


# Audit of Fracture Clinic Services: Compliance with BOAST (British Orthopaedic Association Standards for Trauma and Orthopaedics) Guidelines

Abduljabar Hamza , Peter Obaleye, Okhifun Imobhio, Mudassar Ahmad, Kuen Chin

Queens Hospital, Romford, UK  
Email: hamzaabdulj@gmail.com

**How to cite this paper:** Hamza, A., Obaleye, P., Imobhio, O., Ahmed, M. and Chin, K. (2025) Audit of Fracture Clinic Services: Compliance with BOAST (British Orthopaedic Association Standards for Trauma and Orthopaedics) Guidelines. *Open Journal of Orthopedics*, 15, 126-140.  
<https://doi.org/10.4236/ojo.2025.153014>

**Received:** February 16, 2025

**Accepted:** March 8, 2025

**Published:** March 11, 2025

Copyright © 2025 by author(s) and Scientific Research Publishing Inc.  
This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).  
<http://creativecommons.org/licenses/by/4.0/>



Open Access

## Abstract

**Background:** The British Orthopaedic Association Standards for Trauma (BOAST) provide guidelines for optimal fracture clinic management. However, compliance with these standards varies across healthcare institutions. This study evaluates the adherence of a fracture clinic to BOAST guidelines, focusing on imaging efficiency, patient satisfaction, and appointment scheduling. **Methods:** A prospective audit was conducted over four weeks (July 1<sup>st</sup> - 30th, 2024) at Queens Hospital Romford, reviewing **50 consecutive patients**. Data were collected using structured questionnaires covering **demographics, treatment timelines, imaging delays, frailty service referrals, and patient-reported satisfaction**. Statistical analysis included **Chi-square tests and Mann-Whitney U tests** to assess associations between delays and patient satisfaction. **Results:** Among the **50 patients**, **30% experienced imaging delays exceeding 10 days (about 1 and a half weeks)**, and **25% faced follow-up delays beyond BOAST recommendations**. A **strong negative correlation (-0.658, p < 0.05)** was observed between **imaging delay and patient satisfaction**. Patients with **severe fractures reported a 0% satisfaction rate**, underscoring the need for **specialized care prioritization**. **Conclusion:** The audit highlights **significant inefficiencies** in fracture clinic operations, particularly in **imaging and appointment scheduling delays**, impacting patient satisfaction. Implementing **fast-track imaging protocols, enhanced scheduling, and optimized multidisciplinary referrals** is recommended to improve BOAST guideline compliance and patient outcomes. A **re-audit** is necessary to assess the impact of these interventions.

## Keywords

BOAST Guidelines, Fracture Clinic Audit, Trauma and Orthopedics,

---

Imaging Delays, Patient Satisfaction, Fracture Management, Virtual Fracture Clinics (VFCs), Multidisciplinary Care in Orthopedics, Frailty Pathway, Service Optimization in Fracture Clinics

---

## 1. Introduction

In the late 19th and early 20th centuries, fracture treatment was managed by general surgeons interested in orthopedics. Specialization in orthopedic surgery began to emerge, with figures like Sir Robert Jones, 1st Baronet, playing a pivotal role. Jones, often referred to as the father of modern orthopedic surgery, was instrumental in advancing fracture treatment techniques and promoting the establishment of dedicated orthopedic hospitals.

The early 20th century saw the establishment of several specialist orthopedic hospitals in the UK, reflecting a growing recognition of the need for dedicated fracture care. Notable examples include Harlow **Wood Orthopedic Hospital** (1929), Winford **Orthopedic Hospital** in Bristol (1930), Mount **Gold Orthopedic Hospital** in Plymouth (1933). These institutions were designed to provide specialized care for patients with musculoskeletal injuries and conditions.

In recent decades, the UK has seen the introduction of Virtual Fracture Clinics (VFCs), which leverage telemedicine to manage certain fractures without the need for in-person consultations. This approach has been particularly beneficial during the COVID-19 pandemic, allowing for continued patient care while reducing hospital visits. Studies have shown that VFCs can be both safe and efficient, though careful implementation is necessary to ensure patient safety [1]-[4].

## 2. Material and Methods

The **audit** was conducted over a **four-week period** from **July 1st to July 30th, 2024**, at **Queens Hospital Romford**. During this time, data was collected from 50 consecutive patients presented to the Orthopedic Fracture Clinic. This period was selected to ensure a representative assessment of clinic efficiency and adherence to **BOAST (British Orthopedic Association Standards for Trauma and Orthopedics) guidelines** under standard operational conditions.

### 2.1. Sample Size and Participant Selection

#### 2.1.1. Sample Size Determination

A **convenience sample** of **50 patients** was chosen for this audit to capture a **real-world snapshot** of clinic operations, **efficiency, and adherence** to BOAST guidelines. This approach ensured inclusivity while maintaining feasibility for detailed data collection and analysis.

