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Implementing Major Trauma Audit in Ireland

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ABSTRACT

Background: There are 27 receiving trauma hospitals in the Republic of Ireland. There has not been an audit system in place to monitor and measure processes and outcomes of care. The National Office of Clinical Audit (NOCA) is now working to implement Major Trauma Audit (MTA) in Ireland using the well-established National Health Service (NHS) UK Trauma Audit and Research Network (TARN).
Aims: The aim of this report is to highlight the implementation process of MTA in Ireland to raise awareness of MTA nationally and share lessons that may be of value to other health systems undertaking the development of MTA.
Methods: The National Trauma Audit Committee of the Royal College of Surgeons in Ireland, consisting of champions and stakeholders in trauma care, in 2010 advised on the adaptation of TARN for Ireland. In 2012, the Emergency Medicine Program endorsed TARN and in setting up the National Emergency Medicine Audit chose MTA as the first audit project. A major trauma governance group was established representing stakeholders in trauma care, a national project co-ordinator was recruited and a clinical lead nominated. Using Survey Monkey, the chief executives of all trauma receiving hospitals were asked to identify their hospital's trauma governance committee, trauma clinical lead and their local trauma data co-ordinator. Hospital Inpatient Enquiry systems were used to identify to hospitals an estimate of their anticipated trauma audit workload.
Results: There are 25 of 27 hospitals now collecting data using the TARN trauma audit platform. These hospitals have provided MTA Clinical Leads, allocated data co-ordinators and incorporated MTA reports formally into their clinical governance, quality and safety committee meetings. There has been broad acceptance of the NOCA escalation policy by hospitals in appreciation of the necessity for unexpected audit findings to stimulate action.
Conclusion: Major trauma audit measures trauma patient care processes and outcomes of care to drive quality improvement at hospital and national level. MTA will facilitate the strategic development of trauma care in Ireland by monitoring processes and outcomes and the effects of changes in trauma service provision.

Introduction

Globally, trauma is the leading cause of death for individuals aged between 5 and 44 years [1]. In the European Union, trauma represents the fourth [2] and in Ireland, the third leading cause of death [3] and accounts for at least 8.5% of admissions to hospitals [4]. Trauma is the leading cause of death among young people in Ireland, causing 44.3% of deaths in 5–14 year olds and 70.0% of deaths in 15–24 year olds [5].

Major Trauma Audit (MTA) is designed to document the acute phase of care delivered to victims of trauma, collecting process and quality indicators, and providing risk adjusted mortality rates.

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Trauma registries, through which major trauma audit is performed, are large databases with appropriately qualified staff and governance structures designed to facilitate this process. Patients are included in the database according to specific inclusion criteria. Data including patient demographics, the circumstances surrounding injury, pre-hospital care and transport, emergency department (ED) and in-hospital interventions received, anatomic injury description, injury severity, physiological measurements, complications, and outcomes are recorded. Trauma registries increasingly include information on pre-existing diseases, recognised as an important determinant of outcome, independent of age and injury severity [6] and are moving towards reporting functional and quality of life outcomes acknowledging that mortality rates are a crude measurement of outcome [7]. Trauma registry data is abstracted and coded from the patient file by trained data abstractors and coders respectively. Registry data has been found to be superior to that found in hospital administrative databases [8,9] and is therefore essential for planning resource allocation.

The decrease in trauma mortality following the introduction of integrated trauma systems provide indirect evidence of the value of trauma audit through trauma registries [10,11]. Data is used as an internal quality control tool for benchmarking with national or international standards, to monitor performance over time or to identify institutional outliers for internal review. Variation in patient care processes and the impact of such variation on patient outcomes can be analysed and reflective clinical practice promoted. The impact of complex patients on hospital length of stay and the predicted local and national resource implications can be considered more strategically. Though not the primary role of a registry, high quality data enables peer reviewed research that can drive clinical change. Importantly, the data also provides a framework for injury prevention strategies [12–16].

