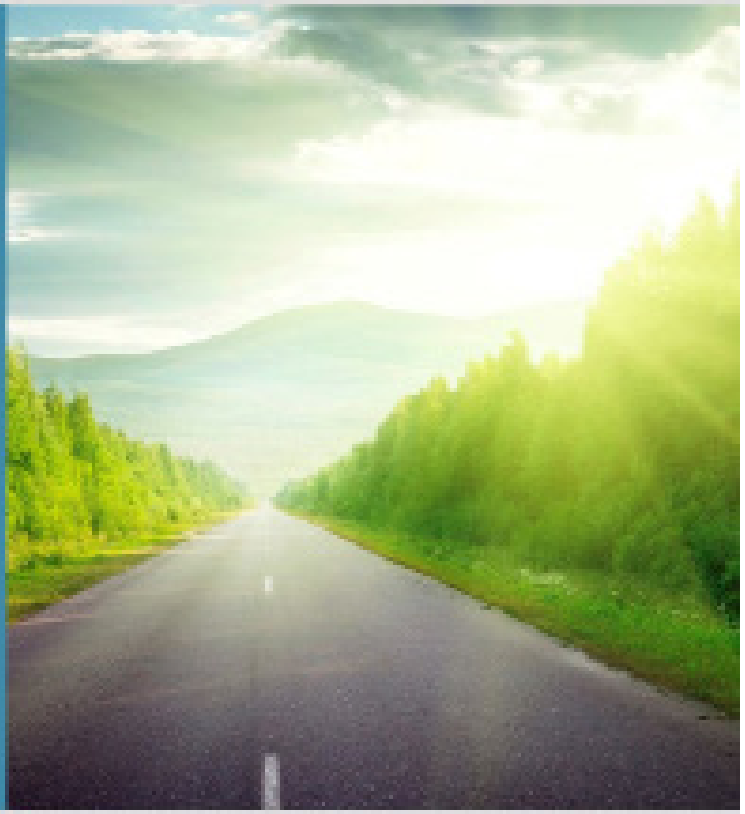
# The 6th International Road Safety Congress & The 3rd International Neurotrauma Congress

# ششمین گردهمایی بین المللی ایمنی راه و سومین گردهمایی بین المللی نورو تروما

15-16 February, 2017

۲۷ لغایت ۲۸ بهمن ۱۳۹۵

# Abstract Book



*Together We Can Save More Lives.*


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# Abstract Book of the 6th International Road Safety and 3rd International Neurotrauma Congress

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## Oral Presentations

### O1

### To Decrease the Victims of Road Accidents; the Strategic Goal of Traffic Police

***Taghi Mehri***

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The Neuroscience Journal of Shefaye Khatam, 2017; 4(S2): O1

Islamic republic of Iran, considering specified guidelines in the horizon of the perspective, as pays attention to annually reducing the maximum number of traffic deaths, tries to minimize the rate of traffic fatalities until 2025 horizon. In order to reduce traffic injuries, Iranian traffic police ,through preparing resources, inter-organizational coordinations, using modern technologies, using successful experiences of model countries, continuous and disciplinary observing actions, expanding span of controls, considering different phases of causing accidents (including: pre-accident, while-accident and post-accident actions) ;and more importantly, paying attention to necessity of establishing guiding body in the field of traffic in our country, has strived to minimize the number of traffic fatalities. In this effort, the traffic police, by assistance of a set of relevant organizations, could have decreased the number of traffic deaths from 27760 people in 2005 to 16586 people in a ten years program. In the other words, through promoting road safety in the country, promoting vehicles relative safety in comparison with the years before 2005, considering post-accident emergency services, and informing and attracting support of citizens in looking at driving safety standards such as fastening safety belt, the traffic police has succeed in experiencing fatalities reduction of 11174 people in a ten years period. That is annually an average of four percent fatalities reduction in our country. We hope that all the relevant organizations and bodies, would promote their intimacies and accompaniments to reduce traffic fatalities in the country; in the other hand, through establishing national, regional and international gatherings by expanding knowledge and successful and scientific experiences in coordinated action, would make possible achieving such a holy target. Of course, it is obvious that the set of above-mentioned actions could not be possible without accompany of our dear Islamic Iranian nation in developing safety in all dimensions and factors of causing traffic accidents, including: human behaviors, environment, vehicle and road. To achieve such an accompaniment and national determination, necessarily traffic injuries should be turned into a social issue.

### O2

### Iranian National Service Framework on Road Safety

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The Neuroscience Journal of Shefaye Khatam, 2017; 4(S2): O2

Globally around 38 million people die each year as a result of non communicable diseases (NCDs) in which 42% (~ 16 million) are premature deaths (below the age of 70). Nine voluntary global targets were set by World Health Organization to control above mentioned premature deaths. Iran added 4 more targets to it, including 20% reduction in the mortality rate due to road traffic injuries. The need to include road traffic injuries among the first priorities of the public health agenda has been increasingly recognized in Iran. This recognition is based on the growing evidence and awareness about the magnitude of road traffic injuries in our country. A comprehensive literature review was conducted and all related national and international reference documents were reviewed. Iranian national service framework was prepared to emphasis the role of health sector in this area containing 8 strategic objectives and 64 strategies to be achieved by 2025.

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## O3

### Importance of Road Safety on Public Health

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The Neuroscience Journal of Shefaye Khatam, 2017; 4(S2): O3

Roads are crucial to our everyday lives as we use them by driving, riding, walking or travelling as a pedestrian. Worldwide, more than 1.2 million people are killed on roads every year and up to 50 million more are injured; with most casualties from developing countries. In addition to different disabilities, road.accidents cause extensive psychological disorders and grief, and occasionally economic hardship for families. Furthermore, road accidents cost societies precious resources, diverting these from other health as well as development challenges. This is essential for.each country to address all these points in order to save the lives of thousands of human annually and protect their society resources.