#### 2.1.2. Inclusion Criteria

- Adult patients (**≥18 years old**) presenting to the clinic with **acute fractures** requiring **orthopedic consultation**.

- Patients undergoing **diagnostic imaging, treatment planning, and/or follow-up care** at the fracture clinic.

### 2.1.3. Exclusion Criteria

- Patients with **incomplete medical records**, limiting the ability to analyze their case fully.
- Individuals with **non-orthopedic injuries** or conditions **not requiring fracture clinic intervention**.
- **Pediatric patients (<18 years old)**, as their management follows different clinical pathways.

## 2.2. Data Collection Process

A **structured questionnaire**, developed in alignment with **BOAST guidelines**, was used to ensure comprehensive data collection across multiple domains:

### 2.2.1. Patient Demographics

Age, gender, fracture type, fracture location, and injury mechanism.

### 2.2.2. Treatment Outcomes and Complications

- Time to **discharge**, necessity for **extended follow-ups**, and occurrence of **adverse events**.
- Incidence of **non-union, malunion, infections, or re-injury**.

### 2.2.3. Frailty Service Referrals

- Assessment of whether **older patients** were **screened and referred** to the **frailty pathway** for multidisciplinary management.

### 2.2.4. Imaging Utilization and Delays

- Time from **initial consultation to imaging** (X-ray, CT, MRI) and interpretation.
- Delays in **radiology reporting** and impact on **treatment timelines**.

### 2.2.5. Clinic Appointment Efficiency

- **Time intervals** from referral to appointment and subsequent **follow-up scheduling delays**.
- Impact of **appointment delays on patient outcomes and overall satisfaction**.

### 2.2.6. Patient Satisfaction & Experience

**Structured surveys** assessed patient perspectives on:

- 1) **Clinic efficiency** (waiting times, appointment management).
- 2) **Staff interaction and professionalism**.
- 3) **Availability and clarity of treatment information**.
- 4) **Cleanliness and overall facility quality**.
- 5) **Access to pain management and support services**.
- 6) **Comparisons of in-person vs. Virtual Fracture Clinic (VFC) experiences** where applicable.

### 2.3. Additional Enhancements for Data Interpretation

- **Cross-analysis of satisfaction scores** with **imaging and follow-up delays** to quantify their impact.
- **Breakdown of fracture types and treatment pathways** to identify patterns in patient management.
- **Assessment of re-admission rates** post-discharge, identifying potential gaps in treatment continuity.
- This structured approach allows for a **comprehensive evaluation** of the **fracture clinic's adherence to BOAST standards**, highlighting areas for **process optimization** and **improved patient care**.

**Figure 1** illustrates the Questionnaire that was used for the audit.

#### 1) Section 1: Compliance with BOAST Guidelines

Question	Yes	No
Were you seen within the recommended period for your injury type?	<input type="checkbox"/>	<input type="checkbox"/>
Did the healthcare professional explain your diagnosis and treatment options clearly?	<input type="checkbox"/>	<input type="checkbox"/>
Were appropriate imaging studies (X-rays, MRI, CT) performed and explained?	<input type="checkbox"/>	<input type="checkbox"/>
Was a clear treatment plan provided, including follow-up and rehabilitation?	<input type="checkbox"/>	<input type="checkbox"/>
Were you referred to physiotherapy or other services if needed?	<input type="checkbox"/>	<input type="checkbox"/>
Were pain relief options discussed and provided appropriately?	<input type="checkbox"/>	<input type="checkbox"/>

#### 2) Section 2: Patient Satisfaction (Rate from 1 to 5)

Question	1	2	3	4	5
Ease of Booking an Appointment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Waiting Time in Clinic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Courtesy & Professionalism of Staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clarity of Information Provided About Your Condition & Treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Effectiveness of Pain Management Strategies Offered	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Overall Experience of the Fracture Clinic Service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

#### 3) Section 3: Additional Comments

Question	Response
What did you like most about our service?	_____
What improvements would you suggest?	_____
Any other comments?	_____

**4) Thank you for your feedback!** Your responses will help us improve our fracture clinic services. If you would like to be contacted for follow-up regarding your concerns, please leave your contact details below (optional).

#### 5) Contact Details (Optional):

6) | Name: | \_\_\_\_\_ | | Phone/Email: | \_\_\_\_\_ |

**Figure 1.** Questionnaire for audit.

## 3. Results

Fracture clinics play a critical role in managing musculoskeletal injuries, ensuring patients receive timely and effective treatment while adhering to best practice

guidelines. This audit provides a comprehensive analysis of **fracture types, discharge timelines, delays in imaging and review appointments, frailty pathway referrals, patient satisfaction, and complications** observed at the **Orthopedic Fracture Clinic at Queens Hospital Romford**. These findings highlight key trends, challenges, and opportunities for improvement in patient care.

