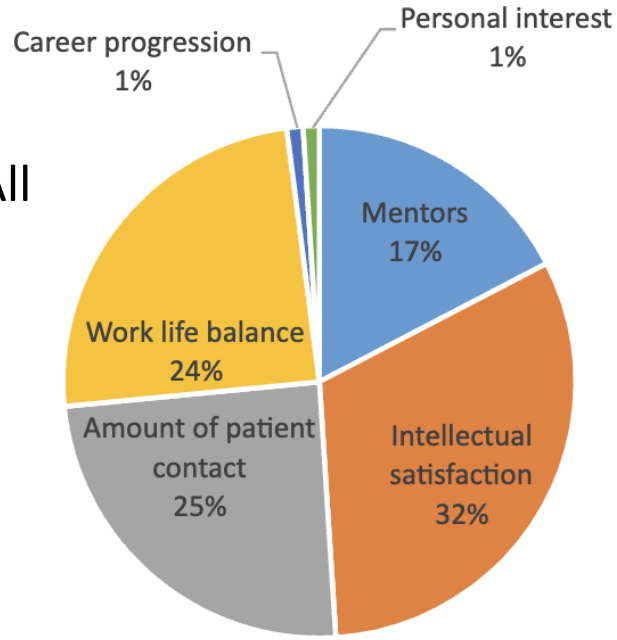
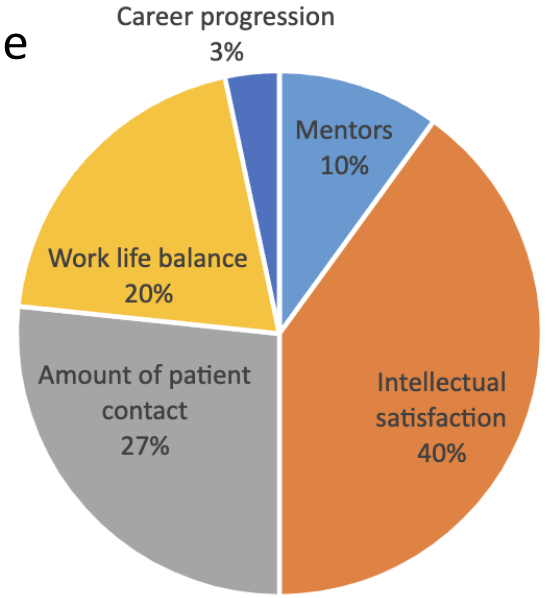
# What is the most important factor pertaining to career choice for you?

| | All | Males | Females |
|---|---|---|---|
| Work life balance | 27 (50%) | 9 (50%) | 18 (50%) |
| Intellectual satisfaction | 12 (22%) | 5 (28%) | 7 (19%) |
| Patient contact | 10 (19%) | 3 (17%) | 7 (19%) |
| Mentors | 2 (4%) | 1 (6%) | 1 (3%) |
| Hands on | 1 (2%) | 0 (0%) | 1 (3%) |
| All the above | 2 (4%) | 0 (0%) | 2 (6%) |

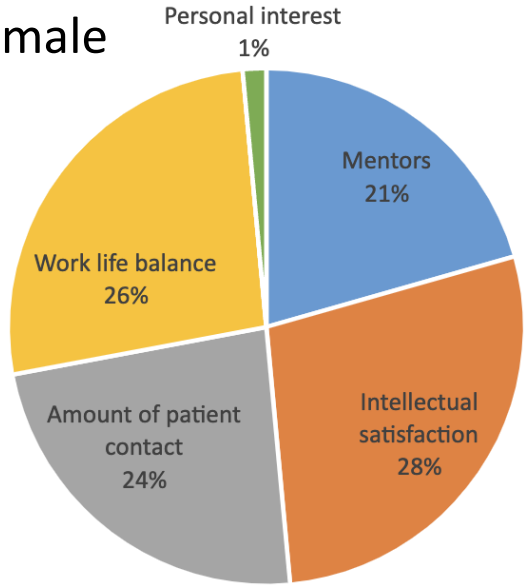
All




Male




Female




# Are there any other factors you would consider important?

- Mentors
- Intellectual satisfaction
- Amount of patient contact
- Work life balance
- Career progression
- Personal interest

