Do We Need a National Agenda to Change our Culture of Care?
Geir Sverre Braut
Oslo, Norway
[abstract not available]

Part B. Can Medical Education Improve Quality and Safety of Care?

Do We Learn High Quality Patient Care the Way We Teach It? A Critical View on How We Teach Trauma Care
Daniel Scheidegger, MD
Basel, Switzerland
[abstract not available]

Animal Models and Use of Cadavers—An Unethical Mess? The Pros and Cons of Traditional Training
Jerry Nolan
Bath, UK
[abstract not available]

Training the Local Trauma Team Together—The Next Step to Improve Trauma Care?
Guttorm Brattebø, MD
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Learning objective: *Improving trauma team performance by simulation training locally at each hospital, by focusing on leadership, communication, and leadership.*

The initial treatment of the trauma patient is a demanding challenge, and well recognised to be the phase with most protocol deviations and diagnostic errors. The resuscitation must be made in correct order to ensure that no valuable time is lost. In Norway, very few hospitals get enough trauma cases to enable the trauma teams to perform optimally just by doing the regular work. Training is one of the ways to make up for this gap between expected and actual experience. Aviation safety work has shown that human factors and suboptimal team cooperation can lead to disasters; crew resource management (CRM) training has been developed to address this. This is even truer in medicine. Modern medicine is complicated, and the human factors tend to be forgotten in technology. For trauma patients, it is the joined action of the trauma team that matters. We have developed a multi-professional course with simulated trauma patients, organized locally at each hospital called BEST (Better & Systematic Trauma Care). The one-day course consists of lectures, followed by practical training with a simulated patient. The hospital's team set-up, procedures, and equipment are used, and team members play their own professional roles. The practical training sessions are video-recorded, and in the subsequent structured debriefing the team is encouraged to focus on areas for improvement in leadership, communication, and co-operation. The case histories used are based on real patient stories, with appropriate X-rays and laboratory results. After the course, all the educational material is left at the hospital for local training purposes. Trauma team leaders receive no formal training in leadership, so for many the BEST course is the first training in which their performance as a leader can be addressed and improved without jeopardising patient safety. A voluntary network between all hospitals has also been established, as a national quality improvement collaborative. BEST is now established at 18 of the 50 Norwegian trauma hospitals. More than 1,900 professionals have followed the lectures and 600 have simulated. In addition, a number of subsequent training sessions, using the simulation set-up, have been arranged locally at many of the hospitals. The feedback is overwhelmingly positive; in particular, many of the health care workers find the local training with their own well-known colleagues, procedures, and equipment very useful. The focus on team performance rather than individuals is important, but there seems to be need for training the instructors, so that the debriefing is performed in a reassuring and safe way. Another important feature of BEST is that after each training session the team members can use what they have learned immediately on real trauma patients. This kind of cross-professional team training in trauma care has never been done before in Norway, and the project seems to be a cost-effective improvement tool that ought to be further explored.

PHTLS® and ATLS®–American Imperialism or the Road to Improved Outcome? Should We Replace Them with European-Based Training Models? (Yes)
Carl L. Gwinnutt, MB, FRCA
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Learning objectives: *To appreciate the influence of ATLS and PHTLS approaches in the management of trauma patients and to examine their limitations.*

For nearly two decades, the American College of Surgeons (ACS) has promoted the ATLS and PHTLS educational packages to improve trauma care. These have proved immensely successful not only in the USA, but also worldwide, including within Europe and in particular the UK.

The principles of ATLS, inherent within PHTLS, are unquestionable; when faced with a trauma victim, one must treat the greatest threat to life first, not allowing the lack of a definitive diagnosis or detailed history to impede management. However, beyond this fundamental message, there are a number of concepts that I would question.