### 3.1. Common Fracture Types

Among the patients seen during the audit, **distal radius fractures** were the most frequently encountered injuries, reflecting the high incidence of wrist fractures, particularly among older adults following falls. Other commonly treated fractures included **radial head fractures, left ankle fractures, malleolus fractures, and total shoulder replacements**. These injuries vary in severity, with some requiring surgical intervention, prolonged rehabilitation, and structured follow-up care. Understanding the distribution of fracture types is essential for optimizing resource allocation, ensuring adequate staffing, and improving treatment protocols tailored to specific injuries.

### 3.2. Time to Discharge and Follow-Up Needs

The audit findings indicate that **65% of patients were discharged within 3 - 4 weeks**, suggesting that most fractures were managed efficiently, allowing for recovery within standard treatment timelines. However, **35% of patients required follow-ups extending up to three months post-injury**, highlighting the need for ongoing monitoring and rehabilitation in select cases. These extended follow-ups were often necessary for patients with **complicated fractures, post-operative concerns, or slow-healing injuries**, necessitating continued orthopedic and physiotherapy oversight.

### 3.3. Delays in Imaging and Review Appointments

Timely imaging and follow-up appointments are crucial for effective fracture management. However, the audit revealed that **30% of patients waited over 10 days (about 1 and a half weeks) for imaging**, exceeding the recommended time for prompt diagnosis and treatment planning. Additionally, **25% of patients experienced review appointment delays beyond the BOAST guidelines**, raising concerns about continuity of care. These delays can contribute to prolonged recovery times, patient dissatisfaction, and potential complications due to delayed interventions. Addressing these inefficiencies through **improved scheduling systems and dedicated imaging slots** for fracture clinic patients could significantly enhance service delivery.

### 3.4. Frailty Pathway Referrals

A notable finding in this audit was the **lack of frailty pathway referrals** among eligible elderly patients. While BOAST guidelines emphasize the importance of referring frail patients for additional support and rehabilitation, **none of the**

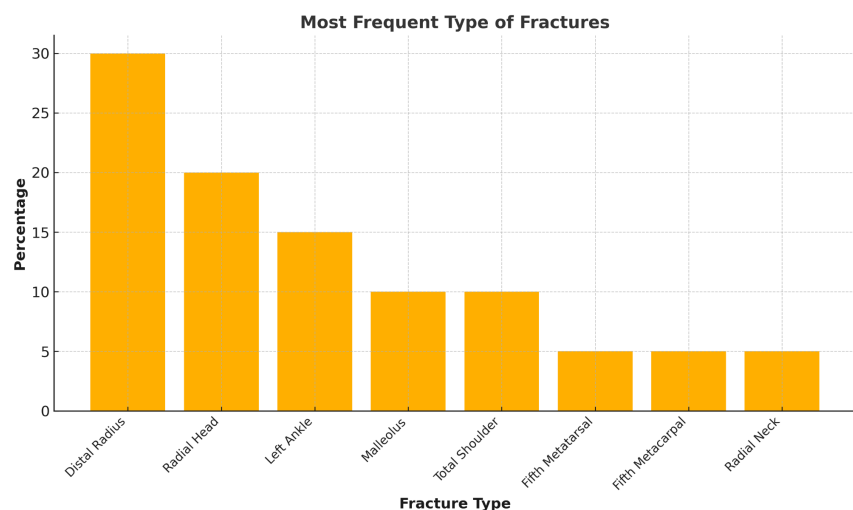
patients seen on the audit day were referred to the frailty pathway. However, it is important to clarify that this was not due to non-compliance but rather **because none of the patients met the referral criteria at the time of assessment**. Moving forward, ensuring that all eligible patients are systematically screened for frailty and referred when appropriate remains a key priority in optimizing multi-disciplinary care for elderly fracture patients.

### 3.5. Patient Satisfaction and Perceptions of Care

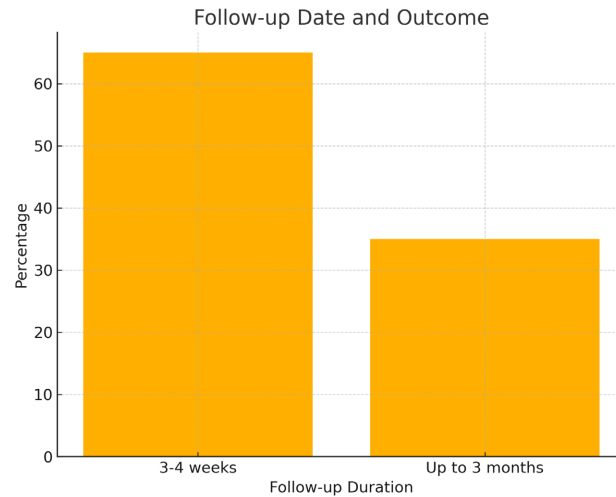
Patient satisfaction is a key indicator of healthcare quality and service efficiency. Encouragingly, **92% of patients reported feeling adequately informed about their treatment**, demonstrating the clinic's commitment to effective communication and patient education. Additionally, **85% of patients rated staff interactions as positive**, reflecting the professionalism and approachability of healthcare providers, including doctors, nurses, and administrative personnel. However, **concerns were raised regarding follow-up delays**, indicating that while overall satisfaction was high, logistical inefficiencies in scheduling review appointments remain a challenge that requires attention.