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# What do you perceive as the number one barrier to orthopaedics?

| | All | Male | Females |
|---|---|---|---|
| Competition ratio | 23 (43%) | 7 (39%) | 16 (45%) |
| Work-life balance | 15 (28%) | 5 (28%) | 10 (28%) |
| Gender bias | 5 (9%) | 1 (6%) | 4 (11%) |
| None | 4 (7%) | 1 (6%) | 3 (8%) |
| Lack of diversity | 3 (6%) | 2 (11%) | 1 (3%) |
| Not interested | 2 (4%) | 1 (6%) | 1 (3%) |
| Lack of mentors | 1 (2%) | 0 (0%) | 1 (3%) |
| Intellectual stimulation | 1 (2%) | 1 (6%) | 0 (0%) |

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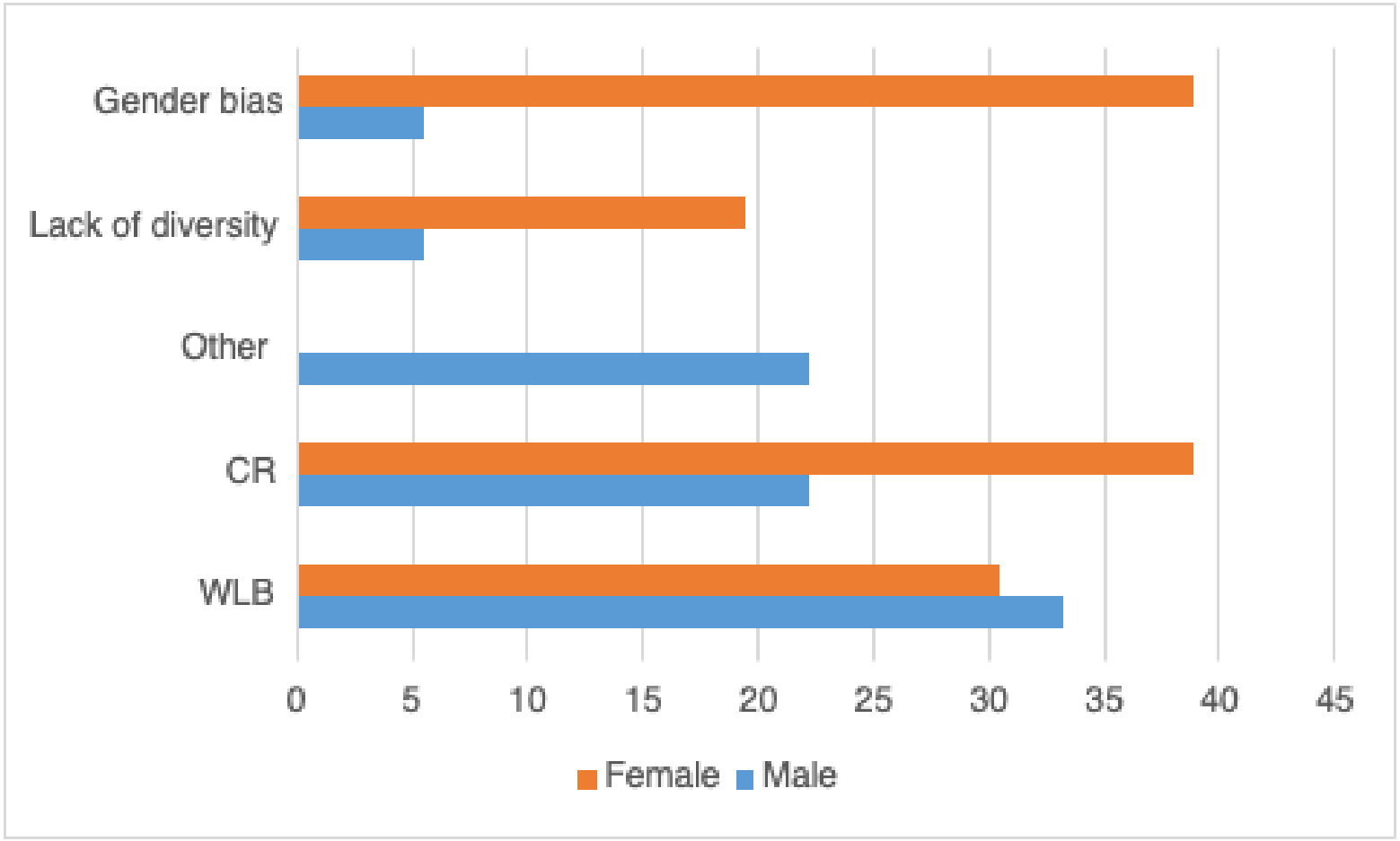
# Are there any other factors you perceive as barriers into orthopaedics?




