ORIGINAL ARTICLE

Teaching the trauma teachers: an international review of the Advanced Trauma Life Support Instructor Course

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Objectives: To identify educational variations between Advanced Trauma Life Support (ATLS) Instructor Courses in the UK, USA and Australia, to determine the impact of any such variations, and to consider their contributory role in future course development.

Methods: Observational, participatory qualitative study of ATLS Instructor Courses held in three representative teaching centres in 2006 and 2007.

Results: Each international territory has developed individual approaches to the teaching of common course content. These approaches have a variable impact upon the educational efficacy of the course.

Conclusions: Observation of educational practice in international course centres allows for a richer understanding of the nature and extent of variations in teaching methods and course organisation. The amalgamation of these variations will facilitate a more inclusive international common platform for the 8th edition Instructor Course.

Advanced Trauma Life Support (ATLS) has developed into the most ubiquitous trauma care teaching model in the world.¹ The rationale for its creation is well known to all participants: a picture slide of orthopaedic surgeon Jim Steiner's mangled light aircraft formed until very recently one of the initial images of the introductory Provider Course lecture.

The ATLS Instructor Course (ATLS IC), based initially upon the educational principles of the then Advanced Cardiac Life Support Instructor Course in the United States, was developed concurrently in order to train enthusiastic ATLS providers in trauma teaching and thereby establish a self-perpetuating body of tuition within the programme.

Course materials and delivery are periodically revised, but the logistics of centrally administered course development based upon large core content has led to significant, frustrating and potentially disenfranchising launch delays.²

Intellectual ownership of ATLS content lies with the American College of Surgeons' Committee On Trauma (ACS COT) and is heavily copyrighted. International delivery of ATLS courses relies upon purchase of materials from the ACS and a commitment to utilise these materials in strict accordance with the regulations set down by the COT.

Delivery of ATLS in Australasia is labelled as "Emergency Management of Severe Trauma" (EMST), and is undertaken via a long-established memorandum of understanding between the COT and the EMST Committee of the Royal Australasian College of Surgeons (RACS).

Central to the universal trauma care principles promulgated by ATLS is an understanding that instructors within its community exhibit appropriate levels of teaching competence and engagement with the materials and the learners. The Instructor Course, facilitated by an Educator, is fundamental to the development of this competence. Nominated ATLS Providers, most of who have no formal educational experience, attend the Instructor Course, are assessed relatively formatively, and emerge as Instructor Candidates.³ The short duration of the ATLS IC mandates that its content and format should be educationally optimised. The wide dissemination of ATLS around the globe carries with it a risk of natural drift and localisation in course delivery. This may include within it useful

and reproducible elements of good teaching practice not necessarily reflected in the "approved" ATLS IC.

The aim of this study was to identify any such variations and from there to discuss the strengths and weaknesses of the different educational strategies employed. The feasibility of a new common platform international Instructor Course is then considered based upon observed and evaluated good practice.

METHODS

During 2006 and early 2007, an observational analysis was undertaken of Instructor Courses in three international territories: Australia (course centre: RACS, Melbourne), United States (course centre: University Medical Center, Las Vegas) and United Kingdom (course centre: Royal College of Surgeons).

In each centre, participation as an associate ATLS Educator was coupled with personal observation of all aspects of the course—Faculty meetings, lectures, skill stations and moulage practice—alongside an ongoing dialogue with the Course Director, Educator and all Faculty members. In this way a detailed impression of the educational aspects of the course was achieved.

Recording of these observations and conversations was made using brief notes which were fully written-up at the close of each daily course session in order to minimise the effects of recall bias. Aspects of observation requiring clarification were checked with the Course Director or Educator before the closure of the course. A debrief conversation was held with the leaders of each course at its conclusion.

Basic quantitative and demographic data were obtained by review of the course documentation from each centre.

Approval for the study was granted by the Chair of the ACS COT and the relevant international trauma committees (EMST Committee of the RACS and ATLS Steering Group of the Royal College of Surgeons).

Abbreviations: ACS COT, American College of Surgeons' Committee On Trauma; EMST, Emergency Management of Severe Trauma; ATLS, Advanced Trauma Life Support; MCQ, multiple choice question; RACS, Royal Australasian College of Surgeons

Table 1 Instructor Course characteristics

Region	UK	USA	Australia
Course demographics			
Courses per year (approximately)	16	18	2
National course centres	2	18	1
Faculty: candidate ratio	1:2	1:4	1:3
Course length (days)	2.0	1.5	2.5
Course structure			
Educator—facilitated	Y	Y	Y
Cognitive philosophy	Y	Y	Y
Faculty role-modelling	Y	Limited	Limited
"Set-dialogue-closure" approach	Y	Y	N
"4-part" skills teaching approach	Y	Y	N
Named mentoring	Y	N	N
Mentor meetings during course	Y	N	N
Participant assessment	Practical + MCQ	Practical	Practical + MCQ

MCQ, multiple choice question; N, no; Y, yes.