## O4

### Theoretical and Practical Basics for Successful Traffic Safety Work

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The Neuroscience Journal of Shefaye Khatam, 2017; 4(S2): O4

Traffic safety work is a goal common to all public authorities, police agencies and organizations in Bavaria. Reducing the number of traffic fatalities in a sustainable manner and continuing to lower the number of traffic accidents and road traffic injuries is a task for society as a whole. The various measures being implemented in Bavaria during the road safety campaign “Bayern mobil – sicher ans Ziel, Verkehrssicherheit 2020,” or translated into English “Bavaria is mobile – arrive safely, road safety 2020,” take this task into consideration. The basics for successful traffic safety work can be found in linking together interventions from the fields of engineering, education and enforcement combined with appropriate activities in the field of public relations. These intervention fields are combined to form a single unit in the work done by the Bavarian police. The formula for success is based on the fact that they influence each other greatly. Knowledge gained from one intervention field has to be integrated into the decisions made concerning other intervention fields and must influence them. Increasing road safety successfully is something that can be ensured only when the police cooperate with other organizations and partners in the area of road safety. The responsibility of the police goes beyond the classic task of providing safety and security. Only by participating in traffic planning, cooperating with other authorities together in an accident commission, conducting targeted traffic surveillance and carrying out prevention work targeted at specific groups can the police contribute to improving road safety. There are a variety of ways in which the methods can be implemented. The police need to convey information on appropriate road behavior and in the process promote understanding and the willingness to participate in road traffic in a responsible manner. In this context, traffic surveillance and traffic checks need to be closely intertwined with each other. Appropriate public relations work involving the acquisition and passing on of information and the transfer of knowledge serves to improve the feeling of safety of citizens. The accident commissions that have been established across Bavaria are an important component of the governmental authorities in Bavaria. They are composed of representatives from police agencies, road traffic authorities and road construction authorities. An accident commission is a committee of experts that carries out detailed analyses in road areas with a significant number of accidents. If necessary, the commission takes remedial action within its jurisdiction in order to lower the number of accidents at those locations. The Central Office for Road Safety of the Department of Road Construction analyzes all traffic accidents in Bavaria recorded by the police and uses that information to create digital accident maps. Accident commissions are tasked with recognizing areas of the road system where a significant number of accidents occur, analyzing how the accidents occurred, adopting measures designed to increase safety and monitoring how they are implemented as well as subsequently assessing their effectiveness. In order to do so, the members of the commissions use their common basic knowledge and their specific expert knowledge from the three disciplines police, road construction and road traffic to carry out investigations at such dangerous places.

## O5

### Traffic Safety Measures Concerning Different Categories of Road Users Cooperation between Police and Emergency Medical Services

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The Neuroscience Journal of Shefaye Khatam, 2017; 4(S2): O5

The police are competent and always present contact

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persons who have direct knowledge and experience and act as role models in the area of road traffic. One of the focuses of police work is to increase tolerance and consideration, especially for more vulnerable road users. The priorities of the police are geared at emphasizing how relevant and appropriate the decisions made by road traffic authorities are. Police activities center on reducing the dangerous behavior of certain target groups, changing attitudes and increasing the risk of detection. A report on the traffic situation contains all of the information the police need in order to take further action and constitutes the scientific basis of police work involving traffic matters. The most important component thereof is a traffic accident evaluation done by experts. This evaluation incorporates the data from all accidents recorded by the police. This data combined with the data from traffic surveillance provides a detailed picture of the traffic situation. The police subsequently adapt traffic-related measures according to the various target groups, the main causes of accidents and times that accidents often occur. Currently, the target groups in Bavaria are car drivers, motorcyclists, truck drivers, bicyclists, pedestrians, young novice drivers, children (school children) and senior citizens. In the case of older road users, the emphasis lies on perception and perceptibility. Vision and physical mobility worsen as a person ages. Thus, it is important to take appropriate steps in order to persuade senior citizens to take more individual responsibility. As far as the topic of perceptibility is concerned, all road users are asked to show more consideration for others. One's own visibility is a key issue. Cooperation between Police and Emergency Medical Services The Bavarian State Ministry of the Interior, Building and Transport is the highest authority over the police and emergency medical services. The individual police dispatch centers and the integrated control rooms for emergency medical services are in close contact with each other in order to ensure that a uniform course of action is taken, from the emergency call to the assistance provided on site. The cooperation between all authorities and organizations involved in an operation is regulated by law and precisely stipulated. This presentation contains various practical examples of courses of action in the event of an operation, from a traffic accident to a mass accident.

## O6

## Traffic Safety Work with the Main Group Children (School Children) and Young Persons

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In Bavaria, about 1.7 million children walk, ride a bike or take the bus to school. It is important that they all get to school and back home again safely. In the last few decades, we in Bavaria have been able to significantly improve safety on children's way to school. In the mid 1970s, up to 35 children were killed in accidents every year on their way to school. In the last few years, we have been able to lower this number to zero. However, the number of traffic accidents resulting in injured school children is still so high that the police, school authorities, road traffic authorities and many other organizations have to take steps to continue increasing safety on the way to school. Every year the Bavarian police practice with children beginning school how they are to conduct themselves on their way to school. Specially trained police officers educate children on traffic safety and explain the dangers of road traffic to them. First graders practice, for example, what to do at traffic lights, at crosswalks and when crossing the street so that they get to school and back home again safely. The Bavarian police educate more than 100,000 first graders every year throughout Bavaria on road safety. More than 30,000 citizens across Bavaria volunteer to help the Bavarian police and ensure that children get to school safely. Every year about 100 events take place with the purpose of educating over 700 school bus drivers and making them aware of issues especially relating to children. In addition, the police monitor and check the school buses used throughout the whole year. All road users, especially drivers, must observe a special speed limit of 30 km/h near schools. In order to monitor whether these speed limits are kept, the police in Bavaria carry out speed checks using technical equipment such as radars or hand-held laser devices. During these speed checks, the police also check for no standing violations as well as violations of the compulsory use of seat belts and child safety seats. The level of police monitoring is especially high at the beginning of the school year, as the first few weeks of school are the most dangerous for children. Local media also support the work of the police in an important way by picking up on safety issues involving children on their way to school, especially at the beginning of the school year, and also reporting on the safety measures that are carried out. In addition, the police and schools distribute leaflets and brochures containing important information to parents and children. Young drivers (18 to 24 years old) constitute about eight percent of the entire population of Bavaria. However, they are involved in a disproportionately high percentage of accidents resulting in serious injuries, namely 22%. Novice drivers do not have much driving experience, and some are also more willing to take risks. Thus, they are an important target group for the Bavarian police. In addition to enacting special provisions concerning traffic law, for example accompanied driving from the age of 17 or a blood alcohol limit of 0.00% for novice drivers, the focus of prevention work is not only on driving skills but also on one's personal views on participating in road traffic and taking responsibility for oneself and others.

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## O7

### Evaluation of the Factors Affecting Traffic Safety Culture Promotion and Reduce Crime and Social Problems with Motorcycle

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The Neuroscience Journal of Shefaye Khatam, 2017; 4(S2): O7

Today, the motorcycle riders in the streets as traffic congestion have become a challenge. If we do not have planning and scientific management for this problem, consequently the volume of traffic and accidents, crime, social damages will be increased. Considering the importance of the issues, Identify and assess the factors promote traffic safety, reduce crime and Social problems with motorcycle can significantly improve traffic and reduce crime and social problems. The results of our evaluation have shown that factors affecting traffic safety culture are including of control of motorcyclists and their skills, education and awareness repeatedly by the media, planning principles for reducing motorcycle trips within the city, intervention of the judiciary in motorcycle traffic violations, rigorous implementation of traffic rules in the motorcycle riders, create a single regulatory system with the necessary protections for motorcycle transport system, identification of high-accident areas and secure them, annual review and analysis of accidents and casualties, identifying and resolving technical defects and optimization of the production process or entry vehicle, and balance and partnership between the private sector and the government and people about motorcyclists.