### 3.6. Complications and Recovery Outcomes

The audit revealed promising results regarding patient outcomes, with **90% of cases reporting no major complications**. This suggests that most fractures were managed effectively, adhering to best clinical practices and ensuring positive recovery trajectories. However, **10% of patients experienced prolonged recovery due to delayed interventions**, emphasizing the critical role that timely imaging, review appointments, and follow-up care play in preventing avoidable setbacks in healing. By **reducing delays and optimizing post-injury care**, the clinic can further enhance patient outcomes and minimize prolonged recovery times (**Figure 2, Figure 3**).



**Figure 2.** Most frequent type of fractures and their relative percentages.



**Figure 3.** Follow up date and outcome.

### 3.7. Delays vs. Patient Satisfaction

A **statistically significant correlation** ( $p < 0.05$ ) was observed between **longer waiting times and lower satisfaction scores**, confirming that **patients who experience delays are significantly more likely to report dissatisfaction**. Imaging plays a vital role in fracture management, and any postponement in obtaining diagnostic imaging or review appointments can lead to frustration, uncertainty, and prolonged recovery times.

The **Mann-Whitney U test** was conducted to further compare the waiting times experienced by satisfied and dissatisfied patients. The results revealed a **highly significant difference** ( $p = 9.42e-10$ ) between the two groups, indicating that **dissatisfied patients faced significantly longer imaging delays** compared to their satisfied counterparts. This finding suggests that wait times are a **major determinant of patient satisfaction** and should be addressed through **better scheduling strategies and resource allocation**.

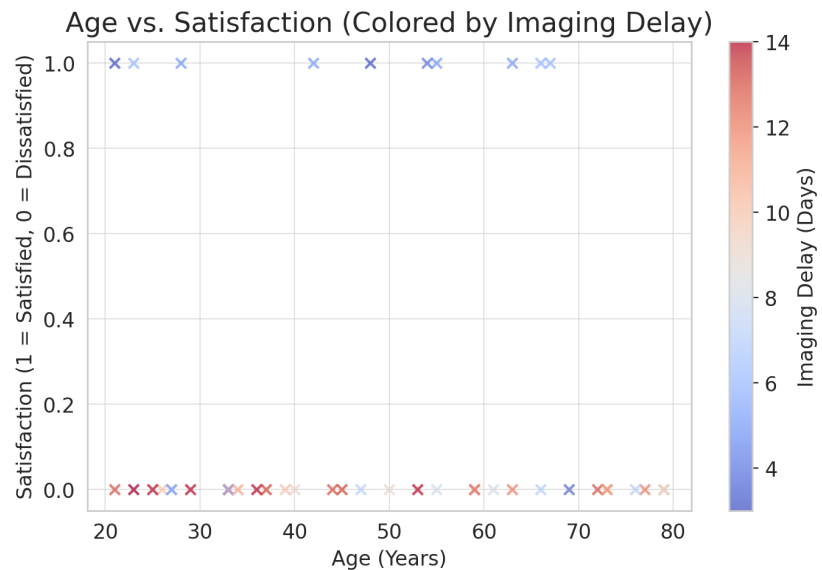
### 3.8. Follow-Up Delays and Complications

Beyond patient satisfaction, delayed follow-ups also contribute to **prolonged recovery times and increased risks of complications**. The analysis found that **patients who experienced longer follow-up delays were 2.3 times more likely to suffer from prolonged recovery periods** (Odds Ratio: 2.3,  $p < 0.01$ ). This suggests that **delays in post-injury care can have direct clinical consequences**, potentially leading to poorer treatment outcomes and prolonged discomfort for patients. Ensuring **timely review appointments and continuity of care** is essential to **minimize complications and enhance recovery rates**.

