

## QATAR CRITICAL CARE CONFERENCE ABSTRACT

# Prehospital analgesia for femur fractures: An improvement study

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<http://dx.doi.org/10.5339/qmj.2019.qccc.84>

Submitted: 10 May 2019

Accepted: 16 June 2019

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Cite this article as: Howland IR, Howard IL, Pillay Y, Ludick BD, Castle NR. Prehospital analgesia for femur fractures: An improvement study, Qatar Medical Journal, Qatar Critical Care Conference 2019:84 <http://dx.doi.org/10.5339/qmj.2019.qccc.84>

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HAMAD BIN KHALIFA UNIVERSITY PRESS

### ABSTRACT

Background: Management of pain in the prehospital setting is an important priority for prehospital clinicians, yet is often underestimated, either due to poor pain assessment, under dosing and inadequate provision of analgesia<sup>1,2</sup>. A femur fracture is considered a painful injury and as such, should be managed with effective analgesia. Pain is associated with multiple negative physiological effects which may potentially worsen a patient's clinical condition<sup>1</sup>, further highlighting the importance of providing effective analgesia. Vassiliadis et al., highlighted that patients with a femur fracture receive only moderate analgesia in the prehospital setting and this requires a focused strategy to improve the care received by these patients<sup>3</sup>. A retrospective audit of the Hamad Medical Corporation Ambulance Service (HMCAS) electronic patient care records (ePCR) highlighted the low frequency of prehospital analgesia for the management of femur fractures (October 2016 – December 2016). The provision of three pharmacological agents (Methoxyflurane, Fentanyl and Ketamine) which are the primary analgesics used by the HMCAS for the management of pain associated with femur fractures was reviewed. These drugs are often used together in a multimodal strategy to manage pain effectively.

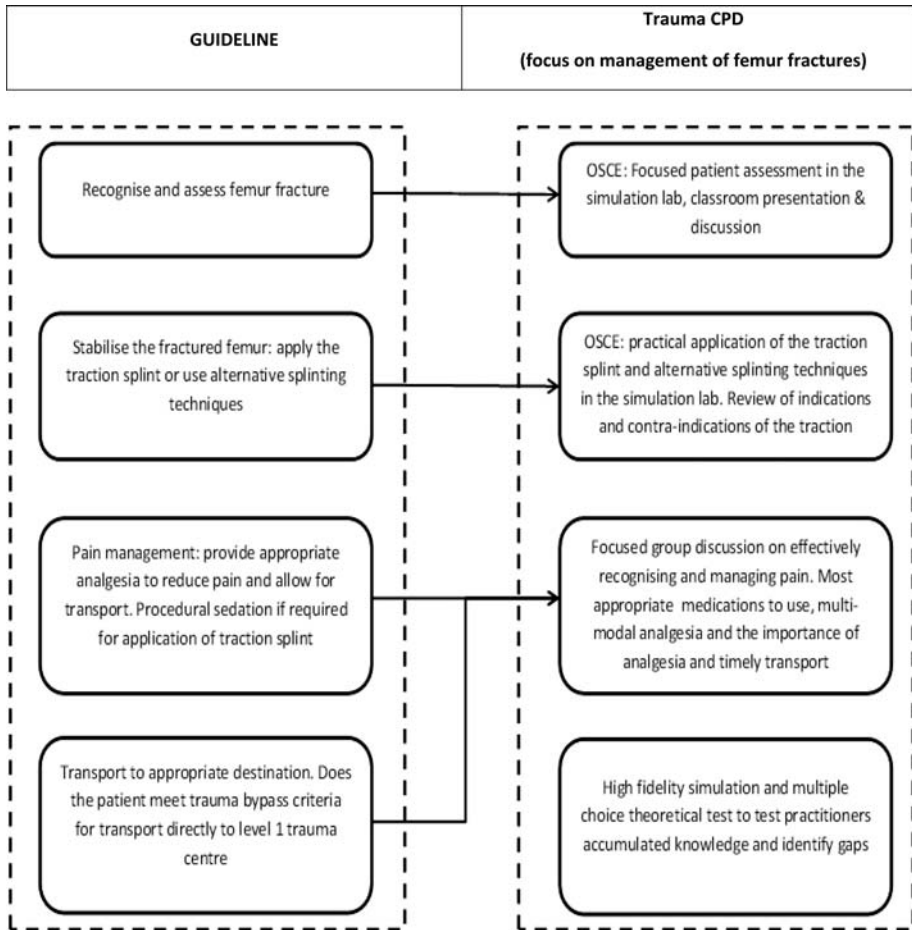


Figure 1. Overview of Hamad Medical Corporation Ambulance Service training guideline (focus on management of femur fracture).

