



Portugal Training System for Trauma Care



Lusitanian Association for Trauma and Emergency Surgery

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No disclosures

Coimbra



Coimbra University



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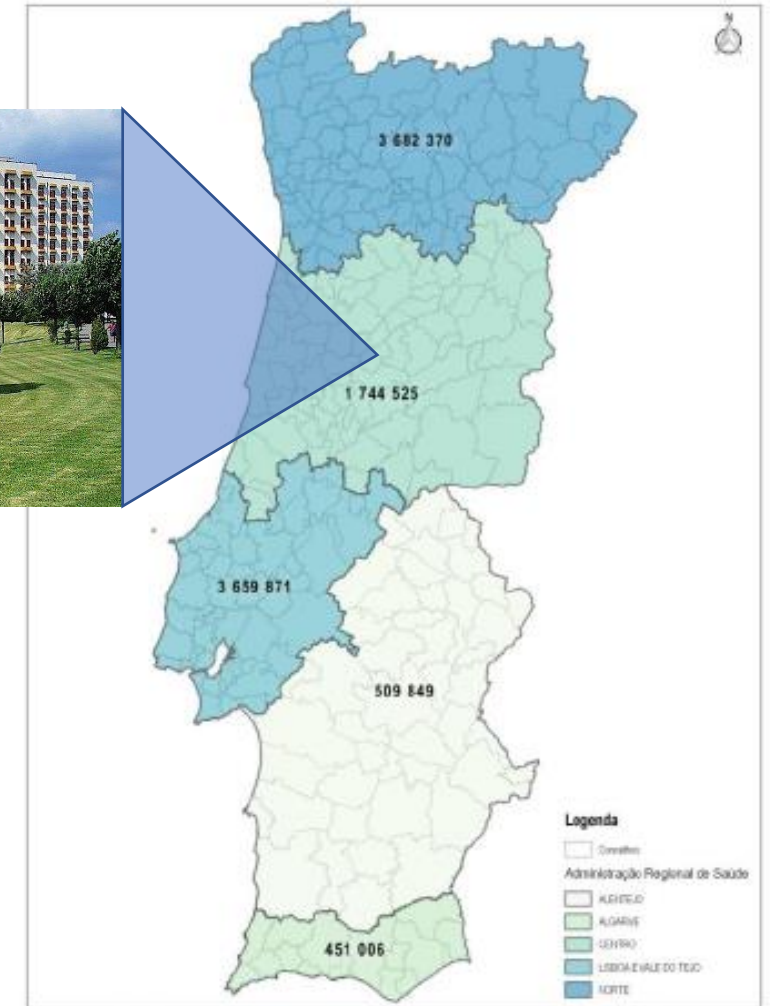


Coimbra University Hospital Center

Largest hospital center in Portugal
> 2.200 beds

Level I trauma center for 2.000.000
inhabitants

>200.000 emergency admissions / year



Introduction

Trauma systems improve outcomes

Organization of hospital response is mandatory

Ultimately also relies on the skill set of practitioners at all levels

Training programs should reflect:

- Individual, technical skills
 - At the Emergency Department
 - In the Operating Room
- Teamwork and non-technical skills
 - At the Emergency Department
 - In the Operating Room

Trauma teams: How are they trained?