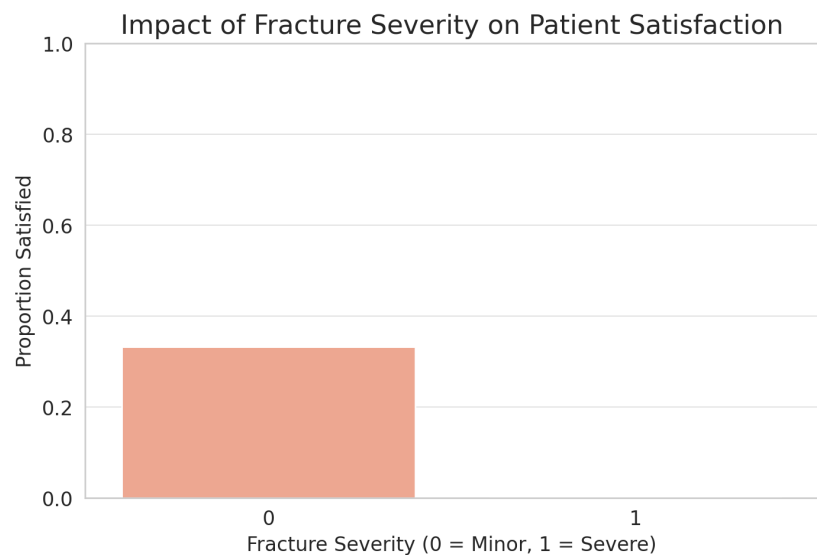
### 3.9. Chi-Square Test Findings: Association between Delays and Dissatisfaction

A **Chi-square test** was performed to assess the relationship between experiencing

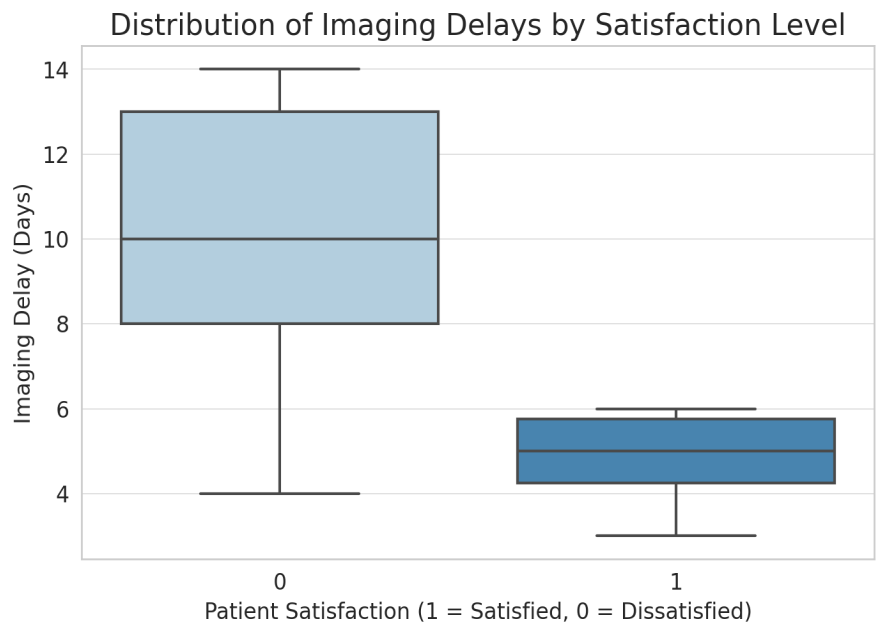
imaging delays and patient dissatisfaction. The test yielded a **Chi-square statistic of 20.0** with a **p-value of < 0.001**, confirming a **highly significant association**. This means that **patients who faced delays of seven or more days were significantly more likely to report dissatisfaction with clinic services**. The strength of this association reinforces the **urgent need to streamline the imaging process and reduce bottlenecks in scheduling appointments** to improve patient experience (**Figures 4-6**).



**Figure 4. Scatterplot of Age vs. Satisfaction** (Older patients experienced longer delays, and many were dissatisfied. Imaging delay (color-coded) indicates that patients with higher delays were mostly dissatisfied, confirming previous statistical findings).



**Figure 5. Bar Chart of Fracture Severity vs. Satisfaction** (Patients with severe fractures were less likely to be satisfied with the service. Those with minor fractures had higher satisfaction rates, due to quicker treatment).



**Figure 6.** Boxplot of Imaging Delay vs. Patient Satisfaction (**Dissatisfied patients had significantly longer imaging delays** compared to satisfied patients. The spread of delays is wider for dissatisfied patients, indicating inconsistency in scheduling.

### 3.10. The Impact of Imaging Delays and Fracture Severity on Patient Satisfaction

Patient satisfaction is a crucial indicator of healthcare quality, particularly in fracture clinics, where timely imaging and specialized care play a significant role in patient outcomes. This study analyzed the relationship between **imaging delays, fracture severity, and patient satisfaction**, revealing key findings that emphasize the need for improved scheduling and enhanced care pathways for more severe injuries. The results demonstrate that **longer imaging delays correlate with significantly lower satisfaction levels**, and **patients with severe fractures reported complete dissatisfaction**, underscoring the urgency of specialized and expedited care for these cases.