A multimodal approach to managing trauma pain has the benefit of improving efficacy with multiple mechanisms of action, limiting the number of doses required of a single drug, as well as reducing the risk of side effects<sup>4</sup>. The aim of this study was to improve prehospital analgesia for femur fractures, by means of introducing a purpose-designed trauma CPD training course. Focused training through the means of high fidelity simulations and simple skills training leads to improved

performance and an increase in knowledge gained by the practitioner<sup>5</sup>, resulting in improved and safer care delivered to patients. Methods: An intervention consisting of a theoretical, individual skills and simulation-based mandatory trauma CPD training session for all operational prehospital care providers was implemented over a three-month period (January 2017 – March 2017). The eight-hour trauma CPD training session focused on managing major trauma

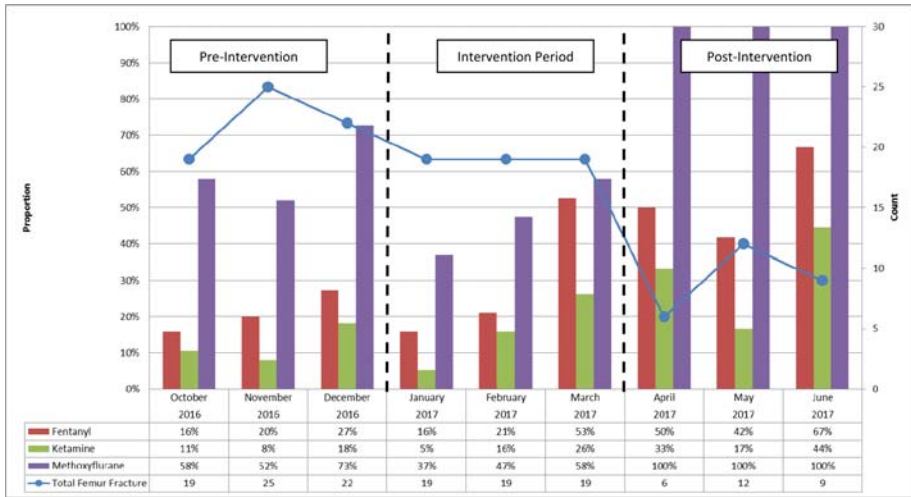


Figure 2. Analgesia provided to femur fractures pre and post-intervention.

with specific focus on femur fracture identification and optimization of analgesia (Figure 1). Following the intervention period, a repeat retrospective audit of the ePCR database was conducted to identify any improvement in the frequency of prehospital analgesia for patients with femur fractures (April 2017 – June 2017).

Results: The mean provision of prehospital analgesia for a femur fracture in the pre-intervention stage was found to be sub-optimal (Methoxyflurane 61%; Fentanyl 21%; Ketamine 12%). Whereas, following the intervention period, the mean provision of prehospital analgesia for femur fractures increased significantly (Methoxyflurane 100%; Fentanyl 30%; Ketamine 52%).

See Figure 2.

Conclusion: This study found that focused trauma training is an effective means to improve prehospital analgesia for femur fractures as well as overall patient care. Introduction of the trauma CPD training

session resulted in an improvement in the management of pain associated with a femur fracture. Significant room for improvement still exists and prehospital analgesia should continue to be developed. Further research is still required.

Keywords: femur fracture, prehospital, analgesia

### Ethical approval

The Hamad Medical Corporation Medical Research Center has determined this project as 'Quality Improvement' and hence does not require Institutional Review Board approval.

### Acknowledgements

The authors would like to thank the Hamad Medical Corporation Ambulance Service for their support during this project.

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