RESULTS

The results are presented in narrative format based upon the detailed notes prepared at each centre. Each territory is presented as a separate section. Basic course demographics are amalgamated in table 1 below.

UNITED KINGDOM INSTRUCTOR COURSE

Delivery of the ATLS Instructor Course occurs at two UK centres. Faculty for the courses is drawn from across the UK and Ireland. A pool of eight Educators is drawn upon for course facilitation.

The course is taught based upon the ATLS 7th edition manual. The core content is employed exclusively and there is very limited flexibility to amend or omit content during the delivery of sessions within the Instructor Course.

The educational principles of UK ATLS are based upon adult cognitive psychology. Their introduction is preceded by an abbreviated Provider Course lecture on "initial assessment and management" with the aim of re-acclimatising participants to the culture of the "ATLS approach". Structured Educator-led sessions are interspersed with brief Faculty-delivered "demonstration lectures" of variable lecture styles.

Skills teaching is facilitated in the latter part of the first day following a "model" skill demonstration by Faculty. Teaching follows the "set-dialogue-closure" structure coupled with employment of the "four stage" skills acquisition technique.⁴

Initial assessment scenario management practice occurs on the second day, before which each participant is taken through a "mock assessment" with the aim of reorienting them to the situation of a Provider Course candidate facing the challenge of assessment for the first time.

Micro teaching practice involves the delivery, in small peer groups, of pre-prepared topics in either a very brief lecture or discussion format. There is no designated time within the course to allow for lesson planning or refinement of allocated micro teaching topics. Participants prepare their materials on overhead acetates or use a white board to avoid the complexity of PowerPoint equipment failure.

Participant assessment is predominantly formative⁵ based upon a Faculty review of performance in the various sessions, coupled with a contributory multiple choice question (MCQ).

AUSTRALASIAN INSTRUCTOR COURSE

EMST Instructor tuition for Australia and New Zealand, together with some areas of the Far East, is provided by biannual Instructor Courses held solely at the RACS in Melbourne. Consequently, Faculty for the course is drawn

from a huge geographical pool, yet most of those involved are very well known to each other.

Faculty for the EMST IC on this occasion (November 2006) included a remote general practitioner, reflecting the demographics of trauma provision in rural areas of the country in a way analogous to elements of original ATLS philosophy.⁶

The Australian EMST Educator is single-handed within the territory and was notably a University Teaching Fellow in Nebraska at the time of inception of ATLS, having worked on the programme from that time onwards.

EMST is currently based upon the 6th edition ATLS core content. Instructors are given flexibility in how they include these materials on their Provider Courses: lecturers may present "all the material, or only that which is felt to be most pertinent".⁷

EMST Instructor Courses do not have an explicit mentor structure. Faculty members are seen as a general "trouble-shooting" resource to be approached as the need arises.

Although the format of the course is broadly similar to that in the UK (table 1), there is significant participant involvement in the early "demonstration lectures". Nominated members of the learner group are asked at short notice to present micro-lectures during day 1 to the whole group and asked to adopt a "lecturer style" to illustrate variations. There are no Faculty-delivered "model lectures".

EMST educational theory is again based upon cognitive principles, reflecting current ATLS philosophy, but with locally created slide materials. The "set-dialogue-closure" structure does not form part of EMST teaching culture, such that micro-teaching lectures are practised and delivered in a much more informal style than would be familiar to UK Instructors.

There is more creativity in the EMST Instructor Course than in the UK or US examples. Small group "Lesson plan" sessions, led by a Faculty member, allow discussion of ways to create and deliver teaching sessions in a generic manner rather than in relation to EMST per se. Writing-up of participants' lesson plans precedes delivery of the allocated lecture or discussion topic. Video taping of the micro teaching session is used, the films critiqued in the group, and participants are given copies to take away.

EMST critique occurs in an informal, rather discursive yet supportive way rather than having a designated "structure".

