

## Research Article

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# The Advanced Trauma Life Support (ATLS®) Program in Trinidad and Tobago Positively Impacts Trauma Education and Care in the Caribbean

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## Abstract

The Advanced Trauma life support (ATLS) program was introduced in Trinidad and Tobago as the first program outside North America in 1986. This was the beginning of the International promulgation program through which over 2 million doctors have been trained internationally. In Trinidad and Tobago, the program is still very active and has spawned many other trauma education programs in Trinidad and the rest of Caribbean Islands including development of Ambulance systems training, pre-hospital trauma training, disaster management and rural trauma course teaching. In this report, we describe the development and impact of these programs in Trinidad and Tobago and their extension to other islands of the Caribbean through faculty from Trinidad and Tobago. We describe these programs in greater detail outlining the specific programs in each of the Caribbean islands. These programs have provided a strong bond among physicians interested in trauma care in the Caribbean.

**Keywords:** Advanced Trauma life support (ATLS); Impact of ATLS; Pre-Hospital Trauma Life Support (PHTLS); Rural Trauma Team Development Course (RTTDC); Trauma Evaluation and Management (TEAM); Trauma Training

## Introduction

The Advanced Trauma Life Support (ATLS) program was developed through the recognition of the need for trauma training among primary care physicians in North America, where like most of the world, trauma continues to be the leading cause of death among individuals less than 40 years of age [1]. The original ATLS program was initiated in the late 1970's in Nebraska and soon

became adopted by the American College of Surgeons Committee on Trauma [2]. It was then introduced throughout the US and Canada after which it was initiated in Trinidad and Tobago in 1986. The impact of the program on trauma outcomes in Trinidad and Tobago is reported including the effect on trauma education [3]. The mortality decreased two-fold following ATLS teaching among physicians in the main trauma referral hospitals in Trinidad and Tobago. However, overall trauma mortality in the country as a whole was unaffected due to the large percentage of patients dying in the prehospital setting from trauma [4]. This prompted the introduction of the Pre-Hospital Trauma Life Support (PHTLS) course which led to improvement in overall trauma mortality in

Trinidad and Tobago [5].

Other trauma education programs in Trinidad and Tobago include the Rural Trauma Team Development Course (RTTDC), the Disaster Management program, the Trauma Evaluation and Management (TEAM) program for medical student in their senior years and first responder trauma programs. The ATLS program stimulated the development of an ambulance training program in Trinidad and Tobago. Soon thereafter, the faculty from Trinidad and Tobago was invited to conduct ATLS programs in Jamaica where other programs including the TEAM program were conducted [5]. In this report, we chronicle the development of trauma training programs in adjacent islands in the Caribbean, detailing the type and number of programs in each island. We also describe the influence of the Trinidad and Tobago Faculty in the dissemination of these programs as well as the effect on trauma education and trauma outcome [6].

## Methods

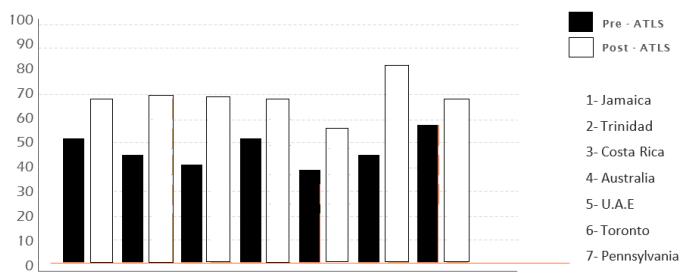
We assessed trauma education program evolution in Trinidad and Tobago and the rest of the Caribbean by reporting on the specific programs introduced into the Caribbean islands by the Trinidad and Tobago faculty. Programs in Trinidad, Grenada, Jamaica and Barbados as well as their impact on ambulance system development and training of participants from other islands that do not have their own trauma training programs, are outlined. The results are grouped according to individual island trauma training program activities.

