



Postgraduate Certificate

Shock Management in Trauma in the ICU

» Modality: online

» Duration: 6 weeks

» Certificate: TECH Global University

» Credits: 6 ECTS

» Schedule: at your own pace

» Exams: online

Website: www.techtitute.com/us/medicine/postgraduate-certificate/shock-management-trauma-icu

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tech 06 | Introduction

Shock in the context of Trauma and Intensive Care is a critical pathology that can have very dangerous consequences for the health of the patient. In fact, in the ICU setting, where patients often experience severe trauma, *shock* can be a serious and potentially fatal complication.

Therefore, this Postgraduate Certificate dedicated to the diagnosis and comprehensive treatment of Shock in patients with traumatic injuries is born. The specialist will be able to recognize the different types of *shock* and evaluate vital signs, hemodynamic parameters and biomarkers. In addition, it will address strategies to restore blood flow, which may involve surgical interventions to control bleeding, the use of medications to improve cardiac function, and the administration of intravenous fluids to maintain blood volume.

Common triggers of *shock*, such as massive blood loss due to severe injury, will also be delved into. Other causes may include injuries that directly affect the heart, such as cardiac trauma or arrhythmias, or problems that interfere with the lungs' ability to oxygenate blood efficiently.

The program will also explore continuous monitoring and adaptation of treatments based on patient response. In this way, the physician will acquire advanced skills to address Shock in traumatized patients, optimizing their prognosis and recovery in Intensive Care settings, emphasizing interdisciplinary collaboration and evidence-based decision making.

This academic program, completely online, will provide the graduate with the flexibility to complete it from anywhere and at any time, with no time restrictions. Only an electronic device with internet access will be required to incorporate the most advanced skills into daily clinical practice. A unique opportunity for students to update their skills through the revolutionary *Relearning* methodology, consisting of the repetition of key concepts to ensure optimal knowledge acquisition.

This **Postgraduate Certificate in Shock Management in Trauma in the ICU** contains the most complete and up-to-date scientific program on the market. The most important features include:

- The development of practical cases presented by experts in Shock Management in Trauma in the ICU
- The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice
- Practical exercises where the self-assessment process can be carried out to improve learning
- Its special emphasis on innovative methodologies
- Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- Content that is accessible from any fixed or portable device with an Internet connection



You will update your education in Shock Management in Trauma in the ICU thanks to this Postgraduate Certificate. And in only 6 weeks!"



Thanks to the most innovative didactic resources you will delve into the problems of multi-organ dysfunction in Trauma"

The program's teaching staff includes professionals from the sector who contribute their work experience to this training program, as well as renowned specialists from leading societies and prestigious universities.

Its multimedia content, developed with the latest educational technology, will allow the professional a situated and contextual learning, that is, a simulated environment that will provide an immersive education programmed to learn in real situations.

This program is designed around Problem-Based Learning, whereby the professional must try to solve the different professional practice situations that arise during the academic year For this purpose, the students will be assisted by an innovative interactive video system created by renowned and experienced experts.

You will analyze Transfusion Secondary Acute Lung Injury (TRALI), a severe respiratory syndrome resulting from transfusion of blood products.

You will delve into the diagnosis and the most current therapeutic strategies to treat Hemorrhagic Shock in Intensive Care Units (ICU).







tech 10 | Objectives



General Objectives

- Delve into a thorough understanding of the anatomophysiological, pathophysiological, and clinical basis of severe traumatic injuries, as well as associated complications and comorbidities
- Effectively communicate injury prevention information to different audiences and utilize health promotion strategies
- Integrate quality and safety practices in the management of trauma patients, minimizing risks and optimizing outcomes
- Implement triage protocols in mass trauma situations and prioritize care



You will reach your professional goals in only 6 weeks and with a pioneer methodology in TECH: Relearning"





Specific Objectives

- Delve into the different types of shock in trauma patients in the ICU
- Delve into the interpretation of vital signs and hemodynamic parameters to assess the severity and progression of *shock*
- Learn the principles of intravenous fluid administration and its proper use to maintain perfusion
- Update knowledge of vasoactive medications and their mechanisms of action to correct hemodynamic imbalance
- Identify and address coagulation disorders associated with traumatic *shock*
- Develop strategies for recognizing and treating septic shock, a common complication in trauma patients







International Guest Director

Doctor George S. Dyer is an eminent orthopedic surgeon, specializing in Upper Limb Traumatology and Complex Post Traumatic Reconstructions of the Shoulder, Elbow, Wrist and Hand. In fact, he has served as an Upper Limb Surgeon at Brigham and Women's Hospital in Boston, where he has also held the prestigious Barry P. Simmons Chair in Orthopedic Surgery.

