



Connolly Hospital Trauma Assessment Clinic (TAC): a virtual solution to patient flow

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Abstract

Background Trauma Assessment Clinics (TAC) were pioneered by the Glasgow Royal Infirmary Group. Patients deemed for non-operative management are referred to the TAC for review by an orthopaedic consultant with multidisciplinary team (MDT) support. Connolly Hospital launched a TAC on 11 September 2018.

Aims The goal of this study was to evaluate the effect the introduction of this initiative had on patient flow in our institution.

Methods We performed a retrospective review of the Connolly Hospital TAC for the 6-month period since its introduction. We evaluated patient demographics, injuries and outcomes. Furthermore, we retrospectively reviewed the fracture and elective clinic attendances pre- and post-TAC introduction.

Results Over the first 6 months of this initiative, there were 36 trauma assessment clinics. Two hundred forty-seven patients were reviewed with an average age of 42.3 years. 42.9% ($N = 106$) was reviewed directly by the physiotherapy department. 31.6% ($N = 78$) was scheduled directly for fracture clinic follow-up from the TAC. 8.2% ($N = 45$) was discharged directly to their GP from TAC. A review of fracture clinic attendances for the corresponding time period the previous year (from September 2017), highlighted a 22% decrease in new fracture clinic appointments.

Conclusions Following the introduction of the TAC, we noted a marked reduction in fracture clinic attendances. Our outcomes were consistent with results from other units. We established two injection clinics as a direct result of the time saved from the TAC. It has proven to be of benefit to both the trauma and elective patients in our institution.

Keywords Patient flow · Trauma · Trauma assessment clinic · Virtual fracture clinic

Background

The Virtual Fracture Clinic (VFC) Pathway was pioneered by the Glasgow Royal Infirmary Group in 2011. The authors describe a pathway where patients presenting to the emergency department (ED) with a stable fracture pattern are discharged or referred to VFC. The VFC is a multidisciplinary team led by a consultant orthopaedic surgeon whereby the patients’ clinical notes and imaging are reviewed and a management plan formulated [1]. Prior to this initiative, the structure of outpatient fracture care had not changed substantially since the British Medical Association set out guidelines in 1935 [2]. These guidelines were the first attempt at standardisation of often

poorly managed injuries. Seventy-five percent of musculoskeletal injuries are managed non-operatively [3], resulting in a large volume of fracture clinic attendances [4]. The British Orthopaedic Association Standards for Trauma Guidelines recommend that patients should be reviewed by a consultant orthopaedic surgeon within 72 h of an ED referral [5]. White et al. cite National Clinical Director for Trauma in the UK, in suggesting that the VFCs have the ability to process certain injuries of low prevalence but potential high morbidity where radiographs may be misinterpreted [6]. Therefore, VFCs provide a means for hospitals to meet the BOA standards, coupled with this, through the standardisation of protocols for common injuries, patient care in ED can be streamlined [7].

Significant outpatient waiting times for elective orthopaedic appointments and interventions have been well documented. In the Irish context, 92% of GPs have reported that patients are waiting 1 year or more for an elective orthopaedic appointment [8]. Trauma and Orthopaedic surgery has been reported to have the highest volume of outpatient activity within the Irish Healthcare Service [9].

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The Trauma and Orthopaedic Surgery Department in our institution established a Trauma Assessment Clinic (TAC) in 2018 in conjunction with our emergency department colleagues in an effort to streamline management of minor trauma injuries. Patients presenting with suitable injuries were placed in an appropriate splint and referred to the TAC. Patients were supplied with advice and a contact number should they have issues in advance of the TAC clinic review. Two clinics were set up per week led by the senior authors with MDT input and training focus, with the clinics taking place prior to the morning fracture clinic. The patients' ED notes and radiographs were reviewed and a management plan composed. The clinics were attended by consultant orthopaedic surgeon, ED consultant, orthopaedic NCHDs, ED NCHDs, advanced nurse practitioner in Trauma and Orthopaedics, a physiotherapist and a plaster room nurse. Each injury had a standard pathway devised prior to the introduction of the TAC. A letter was dictated to the patients' general practitioner (GP) following the clinic and the patient was contacted by a nurse by phone call to outline their management plan. The first clinic was conducted on 11 September 2018.

Following the introduction of the TAC in CHB, a noticeable reduction in fracture clinic attendances was observed. This reduction enabled us to create two further outpatient clinic sessions. Given the growing outpatient waiting list for intra-articular injections in our institution, we elected to use these clinic sessions to establish an injection clinic. This clinic was commenced twice weekly from September 2018.

The goal of this study was to retrospectively analyse the first 6 months of this initiative in our institution and to evaluate the hypothesised service improvement that ensued.

