

Improved trauma management with advanced trauma life support (ATLS) training

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Abstract

Objective—To determine the value of advanced trauma life support (ATLS) training for medical staff in a major incident situation, based upon performance in a simulated exercise.

Methods—A major incident exercise was used to assess the management of trauma victims arriving in hospital suffering from multiple or life threatening injuries. The effect of ATLS training, or exposure to an abbreviated form of ATLS training, on the management of patients with simulated life threatening traumatic injuries was examined. The treatment offered by medical staff of different grades and varying exposure to ATLS training was compared.

Results—Medical staff who had undertaken ATLS training attained a higher number of ATLS key treatment objectives when treating the simulated trauma victims.

Conclusion—Medical staff who have either undertaken the full ATLS course or an abbreviated form of the course were more effective in their management of the simulated trauma cases.

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Keywords: ATLS; trauma management; major incident simulation.

The management of patients presenting with acute life threatening traumatic injuries is often difficult and causes anxiety, even for the most experienced of clinicians. To address this problem and to provide clinicians with an easily reproducible and effective approach for the management of these cases, the American College of Surgeons developed the advanced trauma life support (ATLS) course. This course was launched in the United Kingdom in 1988 and is widely considered to be the gold standard for the practice of acute trauma management.

Following a major incident in September 1993 involving a bus crash with predominantly paediatric casualties,¹ a debriefing session was held during which a number of senior medical staff indicated that their unfamiliarity with and remoteness from acute trauma care was of concern to them. A local one-day trauma course was arranged to provide a large number of medical staff (of all grades) with an overview of the ATLS course approach to trauma. The composition of this course is described elsewhere.²

During the one-day course it was advocated that all medical staff who routinely manage trauma cases should undertake the full ATLS course. Following their attendance on this one-day course many of those who had voiced concerns about their trauma management skills felt they would be better able to cope with a trauma case under similar conditions.

ATLS would seem to be the ideal training course for doctors who may have to deal with a trauma case on an infrequent basis, such as during a major incident. The ATLS manual³ states that the ATLS course is primarily targeted at people who do not deal with major trauma on a day to day basis, who must evaluate and manage the seriously injured patient during the period immediately after the injury.

To try to assess the value of both full and abbreviated ATLS training in the care of trauma patients, a study was arranged to coincide with a major incident simulation exercise arranged locally. The exercise was arranged at York City football ground under the auspices of North Yorkshire County Council in collaboration with the emergency services and the voluntary agencies.

Methods

The exercise involved transporting 40 mock "casualties" from the football ground to the hospital. They had been realistically prepared by the Casualties Union to simulate various injuries. Fifteen of these "casualties" simulated major injuries or life threatening conditions and they were used to assess whether there was any benefit in being treated by a doctor who had been exposed to either a full ATLS provider course or some form of abbreviated ATLS training. Two of the assessment proforma sheets could not be identified with a particular doctor and could not be assessed in the study, leaving 13 cases in the study for evaluation.

The 13 simulated casualties were treated by eight different doctors of varying grades, ranging from consultants to senior house officers, and with varying degrees of trauma management training. As each simulated casualty was brought into the department, one of these doctors was randomly selected to attend to the casualty. To keep the simulation realistic, those who completed the management of their patient were then allocated the next available simulated casualty. The doctors were forewarned of the date of the exercise but given no details of what the incident would involve. The ATLS approach was set as the standard for the exercise. The scenarios were conducted with