Therefore, one of his most significant contributions has been his work in Haiti, where he has had a lasting impact. After the devastating earthquake of 2010, he was one of the first surgeons to arrive in the country, providing assistance at a critical time. In doing so, he has worked closely with local surgeons and other health professionals to strengthen Haiti's capacity to manage medical emergencies. As such, his efforts have been instrumental in training a new generation of Haitian orthopedic surgeons, who demonstrated their skill and preparedness during the 2021 earthquake, handling the situation with great efficiency and professionalism.

Likewise, during his time as Director of the Harvard Combined Orthopedic Residency Program, he has strived to improve the working and educational conditions of the residents, fostering a more balanced and healthy work environment. This focus on resident well-being reflects his commitment to preparing future physicians and his concern for the mental and professional health of his colleagues.

As such, Doctor George S. Dyer's impact on his field has been recognized through various honors, such as the Humanitarian Award given by the Hippocrates Society at Brigham and Women's Hospital, as well as being named a Top Doctor in Massachusetts. These awards have underscored his influence and significant contribution to global Orthopedic Surgery, reflecting his dedication and commitment to all aspects of his career.



Dr. Dyer, George S.

- Upper Limb Surgeon at Brigham and Women's Hospital, Boston, United States
- Barry P. Simmons Chair in Orthopedic Surgery at Brigham and Women's Hospital, Boston, United States
- Commandant Surgeon in the Medical Corps of the U.S. Navy
- Director of the Harvard Combined Orthopedic Residency Residency Program
- Fellowship in Upper Limb Fellowship at Brigham and Women's Hospital and Children's Hospital
- Doctor of Medicine from Harvard Medical School
- B.A. in Political Science and Government from Harvard University
- Humanitarian Award from the Hippocratic Society of Brigham and Women's Hospital
- Massachusetts Top Doctor



tech 16 | Course Management

Management



Dr. Bustamante Munguira, Elena

- Head of the Intensive Care Medicine Department of the Hospital Clínico de Valladolid
- Medical Director of the Health Area of Ibiza and Formentera
- Specialist in Intensive Care Medicine
- Teacher of refresher courses and workshops
- Illustrious Official College of Physicians of Salamanca Award
- · Ramón Llul Award of the Patient Safety Unit
- PhD in Medicine and Surgery
- Master's Degree in Management
- Medical and Healthcare Management
- Master in Patient Safety

Professors

Dr. De la Torre Vélez, Paula

- Intensive Care Physician at the Hospital Clínico Universitario de Valladolid
- Emergency Physician in the Emergency Service of 112 of Castilla y León
- Cooperating with Medicos sin Fronteras (Doctors without Borders)
- Specialist in Intensive Care Medicine at the University Hospital of Burgos
- Degree in Medicine from the University of Valladolid







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Module 1. Management of shock in ICU trauma

