Uniform reporting in resuscitation

W. F. Dick

Over the past 20 yr resuscitation medicine has become a scientifically recognized interdisciplinary part of acute medicine. However, the two main areas of resuscitation medicine—cardiopulmonary–cerebral resuscitation (CPCR) and trauma life support (TLS)—are still practised under entirely different conditions and circumstances. As a result, data on quality of care, quality of outcome and life after survival, in addition to many other criteria, differ from publication to publication.7 8 19 24 26 29

In 1974 the American Heart Association (AHA) published the first edition of “standards for CPR”.1 Many changes were made to subsequent versions of the standards, later to be termed guidelines, because a considerable number of conclusions made in 1974,1 1980,2 19863 and 19924 had never been scientifically proved. This was because uniform criteria had not been established to describe the study design of animal and human CPR research projects, to report the characteristics of the emergency medical services (EMS) systems and outcome data.

Consequently, the CPR Research Committee of the European Academy of Anaesthesiology (EAA) met in 1986 to discuss and develop recommendations for animal research in CPR; these were published initially in 1988,14 followed by a revised version in 1990.15 Recommendations for clinical CPR studies15 were published by the same group later that year.

The topics for animal research discussed by the committee included: type of animal; anaesthetic technique; methods of induction and duration of cardiac arrest; CPR technique; ventilation volumes; use of buffers, inotropes and antiarrhythmic agents; and monitoring.

The following topics were included in the recommendations for clinical studies: prospective, randomized studies; patient data; distinction between witnessed and unwitnessed cardiac arrest, and cardiorespiratory and cardiocirculatory arrest; out-of-hospital and in-hospital arrests; VF/VT, asystole and EMD; drugs and routes of administration; monitoring; level of training of responders; pre-arrest conditions; survival after different intervals (outcome); quality of life after survival.

These reports, together with similar initiatives by experts from the American Heart Association,12 3 19 20 European Resuscitation Council (ERC), Heart and Stroke Foundation of Canada (HSFC), Australian Resuscitation Council (ARC) and Resuscitation Council of South Africa (RASC) were the background for an informal gathering by experts from these organizations at Utstein Abbey on the Norwegian Island of Mosteroy in the summer of 1990. At this meeting it was decided to hold a scientific conference on the subject of developing guidelines for uniform reporting of data from cardiac arrest.11

The Utstein Consensus Conference was convened near London later that year and members of the organizations participating in the first Utstein symposium were invited. A template was developed to include the most relevant factors for describing and comparing CPR research results. This template was described as the Utstein style after the site of the initial meeting.

Uniform reporting of data—the Utstein style

The term Utstein style has been incorporated into the following templates:

- a template for out-of-hospital resuscitation8
- a template for paediatric resuscitation12
- a template for in-hospital resuscitation9
- a disaster medicine response research template30
- a template for reporting laboratory research in animals.22

In 1995 Spaite and colleagues28 reported the results of the US Prehospital Emergency Medical Services Data Conference which provided the basis for an 81-item uniform data set. It was hoped that documentation conforming to this template would answer the question, “has the EMS (apart from out-of-hospital cardiac arrest and resuscitation) had an impact on morbidity and mortality of emergency patients (trauma, intoxication, asthma, myocardial infarction, etc).”

Another template for uniform reporting of data after trauma is under development and others may follow.16 17

Key words
UNIFORM REPORTING OF DATA AFTER OUT-OF-HOSPITAL CARDIAC ARREST

Terminology

The working group initially focused on developing a uniform and worldwide acceptable terminology set down in a "glossary of terms".

The glossary of terms begins with a definition of a cardiac arrest and its aetiology (cardiac, non-cardiac). It also outlines major signs and symptoms, regardless of how long they may persist.

A consensus was established as to what was to be included under the headings basic life support (BLS), advanced life support (ALS), basic cardiopulmonary resuscitation (BCPR) and advanced cardiopulmonary resuscitation (ACPR). The following definitions relating to the treatment of cardiac arrest were agreed.