*WLB= Work life balance, CR= Competition ratio

# Would you say you have a positive role model/ mentor?

| | All | Male | Female |
|---|---|---|---|
| Yes | 24 (73%) | 10 (56%) | 21 (58%) |
| No | 9 (27%) | 8 (44%) | 15 (42%) |

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# Do you have any other comments on your perceptions of Trauma and Orthopedics as a specialty?




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# Discussion points

- Less females consider T&O from 1st year of medical school
- Work-Life Balance is an important factor for career choice
- Females rate mentors highly as an important factor
- Competition ratio is a perceived barrier into T&O across the board

# Discussion

Comparison to existing literature…

British Orthopaedic Association

Careers Congress Learning & Events Policy & Engagement

**Take home message**

- Female medical students are equally likely to consider a career in T&O compared to males.
- Students' cited perceptions of gender distribution, negative culture, poor work-life balance and negative stereotypes as off-putting from a career in T&O.
- Negative comments about the specialty from peers and other medical professionals had been experienced by nearly a third of students.

…m, had been witnessed by a high proportion …edicine and surgery.

THE PERRY INITIATIVE

Building the Talent Pipeline in Orthopaedic Surgery & Engineering

**Women in trauma and orthopaedics: are we losing them at the first hurdle?**

**Authors**: K Malik-Tabassum, JN Lamb, S Seewoonarain, M Ahmed, P Normahani, H Pandit, J Aderinto, and B Rogers | AUTHORS INFO & AFFILIATIONS

**Publication**: The Annals of The Royal College of Surgeons of England • Volume 105, Number 7 • https://doi.org/10.1308/rcsann.2022.0112

Bone & Joint Open

GENERAL ORTHOPAEDICS OPEN

**Current challenges for women in orthopaedics**

Maryam Ahmed Laura C. Hamilton

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# Conclusion

1. Start conversations early
2. Emphasis on mentors
3. Consider how we tackle these perceived barriers




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# What are your perceptions?

Doctors'/ Surgeons' perceptions of Trauma and Orthopaedics as a career

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# Thank you!
# Any questions



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# Radiation Personal Protective Equipment (RPPE) in Orthopaedic Theatres: A Nationwide Stocktake

Francesca Solari
ST5
University Hospital Wales

# Introduction

- RPPE necessary to protect staff members whilst using ionising radiation
- Guidelines from the BOA
  - Wrap around style
  - High axillary coverage
  - Range of sizes available
  - Well fitting

British Orthopaedic Association

35-43 Lincoln's Inn Fields,
London, WC2A 3PE

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- A range of PPE reflecting different body shapes and sizes is available – female orthopaedic surgeons should not be using tabard gowns.
- Vests should be fitted to the size of the individual and as close to the axilla as possible.
- Minimum lead thickness should be 0.35mm.
- Detachable sleeves should be avoided.