1	ľ	1	Ob	iectives	end	points	of trai	Jma	resuso	citat	rior	,

- 1.1.1. Resuscitation
- 1.1.2. Pathophysiology
- 1.1.3. Global parameters
 - 1.1.3.1. Clinical parameters, physical examination, vital signs
 - 1.1.3.2. Hemodynamic parameters: Optimization of volemia
 - 1.1.3.3. Hemodynamic parameters: Cardiac work
 - 1.1.3.4. End-expiratory CO2 values (End-tidal CO2)
 - 1.1.3.5. Oximetric values
 - 1.1.3.6. Measurement of tissue metabolism anaerobiosis
- 1.1.4. Regional parameters
 - 1.1.4.1. Gastric mucosal tonometry
 - 1.1.4.2. Sublingual capnography
 - 1.1.4.3. Tissue oximetry and capn ometry
 - 1.1.5.4. Near Infrared Spectrometry (NIRS)
- 1.1.5. Conclusions
- 1.2. Multi-organ dysfunction in trauma
 - 1.2.1. Dysfunction
 - 1.2.2. Pathophysiology
 - 1.2.3. Classification
 - 1.2.3.1. Early Onset
 - 1.2.3.2. Late Onset
 - 1.2.4. Diagnosis
 - 1.2.4.1. Scales
 - 1.2.4.2. Risk Factors
 - 1.2.5. Therapeutic Approach
 - 1.2.5.1. Cardiorespiratory support
 - 1.2.5.2. Damage control surgeries
 - 1.2.5.3. Surgeries for debridement of infectious foci
 - 1.2.5.4. Blood volume and blood products supply
 - 1.2.5.5. Others: Protective mechanical ventilation and nutrition
 - 1.2.6. Conclusions



Structure and Content | 21 tech

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- 1.3.1. Recognition of the state of shock
- 1.3.2. Clinical differentiation of shock etiology
 - 1.3.2.1. General description of hemorrhagic shock
- 1.3.3. Physiological classification
 - 1.3.3.1. Grade I hemorrhage >15% blood volume loss
 - 1.3.3.2. Hemorrhage grade II 15-30% of blood volume loss
 - 1.3.3.3. Hemorrhage grade III 31-40% of blood volume loss
 - 1.3.3.4. Hemorrhage grade IV >40% blood volume loss
- 1.3.4. Initial management of hemorrhagic shock
 - 1.3.4.1. Physical Examination
 - 1.3.4.1.1. Airway and Breathing
 - 1.3.4.1.2. Circulation, hemorrhage control
 - 1.3.4.1.3. Neurological Deficit
 - 1.3.4.1.4. Exposure: complete examination
 - 1.3.4.2. Vascular Access
 - 1.3.4.3. Initial treatment with liquids
 - 1.3.4.4. Blood restitution
 - 1.3.4.4.1. Crossmatching tests
 - 1.3.4.4.2. Prevention of hypothermia
 - 1.3.4.4.3. Autotransfusion
 - 1.3.4.4.4. Massive transfusion
 - 1.3.4.4.5. Coagulopathy
 - 1.3.4.4.6. Calcium administration
- 1.4. Systemic inflammatory response syndrome and sepsis in severe trauma
 - 1.4.1. Systemic inflammatory response
 - 1.4.2. CNS
 - 1.4.2.1. Common infections
 - 1.4.2.2. Treatment
 - 1.4.2.3. Antibiotic prophylaxis for CNS infections
 - 1.4.3. Pneumonia

1.4.4. Infections related to fractures

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- 1.4.4.2. Factors associated with infection
- 1.4.4.3. Diagnosis of fracture-related infection
- 1.4.4.4. Infection-related treatment
- 1.5. Coagulation disorders in trauma
 - 1.5.1. Coagulation
 - .5.2. Coagulopathy associated with trauma
 - 1.5.2.1. Trauma-associated coagulopathy (TAC)
 - 1.5.2.1.1. Tissue damage and inflammation
 - 1.5.2.1.2. Endothelial Dysfunction
 - 1.5.2.1.3. Shock and hypoperfusion
 - 1.5.2.1.4. Platelet dysfunction
 - 1.5.2.1.5. Coagulation factor consumption and dysfunction
 - 1.5.2.1.6. Hyperfibrinolysis
 - 1.5.2.2. Coagulopathy Secondary to Trauma (CST)
 - 1.5.2.2.1. Associated with the patient's situation
 - 1.5.2.2.1.1. Hypothermia
 - 1.5.2.2.1.2. Acidosis
 - 1.5.2.2.2. Dilutional
 - 1.5.2.2.3. Added
 - 1.5.2.2.3.1. Comorbidities
 - 1.5.2.2.3.2. Concomitant Drug
 - 1.5.3. Diagnosis
 - 1.5.3.1. Conventional tests
 - 1.5.3.1.1. Conventional coagulation tests
 - 1.5.3.1.1.1. Platelet count
 - 1.5.3.1.1.2. Fibrinogen levels
 - 1.5.3.1.2. Viscoelastic test
 - 1.5.3.1.2.1. Reactions and parameters
 - 1.5.3.1.2.2. Interpretation
 - 1.5.3.1.2.3. Advantages and Limitations
 - 1.5.3.2. Evaluation of CIT and prediction of massive transfusion

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1.6.