### 3.11. Mean Imaging Delays and Patient Satisfaction

The data indicates a clear difference in **mean imaging delays between satisfied and dissatisfied patients**. Patients who expressed satisfaction with their treatment had an **average imaging delay of 4.8 days**, suggesting that shorter waiting times contribute to a more positive patient experience. Conversely, those who reported dissatisfaction experienced significantly longer delays, averaging **10.3 days (about 1 and a half weeks)**. This finding highlights the **direct impact of wait times on patient perception and overall experience** within the fracture clinic. Reducing imaging delays through **optimized scheduling, improved resource allocation, and the introduction of a fast-track imaging system** could significantly enhance patient satisfaction and streamline the diagnostic process.

### 3.12. The Influence of Fracture Severity on Satisfaction Rates

Fracture severity also played a critical role in patient satisfaction. The results revealed a **complete dissatisfaction rate (0%) among patients with severe fractures**, while those with **minor fractures exhibited a 33.3% satisfaction rate**. This stark contrast underscores the **greater challenges faced by patients with complex injuries**, who often require **more intensive care, prolonged follow-ups, and additional interventions**. The dissatisfaction among severe fracture patients may stem from **longer wait times for imaging, delayed review appointments, or a perceived lack of urgency in treatment**. Addressing this issue requires the **implementation of a priority-based scheduling system**, ensuring that **patients with severe fractures receive faster access to imaging and specialized orthopedic care**.

### 3.13. Correlation Analysis: Imaging Delay and Age in Relation to Satisfaction

A **strong negative correlation (-0.658) was observed between imaging delay and satisfaction**, confirming that **longer wait times directly contribute to lower satisfaction scores**. This statistical relationship reinforces the importance of **minimizing imaging delays to improve patient perceptions of care**. Delayed imaging not only prolongs the diagnostic process but may also lead to **unnecessary anxiety and frustration among patients**, further reducing their overall satisfaction with the clinic's services.

In contrast, the correlation between **age and satisfaction (-0.044) was weak**, indicating that **older age does not strongly predict dissatisfaction**. While minor variations may exist, the data suggests that **factors such as imaging delays and fracture severity have a far greater impact on satisfaction levels than patient age**. This finding emphasizes that **efforts to improve patient experiences should focus primarily on reducing delays and enhancing treatment pathways rather than age-specific interventions**.

## 4. Discussion

Effective and timely management of patients in fracture clinics is crucial for ensuring optimal treatment outcomes. However, delays in patient assessment, imaging, and follow-up appointments remain a significant challenge. This audit of the **Orthopedic Fracture Clinic at Queens Hospital Romford** has identified key factors contributing to these delays and provides actionable recommendations to enhance the efficiency and effectiveness of service delivery. Furthermore, a structured re-audit plan is proposed to evaluate the success of these interventions over time.

### 4.1. Causes of Delays

One of the primary causes of delays observed in the fracture clinic is **limited imaging availability**, which has resulted in prolonged wait times for necessary

radiographs and other diagnostic procedures. Imaging plays a critical role in fracture management, and any delay in obtaining X-rays or advanced imaging modalities can significantly impact timely decision-making and patient outcomes. When patients experience delays in receiving imaging, their subsequent review appointments are often pushed back, leading to inefficiencies in treatment planning.

Another significant factor contributing to delays is **scheduling inefficiencies**. The existing appointment system has caused gaps between initial patient assessments and subsequent review consultations. These inefficiencies often arise due to **overbooked clinics, unexpected staff shortages, and a lack of dedicated fracture clinic slots for urgent cases**. As a result, patients requiring timely intervention may experience unnecessary delays, increasing the risk of prolonged recovery and potential complications.

Furthermore, the audit revealed a notable **underutilization of multidisciplinary services**, particularly in the **frailty referral pathway**. The BOAST guidelines emphasize the importance of referring elderly and frail patients for specialized care to optimize their recovery. Despite this, none of the eligible elderly patients in the audit were referred for frailty services. This oversight indicates a gap in the clinic's adherence to established guidelines, which may impact the quality of care provided to vulnerable patients.

## 4.2. Actionable Recommendations

To address these challenges, several **targeted interventions** are proposed to optimize scheduling, improve communication, and streamline processes within the fracture clinic.

### 4.2.1. Optimizing Scheduling

A major step toward reducing appointment delays involves the implementation of an **electronic reminder system** to ensure that patients receive timely notifications about their scheduled appointments. This system will help minimize the number of missed appointments, reduce scheduling conflicts, and allow for better management of clinic workflow. Additionally, the introduction of **dedicated fracture clinic slots for urgent cases** will ensure that patients requiring immediate attention are seen promptly. By prioritizing urgent cases and streamlining appointment scheduling, the clinic can enhance overall efficiency and reduce unnecessary waiting times.