BCPR includes expired air inflation of the lungs with and without airway adjuncts and face shields (excluding the use of bag–valve–mask devices, laryngeal mask airway, oesophageal tubes/Combitubes or tracheal tubes) and application of external thoracic compression. In the USA, in contrast with European practice, BLS includes knowledge of public access to the EMS system and an educational programme, in addition to technical skills in BCPR.

ACLS and ACPR are very similar and include intubation, defibrillation and medication. Defibrillation may become part of BLS in several countries in the future, particularly to take into account the increasing use of automatic external defibrillators (AED).

A distinction was made on the basis of the qualification of initial CPR providers to differentiate between bystander CPR performed by lay responders compared with professional first responders who are either part of the emergency medical system (EMS) or acting as a bystander.

Times, events, intervals

Precise definitions of events, times and event-to-event intervals were made. Some of this information was deemed essential (core data); other data were considered optional (supplementary data). The following example indicates the relationship between events, times and intervals (figs 1, 2).

CARDIAC ARREST

Collapse occurs

Figure 1 The four clocks of sudden cardiac arrest (reproduced from Chamberlain and colleagues® with permission).
Uniform reporting in resuscitation

Collapse to cardiac arrest–recognition interval

Collapse witnessed/recognized.
EMS called
Time of call receipt
BLS starts by bystander
Call processed
First vehicle mobile
Call–response interval.

Arrival of the first ambulance at the scene
Call–arrival interval
Arrival of the first team at the patient side
Call to patient contact interval
BLS continued by professional responders

Arrival of the second tier at the scene
Arrival of the second tier at the patient side.
ALS starts with defibrillation, intubation, i.v. access, medication.

Time of restoration of spontaneous circulation (ROSC)

Call to ROSC interval
Epidemiological and outcome data

In addition to developing a template for uniform reporting of events and intervals it was considered essential to evolve a template for obtaining data on survival, survival rates and quality of life after survival. The template allows description of the population served by the EMS, including information on age, sex, education, socioeconomic status, total number of deaths, incidence of ischaemic heart disease and deaths per 100 000 of the local population (only rarely available). Also included are definitions of confirmed arrest and recommendations as to when resuscitation should or should not be attempted, replacing traditionally used terms such as do not resuscitate (DNR) with do not attempt to resuscitate (DNAR).

Differentiation between initial VF/VT or asystole is important with regard to outcome. The rhythms of electromechanical dissociation (EMD) or pulseless electrical activity (PEA) are still only poorly defined.

A large number of the terms referred to above can be used to describe outcome, for example ROSC at the scene, during transport or on admission, survival to admission to the ICU, general ward, rehabilitation unit or discharge from hospital, survival after cardiac arrest for 6 months, 1 yr, etc. However, information on survival rates alone is inadequate because it does not describe the quality of life after survival. To provide additional data on quality of life at discharge or after survival for 1 yr, the Utstein template recommends the use of the Glasgow–Pittsburgh outcome categories, overall performance categories (OPC) and cerebral performance intervals are determined by the structure, quality and efficiency of the EMS. The template provides an accurate description and classification of the EMS response based on core and supplementary data collected at the dispatch centre (who does what, how and when, and how well?).

Structure of the EMS system

The structure of the emergency medical services (EMS) system is of crucial importance. The initial
categories (CPC), although other systems may be used for this purpose.

**Forms for uniform reporting of data from out-of-hospital cardiac arrest**

To complement the Utstein meeting, a form for uniform reporting of data from out-of-hospital and in-hospital cardiac arrest was prepared and published by a working group consisting of representatives of the ERC, EAA and the Belgian Society for Emergency and Disaster Medicine. The form facilitates the use of the Utstein template.

**Publication policy**

The Utstein template recommends that publications on CPR should follow the Utstein style to overcome the present confusion arising from the lack of a uniform terminology and general agreement on data to be recorded.

**Comment**

Several prospective, randomized, comparative, controlled studies in the pre-hospital setting have been performed according to the Utstein style. Most investigations were designed to evaluate the efficacy of new methods of CPR compared with traditional CPR (ACD–CPR, Vest–CPR, etc).