1.7.

1.5.4.	Management of coagulopathy	1.8.	Neuro	genic shock in trauma		
	1.5.4.1. Management of CIT/HECTRA		1.8.1.	Shock		
	1.5.4.1.1. Red blood Cell Concentrates		1.8.2.	Memory Clinical differentiation of shock etiology		
	1.5.4.1.2. Fresh frozen plasma			1.8.2.1. General description of hemorrhagic shock		
	1.5.4.1.3. Platelets		1.8.3.	Classification of spinal cord injury		
	1.5.4.1.4. Fibrinogen			1.8.3.1. Level		
	1.5.4.1.5. Protombinic Concentrate Complexes (PCC)			1.8.3.2. Severity of neurological deficit		
	1.5.4.1.6. Tranexamic Acid			1.8.3.3. Spinal Cord Syndromes		
	1.5.4.1.7. Other hemostatic drugs		Throm	boembolic disease in trauma and post-traumatic fat embolism syndrom		
	1.5.4.1.8. Other Measures		1.9.1.	Thrombo		
	1.5.4.2. Management of hypercoagulability		1.9.2.	Venous Thromboembolic Disease		
Massive transfusion				1.9.2.1. Pathophysiology		
1.6.1.	Transfusion			1.9.2.2. Prophylaxis and pharmacology		
1.6.2.	Definition			1.9.2.2.1. Onset		
1.6.3.	Transfusion management guidelines in severely traumatized patients			1.9.2.2.2. Anticoagulation and posology		
1.6.4.	Associated risks			1.9.2.3. Mechanical Prophylaxis		
	1.6.4.1. Coagulopathy			1.9.2.4. Diagnosis		
	1.6.4.2. TRALI			1.9.2.5. Treatment of venous thromboembolic disease		
	1.6.4.3. Infections			1.9.2.6. Prognosis		
Cardia	c arrest in trauma		1.9.3.	Fat Embolism Syndrome		
1.7.1.	Stop			1.9.3.1. Pathophysiology		
1.7.2.	Etiopathogenesis of traumatic CRA			1.9.3.2. Clinical Symptoms		
1.7.3.	Cardiopulmonary resuscitation algorithm in traumatic CRA			1.9.3.3. Diagnosis		
1.7.4.	Prognosis of traumatic CRA			1.9.3.4. Treatment		
1.7.5.	Emergency thoracotomy			1.9.3.5. Prevention		
	1.7.5.1. Indications and Contraindications		0. Compartment syndrome and crushing			
	1.7.5.2. Role of ultrasound		1.10.1.	Compartment Syndrome		
	1.7.5.3. Objectives			1.10.1.1. Definition and localizations		
1.7.6.	Surgical Technique			1.10.1.2. Etiology and Clinic		
	1.7.6.1. Emergency sternotomy			1.10.1.3. Treatment and Prophylaxis		
	1.7.6.2. Left thoracotomy					
1.7.7.	Material and monitoring					



Structure and Content | 23 tech

1.10.2. Crush Syndrome

1.10.2.1. Introduction

1.10.2.2. Pathophysiology

1.10.2.3. Evolution

1.10.2.4. Clinical Management



The Postgraduate Certificate in Shock Management in Trauma in the ICU will ensure the acquisition of solid fundamentals and their practical application in real situations"





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At TECH we use the Case Method

What should a professional do in a given situation? Throughout the program, students will face multiple simulated clinical cases, based on real patients, in which they will have to do research, establish hypotheses, and ultimately resolve the situation. There is an abundance of scientific evidence on the effectiveness of the method. Specialists learn better, faster, and more sustainably over time.