Despite their firm belief in all things ATLS, the ACS has been extremely restrictive in the way they have allowed it to flourish. For example, despite running ATLS courses for 14 years, the Royal College of Surgeons of England is not permitted to establish an ATLS program in any other country, even within Europe. Only the ACS can do this, irrespective of the (considerable) cost or inconvenience to the host nation. ATLS educational material is available only from the ACS and even when purchased, can be used only in conjunction with approved ATLS courses. In addition, PHTLS can be imported only where there is an established ATLS program. Consequently the ACS dominates any organisation, anywhere in the world, and in turn this generates total dependence on the ACS, even once ATLS has been established.

As a result of the promotion of ATLS and PHTLS, many health care professionals or their employers have spent millions of dollars to attend these courses, but incontrovertible evidence of improved outcome is still lacking. Knowledge and skills improve, ATLS techniques are utilised at the roadside and in hospital, and medical personnel feel more confident, but these do not automatically equate to better outcome. Furthermore, there are numerous confounding factors in trauma patients that, along with local variations in trauma systems, mean perceived effectiveness in one area is not automatically transferable to others.

Finally, do PHTLS and ATLS reflect our experience, practice, and needs in Europe? In North America, apart from the significant difference in the prevalence of penetrating trauma, prehospital care is delivered predominantly by emergency medical technicians. In contrast, in Europe there is an increasing involvement of physicians. In addition, ATLS is surgically dominated, with virtually no input from other specialties, but in Europe, trauma is the provenance of emergency physicians, anaesthetists, and intensivists to name but a few. The lack of involvement of such specialists is reflected in the core content, which is frequently at variance with practice in Europe–tracheal intubation without the use of drugs and the reliance on crystalloids for resuscitation being obvious examples. Finally, in an area where there is increasing recognition of a "team approach," this appears to remain an enigma to the ACS.

ATLS and, to a lesser extent, PHTLS have probably been the major influence on trauma management for the past decade. However, there is a growing awareness that time has come for us to develop courses that reflect both European practice and the problems we face when dealing with our victims of trauma. We should not be afraid to rise to this challenge.

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PHTLS® and ATLS®–American Imperialism or the Road to Improved Outcome? Should We Replace Them with European-Based Training Models? (No)
Claus Falck Larsen
Copenhagen, Denmark
[abstract not available]

— Session 1B —
Pain Management in Trauma

Pain Relief in Trauma-More Than Just Humanitarian Action? And, If So, Can We Secure Adequate Pain Control Throughout the Trauma Chain of Survival?
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[abstract not available]

Prehospital Analgesia—Experiences from the Norwegian Air Ambulance
Asgier Kvam
Olso, Norway
[abstract not available]

Prehospital Pain Therapy with Acupressure Performed by Paramedics
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Learning objective: *To understand the application and benefits of acupressure as used by paramedics treating trauma patients.*

Background: Untreated pain during the transportation of minor trauma is a common problem in emergency medicine. Because paramedics usually are not allowed to do invasive procedures or to give drugs for pain treatment, a noninvasive, non-drug-based method would be helpful. Acupressure is a traditional Chinese treatment for pain, based on pain release followed by short mechanical stimulation of specific points. Consequently, we tested the hypothesis whether effective pain therapy is possible by paramedics who are trained in acupressure.

Methods: In a double-blind trial we included 60 trauma patients. We randomly assigned them into three groups ("true points," "sham points," "no acupressure"). We recorded vital parameters and visual analogue scales for pain and anxiety before and after treatment. At the end of transport we asked for overall satisfaction. For statistical evaluation, one-way ANOVA and Scheffe's F test were used. $P<0.05$ was considered statistically significant.

Results: Morphometric, demographic data, and potential confounding factors such as age, gender, pain, anxiety, blood pressure, and heart rate before treatment did not differ between the groups. At the end of transport, we found a significant difference in pain, anxiety, heart rate, and satisfaction between the three groups ($P<0.01$).

Discussion: Our results show that acupressure is an effective and simple-to-learn treatment of pain in emergency trauma care, leading to improvement of the quality of care. We suggest that this technique is easy to learn and risk free and may improve paramedic-based rescue systems.