Although it is becoming increasingly apparent that the Utstein template offers an excellent description of the course of resuscitation, from occurrence of cardiac arrest to survival or death under various conditions, there is still a lack of accurate information on the underlying disease. The Utstein template does not differentiate between cardiac arrest caused by electrophysiological disturbances occurring in a young patient or an extensive myocardial infarction in an older patient with coronary artery disease and major myocardial dysfunction.

While the Utstein template provides information on survival and quality of pre-hospital and in-hospital care for these patients, it does not permit conclusions to be drawn on the overall efficacy of the selected treatment. While the use of a resuscitative technique or drug may be highly effective in a young patient with an electrophysiological disorder, it may prove ineffective in an older patient with a malfunctioning myocardium.

**Glossary of terms/dictionary of terms**

The paediatric Utstein template, in common with the Utstein template for adults, addresses the problem of a uniform terminology in the “dictionary of key terms” and continues with recommendations for core and supplementary data.

In addition to existing definitions for resuscitation, EMS, cardiac arrest and respiratory arrest, the paediatric Utstein template introduces the term “respiratory compromise” to define ineffective breathing requiring assisted ventilation in infants and children at risk of developing cardiac arrest after respiratory insufficiency.

“Bradycardia/poor perfusion” requiring basic CPR is another term which is different from the adult template. It applies to infants and children with organized cardiac electrical activity but with a low output and low perfusion, usually with heart rates less than 60 beat min⁻¹.

The paediatric template also distinguishes between sustained (> 20 min) and intermittent (< 20 min) return of spontaneous circulation (ROSC) and introduces the term “return of spontaneous ventilation” (ROSV).

The template includes “times and time intervals”, but creates an interval not included in the adult template, the “start–stop CPR interval”, that is the time from initiation of CPR to either ROSC or termination of efforts.

With a view to outcome, the paediatric template defines the return to pre-event conditions as the main goal of all resuscitative attempts. Further emphasis is placed on the importance of investigating efficiency and effectiveness. Of the available systems for measuring quality of outcome, only a modified version of the Glasgow–Pittsburgh outcome categories, with the added category “mild disability group”, is recommended for measuring the quality of outcome in infants and children. Although factors such as OPC, CPC and length of ICU stay are considered in the “paediatric risk of mortality score”, it fails to record the infant’s or child’s pre-event conditions. Another, although not yet validated, criterion for measuring quality of outcome may be “time to awakening or return to consciousness”.

**Reporting of ALS data**

In accordance with the adult template, a template for uniform reporting of advanced life support (ALS) has been developed for infants and children to obtain data on epidemiology, aetiology, location of event, etc.

**Patient data**

Various denominators and numerators have been recommended to calculate the incidence of a wide variety of criteria (fig. 3). The following age groups have been established: 0–12 months, 1–4 yr, 5–12 yr and 13–18 yr. The patient characteristics section of the template discusses the division of the paediatric population into children and adolescents,
recommending the use of the term “child” for individuals up to 13 yr of age and “adolescent” for those aged 13–18 yr. For patient data purposes, anyone less than 19 yr of age is included in the paediatric population.

**Influence of the EMS system**

The impact of an EMS system on the outcome in paediatric age groups has never been documented sufficiently. This may be because in contrast with adult populations with a high incidence of VF/VT there is an absence of a predominant diagnosis in this age group. Few investigations have been performed on events such as near-drowning or trauma, for example, to provide adequate data to determine the influence of the EMS on paediatric outcome. It was therefore considered essential to include the same EMS system data as in the adult Utstein template.

**Hospitals**

In contrast with the adult template, the paediatric template recommends a description of the hospital to which the infant or child is transferred...
(children’s or general hospital, number of beds, classification, trauma level, ED, number of ED patients per year, etc). Unfortunately, hospital data have not been included in either the initial or updated version of the Utstein I template. However, in addition to quality of primary care provided by the EMS, quality of care in the hospital itself may influence outcome decisively. In common with the description of the EMS, the description of the hospital should include data on quality of hospital personnel, level of training, personnel responsible for resuscitation, intensive care units, emergency departments, etc.