## O8

### A Study on Vertebral Column Trauma Patients Presenting to the Trauma Center of North-West of Iran

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The Neuroscience Journal of Shefaye Khatam, 2017; 4(S2): O8

Spinal traumatic injuries are the major damage which is associated with morbidity and mortality rates. In this study the epidemiological characteristics of spinal trauma and their outcome were investigated. In this cross sectional study, trauma patients who admitted to Imam Reza hospital were included. Their information such as age, sex, type of injury, severity of injury and site of injury was investigated since 1st April 2012 for a 2-year period. Chi-square test has been used to compare the types of injuries associated with outcome and regression methods. The spinal trauma was identified in 105 cases, of which 61.9% was male. Eighteen percent of patients had injury of spinal cord, however, 71.4% of them suffered from various types of spinal column injuries. Motor vehicle accidents are responsible in approximately 70% of cases (48.6% car related & 21.1% motorcycle); as well 14 cases (13.3%) were due to the falling, 10 cases (9.5%) related to pedestrian accidents. There were 5 patients (4.7%) with penetrating trauma to spine and the rest of 2.9% were due to other causes. Six patients died during a 30-day period after trauma. Type of injury, site of injury and injury severity was significantly associated with outcome. Motor vehicles accidents (cars and motorcycles) are the most common cause of spinal trauma in our country. The most effective factors on outcome are severity of primary injury to spine, stability of patient's vital signs and also the type of spinal fractures. According to the achievement of the emergency department in the early diagnosis, appropriate management such as surgery in preventing complications and may improve outcome.

## O9

### Trauma Care in Germany

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The Neuroscience Journal of Shefaye Khatam, 2017; 4(S2): O9

By the year 2020, the incidence of trauma has been predicted to rise worldwide and the death rate is expected to increase from 5.1 million to 8.4 million. The most important cause of death and severe morbidity up to the age of 45 years is traumatic brain injury, with or without polytrauma. Since the early 1970s, traffic-related deaths in Germany have dropped continuously—with the exception of the early 1990s because of the German reunification—from approximately 20,000 to approximately 5300 in 2005, despite an enormously increased traffic volume. Compared with 2004, the death rate declined by 8.2% in 2005. Undoubtedly, this success results mainly from powerful prevention strategies, such as airbags, seat belts, helmets, etc. In 2006, national economic costs for traffic-related injuries were reduced to 32 billion Euros, and expenses for material damages (15.7 billion Euros) surpassed those of personal damages (15.2 billion Euros) for the first time in German history. According to the data of Germany's Federal Statistical Office, there were 335 845 accidents resulting in personal injury in Germany in 2007. 4949 people were killed and 75 433 seriously injured in these 335 845 accidents. Following their accidents, these

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people require appropriate medical care. Germany has efficient hospitals that provide the various levels of care needed, but those with serious injuries should be treated in appropriate level one or level two trauma centers. Since then it has been shown that the trauma mortality rate in Germany is still falling. Despite this decline and the efficiency of the centers that provide care, it has not been clear until now how homogeneous care is, as measured by the mortality rate.

From Injury Site to Hospital: Who, How, Whereby

The treatment of patients with polytrauma, initially consisting of adequate preclinical resuscitation and management, encompasses a comprehensive package of measures. Their effective administration requires great competence and skill as well as a high level of organization and logistics among emergency physicians and preclinical rescue personnel. In particular, endotracheal intubation, usually regarded as necessary to counteract. For the early stage of diagnostic and therapy of polytraumatised patients the international recognized Advanced-Trauma-Life-Support (ATLS) protocol of the American College of Surgeon was established. In Germany this training of the ATLS is offered nationwide since 2003. This ATLS-concept which was developed in the 1970s is an education concept, which defines a standardized procedure in the early-phase clinical primary-care. It is already established in the acute care of polytrauma patients in more than 30 countries worldwide. Furthermore a significant benefit for the proof or exclusion of free intraabdominal fluid was the implementation of the sonography (FAST= Focused Assessment Sonography for Trauma) in the 1980s. The increasing usage of Multislice-CT-Scans in the primary diagnostic of polytrauma care has also reduced the posttraumatic mortality rate. Furthermore the outcome of the accident patient has affected positively by the developments in preclinical part. By extension of the emergency doctor and rescue helicopter network the rescue time have been shortened and the preclinical treatment improved significantly. The increasing preclinical therapy, calculated volume therapy, primary intubation, thoracic drainage etc., has also decrease the mortality. To improve the treatment of polytrauma patients in specialized trauma centers interdisciplinary teams and technical equipments and facilities were established. The polytrauma patient is admit to a trauma room of the emergency department where the specialty doctors are waiting.

## O10

### Issues of Emergency Services in Road Traffic Injuries: a Qualitative Study in an Iranian Context

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The Neuroscience Journal of Shefaye Khatam, 2017; 4(S2): O10

Iran is one of the countries with considerable road traffic injuries. Pre-hospital interventions have an important role in preventing mortalities and disabilities caused by traffic accidents. The present study aimed to explore the barriers of pre-hospital care in traffic injuries in Tehran, Iran. A qualitative content analysis approach was conducted based on 21 semi-structured interviews with 18 participants. A purposeful sampling method was applied until reaching data saturation. Interviews were transcribed verbatim, and then data condensing, labeling, coding and defining categories were performed by qualitative content analysis. Four main barriers including 4 main concepts and 13 subconcepts emerged; they included Barriers related to people, Barriers related to metropolitan infrastructure, Barriers related to the profession and Barriers related to managerial issues. Based on the findings of this study, pre-hospital service barriers in traffic accidents have many dimensions including cultural, structural and managerial domains. Policy makers in health system can use these findings to promote the quality of pre-hospital services, especially in the field of traffic injuries.

## O11

### Casualty Care

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The management of road traffic accident and The care of casualties has undergone many changes in recent years. To provide an uniform and systematic approach the EMS, firefighters, red cross, red crescent and other rescuers must be updated to reduce entrapment times, and mortality rates, over better organisation and a methodical approach. The rescuers should not attempt to administer medical first aid unless trained to do so. Self-protection is the first step of rescue management because casualty may carries a harmful blood borne virus or bacteria. The next step is casualty assessment, to assess the casualty knowing of kinematics of injury is important.