The "four stage" approach to skills learning is not articulated in EMST. In contrast to UK and US practice, Faculty skills demonstrations occur very early in the course and are run in a "freeze frame" manner. At certain points during the proceedings, the Course Educator asks the Faculty to "freeze", breaking the scenario dynamics, while a discussion takes place about the evolution of that scenario and those involved in it.

There is no session analogous to UK practice whereby participants undergo a "mock Provider Candidate" initial assessment before practice in the Instructor role at the start of the final day of the course. Participant assessment is formative based upon performance in the micro-teach, skills and initial assessment stations together with a contributory MCQ.

UNITED STATES INSTRUCTOR COURSE

The observed course centre was acting as a pilot for limited format changes, agreed only the preceding week at an Educator meeting of the ACS COT. It was directed by the recently elected COT Chair and facilitated by a senior ATLS Educator.

The short (1.5 day) US course places very heavy reliance on the Educator, who leads all 12 sessions on the first day with input from the Course Director. Other Faculty members only have any practical input in the demonstration of initial assessment and the skills teaching sessions on day 2.

In the reformed pilot US IC, the theoretical foundations of ATLS teaching have been de-emphasised in the initial session on principles of adult learning. In their place is a more interactive forum with particular emphasis on the importance of “affect” and desired instructor behaviours.

There are no “demonstration” lectures on the course. Instead, the principles of interactive lecturing—set, dialogue, closure and the appropriate use of questioning—are discussed as an Educator-led session. Course participants are given a 30 min period of time to discuss and refine their allocated micro teaching topics but are expected to have prepared these in advance of the course. Students are encouraged to prepare materials using PowerPoint and are expected to confine their presentation to seven slides only.

Participants learn how to teach skills based upon a modified platform of the “4 stage” approach.⁸ Faculty members join the course on the second day to act as session facilitators, but low numbers means that participants are required to act as “type students” demonstrating certain behaviours as their peers practise teaching them.

Critique occurs in an informal manner more analogous to Australia than the UK. Participants are used to this non-structured approach and demonstrated familiarity with the concept of supportive commentary to their peers.

Successful course completion is based upon a formative review of performance. There is no MCQ component.

DISCUSSION

Participatory methodology allows for detailed understanding of a learning environment but has inherent weaknesses. Recall bias may lead to erroneous or unsubstantiated conclusions but was minimised by timely writing up of notes and clarification of these records with centre leaders. Faculty being observed by external staff may tend to exhibit altered behaviours. The fact that centres were being compared like-for-like with this presence as a constant, and that the external observation was by an ATLS Educator and Instructor, again minimises the confounding effect of observation. The impressions gained from the study do, however, remain to some degree personal, which is inevitable in a project of this kind.

International debate has related to perceptions of the intransigence or inability of the ACS COT to acknowledge or respond to variations in trauma care in large recipient territories⁹ and progress towards a more locally-responsive European Trauma Course has been made with these issues in mind.¹⁰ These tensions extend beyond clinical practice and into the underlying educational culture of the ATLS programme. This study reveals significant variations in Instructor Course practice across the three continents, none of which have come about as a result of international discussion or consensus.

Putative educational differences between delivery of ATLS in the UK and the USA have been succinctly outlined elsewhere.¹¹ One issue has been a perceived lack of emphasis in US teaching on “communities of practice”¹²; that sense of teamwork founded upon critical awareness, Faculty role modelling and engagement with professional peers. This perception has not been borne out by actual observation in this study: all three international centres demonstrated and embraced these principles, albeit to varying degrees in both the taught sessions and in the provision of mentors and role modelling. Course participants from a given centre seemed just as “team spirited” at the end of the course as those from any other centre. The absence of a formal mentor structure in Australia, coupled with role modelling based around humour and friendship more than the “team approach”, did not translate into any less a perception of being part of a clinical team for those being taught. Whether a formal named mentoring arrangement, as

practised in the UK, has any real virtue in such a short course remains unclear.

The US Educator was very mindful of the limitations of current course materials in providing a satisfactory indication of “required behaviours”, despite the new emphasis on “affect” within the manual, and tailored the initial adult educational sessions with this in mind. Low faculty: candidate ratios in the US reflect geographical restrictions in obtaining teaching staff rather than an educationally-rooted strategy to facilitate learning using minimal facilitators (F Doto, personal communication, 2007). As a result, course participants are obliged to take on “type behaviours”, posing as Provider Course candidates to allow their peers to practise the handling of such personalities. There are important internal educational validity implications of this approach. Undoubtedly UK and Australian courses are stronger learning environments in using established Faculty for this purpose. The ACS COT is now willing to acknowledge this fact and has no plans to mandate international staffing ratios along its own domestic lines.