Events, primary care, patient status at different levels

The paediatric template provides further opportunities for the description of aetiology, location, type of cardiac arrest and quality of initial care. In addition to the recommendations in the adult template for reporting aetiology, the inclusion of information as to whether or not the event resulted from respiratory or circulatory compromise or was caused by cardiorespiratory failure, has been suggested. In addition, classification of the underlying disease according to ICD 9 has been recommended. Concomitant diseases or conditions which may influence outcome should also be reported. It should be stated if the event occurred at home, on the street, at school or work, or in a transport vehicle. Events occurring during inter- or in-hospital transfer or in the ICU should be recorded separately.

Other items which are reported slightly differently in the paediatric template include the pre-event clinical status, clinical status before arrival of the first EMS provider, pre-event monitoring, witnessing of the event, “resuscitation not attempted” information and initial rhythm and pulse.

Diagnosis of supraventricular tachycardia (SVT) in infants and children requires a heart rate of more than 200 beat min⁻¹, which may be difficult to differentiate from sinus tachycardia. The diagnosis of bradycardia requires a heart rate of less than 60 beat min⁻¹.

The level of response to stimulation is assessed by the AVPU scale (alert and responsive, responsive only to verbal stimulation, responsive only to painful stimulation and unresponsive).

As with the adult template, deaths in hospital are categorized as follows: deaths within 24 h or deaths between 1 and 7 days, related to the total number of deaths. For survivors, the discharge location (home, etc) is recorded. Outcome is defined according to paediatric cerebral and overall categories at all times after discharge.

Unresolved problems include the age at which a child becomes an adolescent or adult (14 or 16 yr), definition of trauma centres, aetiology, pre-existing morbidity, neurological function after the event, neurological outcome, etc.

Refinements of the document will be published in updated versions of the statement and comments are invited from those involved in paediatric resuscitation.

UNIFORM REPORTING OF DATA FROM IN-HOSPITAL RESUSCITATION: THE IN-HOSPITAL UTSTEIN STYLE

As with the out-of-hospital situation, the efficiency of in-hospital-resuscitation is not based on solid scientific evidence. Data available from retrospective reviews and from the prospective British Resuscitation Study (BRESUS) demonstrate that at 24 h after in-hospital cardiac arrest, survival ranges from 3 to 59%, and from 3 to 27% at discharge. However, this information is influenced by many variations in definitions and procedures of reporting.

The in-hospital cardiac arrest template presents definitions of, for example, what precisely is a cardiac arrest (cessation of cardiac mechanical activity confirmed by the absence of a detectable pulse, unresponsiveness and apnoea or agonal gasping). In contrast with the out-of-hospital situation, however, a hospital patient may be unresponsive or apnoeic because of controlled sedation or anaesthesia. In addition, the co-morbidity rate is higher in in-hospital than in out-of-hospital patients.

Four in-hospital Utstein variables (hospital, patient, arrest and outcome factors) influencing outcome after in-hospital cardiac arrest have been identified in the Utstein template (fig. 4).

Patient variables include age, sex, socio-economic status, reasons for admission, pre-arrest and co-morbid conditions, severity estimates, ALS interventions in progress at the time of arrest, previous arrests, witnessed or unwitnessed arrests, and location of events.

The following age groups have been identified (differing slightly from the paediatric template): infancy (0–12 months); childhood (1 < 3, 3–<8, 8 <14 and 14 < 20 yr); adulthood, with subdivisions into 5-yr periods (20 <25 yr, etc).

As recommended in the other Utstein templates, pre-arrest capacities should be described according to the Glasgow–Pittsburgh outcome categories, including CPC and OPC (or the paediatric versions).

The definition of co-morbidity is considerably more difficult because the ICD 9 and ICD 9-CM are not used uniformly. Co-morbidity indices may be useful, although only one has thus far been developed for in-hospital purposes.

The severity of a medical condition can be described using APACHE scores for ICU patients, the pre-arrest morbidity score (PAM) or TISS. However, all of these systems are known to be flawed in some respects. Arrest variables comprise rhythms, interventions performed, and event times and intervals.

