

Streamlining patient care from the emergency department to discharge: Proof of concept of an electronic neck of femur pathway

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Abstract

Background: Femoral neck fractures are associated with a high mortality rate and the incidence is rising in the UK [1-3]. High quality evidence-based guidelines exist and are supported by financial incentives for trusts meeting set criteria through a best practice tariff (BPT) payment.

Hospital trusts submit data collected for their neck of femur patients to the national hip fracture database (NHFD) who support the BPT scheme. Compliance with these standards has been shown to be beneficial to patients reducing mortality and improving outcomes. Between 2015 and 2016 when these audits took place, the value of BPT increased from £890 to £1353 making compliance potentially more valuable.

Methods: In August 2016, an electronic pathway was introduced to a Trauma and Orthopaedic department in South Yorkshire. The rates of documentation and the compliance with the BPT criteria were audited for the seven months before and after introduction. Prior to the introduction, the audit was conducted by pulling a random selection of notes whilst the electronic pathway made the process much easier, allowing all pathways to be assessed for completeness.

Results: For the first audit, 79 patients' notes were pulled, with 221 pathways being analysed for the second. Following the introduction of the pathway the percentage achieving the tariff did reduce but it is likely artefact as only a third of pathways were audited.

Conclusion: Since the introduction of the electronic neck of femur pathway, completion rates of documentation have increased. This means there is the potential for patient care to have improved. Due to the limited number of notes being pulled as part of the initial audit we are unable to say whether the pathway has improved the rates of BPT achievement but further audits will be able to show this. At present the electronic pathway is being advertised on the NHFD website and will be trialled at other sites.

Introduction

Neck of femur fractures (NOF) carry a high mortality with 20 to 35% of sufferers dying within one year and the resulting morbidity being serious, including deep venous thrombosis, pulmonary embolus and infection [1-3]. With around 90,000 patients [4] suffering this injury each year, a Best Practice Tariff (BPT) has been created with the express purpose of standardising and improving patient care and, as a result, improving patient outcomes [1]. Alongside the improved individual outcomes, the introduction of the BPT also is invaluable for trusts across the country due to its potentially increased revenue. Units "treating 350 hip fractures per year with 90% meeting requirements" could result in an extra "£140,000 of additional income" for the trust and funding for other services [5]. At present, all patients diagnosed with a NOF have their details uploaded to the National Hip Fracture Database (NHFD), with 64,864 being uploaded in 2015 alone [6]. Between 2015 and 2016 when these audits took place, the value of BPT increased from £890 to £1353 making compliance potentially more valuable (Figure 1).

With the increasing focus on patient centred care, as well as the financial situation of the NHS being more stretched than ever before, the creation of an electronic pathway to streamline the care of NOF patients was undertaken. By allowing the emergency department, surgical team and the orthogeriatricians to document their care in the same place, it was felt a more integrated approach to fulfilling all

aspects of the BPT could be achieved. Following its introduction, the pathway was audited against the previous paper system.

Materials and Methods

Using the pre-existing clerking booklet, an electronic pathway was created, including a traditional template with additional sections focussing on the information required by the NHFD such as use of nerve blocks and Nottingham Hip Fracture Score. The pathway was created using a multi-disciplinary approach, with sections for the emergency department, clerking senior house officer, operating surgeon and the orthogeriatrician to complete. By each section requiring input and being linked to a subsection of the BPT, the pathway has the

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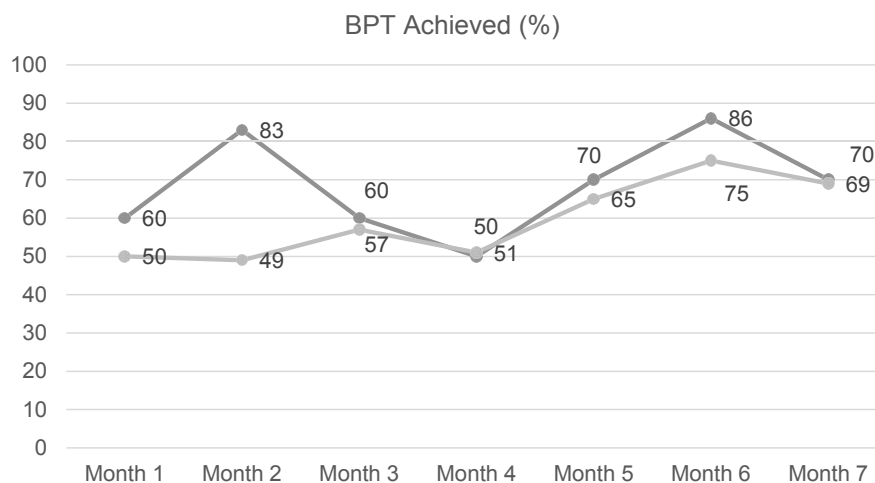