If you have any questions on this matter, do please contact: Gary Robjent, Head of Policy and Public Affairs (g.robjent@boa.ac.uk)

For further information: https://www.boa.ac.uk/standards-guidance/radiation-exposure-in-theatre.html

Yours sincerely,

Deborah Eastwood,
President



# Aim

1. Assess RPPE availability across the region and BOA guidance compliance
2. Develop a systematic tool to allow for repeated measures of RPPE stock for future re-audits

# Methods

Developed a simple google form

- Number of wrap around and tabard gowns
- Number of thyroid guards
- Thickness of the gowns
- Sizes of the gowns

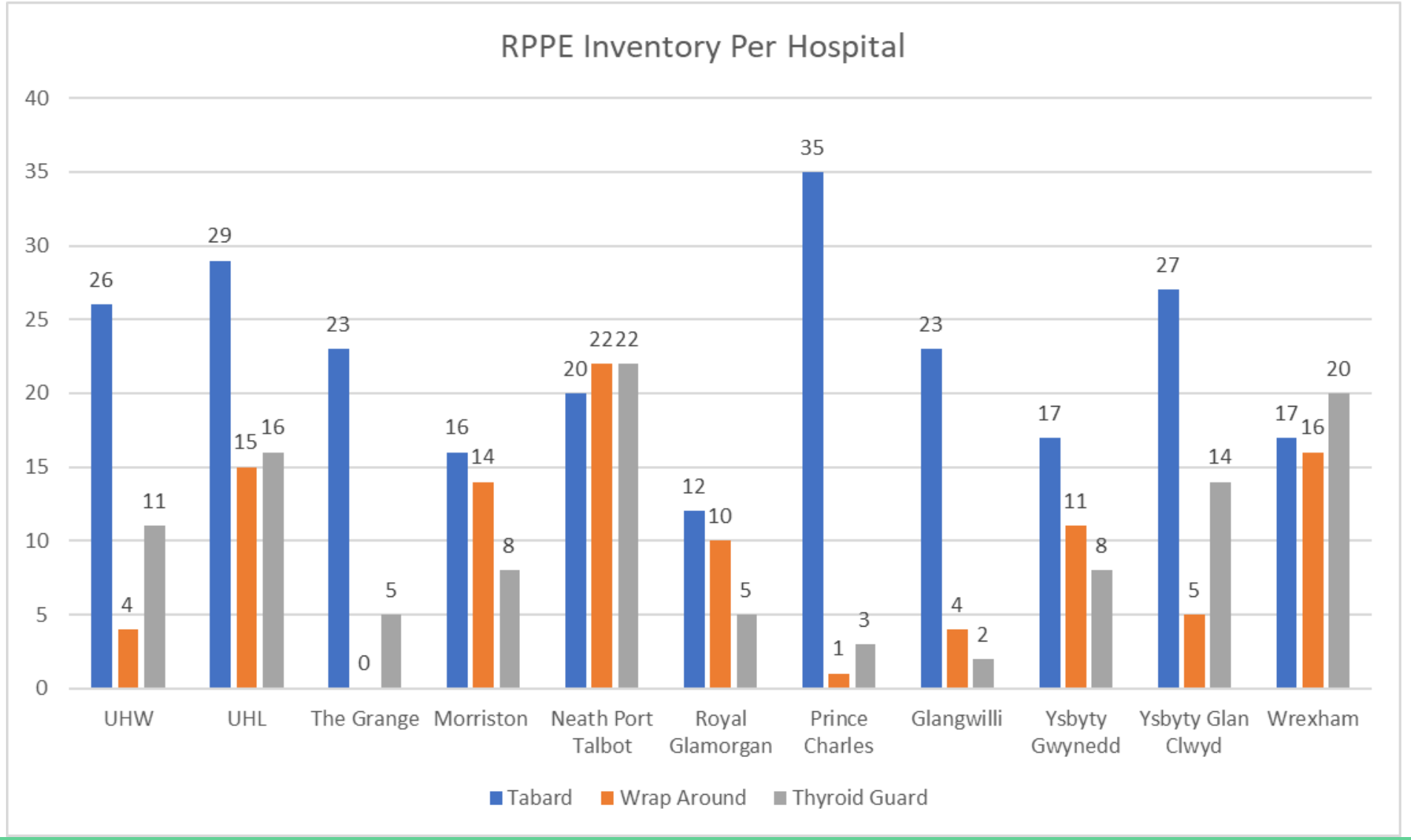
Distributed to a single representative in each hospital hosting higher T&O trainees