International survey

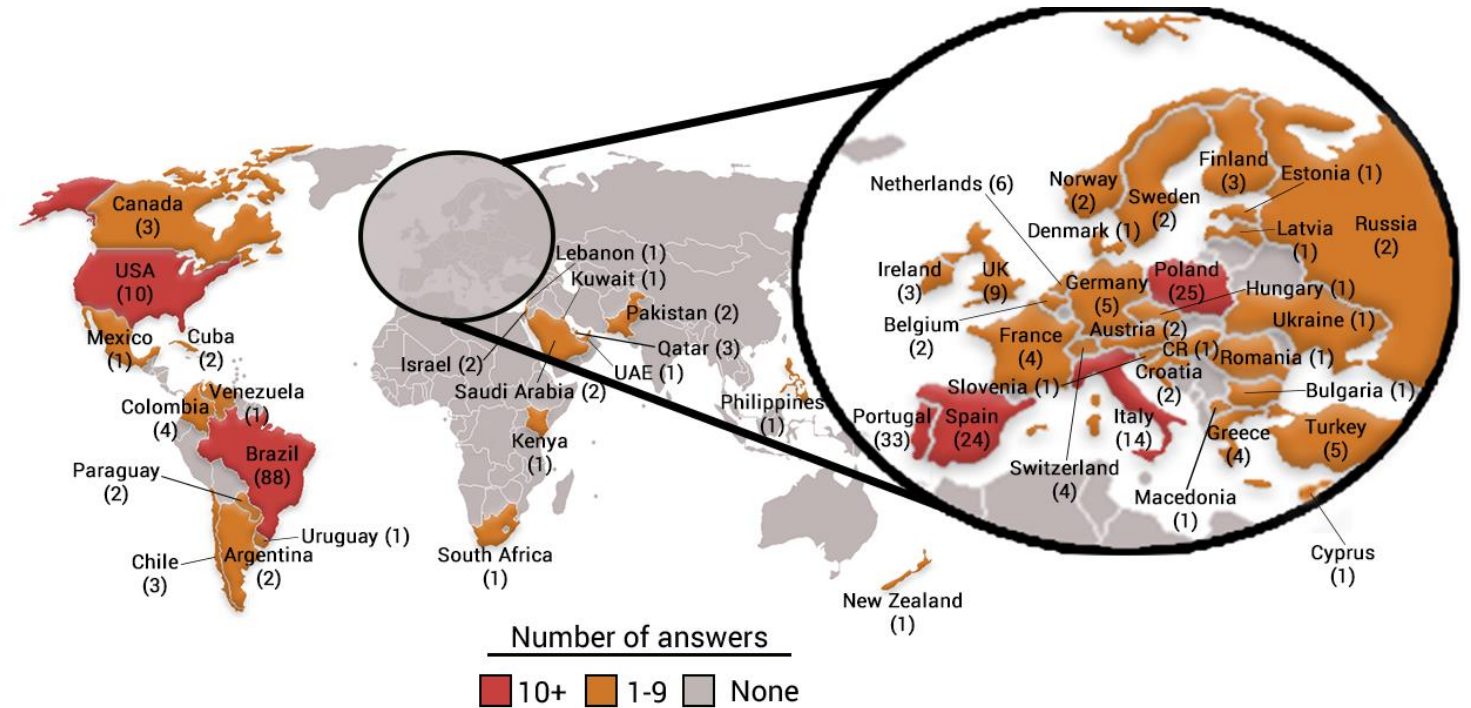
N = 296 responses

Portugal n = 33 responses

56% General Surgeons

48% Level I Trauma center

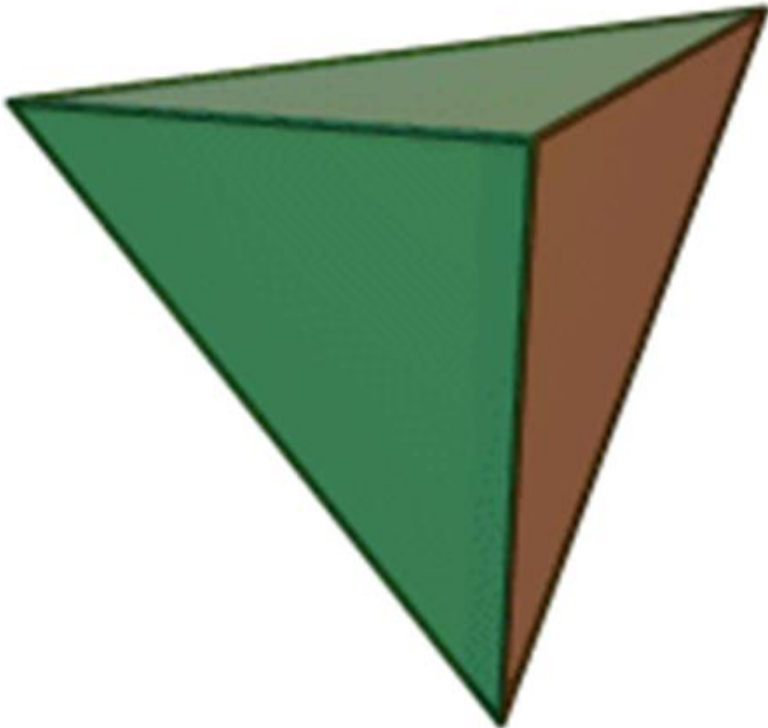
66% of hospitals do not provide postgraduate training in trauma management



Brazil	88	Turkey	5	Ireland	3	Norway	2	Philippines	1	Estonia	1	Denmark	1
Portugal	33	Germany	5	Canada	3	Austria	2	UAE	1	Latvia	1	Mexico	1
Poland	25	Greece	4	Chile	3	Croatia	2	Kuwait	1	Romania	1	Venezuela	1
Spain	24	Switzerland	4	Pakistan	2	Belgium	2	Lebanon	1	Bulgaria	1	Uruguay	1
Italy	14	France	4	Saudi Arabia	2	Cuba	2	Cyprus	1	Macedonia	1		
USA	10	Colombia	4	Israel	2	Paraguay	2	Kenya	1	Hungary	1		
UK	9	Qatar	3	Russia	2	Argentina	2	South Africa	1	Czech Republic	1		
Netherlands	6	Finland	3	Sweden	2	New Zealand	1	Ukraine	1	Slovenia	1		