In England and Wales, the Trauma Audit and Research Network (TARN) has been in operation since 1990 while in Scotland the Scottish Trauma Audit Group (STAG) was established in 1991. Trauma registries have been implemented in the United States since the mid-1970s, around the same time that trauma centres were being developed [17–19]. These registries have been most influential and integral to the ongoing strategic development of trauma services in the USA, UK and Australia [20]. Detailed TARN inclusion criteria [22] are beyond the scope of this report however, broadly, TARN includes the more severely injured patients; those with a length of stay of 72 h or more, trauma patients admitted to a high dependency area regardless of length of stay, and deaths of trauma patients occurring in the hospital including in the emergency department. TARN also includes those transferred into or out of the hospital for ongoing care. TARN collects observations and interventions performed across the patient journey from Prehospital, ED and Critical Care locations. Data collectors at the contributing hospitals upload the relevant information to the electronic data collection reporting system. The Injury Severity Score (ISS) is calculated using the Abbreviated Injury Severity Score; AIS coding is performed centrally by TARN data coders. The probability of survival for each patient is calculated adjusting for ISS, Glasgow Coma Score (GCS), age, sex and, more recently, co-morbidities. A comparative outcome analysis (Ws) is provided to hospitals describing their number of unexpected survivors or unexpected deaths per 100 patients treated. The physical and human resources required for data collection are a computer with Internet access, access to patient records and an organised computer literate data collector who may be from a clinical or hospital administration background. One day per week per 100 TARN entries per year is the estimated time required of such a data collector. The structures and governance around MTA are key so issues raised can be readily addressed at local hospital and trauma system levels [22].

The aim of this report is to highlight the implementation process of MTA in Ireland and share lessons that may be of value to other health systems undertaking the development of MTA (Fig. 1).

Background to Major Trauma Audit in Ireland

There are 27 receiving trauma hospitals in the Republic of Ireland. There has not been an audit system in place to monitor and measure process and outcomes of care for patients suffering major trauma. The need for high quality clinical data has long been identified as an essential component of trauma care in Ireland. Most recently, the National Trauma Audit Committee (NTAC) of the Royal College of Surgeons in Ireland (RCSI) proposed the implementation of a national system of trauma audit in Ireland using the internationally recognised TARN [22] (Trauma Audit and Research Network) in 2010. This proposal was endorsed by the Emergency Medicine Programme (EMP) of the Health Services Executive (HSE) as a public health initiative to provide a comprehensive epidemiological database of severe injury that would drive quality improvement. The EMP is a multidisciplinary working group whose aims are to improve the access, safety and quality of care for patients attending Emergency Departments (EDs) throughout the country [21]. The EMP, working with the surgical programmes involved in trauma care, recommended the establishment of major trauma audit in the National Office of Clinical Audit (NOCA).

NOCA was established in 2012 through a collaborative agreement between the HSE Quality Improvement Division and the Royal College of Surgeons in Ireland. The primary purpose of NOCA is to establish sustainable clinical audit programmes at national level which will ultimately improve outcomes for patients in hospitals in Ireland. Current national audits in development or implementation phase include the Irish National Orthopaedic Register (INOR), National Audit of Hospital Mortality (NAHM), the National Intensive Care Audit (ICU Audit), the Irish Audit of Surgical Mortality (IASM), the Irish Hip Fracture Database (IHFD) and Major Trauma Audit (MTA). NOCA functions through an Executive Team which provides managerial and operational support to deliver the objectives of the NOCA Governance Board. The NOCA Governance Board is an independent voluntary Board made up of representatives from the health service including the medical training bodies, nursing and patient advocacy representatives to oversee the establishment of sustainable clinical audit programs.

Methods

NOCA provides administrative and national operational support of this audit; a Clinical Lead was nominated (CD) and a fulltime Audit Coordinator (MC) employed. A national multidisciplinary Major Trauma Audit Governance Committee was established; stakeholder groups including the Post-graduate Medical Colleges, Faculties and Associations involved in the care of the traumatically injured patient are represented on this committee (Table 2). The committee's role is to ensure the integrity and success of the audit process, cascade key messages to the respective specialist groups represented and to advocate strategies that will bring about improvements in major trauma care in Ireland informed by the data provided by MTA.

The Trauma Audit and Research Network (TARN) based at the University of Manchester was chosen as the audit provider. TARN has been in existence since 1989 and is the largest trauma registry in Europe [22]. NOCA and TARN agreed upon a process of including Irish hospitals on the TARN electronic platform. Working with TARN, the data set was expanded to include variables appropriate