## Results

### Trinidad and Tobago

- Using the ATLS program as a model, the faculty from Trinidad and Tobago coordinated the development of ambulances with communication systems. A total of 125 ambulances (National Ambulance Service 45; Government 20; Regional Health 20; Private including Red Cross 40) were equipped, compared to about 25, ten years previously.
- ATLS: 103 courses were conducted (16-32 participants per course) for a total of 2287 physician trained. 550 nurses audited the ATLS provider course in Trinidad and Tobago. 162 physicians were also trained in ATLS from Barbados, Guyana, Antigua, Dominica, Bahamas, St. Lucia, Suriname, Curacao and Aruba at the Trinidad sites.
- PHTLS: 62 courses were conducted in which 1200 participants were trained since its inception.
- TEAM: This program is aimed at training senior medical

students in the concepts of trauma resuscitation based on the ATLS course. TEAM was started in 2001 with 100-200 trained per year. This program has shown improved MCQ performance not only in Trinidad and Tobago but also in 6 other countries [7,8] (Figure 1).



**Figure 1:** MCQ trauma scores (%) among medical students before and after the TEAM course in seven countries, including Trinidad. Trauma MCQ scores increased post TEAM training in all countries.

- RTTDC: This program is geared towards applying ATLS concepts in low resource clinical settings. Two courses were conducted with 30 physicians trained in Trinidad.

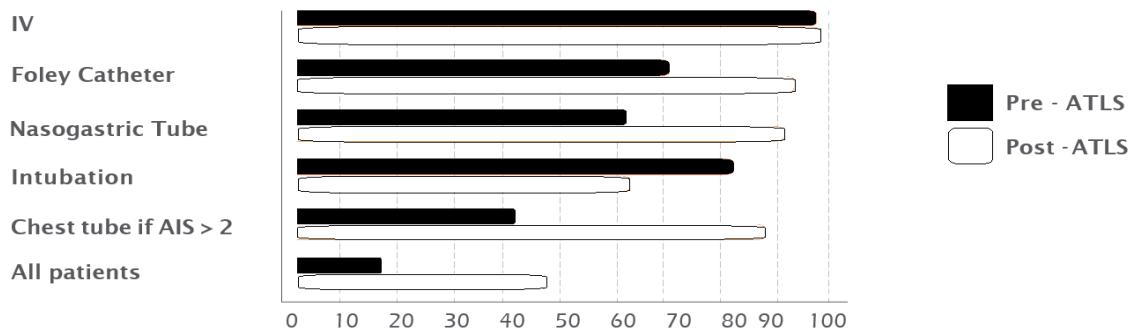
The ATLS program was associated with a decrease in overall mortality among all trauma patients (Table 1) and this was found across all Injury Severity Scores (ISS) (Table 2). This was due to demonstrated increase in overall implementation of prehospital resuscitative manoeuvres (Figure 2) and increased implementation of resuscitative manoeuvres specifically in the emergency department (Figure 3) [9].

	TOTAL PATIENTS		DEATHS
	Pre - ATLS	413	279
Post - ATLS	400	134	
Totals	813	413	

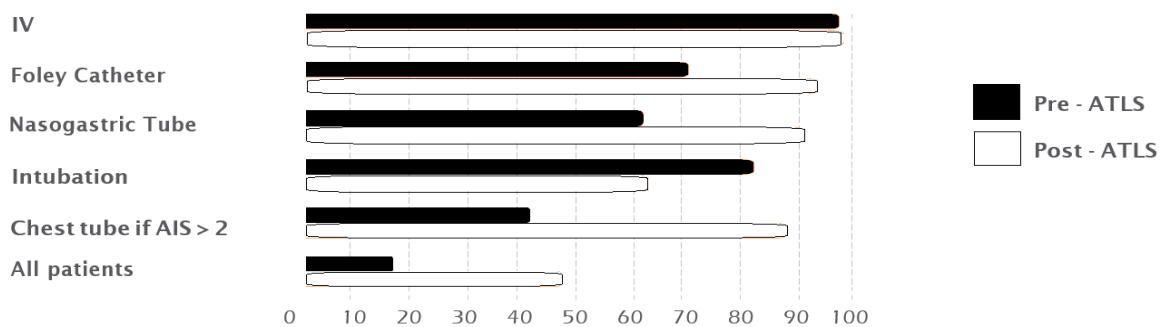
**Table 1:** Mortality Among All Trauma Patients. There was an overall decrease in trauma mortality after ATLS (4 years pre and 4 years post ATLS compared).

ISS	Mortality Pre (%)	Mortality Post (%)	Odds Ratio
Less than 24	47.9	16.7	4.5
24-40	91.0	71.0	1.2
41+	100	100	

**Table 2:** Injury Severity Scores (ISS) and Mortality. Injury mortality decreased at all levels of injury severity except ISS >41 after ATLS.