Methods

We performed a retrospective analysis of the first 6 months of the CHB TAC. We reviewed patient demographics, the injury sustained and the outcome of the clinic for each patient. We retrospectively evaluated the intra-articular injection list, fracture clinic lists and elective orthopaedic list for the Trauma and Orthopaedic department for the corresponding 6-month period from September 2017 (previous year). Appropriate TAC referrals are outlined in Table 1, the TAC clinic pathway can be seen in Fig. 1.

Results

The first TAC clinic was conducted on 11 September 2018. There were 36 clinics conducted over the first 6 months of this programme. Two hundred forty-seven patients were reviewed with an average age of 44.1 years. 42.9% ($N = 106$) was

Table 1 Appropriate TAC referrals

Injuries suitable for TAC review
> ACJ dislocation
> Radial head fracture
> Distal radius fracture
> Scaphoid fracture
> Distal phalynx fracture
> Metacarpal fracture
> Clavicle fracture
> Neck of humerus fracture
> Anterior glenohumeral dislocation
> Distal fibular fracture (Weber A)
> Hallux fracture
> Fifth metatarsal fracture
> Phalynx fracture (toe)

reviewed directly by the physiotherapy department and subsequently discharged to general practitioner (GP). 31.6% ($N = 78$) was scheduled directly for fracture clinic follow-up from the TAC. 7.3% ($N = 18$) was scheduled for a subspecialty clinic appointment. 18.2% ($N = 45$) was discharged directly to their GP from TAC.

Fracture clinic attendances for the corresponding time period the previous year (from September 2017) were reviewed and can be seen in Fig. 2. Overall, there was a 22% ($N = 177$) decrease in new fracture clinic appointments, a 4.6% ($N = 121$) reduction in return appointments and an 8.7% ($N = 298$) reduction in overall fracture clinic attendances.

Two hundred thirty musculoskeletal intra-articular injections were performed in the injection clinic during the same 6-month period following the introduction of the TAC, this was a 25.7% increase on the corresponding period 1 year previously ($N = 187$).

The elective orthopaedic clinic attendances can be seen in Fig. 3. There was a 37% ($N = 212$) increase in new patient appointments, 19.5% ($N = 355$) increase in return appointments and a 23.7% ($N = 567$) in overall elective clinic appointments.

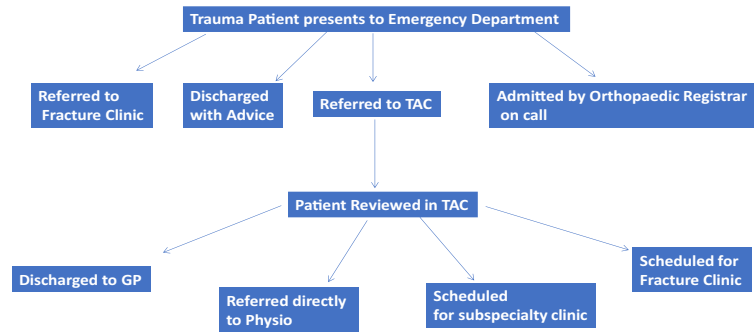
Discussion

We have demonstrated from our review that the trauma assessment clinic initiative can substantially decrease fracture clinic attendances. We have also highlighted that through the use of time and resources saved, orthopaedic elective services can be improved. This is evident in the 37% increase in elective clinic attendances and 25.7% increase in musculoskeletal injections performed. Considering 10.3% of all new outpatient referrals in the Republic of Ireland are for orthopaedic appointments and

Fig. 1 Trauma pathway Connolly Hospital Blanchardstown

Injuries Suitable for TAC Review

- *ACJ Dislocation*
- *Radial Head Fracture*
- *Distal Radius Fracture*
- *Scaphoid Fracture*
- *Distal Phalynx Fracture*
- *Metacarpal Fracture*
- *Clavicle Fracture*
- *Neck of Humerus Fracture*
- *Anterior Glenohumeral Dislocation*
- *Distal Fibular Fracture (Weber A)*
- *Hallux Fracture*
- *Fifth Metatarsal Fracture*
- *Phalynx Fracture (Toe)*



13% of patients are waiting in excess of twelve months for their outpatient appointment [9], it is imperative that every effort is made to maximise service efficiency.