Kinematics of injury: Kinematics refers to a branch of mechanics dealing with the motion of a body without consideration given to its mass or the forces acting on it. It is important for rescuers to try to establish the kinematics of the injury in order to determine the extent and seriousness of the injury. How injury was caused, what type of injuries may have occurred. Knowing the type of impact injuries is important.

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-A cracked windscreen or displaced rear mirror may indicate head or spinal injury.
-Deformed steering wheel or column may indicate chest injuries.
-Deformed dashboard may indicate lower limb injuries.
-Deformed gear change lever may indicate lower limb damage.
-Deployed airbag may indicate facial injuries.
Seat belt sign may indicate abdominal or chest injuries
Casualty assessment: Obey the rules of ATLS (Advanced Trauma Life Support) and ABCDE is mandatory. It consists of the assessment of Airway, Breathing, Circulation, Disability and Exposure and environmental control. Attempt should be done to obtain a clear airway, achieving a normal breathing and circulation. Knowing the need of oxygen therapy and applying it in a correct manner is important. The rescuer should know the signs and symptoms of the shock and the correct way to manage it. Disability and neurologic assessment as well as exposure and environmental control are the next steps to manage casualties.

## O12

### Open Fracture Management in Road Traffic Accident

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Open fx is one of most serious injury in motor car accident. Infection /osteomyelitis/amputation and frequent admission in hospital and IV antibiotic and surgery are common complication of this problem. Life saving limb saving prior to the other practice. Take a photo by cell phone then call for help and cover the wound /control of bleeding and keep person warm is principles to management for open wound with fracture. Don't move victim injured area care limb with splint. According to newest international guideline antibiotic injection can be reduced infection rate and other complication.

## O13

### Crush Syndrome

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Life in the modern world means existing with the evolving face of modern warfare and global terrorism. We have disasters both man-made disasters, natural. Man has devised weapons of mass destruction, which in the hands urban terrorists can cause blasts, building collapses. resulting in a unique pattern of damage to the human body namely, crush injuries "Crush syndrome" first recorded in bombing of London during second worldwide. The reperfusion syndrome is a group of complications following re-establishment of blood flow to the ischemic tissues and can occur after fasciotomy and restoration of muscle blood flow in the acute compartment syndrome. It is recorded that up to 80% of crush injury patients die due to severe head injuries or asphyxiation.Of the 20% that reach hospital, 10% make an uneventful recovery. The other 10% go into crush syndrome. Our whole focus has to be centered on tackling this 10%, which has severe and extensive metabolic disturbances. Casualties deteriorate only after being rescued out of the debris of collapse or entrapment absolutely imperative that an assessment is made prior to beginning any extrication activities! Dually imperative that the rescue team be made aware of the importance of treating the patient prior to extrication. Fluid replacement and monitoring is the most important factor in treating crush syndrome.

## O14

### Trauma Surgery and Injury Prevention

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In our country injury and its related sequelae are major public health problems. Organizations that are responsible for dealing with these issues must be familiar with the impact of it on national health status and resources to have prioritized their control strategies and also target trauma centers. Injury is the 5th cause of death in the whole population and the 1st in the age first decades of life (1-44 years).Unfortunately disabilities are far exceeding and the affected persons are young working populations of community , these make the health burden expenses more pronounced. In our country we have both accidents and injuries as the main public health problems nowadays encountering with, so here the definitions of each need to be clarify for better control planning.
-Accident: An unexpected occurrence, happening by chance.
-Injury: A definable, correctable event, with specific risks for occurrence.
-Categorizing of injury prevention is very helpful for the persons who are involved in planning and leading the control program:
-Primary prevention: Eliminate the event.
-Secondary prevention: Diminish effect.
-Tertiary prevention: Improve outcomes.
Incidence of injury can de decreases if we can control or modify the risk factors and also manage the sequels

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in a timely manner, most of time this can be achieved by trauma surgeons with focus on management of the injured patients only. They have an important role in management of the victims, but their main responsibility is to give their feedback to the organizations that are in charge. Trauma surgery centers have an enormous role in injury prevention programs; they can identify the problems, collect and analyze data's, design interventions, select and participate in action plans and also perform effective evaluations and give feedbacks. Unfortunately there is a weak collaboration between the public health planners and trauma centers, making execution and pervasiveness of the control plans difficult.

## O15

### Golden Hour Rescue Chain

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The Neuroscience Journal of Shefaye Khatam, 2017; 4(S2): O15

Trauma is a leading cause of death and disability especially amongst young people. Road traffic crash–related death, injury, and chronic disability continue to be a major worldwide burden to drivers, pedestrians and users of mass transit, especially in low- and middle-income countries(LMIC). Projections predict worsening of this burden, and while motorization of LMIC increases exponentially, a corresponding improvement in prehospital and acute in-hospital trauma care has not been seen . Prehospital trauma care service remains a dynamic field of medicine for care of trauma patients. The goal of prehospital emergency care system should be to match the needs of the patients to the available resources so that optimal, prompt and cost-effective care can be offered. For bridging the wide gap between the actual and expected level of care, the urgent need must be appreciated by the community, administration, medical professionals and very positive steps should be taken to meet the future challenges. One of the most well known principles in medicine is ''golden hour'' of trauma, which specifies that patients outcome are improved when patient is transported to a designated trauma center within an hour of injury. The prehospital trauma care process consists of six key steps: detection, reporting, response, on-scene care, care in transit and transfer to definitive care. Objectives of prehospital trauma care involve prompt communication and activation of the system, proper actions at the scene of the crash by first responders, and the prompt response of the system or simply offer fastest possible basic life support includes, airway, breathing, control of bleeding, and transportation of the right patient to the right place at right time.

## O16

### Impact of ATLS Training on Roads Morality Reduction

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ATLS or Advanced Trauma Life Support and the family training courses like ATCN and PHTS, are training courses planning for medical staff who are involved in trauma care to mange injured people in proper way to save lives and reduce the morbidity significantly. From the scene of accident EMS who passed PHTLS for pre hospital trauma care to emergency rooms in hospital doctors and nurses could perform better to save more lives. These Trainings are under licence of American College of Surgeons and are holding worldwide, in some countries it is mandatory to pass the course for all people who are involved in trauma care. In Iran, courses started in 2011, and now in four centres, Tehran, Shiraz, Tabriz, and Ahvaz we are holding the courses regularly. Several studies support the positive impact of these trainings on reducing the number ofvictims. In one study mortality reduced from 55/2% to 13/6% after ATLS training . Road safety strategy should include good management of the injured people rapidly and in proper way to reduce number of victims.