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Patient number	12	1	11	4	9	13	8	2	6	10	3	5	7
Criteria:													
Airway	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	—	—	—
Cervical spine	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	—	—	—
Breathing	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	—
Circulation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Disability	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Exposure	✓	✓	✓	✓	✓	✓	✓	—	—	—	—	—	—
Oxygen treatment	✓	✓	✓	✓	✓	✓	✓	✓	✓	—	✓	✓	✓
Log roll	✓	✓	✓	✓	✓	✓	—	✓	—	—	—	—	—
Total score	8	8	8	8	8	8	7	7	6	5	4	4	3
ATLS Status													
ATLS provider	✓		✓	✓	✓		✓						
ATLS aware		✓				✓		✓					
Nil									✓	✓	✓	✓	✓
Grade of doctor	SHO 1	CONS 1	CONS 2	SHO 1	REG	CONS 1	SHO 1	SHO 2	CONS 3	CONS 4	SHO 3	SHO 3	CONS 4

Scores of individual doctors in the simulated major incident. SHO, senior house officer; CONS, consultant; REG, registrar; ATLS, advanced trauma life support.

an independent (ATLS trained) observer monitoring and instructing the team leader on patient status and response to treatment, in the fashion of the ATLS course "moulage" assessment. The doctors were assessed on the basis of achieving key treatment objectives for successful resuscitation of the "casualties" in correct order.

The key treatment objectives were:

- airway assessment
- cervical spine control
- delivery of oxygen through an appropriate source
- breathing and ventilation assessment
- circulation and haemorrhage control
- assessment of disability (brief neurological assessment)
- exposure (head to toe examination)
- log roll

The scenarios were run in real time, with full support of nursing and ancillary staff and with full simulated radiology services available. The nursing staff were allowed to help the medical staff in undertaking tasks but were not allowed to prompt the medical staff. It is acknowledged that many nurses are familiar with the concepts of ATLS and use it in practice, but this paper was attempting to focus on the performance of the individual doctor and not the resuscitating team as a whole.

Results

Results for the individual doctors are given in the figure. Scores were awarded on a point basis for each of the key treatment criteria, the maximum score being eight. Irrespective of the grade and speciality of medical staff, those who had undergone some form of trauma management training scored higher than those who had not. Medical staff who had not undergone any form of trauma management training con-

sistently achieved a lower score. No individual doctor seeing more than one patient achieved contradictory scores.

These results show a clear trend in the predicted direction that might be expected to reach significance with a larger sample.

Discussion

The effectiveness of the training received in ATLS courses is still not universally accepted. ATLS training has been shown to make a difference in the management of cervical spine injuries.⁴ It has also been suggested that a trauma management system based on ATLS training and the development of the trauma team concept has apparent benefits for patient survival.⁵ However, there is also evidence from published reports that ATLS training may not be particularly useful. Vestrup *et al*⁶ in Vancouver reported that ATLS instruction failed to produce a quantifiable improvement in patient assessment or outcome when they looked at early trauma management before and after the introduction of ATLS training. Bennett *et al*⁷ felt that the ATLS course is not designed for the British system. They also suggest that there is uncertainty as to what grade of staff should be attending an ATLS course.⁸ In our particular simulation, and indeed in the actual major incident leading to the setting up of the simulation, doctors of all grades were involved with the immediate management of simulated casualties.

The original major incident involved a high proportion of senior staff who had received no prior trauma training or experience. In the district hospital setting, the staff managing trauma victims in a major incident will inevitably come from a greater spectrum of specialties than those available in a dedicated trauma centre. The aim of this simulation was to assess

whether ATLS awareness as well as ATLS provider status leads to a better standard of care. It has been shown before that ATLS training provides a comfortable framework for non-trauma-experienced physicians confronted with a major incident.⁹ We have also assessed people who have attended a one-day trauma course. While realising that performance during a simulation does not equate directly with performance in the real event, we feel that our simulation was as close to reality as was practically possible.

Within the limitations of this small study, the general trend was that clinicians with previous ATLS training, or exposure to ATLS principles, were more ordered in their approach to patient management and achieved higher assessment scores. Training along ATLS principles would appear to be beneficial and should be offered to all hospital staff in the way of one-day trauma courses. Those involved in the regular care of trauma victims should be encouraged to attend an ATLS course. This

should lead to improved trauma care not only under simulated major incident circumstances but also in day to day practice.

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