The TAC appointment cost has been well documented to be below that of the traditional fracture clinic appointment, O'Reilly et al. estimate a TAC appointment to cost €28

Fig. 2 Fracture clinic attendances

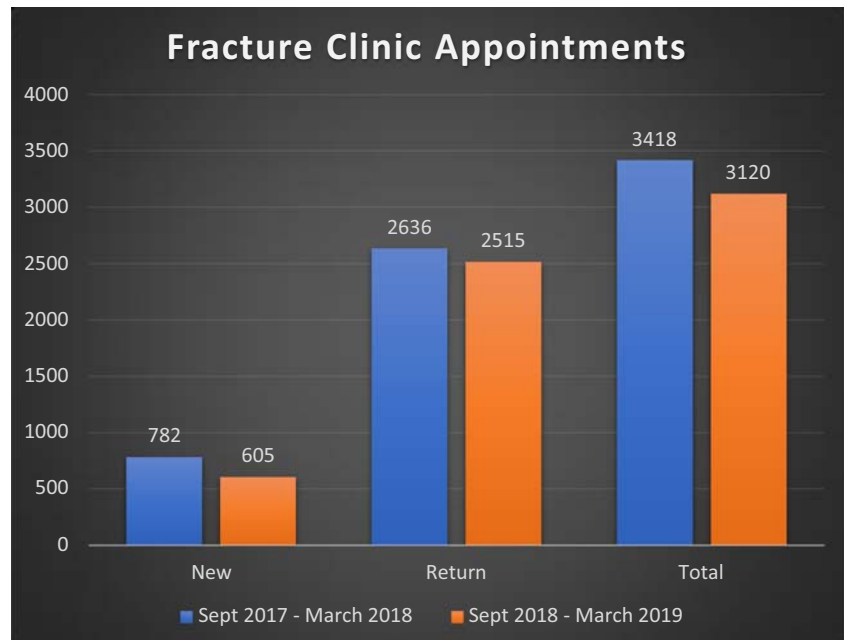
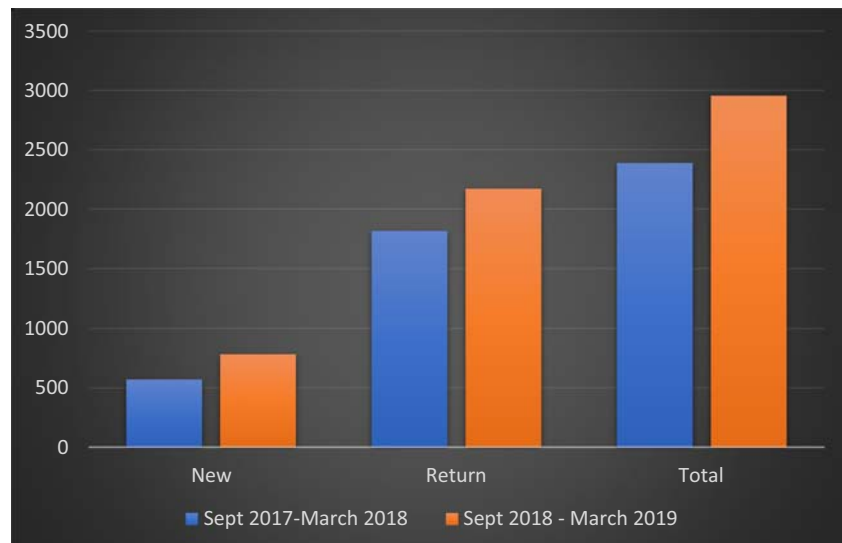


Fig. 3 Elective clinic attendances

compared with a fracture clinic appointment projected costing of €129 [8], our predicted saving over the 6-month period reviewed is €24,947. As outlined in the HSE National Service Plan 2019, the HSE's allocated funding for 2019 from the Department of Health is €16,050 million, which is an increase €484 million on 2018. This budgetary increase is reported to be due to the elevated service costs and development plans projected for 2019 [10]. We have demonstrated that streamlining patient care is cost effective. Coupled with this is the high level of patient satisfaction reported in the literature, the recently published review on the TAC in Midlands Regional Hospital Tullamore highlighted patient satisfaction as high as 97% [8].

Debleser et al. defined a clinical care pathway as one in which care for a specific group of patients at a specific time point is formulated as per best practice and evidence-based medicine [11]. It is believed that standardisation of healthcare can lead to better quality, better volume output, less complications and less costs [12]. In this current study, we employed the use of a MDT to facilitate the training of NCHDs and ancillary healthcare staff, as well as optimising time management. The close collaboration between an array of healthcare professionals in trauma and orthopaedic surgery are associated with both improved patient outcomes and ensure efficient transit throughout the patient's journey (HSE PAPER). Virtual clinics have been utilised in multiple other specialties to good effect such as gastroenterology and nephrology [13, 14]. Following the introduction of the TAC in our institution, we have demonstrated that stable fractures suitable for non-operative management can be successfully managed in a streamlined fashion benefitting both the patient and service. Furthermore, the introduction of two dedicated injection clinics per week has had a significant impact on the volume of musculoskeletal intra-articular injections performed by our service. The relocation of these patients to a dedicated

injection clinic has allowed our unit to substantially increase the volume of elective patients reviewed in our orthopaedic clinics.

Conclusion

We have shown in our review that through streamlining patient trauma care with clearly defined management plans for stable fracture patterns, the time and resources saved can be used to improve the quality of service delivered by the Trauma & Orthopaedic Department.

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