Does Choice of Anaesthetic Technique Affect Postoperative Recovery in Trauma Patients?

Johan Rœder
Oslo, Norway

[abstract not available]

New Drugs for Pain Treatment

Professor Anthony H. Dickenson
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Learning objectives: *1) to understand various causes of pain and 2) to understand the pharmacological rationale for development of various pain-relieving drugs.*

The pharmacology of pain and analgesia exhibits plasticity in different pain states. Understanding this plasticity may lead to improved therapies for the two major types of pain—neuropathic and inflammatory. The potential for a novel magic bullet will depend on the identification of key target mechanisms at peripheral or central levels. Finally, after centuries of serendipity, rational targets are now emerging. A number of potential targets have been revealed recently by animal models of different clinical pains.

At the level of the peripheral nerve, drugs acting on particular sodium channels may provide local-anaesthetic-like drugs that target only pain-related activity. Agents acting on calcium channels may control both neuronal activity and transmitter release. Agents that could be developed to act on these targets are closest to peripheral magic bullets, since in both nerve injury and inflammation, peripheral activity plays a key role in the subsequent plasticity of pain processing. The new generation of NSAIDs, COX-2 inhibitors, which lack gastric actions, are a good example of this rational approach to pain control, as are the triptans in headache. The identification of numerous receptors and channels activated by endogenous mediators, active after inflammation, such as protons, bradykinin, and ATP, provide interesting targets, but many changes in the periphery are restricted to tissue damage, so these types of drugs would lack broad analgesic actions.

In the spinal cord, the release of peptides and glutamate causes activation of the N-methyl-D-aspartate (NMDA) receptor for glutamate in persistent pain states, which, in concert with other systems, generates spinal hypersensitivity. This is a key target. Ketamine does block the NMDA receptor complex; there is potential for drugs that lack the side effects of ketamine. The roles of the other receptors for glutamate are less well understood, but kainate receptors look interesting.

Blocking the generation of excitability is one approach, but increasing inhibitions may also provide novel analgesics. Non-mu receptor agonists are possible and the recent description of the nociceptin receptor may be another novel target. The multitude of receptors for 5HT lends hope for future analgesic agents in pains other than headache. Adenosine receptor agonists and brain-selective nicotinic agents look promising. Possibly, despite the identification of multiple targets, the best approach would be single molecules with dual pharmacologic actions, encompassing targets covered here. At present, this approach can be achieved by combination analgesia. Additive or synergistic effects of two drugs with different mechanisms may allow pain relief without major adverse effects—the true magic bullet for the new millennium?

Bibilography

Dickenson AH. Spinal cord pharmacology of pain. *Br J Anaesth* 1995; 75:193–200.

The Pros and Cons of Epidural Analgesia in Trauma Patients

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Learning objectives: *To identify the types of injury amenable to epidural analgesia and to recognize the advantages and limitations of epidural analgesia.*

Pain management of the trauma patient presents a challenge to the anesthesiologist. Multitrauma patients may have associated head, spine, chest, and abdominal injuries. Pain management is often delayed until all clinical and especially neurologic evaluation is completed.[1] Many of these patients are very sick and unstable and there is a risk that inappropriate pain management may actually harm the patient. Trauma patients may require surgery and may benefit from avoidance of general anesthesia; however, regional anesthesia may also be a problem due to hypovolemia, coagulopathy, evident or possible spinal or head injury, and non-cooperative or unconscious patient. Studies have shown that pain control in the emergency department is inadequate, frequently delayed, and inappropriate.[2–4] The main reasons offered to explain this failure is fear of diagnostic masking and problems with assessing pain intensity. Reluctance to treat pain in an emergency is particularly evident when treating the elderly and children.[2]

Pain associated with trauma adds to the already activated stress response. Management is further complicated with hypovolemia, which may be deleterious if sympathetic activity is blunted by opioid or local anesthetic analgesia. The physiologic effects of trauma will depend on the type and extent of injuries.