## O17

### Cross Professional Competence Is Mandatory for a Better Road Safety

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The Neuroscience Journal of Shefaye Khatam, 2017; 4(S2): O17

We are concerned: The number of Road Traffic Fatalities is rising since 2014 again, in Germany, in the European Union, in the USA, after a continuous decline over the last 40 years. Many reasons are discussed: Human behaviour, e.g. texting while driving; no respect for traffic rules; daily life competition, who will be the fastest; more traffic, more vehicles, more kilometres driven. The industry would be able to provide a much better safety on our roads, but more safety is expensive and lower the profit. Governments worldwide are not willing to implement stronger regulations against the financial interest of their manufacturers. This is a deadly one way, which we must overcome. Cross Professional Competence will show the public the great chance to lower the burden of traffic injuries:

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Police, Red Crescent-Red Cross, Medical Doctors and Hospitals, Fire Department, Kindergarden-Schools and Universities, Villages and Cities must work together to provide the most effective Rescue Chain The injured human is competent guided from the scene of accident to the adequate hospital and after acute treatment send to a rehabilitation centre to regain his full pre-accident activity. The " RESCUE CHAIN " is as strong as its weakest chain-link The WHO 5 Pillar organigram : Road safety Management – Safer Road and Mobility – Safer Vehicles – Safer Road User – Post Crash Response can be the basis for a understanding. For a better cooperation CROSS PROFESSIONAL COMPETENCE. Is required. and has to be demonstrated in public: Report from the accident, rescue chain helicopter, hospital treatment, shock room and rehabilitation with the victim back to his normal life. With the public opinion on our side, politicians will listen and implement necessary laws.

## O18

### Vulnerable Road Users - Is There a Way to Protect?

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Road Traffic Accident (RTA) is a global burden of disease. More than 1.25 million people per year are killed by RTAs. More than half of the fatalities strike vulnerable road users (e. g. pedestrians, skaters, cyclists and other non-protected road users). The ongoing challenge is to protect vulnerable road users (VRU). As a VRU is neither shielded by seatbelts or crumple zones nor by airbags, the adverse party´s vehicle should be protecting the VRU. While steel should protect a human from being injured, one might think this as hard to achieve as squaring a circle -. However, it is possible! The newest achievements of engineering skills such as active engine hoods or soft radiator grilles or automatically emergency brake systems can protect a VRU. These developments will guide the future of VRU protection that has just begun!

## O19

### Differences in the Management of Severely Injured Elderly Patients in Germany )An Analysis of 37.901 Patients of the German Trauma Register DGU®)

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Demographic changes in Germany show the fastest progress of all european countries and are not only influencing socioeconomic issues but also the management of patients with their individual risc profile. Especially severely injured elderly constitute a group of patients who need specific attention due to their individual age related pathophysiological processes. 21% of the German population were older than 65 years in 2012. It will increase to 29% in 2030 and 34% in 2060, while 9% will be older than 85 years and Germany is one oft he countries with the highest expectency of life (female 83,3, male 78,6 years) [1]. Elderly casualties do not only show a higher incidence of severe injuries but also an increasing mortality rate [2]. At the same time mobility and activity rates are increasing, showing specific pattern of injury and pathophysiological characteristics in the population of elderly [3]. Next to an increasing average of life the rate and complexity of pre-existing medical condition is significantly increasing in elderly (report of the TraumaRegister DGU ®). Trauma is the main cause of morbidity behind cardiovascular and neoplastic diseases in Germany. Almost one third of all expanses in the German medical system related to trauma patientes are invested in the treatment of patients older than 64 years of age. Due to higher complication and mortality rates in severely injured patients, elderly show a significant longer hospitalization [4]. It was our aim to compare the reality of medical treatment and patients management between elderly and the younger population of severely injured patients. After analysis of the data of 2002 – 2012 (37.901 severely injured patients) of the German TraumaRegister DGU ® we where able to show significant differences in cause of accident, mortality rate, diagnostic strategies and treatment. Both the diagnostic strategy and the treatment are less progressive in elderly severely injured patients. Especially the management in the trauma resuscitation unit show significnat differences as well as the rate of surgical vs. conservative treated specific injuries. With these findings and the increased mortality rate in elderly severely injured patients we see the urge to critically evaluate the management of severley injured patients in times of demographic changes and discuss what adjustments need to be done.

## O20

### Around Pedestrian Injuries in Road Traffic from International Point of View

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Injuries suffered in vehicle traffic crashes are the leading cause of death among children in many countries. Prevention of injuries of children in raod accidents is still a challenge. The present lecture discuss the commonly injuried body regions in children involved in motor and non-motor vehicle traffic crashes. Head, ribs and lung are commonly injured body regions among children under 8 years in vehicle crashes.

## O21

### Elderly People in Road Traffic Accidents

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Due to demographic changes in Germany older people are more frequently injured in road traffic accidents. In 2015, 73.338 older people were involved in traffic accidents with fatalities and/or injuries. The numbers of older people who have been injured in traffic accidents have increased dramatically since the late 90's (+40%). But in general, elderly are less likely to be involved in road accidents due to less participation in traffic. The group of elderly people is very inhomogeneous. The cognitive ability and capacity as well as their state of health varies widely. Therefore, many European Countries have introduced health checks in elderly people. Although the risk of sustaining injuries is half compared to the average population, the relative risk to sustaining severe injuries is much higher. 25,5% of the elderly were severely injured in traffic accident, while this was significant less in people <65 years (15,9 %). Furthermore, elderly people are less likely to survive traffic accidents. Mortality is three time higher in people > 65 years of age. This is due to less physical resistance and the way elderly participate in traffic: elderly people are less likely to use motor vehicles and get more often injured as unprotected pedestrians. In general, the chance to die in traffic accidents has decreased in elderly people since 1980 by 77,1%, although elderly people are more likely to loose overview in complex traffic situations. Elderly patients suffering a high-energy trauma with multiple injuries are often undertriaged to trauma centers and underresusitated. Aggressive and early resuscitation can improve outcome in elderly patients. Comanagement by orthopaedic surgeons and geriatricians in these patients can lead to lower length o ity.

## *Workshop Presentations*

## W1

### Neural Tissue Engineering Strategies in Traumatic Brain Injury Therapies

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The incidence of traumatic brain injury (TBI) are annually increasing, developed tissue engineering methods could represent the definite remedies for patients with strongly injured central nervous system and have a great effect in the public healthcare cost. The current clinical treatments in TBI display several limitations. Furthermore, several therapies, coming from neural tissue engineering and nanotechnology, have revealed an absolute potential to regenerate damaged tissues and organs by using biomaterials capable of creating favorable microenvironments for tissue ingrowth. Neural tissue engineering approaches have established a very attractive alternative for neuroregeneration after brain injury. The approaches are using scaffolds encapsulated with cells and or embedded with molecules to achieve neural regeneration. In conclusion, in order to help to regenerate neurons in the CNS, the combination of the scaffolds with stem cells and/or growth factors and biomolecules seems beneficial. Thus, a combinatorial therapeutic approach will be the one that will probably provide the conclusive solution to the complex problem of brain injury repair.