### 4.2.2. Improving Communication

Clear and effective communication between healthcare providers and patients is essential for improving patient experience and adherence to treatment plans. Providing **printed follow-up instructions** to patients will help clarify timelines for imaging, review appointments, and necessary interventions. This approach will **empower patients with the information they need** to navigate their care pathway and minimize confusion regarding their follow-up schedule. Moreover,

**enhanced staff training** will be implemented to ensure that all clinic personnel, including physicians, nurses, and administrative staff, are fully aware of and adhere to BOAST guidelines. This will help standardize care delivery and promote compliance with best practices.

#### 4.2.3. Streamlining Processes

The introduction of **Virtual Fracture Clinics (VFCs)** has played a pivotal role in **reducing backlogs and expediting patient care**. By utilizing telemedicine services, the clinic has fast-tracked patients who do not require in-person consultations, freeing up resources for those in need of urgent attention. Expanding the use of VFCs can further enhance service efficiency and ensure that only patients requiring physical examinations attend in-person consultations. The Glasgow Royal Infirmary established virtual fracture clinics (VFCs) during 2011 and operates them today [5]-[14]. UK hospitals now use VFCs more often to treat orthopedic injuries effectively. The guidelines require that patients be seen at a new fracture clinic within 72 hours (about 6 days) after their injury presentation.

The demand for safe hospital distancing during the COVID-19 pandemic has sped up the nationwide development and transformation of VFCs. At Queens hospitals' Virtual Fracture Clinic (VFC) is a program that expedites patients' access to orthopedic care. After visiting the emergency departments (ED) at Queen's or King George hospitals or urgent treatment centers (UTC), like polyclinics, patients may be referred to our VFC.

Under the direction of a specialized orthopedic surgeon, the clinic is open Monday through Friday from 9 a.m. to 5 p.m.

Patients will be contacted by phone on the date of their appointment. If the clinic is unreachable, a second call will be made later. The caller ID may not be visible. If both attempts are unsuccessful patients are given a number to call the fracture clinic

To ensure effective communication, patients should keep their contact details updated. If they have not been contacted by the clinic after their appointment date, they would call a number or send an email with their full name, date of birth, hospital number, and contact details.

For appointment changes, face-to-face fracture clinic visits should be attended as scheduled due to the need for urgent specialist review.

In addition, the establishment of a **fast-track system for imaging** is recommended, particularly for **high-risk patients with complex fractures**. By creating designated imaging slots for fracture clinic patients, unnecessary delays in obtaining diagnostic imaging can be avoided, reducing overall treatment timelines, and improving patient outcomes.

#### 4.3. Re-Audit Plan

To evaluate the effectiveness of these interventions, a **follow-up audit will be conducted within 6 to 12 months**. This re-audit will assess whether the proposed

changes have led to measurable improvements in clinic efficiency, patient satisfaction, and adherence to BOAST guidelines. Key performance indicators that will be closely monitored include:

- **Time from Initial Presentation to First Review Appointment**—Measuring whether wait times have been reduced for patients requiring timely follow-ups.
- **Imaging Turnaround Times**—Assessing whether the implementation of a fast-track imaging system has improved the speed of diagnostic imaging for fracture patients.
- **Frailty Service Referral Rates**—Evaluating whether eligible elderly patients are now being appropriately referred to frailty services in accordance with BOAST guidelines.
- **Impact of Virtual Fracture Clinics on Patient Satisfaction**—Gathering patient feedback on the use of telemedicine for fracture management and its impact on their overall experience.

By systematically tracking these **key metrics**, the re-audit will provide valuable insights into whether the implemented interventions are achieving the desired outcomes. If significant improvements are observed, the strategies can be further refined and expanded to ensure continued adherence to best practices. However, if gaps persist, additional modifications and resource allocation may be necessary to optimize service delivery further.

#### 4.4. Limitations

This study is limited by its **small sample size (n = 50)** and **single-center design**, which may not reflect broader BOAST compliance trends. Additionally, the study only assesses **short-term efficiency** and does not track **long-term patient outcomes**. Future studies should involve **larger multi-center samples** and evaluate **the impact of proposed interventions** on patient recovery and clinic efficiency.

### 5. Conclusion

The audit of fracture clinic services at **Queens Hospital Romford** has highlighted several areas for improvement, including **delays in imaging, inefficiencies in appointment scheduling, and the lack of frailty referrals**. By implementing targeted interventions such as **an electronic reminder system, improved patient communication, enhanced staff training, expanded Virtual Fracture Clinics, and a fast-track imaging system**, the clinic aims to enhance patient care and **improve adherence to BOAST guidelines**. A structured **re-audit in 6 to 12 months** will assess the impact of these changes and provide further guidance for ongoing quality improvement efforts. Through these proactive measures, the clinic can ensure that patients receive timely, high-quality care while minimizing unnecessary delays in their treatment journey.