Event times and intervals are comparable with those in Utstein I but there are some subtle differences. The intervals shown below have been identified as suitable for inter-and intra-hospital comparisons.

Intervals from: cardiac arrest to start of CPR; cardiac arrest to first defibrillation; cardiac arrest to advanced airway management; and cardiac arrest to first administration of medication.

Event duration and intervals

Event duration and intervals

Event duration and intervals

Event duration and intervals

Event duration and intervals

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Event duration and intervals

Event duration and intervals
Outcome variables include: survival (immediate, short-term and long-term); and quality of life after survival. The quality of life should be assessed using the Glasgow coma score, the Glasgow–Pittsburgh outcome categories leading to the CPC and OPC. The OPC and CPC should be recorded at discharge, and at 6-month and 1-yr intervals. Other recommended outcome criteria are length of hospital stay and costs per survivor.

Hospital variables did not allow accurate categorization, but the different variables are listed in appendix I of this template.

The final section of the template describes the procedure for completing the form (comparable with other templates). Examples refer to:

- Population served (numerator and denominators)
- Explanations of the definitions of a cardiac arrest
- Number of DNAR
- Attempted in-hospital resuscitations (defibrillations, compressions only, airway interventions, combinations)
- False arrests
- Non VF/VT rhythms (see also Utstein I)
- ROSC (intermittent and sustained ≥20 min)
- Death in hospital (<20 min, >20 min to <24 h, >24 h)
- Re-attempts/re-arrests
- DNAR, support withdrawn, brain dead, organ donation.
Survival figures

One of the most important questions is how should survival be best reported and at what times? The recommendations of the BRESUS study have been adopted.

- Percentage survival from arrest to at least 24 h
- Percentage survival from > 24 h to 1 yr
- Percentage survival from arrest to discharge
- Percentage survival from discharge to 1 yr
- Percentage survival from arrest to 1 yr.

However, it is not sufficient that resuscitation is initiated and performed as early as possible; it must also be carried out according to specific quality standards. This gives rise to the question, how is the quality of performance to be rated?

Apart from haemodynamic criteria (difficult to measure) or pulse oximetry, end-tidal carbon dioxide concentration appears to be the most useful criterion. The pulse check merely confirms whether or not a pulse is present and in many cases may be misleading, as has been shown by our group in a human model designed to simulate cardiac arrest during cardiopulmonary bypass.

The final chapter of the in-hospital template refers to ethical issues in general, informed consent and to the futility of CPR in certain circumstances.

Appendices to the template summarize the following items: data elements; a checklist of information and figures of the template itself; and a standard form report.

With the availability of the widely distributed in-hospital template, it is important to use this template as frequently as possible to determine its value compared with the out-of-hospital version.

Uniform reporting of laboratory CPR research

“Modern cardiopulmonary resuscitation (CPR) research depends on the use of animal models that are designed to simulate cardiac arrest in humans.”

This is the introductory statement and guiding principle of the “animal research Utstein style template” which was developed at a conference in Chicago in 1994. Only a few days after the Chicago meeting the proposed guidelines for CPR research were presented and discussed at the Second Congress of the ERC—Resuscitation 94—in Mainz, Germany, with the purpose of “setting guidelines for CPR research”.

Consistent with the other Utstein documents, this template begins with a glossary of key terms.

Glossary of key terms

Baseline conditions are described as the “physiological conditions after the animal has been instrumented” but before induction of cardiac arrest. Therefore, these baseline values do not represent true physiological conditions.

Cardiac arrest in an animal model allows a more precise description than cardiac arrest in humans (i.e. VF or asystole, loss of intra-arterial pressure (< 25 mm Hg in the aorta), etc).

Ventilation should be reported with consideration of at least two of the following variables: ventilatory frequency, tidal volume and minute ventilation.

Standard CPR. Although this has been established for human CPR, a standard cannot be set for animal CPR because of the wide variety of species, with their differences in size, anatomical configurations, physiology, etc. Thus even though the term “standard CPR” should not be used for CPR in animals, the technique used is to be described meticulously.