Observing the pilot of a revamped Instructor Course in Las Vegas allowed for an immediate appreciation of the fact that the 7th edition slide set has now been seen for what it is—a distracting proxy for interactivity—and in 2007 their format will be revisited (J Fildes, personal communication). Continued use in Australia of white boards, handouts and simple text slides seems no less able to facilitate adult learning and underlines the point that effective education depends upon the person doing the talking rather than the slides they may or may not use.¹³ The UK, caught somewhere in the middle, has pursued an almost subversive path to arrive at a point where “official” slides are “doctored” to remove custom animation. The COT tolerates, while not condoning, this approach, which reflects both an acknowledgement of the limits of PowerPoint and the importance of international educational engagement for future working.

Developments in lecturing skills are a key part of new approaches to the US Instructor Course. Participants are asked to base their “micro teach” lecture on a standard seven-slide proforma starting with “title”, then passing through “clinical vignette” to “interactive content” and on to “questions” and “closure”. This attempt to standardise the micro teaching format for all participants arises from historical problems of time management as well as a reflection of the need to keep Instructors “on message” in their lecture delivery. Whether this idea will work remains to be seen. Initial impressions are of a rather formulaic approach to what is often for participants the most personally challenging element of the Instructor Course. An additionally mooted idea is to standardise the questions to be asked at the end of Provider Course lectures in the 8th edition (F Doto, personal communication). It is doubtful that this would receive much international enthusiasm. It is important that overseas opinion is expressed in this area. The COT is willing to listen.

Time spent on group discussion practice and in working through “triage scenarios” has attracted debate among ATLS Instructors. Group discussion techniques are not dwelt upon in the US Instructor Course and participants are not asked to practise leading a group. Discussion teaching is framed rather loosely in Australia (for example, the concepts of “open” and “closed” formats are not covered). The role of discussion teaching will be eliminated when “triage scenarios” disappear, as seems very likely, in the evolution of the 8th ATLS edition (F Doto, personal communication).

The cognitive educational philosophy of 7th edition ATLS has quickly found its feet internationally. This is hardly surprising given that the underlying research base is a predominantly European and Australian one and that the reflexive and

interactive elements of cognitive learning are embedded in current medical practice in the UK and Australia. All three observed centres ran their courses on this philosophical basis. What was much less uniform was the degree to which "learning structures" were employed. Australian Instructor teaching does not articulate "set-dialogue-closure" or the "four stage approach" to skills. To a degree this reflects Educator proclivity (K Solomon, personal communication), but it leads to significant problems of time management and provision of an optimal learning environment. Likewise the use of a "freeze frame" approach to scenario demonstrations in EMST gave a staccato feel to proceedings and did not lend itself to efficient participant learning.¹⁴ Carrying these behaviours forward into Provider Courses is a concern, and poor use of "learning structures" leads on to consideration of course length.

Course duration is an eternal dilemma but is only relevant when the taught material is scrutinised for its efficacy. The use, in the UK course, of a 30 min "initial assessment" lecture at the start of the course, followed soon after by two 15 min "style demonstration" lectures, is questionable. Likewise, the use of a "mock" initial assessment before teaching practice begins, while appealing to put participants "back in the shoes" of a Provider Course candidate, may not reflect best use of time in a short skills-based course. Other international courses seem able to generate an equivalent level of participant competence without these devices. Time spent in "lesson planning" (Australia) or "micro teach planning" (US) could arguably be switched to the pre-course phase, but is anecdotally very difficult to ensure cooperation of participants in completing pre-course tasks. Informal Instructor feedback often points to a need to maximise participants' exposure to skills teaching and assessment: refinement of the "sample lecture" approach may be useful. There is scope here to develop and internationalise a "good practice" lecture DVD to be used both on the course proper and as a take-home resource for participants.

Conclusion

The nuances of clinical practice among recipient ATLS communities are well recognised. There are significant additional differences in the training of ATLS Instructors within three major international territories and this may extend to other regions not studied here.

Several of the variations reflect the fact that there may be more than one way to deliver required knowledge effectively. What has historically been missing is a real international dialogue between the ATLS COT and its overseas colleagues.

Recent personnel changes within the COT, coupled with external expressions of engagement such as this review, now provide a new forum for the development of a more representative international Instructor Course, drawing upon examples of good and sensible practice from around the world.

Further work is now required to take these findings forward and use them to help shape the format and content of the Instructor Course with which the 8th edition of ATLS can be launched.

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