With TECH you will experience a way of learning that is shaking the foundations of traditional universities around the world.



According to Dr. Gérvas, the clinical case is the annotated presentation of a patient, or group of patients, which becomes a "case", an example or model that illustrates some peculiar clinical component, either because of its teaching power or because of its uniqueness or rarity. It is essential that the case is based on current professional life, trying to recreate the real conditions in the physician's professional practice.



Did you know that this method was developed in 1912, at Harvard, for law students? The case method consisted of presenting students with real-life, complex situations for them to make decisions and justify their decisions on how to solve them. In 1924, Harvard adopted it as a standard teaching method"

The effectiveness of the method is justified by four fundamental achievements:

- Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that evaluate real situations and the application of knowledge.
- 2. Learning is solidly translated into practical skills that allow the student to better integrate into the real world.
- 3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.
- 4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.





Relearning Methodology

At TECH we enhance the case method with the best 100% online teaching methodology available: Relearning.

This university is the first in the world to combine the study of clinical cases with a 100% online learning system based on repetition, combining a minimum of 8 different elements in each lesson, a real revolution with respect to the mere study and analysis of cases.

Professionals will learn through real cases and by resolving complex situations in simulated learning environments. These simulations are developed using state-of-the-art software to facilitate immersive learning.



Methodology | 29 tech

At the forefront of world teaching, the Relearning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best online university (Columbia University).

With this methodology, more than 250,000 physicians have been trained with unprecedented success in all clinical specialties regardless of surgical load. Our pedagogical methodology is developed in a highly competitive environment, with a university student body with a strong socioeconomic profile and an average age of 43.5 years old.

Relearning will allow you to learn with less effort and better performance, involving you more in your specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to success.

In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

The overall score obtained by TECH's learning system is 8.01, according to the highest international standards.

This program offers the best educational material, prepared with professionals in mind:



Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is highly specific and precise.

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.



Surgical Techniques and Procedures on Video

TECH introduces students to the latest techniques, the latest educational advances and to the forefront of current medical techniques. All of this in direct contact with students and explained in detail so as to aid their assimilation and understanding. And best of all, you can watch the videos as many times as you like.



Interactive Summaries

The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".





Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.

Expert-Led Case Studies and Case Analysis

Effective learning ought to be contextual. Therefore, TECH presents real cases in which the expert will guide students, focusing on and solving the different situations: a clear and direct way to achieve the highest degree of understanding.



Testing & Retesting

We periodically evaluate and re-evaluate students' knowledge throughout the program, through assessment and self-assessment activities and exercises, so that they can see how they are achieving their goals.



Classes

There is scientific evidence on the usefulness of learning by observing experts.

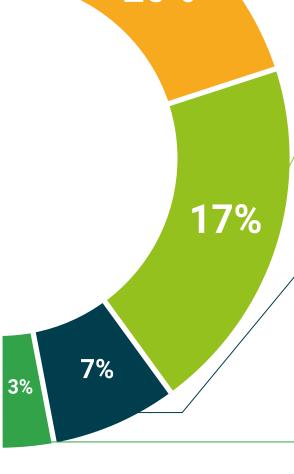
The system known as Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.



Quick Action Guides

TECH offers the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical, and effective way to help students progress in their learning.









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This program will allow you to obtain your **Postgraduate Certificate in Shock Management in Trauma in the ICU** the world's largest online university.

TECH Global University is an official European University publicly recognized by the Government of Andorra (*official bulletin*). Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.

This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program

Title: Postgraduate Certificate in Shock Management in Trauma in the ICU

Modality: online

Duration: 6 weeks

Accreditation: 6 ECTS



^{*}Apostille Convention. In the event that the student wishes to have their paper diploma issued with an apostille, TECH Global University will make the necessary arrangements to obtain it, at an additional cost.

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leducation information tutors
guarantee accreditation teaching
institutions technology learning



Postgraduate Certificate Shock Management in Trauma in the ICU

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Global University
- » Credits: 6 ECTS
- » Schedule: at your own pace
- » Exams: online