Data collected in January 2025

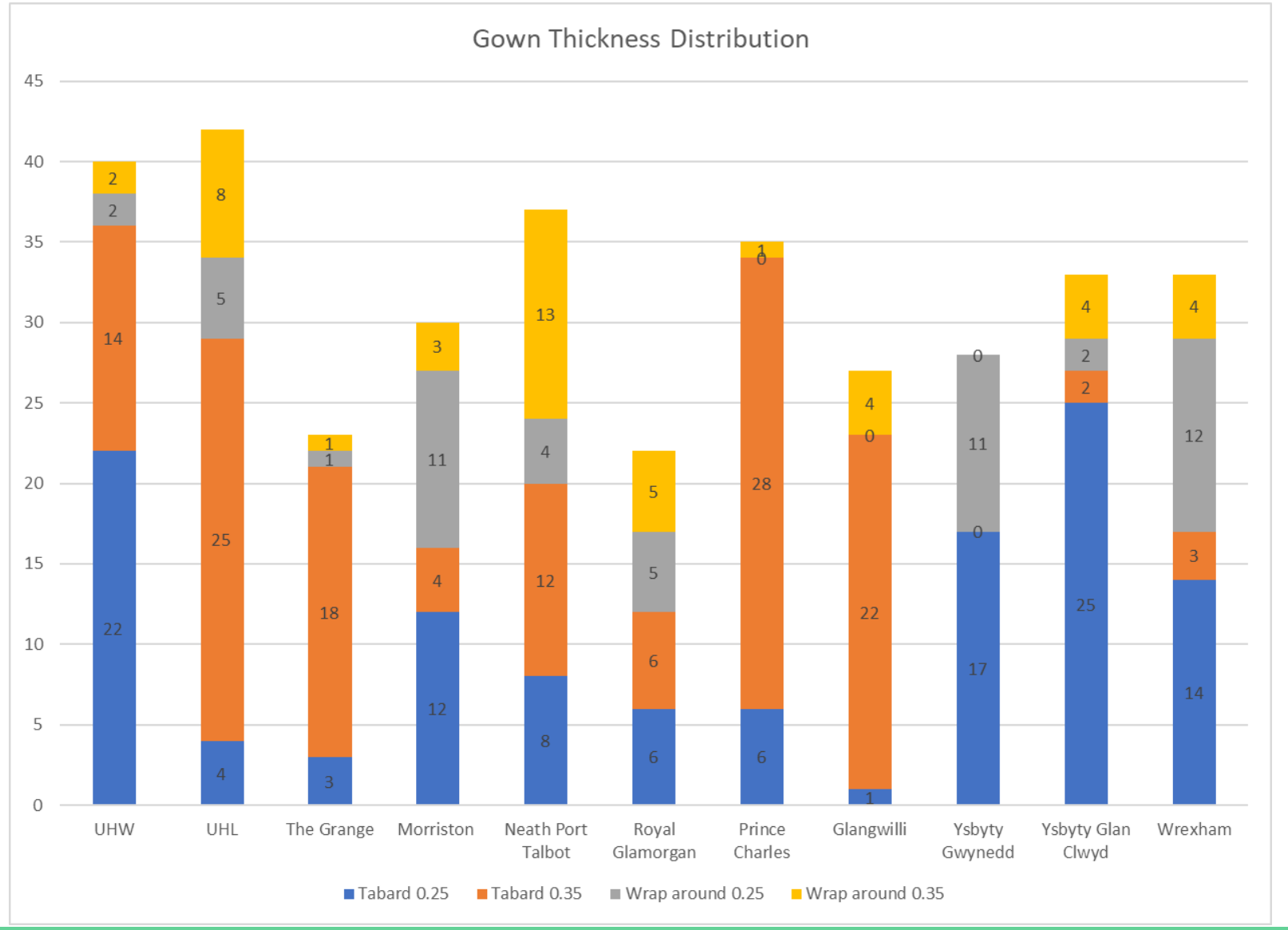
# Results

- Results from
  - UHW
  - UHL
  - The Grange University Hospital
  - Morriston
  - Neath Port Talbot
  - Royal Glamorgan
  - Prince Charles
  - Glangwilli
  - Ysbyty Gwynedd
  - Ysbyty Glan Clwyd
  - Wrexham Maelor Hospital
  - Excluded: Bridgend, Withybush, Bronglais