Prehospital and Emergency Department Pain Management for the Trauma Patient. Pain management strategies in the prehospital setting depend on several factors, such as general condition of the patient and location, type, and severity of injuries. Another factor is the training and skill of the personnel attending the patient. In several countries (France, Belgium, Germany, Italy, Spain), physicians (usually anesthesiologists) are sent to the trauma scene to care for patients with life-threatening problems.[2] Pain relief includes simple measures such as rewarming, splinting of fractures, use of positive communication, and therapeutic suggestions. Intravenous administration of paracetamol (propacetamol) should be used as base medication in all patients who do not have liver damage. Injectable nonsteroidal anti-inflammatory drugs (NSAIDs) are also effective; however, the risk of coagulation disorders, bleeding, and gastrointestinal problems limits their use. There is also a risk of acute renal failure in hypovolemic patients. The newer (intravenous) COX-2 NSAIDs are not associated with bleeding and gastrointestinal side effects and can be expected to be used more frequently in emergency situations.[2] There is good recent evidence that additive analgesic effects are possible if paracetamol and NSAIDs are combined.[5]

Peripheral nerve blocks can provide excellent analgesia over a limited field and with minimal systemic effect. Catheter techniques are possible for nearly all nerve blocks. In general, peripheral nerve blocks are easy to perform, inexpensive, and safe but are underused. Femoral block for pain relief after femur shaft fracture seems to be very popular in France, where it has been taught to a majority of physicians providing prehospital care.[2,6] Brachial plexus block (axillary approach) is also a simple and safe procedure, which is easy to perform. Several distal blocks (digital, wrist, and ankle) are possible; although they are simple and effective, they are rarely used. (In the emergency department, the availability of imaging techniques, nerve stimulators, and other equipment allows the use of more advanced analgesic techniques.)

Epidural Analgesia for the Trauma Patient. A stress response occurs after trauma or surgical injury and consists of endocrine, metabolic, and inflammatory components. The stress response after trauma and burns is greater than that after elective surgery; however, the role of analgesia in reducing this response is not well documented.[7] Epidural analgesia has been shown to reduce stress response to lower abdominal surgical procedures but only variably reduces the response after upper abdominal and thoracic surgery. Epidural analgesia in trauma patients older than 60 years is associated with reduced pulmonary morbidity and mortality compared with parenteral analgesia.[8,9] Epidural analgesia can provide excellent analgesia in the trauma patient. The technique can be used for pain relief following multiple rib fractures, flail chest, thoracotomy, laparatomy, pelvis fractures, and lower extremity injuries.

Advantages of Epidural Analgesia. After thoracic trauma, epidural analgesia provides more effective pain control compared with alternative analgesic techniques such as parenteral analgesia,[10,11] intravenous PCA,[12] or interpleural block.[13] Thoracic epidural analgesia improves ventilatory function by eliminating chest splinting and diminishing the diaphragmatic dysfunction and consequently improving FRC and FVC.[14] TEA has beneficial hemodynamic effects due to decrease in myocardial oxygen demand and increase in supply.[15] The cardiac benefits of TEA have been reported in several recent studies.[16] TEA is also beneficial in the recovery of postoperative bowel function. This may be due to reduced systemic opioid use, unopposed vagal flow, and increased motility following splanchnic blockade and increased gastrointestinal blood flow.[17] However, in a hypovolemic patient who is dependent on sympathetic drive to maintain adequate blood pressure, TEA may cause considerable hypotension or even cardiac arrest.[13,18]

Problems with Epidural Analgesia. In addition to the usual contraindications to any neuraxial block (lack of patient consent, generalized sepsis, and coagulopathy), trauma patients have further possible contraindications such as hemodynamic instability and head or spinal injury.[8]

Coagulopathy subsequent to massive blood transfusion is not uncommon after thoracic and abdominal trauma. Heparin or low-molecular-weight heparin (LMWH) may be administered for thromboprophylaxis.