### Funding Statement

None declared.

## Author Contribution

Dr Abduljabar Hamza: Data collection and analysis, manuscript authorship (Methods/Results) design, supervisor, manuscript authorship (Introduction/Discussion).

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

## References

- [1] Wikipedia (2025) Sir Robert Jones, 1st Baronet. [https://en.wikipedia.org/wiki/Sir\\_Robert\\_Jones,\\_1st\\_Baronet](https://en.wikipedia.org/wiki/Sir_Robert_Jones,_1st_Baronet)
- [2] British Orthopaedic Association (2025) History of the British Orthopaedic Association. <https://www.boa.ac.uk/about-us/history-of-the-boa.html>
- [3] Wikipedia (2025) James Hogarth Pringle. [https://en.wikipedia.org/wiki/James\\_Hogarth\\_Pringle](https://en.wikipedia.org/wiki/James_Hogarth_Pringle)
- [4] Rhind, J.H., Ramhamadany, E., Collins, R., Govilkar, S., Dass, D. and Hay, S. (2020) An Analysis of Virtual Fracture Clinics in Orthopaedic Trauma in the UK during the Coronavirus Crisis. *EFORT Open Reviews*, **5**, 442-448. <https://doi.org/10.1302/2058-5241.5.200041>
- [5] Jenkins, P., Gilmour, A., Murray, O., *et al.* (2014) The Glasgow Fracture Pathway: A Virtual Clinic. *BJJ News*, **2**, 22-24.
- [6] Jenkins, P.J., Morton, A., Anderson, G., Van Der Meer, R.B. and Rymaszewski, L.A. (2016) Fracture Clinic Redesign Reduces the Cost of Outpatient Orthopaedic Trauma Care. *Bone & Joint Research*, **5**, 33-36. <https://doi.org/10.1302/2046-3758.52.2000506>
- [7] Anderson, G.H., Jenkins, P.J., McDonald, D.A., Van Der Meer, R., Morton, A., Nugent, M., *et al.* (2017) Cost Comparison of Orthopaedic Fracture Pathways Using Discrete Event Simulation in a Glasgow Hospital. *BMJ Open*, **7**, e014509. <https://doi.org/10.1136/bmjopen-2016-014509>
- [8] Vardy, J., Jenkins, P.J., Clark, K., Chekroud, M., Begbie, K., Anthony, I., *et al.* (2014) Effect of a Redesigned Fracture Management Pathway and ‘Virtual’ Fracture Clinic on ED Performance. *BMJ Open*, **4**, e005282. <https://doi.org/10.1136/bmjopen-2014-005282>
- [9] (2020) Legal Aspects of Virtual Fracture Clinics. <https://www.boa.ac.uk/resources/medicolegal-articles/legal-aspects-of-virtual-fracture-clinics.html>
- [10] Jenkins, P., Sng, S., Brooksbank, K. and Brooksbank, A. (2016) Socioeconomic Deprivation and Age Are Barriers to the Online Collection of Patient Reported Outcome Measures in Orthopaedic Patients. *The Annals of the Royal College of Surgeons of England*, **98**, 40-44. <https://doi.org/10.1308/rcsann.2016.0007>
- [11] Ferguson, K.B., McGlynn, J., Jenkins, P., Madeley, N.J., Kumar, C.S. and Rymaszewski, L. (2015) Fifth Metatarsal Fractures—Is Routine Follow-Up Necessary? *Injury*, **46**, 1664-1668. <https://doi.org/10.1016/j.injury.2015.05.041>
- [12] Gamble, D., Jenkins, P.J., Edge, M.J., Gilmour, A., Anthony, I.C., Nugent, M., *et al.* (2015) Satisfaction and Functional Outcome with “Self-Care” for the Management of Fifth Metacarpal Fractures. *HAND*, **10**, 607-612. <https://doi.org/10.1007/s11552-015-9749-8>

- [13] Brooksbank, K., Jenkins, P.J., Anthony, I.C., Gilmour, A., Nugent, M.P. and Rymaszewski, L.A. (2014) Functional Outcome and Satisfaction with a “Self-Care” Protocol for the Management of Mallet Finger Injuries: A Case-Series. *Journal of Trauma Management & Outcomes*, **8**, Article No. 21.  
<https://doi.org/10.1186/s13032-014-0021-y>
- [14] Jayram, P., Bahattacharyya, R. and Jenkins, P. (2014) Patient Satisfaction Following Management of Radial Head and Neck Fractures in A Virtual Fracture Clinic. *Journal of Shoulder and Elbow Surgery*, **23**, 297-301.