## *Poster Presentations*

## P1

### The Most Effective Educational Practices of Nurses in the Area of Increased Intracranial Pressure

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Caring for patients with severe head injury and increased intracranial pressure is one of the important activities of nurses. Nurses with specialized information and new, faster decisions can be life-saving. The most important thing is that nurses should be aware of the activities and the factors that can increase intracranial pressure,

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to recognize. This triangle of risk factors for increased intracranial pressure can be considered. The aim of this study was to find the most effective teaching methods in teaching risk factors on the safety of nurses is increased intracranial pressure. In this study, 74 intensive care nurses were nerves as sample. The samples were randomly divided into two groups of 35 patients (teaching and lecturing) and 39 people (training CDs) were considered .The two-part questionnaire was used to collect data. The demographic situation in the first part and second part of the questionnaire of 40 questions about risk factors contained increased intracranial pressure. During the pre-and post-test questionnaire was completed by the subjects. The data analysis using descriptive and inferential statistics were conducted. The results showed that after training methods and use the CD on the number of correct speech, respondents were added to each of the questions. Paired t results in lectures and use the CD at (p=0.01) statistically significant difference was found. Student's t-statistic to compare the effects of these two methods is not statistically significant. The use of two-way teaching methods and CDs in-service training of nurses can increase their cognitive domain.

## P2

### Frequency of Brain Lesion in CT Scan of Traumatic Patients of Kermanshah

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Trauma is the most common reason in 1-34 years olds. In patient with multiple traumas, the head is the most common involved part. The importance of computed tomography (CT scan) in diagnosis of brain trauma is well established and CT of the brain is a choice method. Finding lesion in brain traumatic patient is very important so goal of this study is finding of brain CT scan in traumatic patient that referred to Ayatollah Taleghani Hospital of Kermanshah in 2014. In this cross-sectional a descriptive study brain CT scan finding of 1005 patient in 2014 with brain trauma that referred to CT scan department of Taleghani Hospital of Kermanshah was evaluated. For data collection used pre-prepared tables that contain demographic data, finding of brain lesion location and location was broken and finally data with descriptive statistics were analyzed. In this study showed that 55.09 % of 1005 patients were male and 28% were in 15-34 years old. In this study we evaluated computed tomograms of traumatic patients, 812 (82.11%) case of 1005 patients have normal brain CT scan and 50 (17.89%) case have positive finding that this finding are: 14 case(26%) had brain contusion, 7 case(13%) had epidural hematoma, 8 case(15%) had, 14 case(29%) had subarachnoid hemorrhage, 8 case(15%) had intracranial hemorrhage, 4 case(08%) had intraventricular hemorrhage and 22 case (42%) skull fracture was detected. Due to the high frequency of normal CT scan in this study and disadvantages of no indication CT scan, it is necessary for clinical physicians to pay attention and do accurate efforts because there are some concerns that the CT scan of brain is going to be a routine application.

## P3

### Neuronal Death Following Posttraumatic Excitability and Seizure

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Seizure may occur after mild traumatic brain injury (TBI), and the severity of TBI can be considered the most crucial factor for an increased risk of recurring seizures as well as for the development of posttraumatic epilepsy. However, the effect of seizures in epileptogenesis after mild TBI cannot yet be accurately confirmed. This study was designed to determine whether mild TBI increases seizure susceptibility as well as to investigate the histopathological and molecular consequences of seizure occurrence after mild TBI. Using a novel method of TBI induction, seizures were induced by sub-convulsive doses of pentylenetetrazole (PTZ) fifteen days after induction of focal mild TBI. Behavioral assessments were performed for one hour after PTZ injection and histopathological as well as molecular evaluations were performed. A significantly higher score and longer duration of seizure attacks were observed in the TBI+PTZ group compared to sham and TBI groups. A higher number of apoptotic cells was observed in the TBI+PTZ group compared to sham and TBI rats.

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Molecular investigations revealed higher levels of Bax/Bcl2 ratio, Caspase 3, and NF-κB in the TBI+PTZ group compared to the other animal groups. Our data indicated that seizure occurrence following mild TBI aggravates cell injury and death via activation of neuroinflammatory processes and may increase the risk of posttraumatic epilepsy.

## P4

### PuraMatrix Supports Neural Stem Cells to Repair Brain Injury

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The Neuroscience Journal of Shefaye Khatam, 2017; 4(S2): P4

One of the main problems following road accidents is brain injury after which death and disability in the most active population occurs. Considering the fact that there is no definite clinical treatment for repair of damaged brain tissue, the present study examined the effects of autologous adult neural stem/progenitor cells (NS/PCs) seeded in a nanoscaffold named PuraMatrix in acute brain injury. Twenty male Wistar rats were randomly divided into phosphate buffer saline (PBS), PuraMatrix, NS/PCs and PuraMatrix+ NS/PCs groups. Initially, the right brain SVZ of all subjects were stereotactically harvested. Then, NS/PCs were cultured for 45 days and pre labeled with bromodeoxyuridine (BrdU). At day 45, brain injury was done in left side and treatment was done. The animals were evaluated in terms of behavioral and neurological status for 4 weeks then, decapitated. Nissl and TUNEL staining as well as immunohistochemistry for BrdU, GFAP, Iba1 and CD68 were performed. Treatment of brain injury with PuraMatrix, NS/PCs or PuraMatrix + NS/PCs resulted in neurologic status improvement. The lesion volume was decreased in PuraMatrix+ NS/PCs group compare to PBS group. Astrogliosis rate was higher in PBS group than others. By 3D transplantation of NS/PCs, the rates of microglial and macrophagal reaction as well as apoptosis were reduced, while the survival rate in the site of injury was increased. Autologous transplantation of adult NS/PCs with PuraMatrix by the new injection method may be useful for reduction of brain damage as well as improvement of neurologic condition following acute brain injury.

## P5

### Clinical Management for Blunt Laryngotracheal Trauma in Children

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Cervical injury, Blunt and Penetrating trauma, hardly lead to morbidity and mortality in children population but it is clinically important. Although Blunt trauma is less prevalence in children than Penetrating trauma, it is life threatening due to laryngotracheal rupture. Bicycle accidents are common reason of Blunt trauma. Blunt Laryngotracheal injury is rare in children because mandibular bone protection, elasticity of the cartilaginous support of the airway and the mobility of the supporting tissues collectively act to protect the laryngotrachea. Clinical symptoms of Blunt cervical trauma are various including stridor, hoarseness, dyspnea, voice alternation, and etc. All patients with Blunt cervical trauma should perform direct laryngoscopy and bronchoscopy (DL & B) and esophagoscopy. CT scan can be as a reliable imaging method in Blunt cervical trauma due to its high diagnostic sensitivity. Early diagnosis and air way management is necessary to prevent morbidity and mortality. Immobility of cervical spine should be employed in Blunt cervical trauma to avoid spine injury. Techniques proposed for securing air way include endotracheal tubing with direct laryngoscopy or elective tracheostomy under fiber optic guidance. Managing laryngotracheal stenosis is dangerous, hard and complicated and it may need multiple surgeries and the most common surgery method is tracheostomy where should be performed rapidly at children's bedside and with anesthesia. Treatment includes: observation, stand-alone endoscopy, restoration by endoscope, open cervical explore with open reduction internal fixation (ORIF), and tracheotomy. Results of successful assessment through voice quality and airway accessibility are investigated.