Hemodynamic instability is quite common after major trauma. Thoracic trauma may be associated with myocardial contusion, pericardial tamponade, and tension pneumothorax. These injuries should be treated before epidural placement. Epidural analgesia with an opioid alone may be used as a temporary measure until the patient is stable.

Head injury of moderate to severe nature is a contraindication for epidural analgesia. Patients with high intracranial pressure risk brain herniation if a dural tap occurs. Epidural bolus doses may also transiently increase intracranial pressure.[19] However, in appropriate patients with close monitoring and the use of low-dose opioids, epidural analgesia may be a good choice if thoracic injuries are severe and the head injury is mild.[8]

Spine injury is also a controversial indication for epidural analgesia. Epidural placement should be avoided in patients with paraplegia and spinal column instability. Furthermore, the effect of epidural block on recovery after spinal cord injury is unclear. However, a stable injury several segments away from the intended epidural insertion level and no neurologic deficit can be a good indication for epidural analgesia. Epidural opioid alone or in combination with a low concentration of local anesthetic should be used so neurologic status can be followed closely.[8]

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Burn Pain Management: A Paradigm for Aggressive Pain Control Following Major Trauma

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Learning objectives: *The purpose of this presentation is to use burn pain–possibly the most intense and problematic example of post-traumatic pain–as an illustration for aggressive pain management, emphasizing 1) regular and recorded pain assessment, 2) targeting of analgesic techniques to specific types of pain, 3) anxiolysis as an analgesic adjunct to opioid therapy, and 4) awareness of new or novel analgesic therapies.*

Post-burn pain is an extreme example of post-traumatic pain, both in its intensity and its duration. Because significant attention has been focused on the nature of burn pain management (both pharmacologic and nonpharmacologic), it serves as a potential paradigm for the treatment of other types of post-traumatic pain that accompany major, non-burn trauma. This presentation will focus on four specific areas: pain assessment, targeted analgesia, anxiolysis as an analgesic adjunct, and novel analgesic therapies.

Pain Assessment. A wide variety of pain assessment tools currently exist that have been validated (i.e., they yield accurate and reproducible results in the intended population) in the clinical setting, and are applicable to a wide variety of specific age ranges and cognitive abilities.[1] Regardless of which assessment or measurement technique is used, the consistent use of a pain assessment tool on a daily basis provides two tangible benefits to both patients and staff: 1) accurate assessment of patient pain and efficacy of the current analgesic plan and 2) simplified communication of pain and analgesia issues among care staff. These benefits are maximized when pain assessment occurs regularly (i.e., on daily rounds), when both background pain and procedural pain are assessed, and when results are recorded in the medical record or bedside chart so that all burn care staff are aware of the level of pain, recent changes in pain, or the effects of recent analgesic interventions.

Tailoring Analgesic Regimens to Clinical Needs. Because burn pain is variable in its degree and time course, reliance on a single analgesic regimen is unreliable at best, and unsuccessful at worst. Conversely, the diverse spectrum of burn patients (adults vs children, large burns vs small, intensive care unit nursing vs ward care, inhalation injury vs not) makes the routine individualization of analgesic plans overwhelming and impractical. One clinically practical solution to this dilemma is to determine an analgesic regimen for each individual patient based upon two broad categories: 1) the clinical need for analgesia and 2) the limitations imposed by the patient or by clinical facilities–and then individualize analgesic therapy within guidelines established by the institution:

Clinical Need for Analgesia	Patient or Facility Limitations
– Background pain	– IV access or not
– Procedural pain	– Intubated or not
– Breakthrough pain	– Monitoring needs
– Postoperative pain	– Drug tolerance

The first step is to address background, procedural, breakthrough, and postoperative pain needs separately, and then to consider individual drug choices based upon patient or facility limitations. To reinforce this type of approach to analgesic management, particularly in centers where housestaff physicians and/or nursing staff may rotate or change frequently, the establishment of succinct yet detailed institutional guidelines may help physicians and nurses choose and administer specific analgesics.[2] To maximize simplicity and utility, it is recommended that such guidelines be safe and effective over a broad range of ages, be explicit in their dosing recommendations, have a limited formulary to maximize staff familiarity, and allow the bedside nurse to evaluate efficacy and safety continuously.[2]