Active decompression. Any device used for this technique should be described.

Blood flow. Any method used for measurement of blood flow or regional specific blood flow should be documented.

ROSC. In view of the fact that at least 11 different definitions of ROSC have been proposed, the conference recommended the following definition of ROSC: an aortic arterial pressure of at least 60 mm Hg for at least 10 consecutive minutes (mean, median and confidence intervals).

Survival. This should comprise a minimum of 24 h after resuscitation, including a description of neurological status, multisystem failure, etc.

Intensive care should document any drugs given, at what dosage and how frequently, in addition to any other technical assistance used (defibrillation, assist devices, ventilatory support, etc.)

Intervals and times do not differ from Utstein I. Experimental events and intervals should be recorded.

Non-intervention intervals. As this is one of the most important intervals and may in itself decide survival or death, it must be described clearly (not in terms of “down time”, for example).

An “experimental time line” should provide a graphic description of the above factors (fig. 5).

Induction of cardiac arrest. This is defined as the moment of no blood flow. This cannot be ascertained in cases of asphyxia and exsanguination. In the latter, a pre-selected critical value should serve as the target (e.g. < 25 mm Hg).

Compression and release. Phase measurements:
- during CPR, systolic or diastolic periods cease to exist. Pressures during compression and release should therefore be described.

Defibrillation attempt or rescue shock refer to defibrillation during an “experimentally induced episode of VF”. Number of shocks, timing and energy should be reported.

Coronary or myocardial perfusion pressure. Coronary perfusion pressure is generally calculated on the basis of simultaneous difference between aortic and right atrial pressure during diastole or the release phase. The method of calculation should be described.

THE ENTIRE TEMPLATE IS DIVIDED INTO NINE SECTIONS

Study design

Consistent with the Utstein I template, it is recommended to distinguish between “essential” or “core
data” and “supportive, useful or desirable data”. A prospective study with concurrent control groups is suggested as the optimum study design. The type of blinding needs to be documented where applicable.

**Subjects**

Physiological conditions need to be targeted for all species and the absence of infections or other diseases. The source of the animals should be reported, and age range, sex, etc. (rats, dogs, swine).

**Preparation**

Pre-anaesthesia conditions and premedication with sedatives or analgesics, or both, should be reported, and anaesthetic techniques should be described, including doses of drugs used. Maintaining a period of stabilization is essential.

**Monitoring**

Baseline monitoring includes: heart rate, cardiac output, coronary perfusion pressure; arterial pressure (arterial, mean and cyclic); central venous/right atrial vascular resistances; end-tidal carbon dioxide, arterial and central venous blood-gas analysis and electrolyte concentrations; oesophageal, rectal, PA, VC, bladder or tympanic temperature.

**Experimental procedure**

An experimental procedure covers the period from induction of cardiac arrest to ROSC or comparable variables of outcome. It cannot be emphasized enough that procedures need to be clinically relevant, for example in VF the non-intervention interval needs to be as close to pre-hospital human conditions as possible (3, 5, 10 min?).

Maintaining minute ventilation constant requires specific types of ventilators; inspired oxygen concentration needs to be documented at regular intervals together with other ventilation variables. Furthermore, information should be provided on synchronization of compression and ventilation. Haemodynamic and blood-gas monitoring, pulse oximetry and end-tidal carbon dioxide measurements should be recorded at regular intervals.

The method of inducing cardiac arrest should be described, in addition to the type of defibrillator used to terminate VF. Energy levels, number of shock attempts and additional medication should be recorded.

Blood flow measurements and changes in blood flow are important factors that need to be recorded (implantable flow probes, microsphere techniques, catheter based techniques).

**Outcome variables**

In addition to ROSC and the other variables outlined above, short-term and long-term survival are recommended outcome variables. GPCS, OPC, neurological deficit scores and histopathological damage scores have been used to evaluate outcome. It is nevertheless important to bear in mind the limitations of these variables, particularly when applied to animal studies. Cerebral outcome may be calculated on the basis of EEG patterns, EVP patterns and morphological brain investigations.