## P6

### Application of 3D Bioactive Scaffolds in Brain Injury

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Naturally the brain is ineffective in regenerating functional tissue after disease or injury ,so to overcome these defects innovative curative strategies such as stem cell transplantation and tissue engineering

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have to be considered. Researchers investigate the use of strategies to attain better functional repair results. One of the important challenges of effective transplantation is the delivery of cells to the injured site whereas maintaining cell viability. Intravenous or intraparenchymal injections as Classical methods for cell delivery are plagued by low engraftment of transplanted stem cells. Innovative implantable devices such as 3D bioactive scaffolds can supply the metabolic and physical support required for successful stem cells engraftment, maturation and proliferation. Also the successes of cell replacement therapies can be strengthen by providing a microenvironment by bioactive scaffolds that facilitates the survival, proliferation, differentiation of transplanted cells. Transferring bioactivity into scaffolds is vital to enabling cell to matrix and cell to cell interactions. This has been achieved through the attachment of biomolecules for example extra cellular matrix proteins and trophic factors to direct cell development and proliferation. On the other hand some researchers examine biocompatible polymers as patterns for controlled release of bioactive molecules within the central nervous system for constant drug delivery.

## P7

### Current Status of Fibrin-Based Scaffolds in the Treatment of Spinal Cord Injury

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Spinal cord injury (SCI) results in the damage of motor and sensory pathways. The molecular and cellular structure of the injury milieu has been shown to be vital for endogenous regeneration in most tissues. Regeneration of Injured central nervous system (CNS) is limited by damaged cell environment. Biomaterial scaffolds can reconstruct injured CNS tissue following SCI by promoting the migration of support cells into the biomaterial and enhancing axonal regeneration. Fibrin gel self-assembles into a scaffold by simulating the last stage of blood clotting to support cell migration, proliferation, differentiation, and eventually tissue regeneration. Fibrin is a suitable biomaterial scaffold for nerve regeneration based on its role in wound repair and tissue renovation. Fibrin Gel also been investigated as an Injectable biodegradable scaffold and cell carrier for healing of spinal cord injury. Fibrin has been used as a matrix to seal nerve guidance tubes implanted following sciatic nerve injury in neural tissue engineering and was shown to promote axonal renewal and cell migration. Fibrin scaffolds have also been used in acute studies of whole spinal cord transection, and were found to elicit improved neural fiber sprouting at early time points. Fibrin scaffolds can be amended covalently to form an affinity-based delivery system for the regulated delivery of neurotrophins. Future work will study the effect of fibrin scaffolds in combination with other treatment techniques such as protein delivery on spinal cord regeneration following injury.

## P8

### Perspective of Nanotechnology and Stem Cells for Treatment of Spinal Cord Injury

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It was estimated that 3 million people suffered from spinal cord injury. Unfortunately up to date, there are not any reliable clinical treatments for spinal cord injury and researches for treatments of SCI have focused on medication, surgery, stem cell transplantation, molecular therapy and tissue engineering. Also Scientists are trying to use a combination of stem cells and nanotechnology sciences for approaching effective treatments of spinal cord injury. It is well established that stem cell fate is regulated by interactions that occur between microenvironmental signals and intrinsic cellular programs. On the other hand synthesis of multifunctional nanoparticles and their surface amendment with specific signal molecules can improve the capabilities of stem cells. So nanotechnology and nanomaterials were offered for valuable treatments of spinal cord injury. A lot of studies are conducted using nanomaterials such as nanowires, nanofibers, nanoparticles, and carbon-based nanomaterials along with stem cells .Nanofibers scaffolds especially electro active nanofibers, can serve as excellent guidance in combination of stem cells for treatment of spinal cord injury. Although the use of new techniques based on nanotechnology is still very young, incorporating the use of nanotechnology and stem cells offers promising future perspective for treatment of incurable diseases such as SCI.

## P9

### Different Routes for Cellular Transplantation in Spinal Cord Injury

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Cell therapy is known as one of the most promising

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curative interventions in the spinal cord injury (SCI). Selection of an appropriate route to transplant the stem cells is very important. Principally, four different injection routes have been used in animal experiments. 1. Intramedullary route: This route is known as a classic method for transplantation of stem cells. In this method, the stem cells are injected directly into the damaged tissue following the laminectomy. It is the most effective method for cell administration. The main disadvantage of this method is its invasiveness that leads to further damage to the tissue and post-operative complications. Moreover, the viability of injected cells is decreased because of immunologic condition of area. 2. Intrathecal route: In this minimally invasive method the cells are transplanted into the lumbar cistern by a needle after only a small incision on the skin. The expression of different chemotactic factors such as stromal cell-derived factor-1 (SDF-1α) and its CXCR4 receptor in damaged tissue mediates the large homing of injected cells in the site of injury. Since the amount of these signals is reduced as time passes, the efficiency of this method is mainly in the acute phase of SCI. However, this method, generally, is less effective than intramedullary injection route. Less invasiveness is the advantage of this method. 3. Intraventricular route: This method is not used anymore after developing safer and more efficient procedures. Here, the stem cells are injected into the lateral ventricles which migrate toward the injury site via a similar mechanism that mentioned in intrathecal injection. This method is as effective as intrathecal route but more invasive. 4. Intravascular route: This route has the least effectiveness among different methods of cell injection in the spinal cord injury, although it is the safest way. While cell administration through the artery is not that possible because the spinal cord has a multiple arterial supply, the intravenous injection is safe and easy. Like two previous methods, the homing of transplanted cells into damaged tissue is mediated by chemotactic substances such as SDF-1 and hepatocyte growth factor (HGF). The disadvantages of this method consist of trapping of the injected cells in other tissues than spinal cord such as lung and liver, not passing of the cells through an intact blood brain barrier, and their exposure in blood to immune cells for a long time. Efficiency and safety of routes for cellular transplantation and also the pathologic phase of SCI should be considered to choose an appropriate route for cell therapy.