Anxiolysis and Procedural Burn Pain. Current aggressive therapies for cutaneous burns, together with the intense and unremitting qualities of background and wound care pain, make burn care an experience that is likely to engender anxiety in a large proportion of adult and pediatric patients. It is also recognized that anxiety can exacerbate acute pain, and has led to the common practice in U.S. burn centers of using anxiolytic drugs in combination with opioid analgesics. Intuitively, this practice seems particularly useful in premedicating patients for wound care, due to the anticipatory anxiety experienced by these patients prior to and during debridement. Benzodiazepine therapy improves postoperative pain scores in non-burn settings, and it has been reported that low-dose benzodiazepine administration significantly reduces procedural pain during burn wound care.[3] It appears that the patients most likely to benefit from this therapy are not those with high trait (premorbid) anxiety, but rather those with high state (at the time of the procedure) anxiety or with high baseline pain scores. Other non-pharmacologic anxiolysis techniques (e.g., hypnosis, behavioral therapy) should also be considered, as discussed elsewhere in this course.

New and/or Novel Pharmacologic Analgesic Techniques. Analgesic options, once limited to intramuscular opioids administered on a PRN basis, are now diverse, with new therapies introduced regularly. Clinicians should be aware of new/novel therapies, whether they are new analgesic pharmacologies (dexmedetomidine), new uses of old analgesic pharmacologies (intranasal ketamine), or new nonpharmacologic technologies (virtual reality analgesia).

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[*Editors' note: In this abstract, intranasal ketamine administration is described as a potential new use of an existing pharmacology. The drug delivery system for such administration is currently under development.*]

Post-Traumatic Chronic Pain–Does It Slow Rehabilitation and Increase Costs? And, If So, What Can We Do to Prevent It?

Audun Stubbaug
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[abstract not available]

— Session 1C —

Prehospital Trauma Care–The Weak Link in the Trauma Chain of Survival?

Does Bystander Trauma Care Save Lives or Just Make Things Worse?

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Learning objectives: *1) to understand the history of the development of first-aid courses and application principles, 2) to review accepted basic life support measures for various injuries and medical conditions, and 3) to reveal the need for research into the value of administering first aid at the scene of injury versus initiating immediate transport of trauma victims to a medical facility.*

First Aid History in Norway. The Norwegian system of rescuing injured or lost people, at sea or land, is by tradition based on volunteer rescue preparedness organizations. These organizations are also responsible for providing the majority of first aid courses, where laypersons are educated in basic life support.

The Norwegian Red Cross was founded 1865. The relief work carried out ranges from caring for the elderly, a prison visitor service, international aid, working with AIDS and volunteer rescue groups. The Red Cross Rescue Corps (founded 1932) has 15.000 members and emergency standby at 335 locations. First aid education has been a main activity throughout its history.[1]

The Norwegian Women Public Health Association was founded in 1896. The main activities were education of nurses and public health issues, such as work against tuberculosis and rheumatism; supporting the mentally disabled; and providing information on psychiatric disorders. First aid education was a main topic during the Second World War and in the 1950s.[2]

The Norwegian Peoples Aid was founded in 1932. The organization is a major contributor in international aid, sponsoring projects against the landmine problem, organizing volunteer rescue corps, and providing first aid training and emergency standby at public gatherings.

Norwegian Air Ambulance was established in 1978. The organization has 800.000 members and is a major contributor to emergency medical research and education. Its founder, Dr. Jens Moe, was the inventor of the modern Norwegian air ambulance concept. Norwegian Air Ambulance is now responsible for helicopter operations and/or medical operations at 11 air ambulance bases.