Statistical methods and publication policies of the respective journals are the topics of the final three sections.

**Disaster medical response research: a template in the Utstein style**

Although this template is only loosely related to resuscitation, it should be mentioned briefly because it refers to the term Utstein style. In the introductory section of this document the authors draw attention to the fact that there is no uniform methodology for the conduct and reporting of research in disaster responses. In 1995 a meeting was convened at the Utstein Abbey with the purpose of developing a methodology for the conduct and reporting of research in disasters, proceeding in the same manner as for the development of...
templates for cardiac arrest and resuscitation in adults, infants and animals.

The first chapter of the document attempts to define “What is a disaster?” and specifically “What is a medical disaster?” (fig. 6) before discussing the objectives of a medical disaster response and methods used for medical disaster research. The working group proposed a template for conducting and reporting research in disaster response.

The disaster medicine research template provides definitions for: pre-event health status, disaster event, disturbances in health status, characteristics of events, identification of research goals, measures of effectiveness, interventions, data collection, analysis of data, etc. Each of these definitions includes examples of disaster events subdivided according to type, that is natural, human or technological origin, and the character of the onset of the event (sudden, gradual or delayed impact), secondary effects, time and location, scope or magnitude, total population affected, number of refugees and displaced persons, major causes of injury, source, timing and scope of medical assistance, response time (fig. 7), character of responses, public health, early warnings, etc.

Although this template is the result of a discussion by a group of experts, it has never been tested in the field. The first version of the template has been published in *Prehospital and Disaster Medicine.*30

The effectiveness of the template must await testing.

Uniform reporting of data from resuscitation after trauma

Another issue in urgent need of standardization is the pre-hospital care of the trauma patient. At present, trauma patients are treated either via the scoop-and-run or stay-and-play approach25 by either ambulancemen, emergency medical technicians, nurses/paramedics or emergency physicians, or a combination of these, and transferred to level I–III trauma centres or to hospitals providing different levels of treatment, although they are not recognized as trauma centres.

In 1990 Jones and Brenneis24 noted that trauma studies could not be compared because of the lack of a prospective, randomized, controlled study design. Similar conclusions were drawn by Spaite and colleagues in 199529 emphasizing that the efficiency and quality of trauma care in terms of outcome and quality of life requires the availability of uniform terminology. This terminology has subsequently been developed in the “Utstein style”.

The International Trauma Anaesthesia Critical Care Society (ITACCS) and the European Society for Emergency Medicine have recently formed a working group consisting of anaesthetists, trauma surgeons, epidemiologists and emergency physicians. Within the next few months the group expects to complete work on a template for uniform reporting of data after trauma.17

Several aspects of the Utstein I template can be used in the trauma template. These include descriptions and terminology defining the emergency medical system, times and intervals. Definitions of major, moderate and minor trauma, multiple injuries, polytrauma, the standard of care in terms of basic trauma life support, advanced trauma life support, scoring systems for the assessment of the patient’s general condition and injuries need to be re-designed. The term “standard of trauma care”
Major (life-threatening) trauma (polytrauma) I

Event (trauma) occurring (O)
(May be a part of multiple events)
Time: 0:00
(all trauma cases reported to EMS)

Call–response interval (min) (M)

Time: 0:00 + x min

Ambulance leaves (M)

Call–scene interval (min)

Figure 8 Draft template for uniform reporting of data after trauma (reproduced from Dick17).

can no longer be accepted as valid in the absence of scientific proof demonstrating that the methods comprising this standard are valid. Certain aspects of care require scientific evaluation, such as fluid resuscitation, airway management and brain protection (fig. 8).5 6 16 27

In common with previous Utstein templates, the trauma template needs to define the quality of life after survival following severe trauma (for example 30 days after injury) and the criteria to be used for this purpose (Glasgow coma outcome category, including overall performance categories and cerebral performance categories, major trauma outcome study system, etc).

Summary

The concept of uniform reporting of data in resuscitation has demonstrated its potential value in pre-hospital and in-hospital cardiac arrest in adults, infants and children, in laboratory research, in disaster research and, hopefully, also in trauma care and research.

References