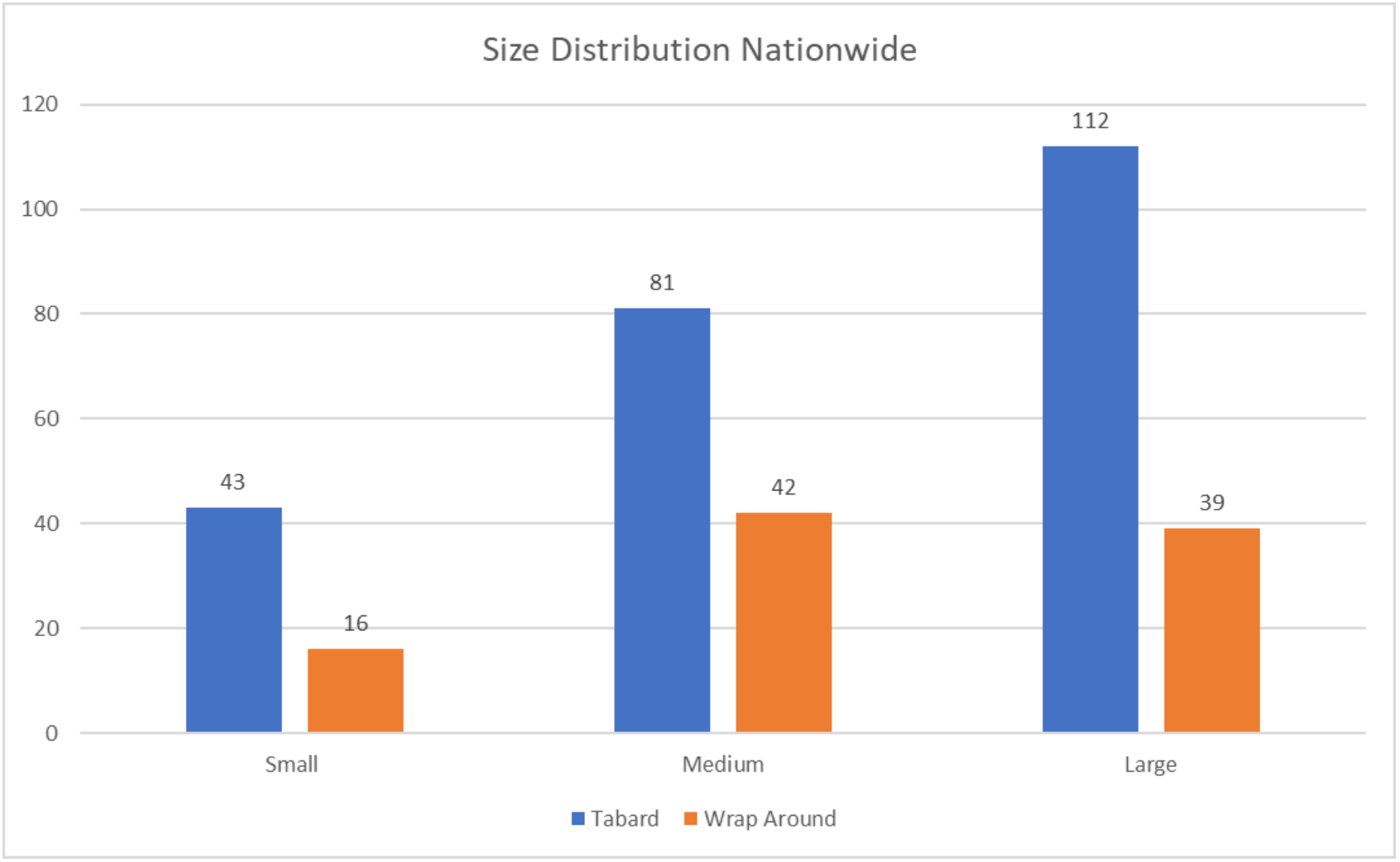
# Results


RPPE Inventory Per Hospital
40
35
30
25
20
15
10
5
0
26
4
11
29
15
16
23
0
5
16
14
8
20
22
22
12
10
5
35
1
3
23
4
2
17
11
8
27
5
14
17
16
20
UHW
UHL
The Grange
Morriston
Neath Port Talbot
Royal Glamorgan
Prince Charles
Glangwilli
Ysbyty Gwynedd
Ysbyty Glan Clwyd
Wrexham
Tabard
Wrap Around
Thyroid Guard

# Results


Gown Thickness Distribution
45
40
35
30
25
20
15
10
5
0
UHW
UHL
The Grange
Morriston
Neath Port Talbot
Royal Glamorgan
Prince Charles
Glangwilli
Ysbyty Gwynedd
Ysbyty Glan Clwyd
Wrexham
Tabard 0.25
Tabard 0.35
Wrap around 0.25
Wrap around 0.35

# Results


Size Distribution Nationwide
120
100
80
60
40
20
0
43
16
81
42
112
39
Small
Medium
Large
Tabard
Wrap Around