Figure 1. Achievement of Best Practice Tariff (Pre-introduction (dark grey) and Post-introduction (light grey)).

potential to ensure compliance with clinical guidance. By developing the interface to be user friendly, the pathway is accessible for all users, no matter what their information technology skills.

Following the electronic NOF pathways introduction in August 2016, a closed loop audit comparing its efficacy and completion rates to a selection of paper based forms was performed. Prior to the introduction, the seven-month audit period was conducted by pulling a random selection of notes whilst the electronic pathway made the process much easier, allowing all pathways to be assessed for completeness. Sessions were run within the department to educate the junior doctors on the use of the pathway prior to the reaudit. As well as looking at the documentation rates, the compliance of patients going to theatre within thirty- six hours and being reviewed by an orthogeriatrician within seventy-two hours was also analysed.

Results

Due to the time required to collect data from paper notes, there was a difference in numbers of pathways analysed. Within the first period of February to August 2015, seventy-nine patients’ notes were reviewed, with two hundred and twenty-one electronic pathways being analysed for the second period between August 2016 and February 2017.

Overall, rates of completion of documentation improved following the introduction of the electronic NOF pathway across most domains. However, the numbers of patients receiving a fascia iliaca block within the emergency department reduced. The achievement of the BPT did slightly reduce however, but due the discrepancy between the numbers of pathways analysed it is not possible to know whether this is a true reflection on the efficacy of the paper pathway. Despite this the completion of the electronic NOF pathway did show an upward trend in the BPT achievement rate.

Discussion

As part of the NHS Five Year Forward View, there is a plan for a paperless system to be in place by 2020. The use of more integrated technology in part aims to “reduce the administrative burden for care professionals” and by inputting data at the bedside, duplication can be reduced [7], documentation improved and patient care expedited. This closed loop audit has identified that electronic pathways such as this may be one example of an innovative technology that are required to achieve a paper free NHS. Overall, compliance of care within the different aspects of the BPT with a potential positive impact on patient

Table 1. Documentation completion rates before and after Introduction of electronic pathway.

	Pre-introduction	(Paper)	Post-introduction	(Electronic)
Category	No. completed (n=79)	Completion Rates	No. completed (n=221)	Completion Rates
Pain Score	1	1.3%	175	79.2%
Pain Review	54	68.4%	174	78.7%
X-ray results	70	88.6%	173	78.3%
ECG results	59	74.7%	173	78.3%
CXR results	24	32.0%	172	77.8%
A&E bloods	61	77.2%	171	77.4%
Nerve Block	30	38.0%	65	29.4%
Previous Medical History	72	91.1%	212	95.9%
Head injury	64	81.0%	211	95.5%
Social History	71	89.9%	211	95.5%
Abbreviated Mental Test	64	81.0%	211	95.5%
Observations	36	45.6%	212	95.9%
Pre-operation bloods	72	91.1%	203	91.9%
BPT achieved	51	64.5%	137	61.9%

care and indeed outcomes such as an improvement of orthogeriatrician reviews increased. Compliance with these standards has been shown to be beneficial to patients reducing mortality and improving outcomes. Between 2015 and 2016 when these audits took place, the value of BPT increased from £890 to £1353 making compliance potentially more valuable.

As well as there being a drive for the paperless system, there is an increasing awareness about the importance of adequate documentation [8] with more of a focus on what is written as being evidence of care. Within this evaluation, documentation improved across all domains (Table 1).

As a result, there were limitations to this audit due the nature of data collection from paper notes being time consuming and logistically more challenging.

Conclusion

The next stage of development of this pathway is to allow completed data to be automatically transferred into a format compatible for submission to the NHFD without the need for transfer by clinical

support staff. The pathway is to be trialled at different sites, with the integration of different IT systems from emergency departments and wards.

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