



TRAUMA PAN CT SCAN

AN EFFECTIVE TRAUMA CARE QUALITY IMPROVEMENT INTERVENTION ?

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INTRODUCTION

Major trauma contributes to a significant global health burden and is the leading cause of death and disability in individuals under 40 (Alberdi F et al., 2014). In Malaysia, transport accidents are the fourth principal cause of death and the leading cause in the 0–14 and 15–40 year age groups in 2023 (DOSM, 2024). Hospital trauma audits identified delayed trauma computed tomography (CT) scan as a major factor in hindrance of definitive trauma care and this contributes to the increased of morbidity and mortality in polytrauma cases. Trauma pan CT scan enables rapid and comprehensive imaging, reducing missed injuries and delays of definitive care (SJM Yussof et al., 2019).

OBJECTIVES

To implement a standardised Trauma Pan CT Scan Protocol in Hospital Umum Sarawak to:

- Improve early injury detection
- Reduce delays in care
- Enhance patient outcomes in major trauma

METHODOLOGY

A retrospective audit was conducted over 13 months (July 2023-July 2024) in the Emergency & Trauma Department (ETD) of Hospital Umum Sarawak. Data were collected from the high impact trauma checklist, major trauma audit data collection form, Malaysian Trauma Registry (MTR), and case notes. Variables included demographics, mechanism of injury, key time intervals (arrival to CT activation, CT activation to CT completion, arrival to disposition), CT findings by body region, post-CT management, and patient outcomes.

RESULTS

A total of 39 patients who underwent pan CT scan were included in the audit. 76.9% were male. Majority of patients (72%) were within the 20-39 years of age group. Transport-related accidents were the predominant mechanism of injury (89.7%). The mean time from patient arrival to CT activation was 28.3 minutes (standard deviation (sd) 16.6 minutes), while mean time for protocol activation to completion of CT was 84.2 minutes (sd 55.7 minutes). The overall mean time of patient arrival to disposition was 7.4 hours (sd 2.4 hours). 84.6% of patients sustained injuries involving two or more body regions. 48.7% patients required operative or radiological intervention, while more than half (51.3%) were managed conservatively. The overall survival to discharge rate was 79.4%.

DISCUSSION

Implementation of the trauma pan CT scan protocol reduced the time interval from patient's arrival to CT scan and expedited clinical decision making. The protocol increased detection of occult injuries, eliminated repeat CT requests, and improved workflow efficiency.

These improvements contributed to reduced morbidity and mortality among major trauma patients, aligning with international evidence such as the REACT-2 trial (Sierlink JC et al., 2016), which demonstrated shorter ETD length of stay (LOS) and hospital LOS with trauma pan CT scan use.

This audit was limited by a small sample size and the absence of data for comparison before and after implementation of the trauma pan CT Scan. Additionally, there is a lack of published local or international literature on similar audits. Future studies to compare among tertiary hospitals with and without trauma pan CT scan protocol can be considered to help determine the cost effectiveness and efficacy.

CONCLUSION & RECOMMENDATIONS

The trauma pan CT scan protocol significantly improved time to diagnosis, streamlined trauma care delivery, and enhanced outcomes among trauma patients in Hospital Umum Sarawak. This quality improvement initiative demonstrates sustainability and scalability. Broader adoption across Malaysian hospitals with CT capability is recommended, with adherence to strict activation criteria to minimise unnecessary CT scan, radiation exposure, and resource burden.

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