# Comparison

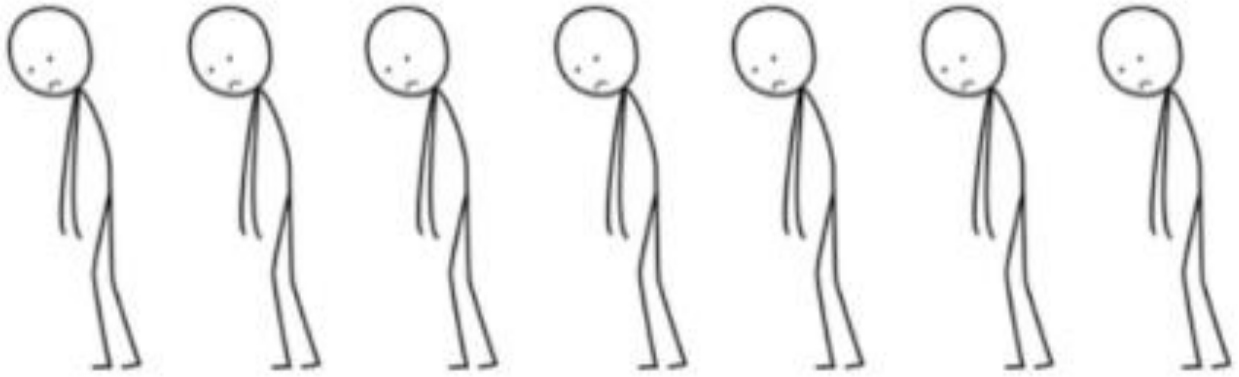
- Heterogenous methodology
- In 2023 survey data
  - 67% reported no access to well fitting wrap around gowns
  - 44% trainees stated their RPPE didn't fit
  - 23 free text reports of there being poor access to thyroid guards across the region



# Conclusion

- Only 29% of RPPE stock in Welsh hospitals hosting T&O trainees is BOA recommended wrap around style
- 6 of 11 surveyed hospitals had fewer than 10 thyroid guards available
    - 4 had 5 or fewer
- Wrap around gowns - in every hospital were fewer in number than tabard style
- Size distribution - right sided skew in the sizes





# Thankyou

Questions?

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