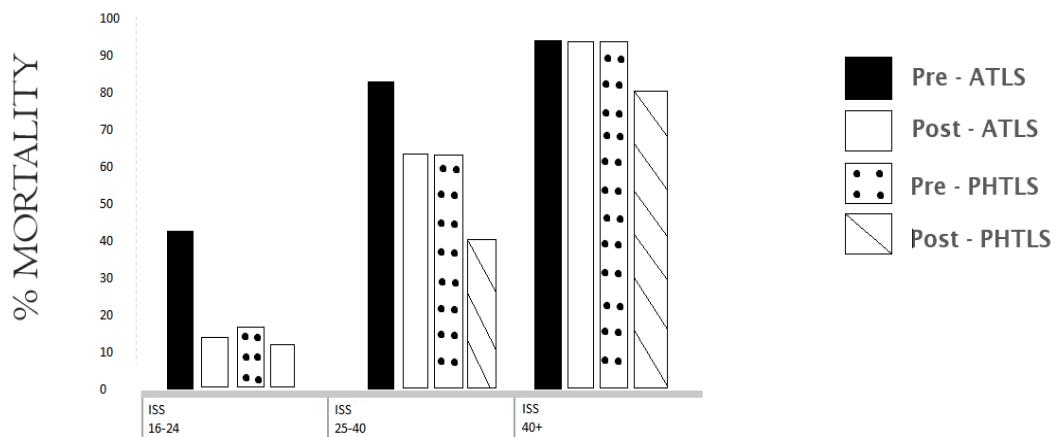


**Figure 2:** Percentage of Trauma Patients Receiving ATLS Procedures Overall. ATLS procedures increased overall after ATLS. (IV-established intravenous access; AIS- Abbreviated injury score).



**Figure 3:** Percentage of Procedures Administered in the Emergency Department. There was a significant increase in ATLS procedures conducted in the Emergency room after ATLS. (IV-established intravenous access; AIS- Abbreviated injury score).

The introduction of the PHTLS program in Trinidad was also associated with a further decrease in trauma mortality compared with the impact of ATLS alone (Figure 4) [10].



**Figure 4:** Trauma Patient Outcome After the PHTLS Program. Pre PHTLS mortality was unchanged after the initial improvement post ATLS. There was a further decrease in mortality after PHTLS for all injury severity scores

## Grenada

- The ATLS program in Grenada, although funded by St George's University, was conducted by the faculty from Trinidad and Tobago: 20 ATLS Courses were conducted in which 346 physicians were trained. The physicians trained also included those providing trauma care while residing in Grenada having moved there from St. Vincent, Africa, India and the Middle East. 165 nurses also audited the ATLS provider courses in Grenada.
- PHTLS: 18 courses have been conducted, and 256 participants were trained.
- RTTDC: 4 courses have been conducted with 48 participants trained.
- TEAM: An annual course for over 250 participants was conducted by the Trinidad and Tobago faculty but was discontinued 5 years ago. This was replaced by the International Trauma Life Support (ITLS) course which is coordinated by the St. George's University faculty.

## Jamaica

ATLS: The Trinidad and Tobago faculty conducted 9 courses from 2001-2004, training 169 ATLS physicians as instructors and providers, ATLS coordinators and 72 nurse auditors. The course required re-establishment on two separate occasions due to change of leadership, lack of funding and decreased activity.

## Barbados

In 1994, a PHTLS course was conducted for 14 instructors and then in 2009 for 8 instructors. This course was stopped due to lack of funding.

## Discussion

As indicated worldwide, trauma is the leading cause of death among young individuals. The ATLS course introduced in Trinidad and Tobago in 1986 was associated with a significant decrease in trauma mortality due to improved skills among physicians and paramedical personnel in the hospital and pre-hospital setting. Adherence to ATLS principles has been useful in developing ambulance systems in Trinidad and Tobago. ATLS training has been implemented by the Trinidad and Tobago faculty in other Caribbean

islands and has also been associated with the establishment of other trauma training programs such as the TEAM program for medical students and the PHTLS for pre-hospital personnel. Increased implementation of these programs in the islands of Barbados and Jamaica is desirable but requires additional financial support from government and other funding agencies. The moving force behind these efforts in trauma education and trauma care in the Caribbean emanates from the ATLS faculty of Trinidad and Tobago.

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