## P10

### Pedestrian Rights in a Safe Way

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A pedestrian is every person who is walking, especially along or the width of a street or other place used by cars. Growth, development and industrialization of societies, threatens the safety of pedestrians. increase and acceleration of vehicles and traffic, lack of road and street standards, weakness of laws or inappropriate executive guarantees, causing to insecurity and incidence of physical dangers to the pedestrians. Main question is how to ensure the security and rights of pedestrian? Pedestrian security is a crucial factor in maintaining physical and mental health and peace, social welfare and preventive measure for many of the anxieties, stress and psychological pressure. Achieving this requires multilateral efforts and convergent state and society. We recommend that the following basic measures taken to ensure the safety of pedestrians. Including: Scientific tutorials for incumbents of the passages, such as municipalities and ministry of roads, development of traffic on society, explaining the rights and duties of pedestrians and drivers, formally right of priority pedestrian and driver, Infrastructures reform, safety and standard the passages in consideration of the rights of all people with lower power and handicapped in urban design and traffic, set rigorous regulations with deterrent executive guarantees for drivers and prevent the transit of motorcycles on footpath, effective monitoring and control for production and supply of vehicles with high quality and high safety factors, prevent installation of intrusive equipment on pavements and establish the amenities and technical equipment on the road for pedestrians to secure them against any hazards of road and street.

## P11

### From Well to Bed: Stem Cell Therapies for Neurotrauma

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Neurotrauma is one of the main medical problems that affect considerable number of population especially young persons in all countries. Neurotrauma not only is a serious threat for life but also creates various disabilities and consequently imposes large costs to society. Following central nervous system (CNS) injury, tissue damage occurs via primary and secondary mechanisms. Despite many attempts, there is no definite solution for repairing of damaged tissue of CNS. In recent years, stem cell therapy has opened a new way in front of scientists to address this problem. Today, several sources are available for neural repairing including embryonic, fetal, umbilical and adult stem cells. Embryonic stem

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cells have great proliferative capacity but their use is associated with ethical and immunological concerns. On the other hand, adult stem cells create an outstanding opportunity for autologous transplantation. In this regard, adult neural stem cells can produce real neural cell lines including neuron, astrocyte and oligodendrocyte. Although there are several questions about neural stem cell utilization such as the fate of stem cells and the control of cell dividing after transplantation, which need more basic studies, some clinical trials have been started in phase I or II especially for spinal cord injury. In conclusion, we are in the beginning of the stem cell therapy for CNS repair, consequently scientists must move forward with caution.

## P12

### Cell Therapies for Neurological Injury

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A neurological disorder is any disorder of the nervous system is usually due to cell loss. The ultimate goal of CNS therapy is to replace lost cells and tissue. There is no neuroprotective, pharmacological and effective treatment available that restores the injury-induced loss of function. Recent studies suggest that identification of adult neural stem/progenitor cells indwelling in the neurogenic regions in the adult mammalian brain and spinal cord may play regenerative and reparative roles in response to CNS injuries. Therefore, cell transplantation is a potential strategy to repair and regenerate the injured brain and spinal cord. Different types of stem cells vary in their ability to help restore function, and an ideal treatment protocol remains unclear pending further clinical research. Stem cells derived from adult tissues such as mesenchymal progenitor cells, fetal progenitors, and post-mitotic cells have a limited potential to differentiate into specific cell types. As Brain and spinal cord injury are associated with enormous loss of multiple cell types due to primary mechanical tissue disruption. The choice of stem cell population used in replacement therapies after Brain and spinal cord injury might therefore be critical.

## P13

### Roadway Design and Road Safety

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Human factors issues associated with roadway design and operations are critical components of improving highway safety. First, the three major components of highway safety are driver behavior, vehicle safety, and roadway safety. The general philosophy in roadside safety follows the priorities of (1) remove the hazard, (2) relocate the hazard, (3) make the hazard forgiving, and (4) shield the hazard. Roadway safety refers to that portion of overall highway safety that is determined by the roadway's physical features such as road design, roadway signs, pavement markings, operating conditions, roadside objects (such as utility poles, signs, trees, guardrails), bridges, and intersections. It should be kept in mind that traffic barriers and crash cushions are hazards in themselves, and their use is limited to situations in which the severity of impacting the traffic barrier or crash cushion is less than that of impacting the hazard the barrier or crash cushion is shielding. The personal and economic costs of highway crashes to our citizens and communities are enormous. Here are a few points to consider: Unlike driver behavior and vehicle design, where significant gains have been made, the percentage of deaths related to crashes with roadside hazards has actually increased over the past two decades.

## P14

### Post-Traumatic Stress Disorder in Car Accidents

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Survivors of car accidents not only are physically challenged, but also from psychological trauma, such as post-traumatic stress disorder (PTSD) also suffers. In recent years, PTSD disorder and other psychological reactions is increased after an accident. PTSD is a Disorder with special signs after stressful events such as accidents can be seen psychological. PTSD is common responses that people show in stressful or traumatic events. This disorder includes symptoms such as frequent reminders of the traumatic memories, re-experiencing traumatic dream and waking, persistent avoidance

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of reminders accident and etc. Usually the person after repeated and unwanted exposure to catastrophic incidents in his mind or when is placed in a position that is reminiscent of what happened, feels the tension and anxiety and behaves as if the event is happening at the moment. The prevalence of PTSD after traffic accidents have been reported in different studies 1 to 46 percent. Considering the importance of early diagnosis and early treatment of psychological disorders in survivors of car accidents and the need for urgent intervention to prevent psychological impact of the disaster on these people are recommended. This study is aimed to investigate the causes and symptoms of PTSD in survivors of the car accident.

## P15

### Evaluation of Early- Childhood Traumatic Brain Injury on the Emotion Perception

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Traumatic brain injury (TBI) is a common injury leading to child disability and is associated with a variety of long-term cognitive, social, and behavioral dysfunctions. Emotion perception (EP) starts up an integral part of social communication is critical to achieve developmentally appropriate goals. This skill, which emerges relatively early in development, is driven by increasing connectivity among regions of a distributed socio-cognitive neural network. Recognizing and comprehending from facial and prosodic points may be vulnerable to disruption from early-childhood traumatic brain injury. These skills are mediated by the ‘‘social brain’’ network, which comprises the superior temporal sulcus, fusiform gyrus, temporal pole, medial prefrontal cortex, orbitofrontal cortex, amygdala, temporoparietal junction, and inferior parietal cortex. Investigations showed that children who sustained TBI between 7 and 17 years of age were significantly less accurate than healthy controls. Survivors of childhood TBI were conflicted with the semantic meaning of the speaker’s message. The vulnerability of the immature social brain network was particularly apparent for the group with severe injuries, they have difficulties to identify facial emotion and integrate emotional information across the visual and auditory modalities. Finally, it seems that severe childhoods TBI may disrupt inter regional connectivity and thus interfere with the functional refinement of areas within the distributed social brain network.

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