



Original research

Assessment of trauma quality improvement activities at public hospitals in Thailand



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HIGHLIGHTS

- 90% Thai public trauma centers have a trauma registry.
- Only 48% Thai public trauma centers reported using all four WHO TQIP elements.
- Barriers to implementing TQIPs are lack of interest and lack of time.
- Use of audit filters was the most frequently identified high priority TQIP activity.

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ABSTRACT

Background: Given the current exceptional burden of injury in Thailand, the proven efficacy of quality improvement programs, and the current scarcity of national-level information on trauma quality improvement program (TQIP) implementation in Thailand, we aimed to examine the use of TQIPs and barriers to TQIP adoption in Thai public trauma centers.

Methods: We distributed a survey to 110 public hospitals which are designated to provide trauma care in Thailand. The survey assessed the presence or absence of the four core elements of the World Health Organization (WHO) recommended TQIPs (morbidity and mortality (M&M) conferences, preventable death panels, trauma registries, and audit filters), and provider perception of barriers and priorities in TQIP implementation.

Results: Responses were received from 80 (72%) respondents. Seventy-two (90%) reported having a trauma registry and seventy (88%) respondents reported use of audit filters. Seventy (88%) respondents reported conducting regular M&M conferences, and 45 (56%) respondents reported the presence of preventable death panels. Thirty-eight (48%) respondents reported presence of all four elements of WHO TQIPs. The most commonly reported barriers to implementing TQIPs were lack of interest (55; 68%) and lack of time (39; 48%) to implement TQIPs. Audit filters were reported by only 25 (31%) of respondents and optimization of audit filters was the most frequently identified next-step in further development of TQIP.

Conclusions: Just under half of responding Thai public trauma centers reported implementation of all four elements of the WHO recommended TQIPs. Priority strategies to facilitate TQIP maturation in Thailand should address staff motivation, provision of staff time for TQIP development, and optimization of audit filter use to monitor quality of care.

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1. Introduction

Injury is a major cause of death and disability globally, accounting for more disability-adjusted life-years (DALYs) lost than human immunodeficiency virus, tuberculosis, and malaria combined [1]. In 2015, Thailand had 24,237 road traffic fatalities (36.2 per 100,000), making it the country with the second-highest road traffic injury fatality rate in the world [2,3]. Thai policy experts agree that the response to this problem should include injury prevention efforts such as development off-road safety measures, as well as strengthening of trauma care [4,5]. The mortality attributable to injury in low and middle-income countries (LMICs) is sustained at least in part due to suboptimal trauma care as compared to those observed in high-income countries. The fact that many high ISS patients receive initial treatment at level 2 and level 3 trauma centers before receiving definite treatment in a level one trauma center may be contributory. It is estimated that persons injured in low-income countries are nearly twice as likely to die as compared to those with the same level of injury in a high-income country, and those in middle-income countries have a 20% absolute greater risk of death than those in high-income countries [6].

Implementation of quality improvement (QI) programs is one means to improve trauma care worldwide [7–9]. QI programs achieve this goal by facilitating continuous identification of deficiencies in care and then prompting development of targeted corrective actions to address these areas [10]. Implementation of QI elements such as morbidity and mortality (M&M) conferences, panel reviews of preventable deaths, audit filters to track complications, and trauma registries have been shown to improve trauma care in high-income countries [7–12]. For example, a multi-center report of the impact of QI program implementation showed a 2.1% ($p < 0.05$) reduction in overall mortality, a 1.9% ($p < 0.05$) reduction in deaths in the emergency department, and most notably, a 19% ($p < 0.05$) reduction in all-cause mortality among patients with an injury-severity score greater than 30 [9].

Due to the large burden of disease, and currently sub-optimal outcomes, hospitals in LMICs are particularly well-positioned to benefit from adoption of formal TQIPs such as those recommended by the World Health Organization (WHO) [12]. Yet, the limited evidence that exists suggests that the rate of TQIP implementation in LMICs, including Thailand, is low [13–15]. In the case of Thailand, there are only three published reports of TQIP implementation, all from a single center [16–18].

Given the current exceptional burden of injury in Thailand, the proven efficacy of QI programs, and the current scarcity of national-level information on TQIP implementation, we aimed to examine the prevalence of, and barriers to, TQIPs across Thai public hospitals which care for trauma patients.

2. Materials and methods

2.1. Participants and setting

We identified a comprehensive list of public hospitals in Thailand using the official Thai Ministry of Health webpage [19]. Private hospitals were not included in the current assessment, as they are estimated to provide only 20% of national trauma care, and function under regulations and resource constraints grossly different than the remainder of the health system [20]. The organizational structure of the Thai hospital system is shown in Fig. 1. Thai public hospitals are either centrally administered by the Ministry of Public Health, or administered regionally or locally by county, military, or university (ministry of university affairs) authorities. Hospitals are additionally divided into those which are

	MOPH	Non MOPH	
Tertiary Public Hospitals	27 RH 22/27	10 MCH 9/10	11 UH 9/11
Secondary Public Hospitals	60 GH 38/60	2 MCH 2/2	

*MCH—Military and County Hospitals, UH—University Hospitals, RH—Regional Hospitals, GH—General Hospitals, MOPH—Ministry Of Public Health

Fig. 1. Organization and Response of Thai Public Hospitals.*The number of respondents in each category of hospital type is presented. Responses were received from a total of 80 (72%) hospitals (11 MCHs; 91.7%, 9 UHs; 81.8%, 22 RHs; 81.5% and 38 GHs; 63.3%).

designated primary, secondary, and tertiary care as classified by size and specialists on staff [21]. Ministry of public health trauma hospitals are divided between large, tertiary care centers which provide definitive trauma care, herein referred to as “regional hospitals” (RH); and smaller secondary care centers which provide a more limited range of services, herein referred to as “general hospitals” (GHs). Non-ministry of public health hospitals are similarly divided, with all university (UHs), and almost all military and county hospitals (MCHs) classified as tertiary care, and the remainder which meet American College of Surgeons (ACS) level three trauma classifications being also classified as secondary care centers [22,23]. Primary care hospitals are community, district level, hospitals, none of which provide definitive care for trauma patients [23,24].

We obtained the names and contact information for trauma care leaders, hospital leaders, or other people suitable to approach to fill out the questionnaire, from the MOPH, from individual hospitals, and from personal contact information. We preferentially contacted potential respondents by email (with a link for the questionnaire), but when email addresses were not available, by mail (Fig. 2).

In cases where respondents worked at more than one hospital (four respondents in the sample covered nine hospitals), respondents were asked to complete multiple surveys, reflecting the different practices at each of the hospitals where they were employed.

For those respondents who were recruited via e-mail but who did not respond to the survey within one week, another request for completion was automatically sent via the electronic survey platform and repeated weekly for three weeks. For those to whom we sent paper questionnaires, we waited for a response for one month. This frequency and duration of solicitation was selected in order to accomplish a targeted response rate of 70%, and the study was closed once we achieved this goal. A response rate of 70% was selected as it was determined to be an adequately comprehensive response to mitigate the impact of response-bias.

2.2. Data collection

The anonymous multiple-choice and open-answer survey was distributed in electronic format (REDCap, University of Washington's Institute of Translational Health Sciences) as a link embedded within the previously mentioned enrollment e-mail [25]. The first page of the electronic survey was an information sheet. The questionnaire included questions regarding hospital size and resources, status of implementation of TQIPs, and barriers

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