First Aid Education, Recommendations, and Legislation in Norway. First aid training is obligatory for all school pupils in Norway. It is not mandatory for obtaining a driving license. Personnel performing their obligatory military training will receive good knowledge of first aid, but today less than 40% of the male population actually completes military training. Humanitarian and volunteer organizations are the main contributors to public first aid education.

All Norwegian citizens have, by statutory law, a general duty to assist and help a person whose life is in danger. The Road Traffic Law instructs a driver to stop and give help at the scene of a traffic accident.

First aid recommendations in Norway are given by the *Norwegian First Aid Council* (member organizations: Norwegian Peoples Aid, Directorate for Civil Defence and Emergency Planning, Norwegian Red Cross, Norwegian Resuscitation Council, Norwegian Defence Force, and Norwegian Air Ambulance) and the *Norwegian Resuscitation Council*.

Epidemiology of Unintentional Injury in Norway. Unintentional injury will cause 1.700 deaths per year in Norway. Of these, 300 will result from road accidents. Half of the victims will be under 40 year of age. According to the Norwegian Institute of Public Health's injury register for the year 1994, more than 400.000 injuries were treated in hospitals or outpatient emergency rooms. 60.000 patients were admitted for hospital treatment. The total cost of treatment was estimated to NOK 1,7 billion.[3]

Modern First Aid Development. Research into modern external cardiopulmonary resuscitation (CPR) and basic life support (BSL) without equipment started in the 1950s.

The efficacy of airway control (for coma) by backward tilt of the head, mouth-to-mouth ventilation (for apnoea), and emergency artificial circulation with external cardiac (chest) compressions established the basis in this development.

Life-supporting first aid (LFSA) was introduced in the 1960s by Safar and Laerdal[4,5]: "A few simple measures, which are crucial to make a difference for the patient's immediate survival."

Bystander Trauma Care: Definition, Medical Literature and Scientific Evidence, International Recommendations. The European Resuscitation Council (ERC) and American Heart Association (AHA) Task Force on First Aid have given the following definition: "First aid is assessment and interventions that can be performed by a bystander with minimal equipment until appropriate medical personnel arrive." They also state, "Education in first aid should be universal: everyone can learn first aid and everyone should."

The International Trauma Anesthesia and Critical Care Society (ITACCS) Working Group on Bystander Trauma Care states in their first report[6]: "Bystander trauma care is almost nonexistent as far as the medical literature is concerned….The recommendations given in (first aid) training manuals and books are not based on scientific studies (however, that does not mean the recommendations are incorrect)".

The ERC/AHA task force[7] states, "Most of the evidence supporting the value of first aid assessment and management was found to be in the categories; astute clinical observations, extrapolations from other data sources and common sense."

Eisenburger and Safar gave the following recommendations[8]: "Life Supporting First Aid measures are mostly psychomotor skills, acquisition depends mainly on practice and repetition. There is a need for utmost simplicity of what and how to teach, training programs should be community based and include the media. Certification is not needed. Case registries are needed for the ongoing evaluation."

The ITACCS Working Group did not find any major differences in first aid recommendations in Europe, North America, and Australia. In most countries, first aid education includes these topics (example from first aid courses offered by St. Johns Ambulance and BBC [a Web-based interactive first-aid course]): action at the scene of an accident (personal safety), caring for an unconscious casualty, carrying out cardiopulmonary resuscitation (CPR), dealing with choking, dealing with serious bleeding, treating shock, treating burns and scalds, responding to a heart attack, responding to poisoning, and responding to drowning.

Specific Evidence-Based BLS and First-Aid Interventions (ERC/AHA 2000 Guidelines[9]). Therapeutic interventions are classified as follows: class I, excellent; class IIa, good to very good; class IIb, fair to good; class indeterminate; and class III, unacceptable.

Burns. Immediately cool the burn with cold–but not ice-cold–water (class IIa). Beneficial effects: pain relief, reduced formation of oedema, reduced infection rates, reduced depth of injury and more rapid healing, reduced need for grafting, and reduced mortality. The