THE TETRAHEDRON OF COMPETENCE IN TRAUMA CARE

**Surgical / Operative
management**

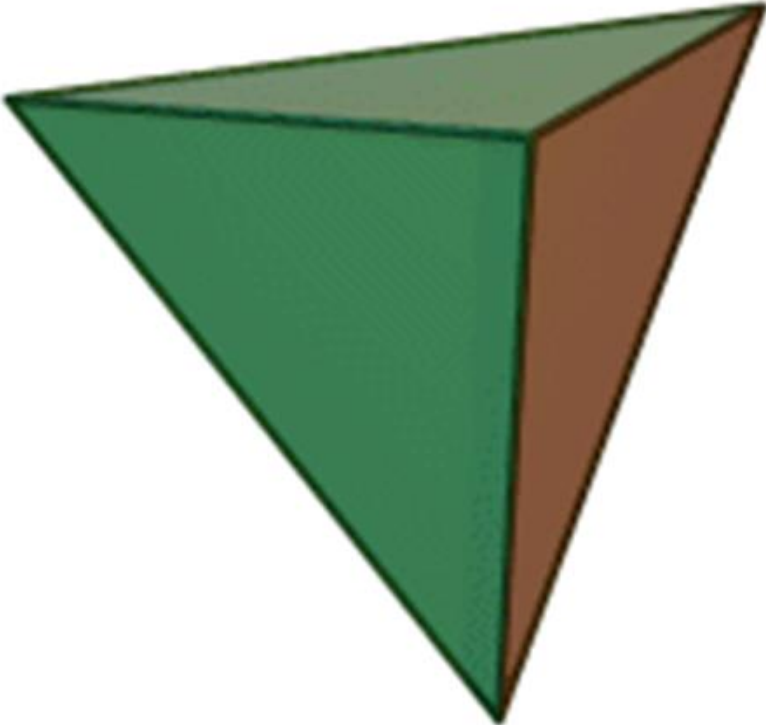


Team approach

**Emergency Room
management**

Slide courtesy of Dr. Carlos Mesquita

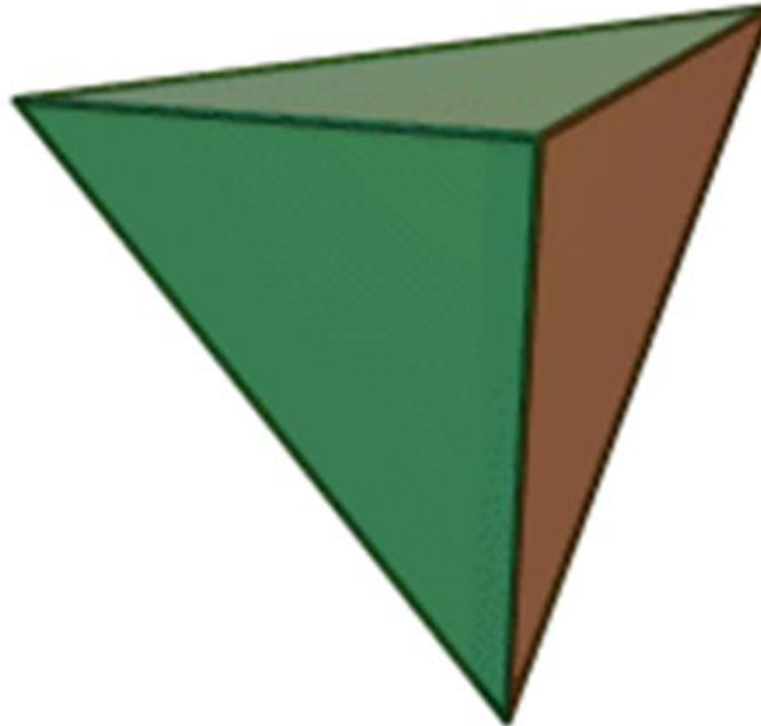
THE TETRAHEDRON OF COMPETENCE IN TRAUMA CARE



ATLS

Slide courtesy of Dr. Carlos Mesquita

THE TETRAHEDRON OF COMPETENCE IN TRAUMA CARE



Individual skills
Junior trauma doctor
As early as possible
Trauma center and non-
trauma center doctor

ATLS

ATLS: Advanced Trauma Life Support

American College of Surgeons and the Portuguese Surgical Society

Since 1998

More than 275 courses and > 4.000 trainees

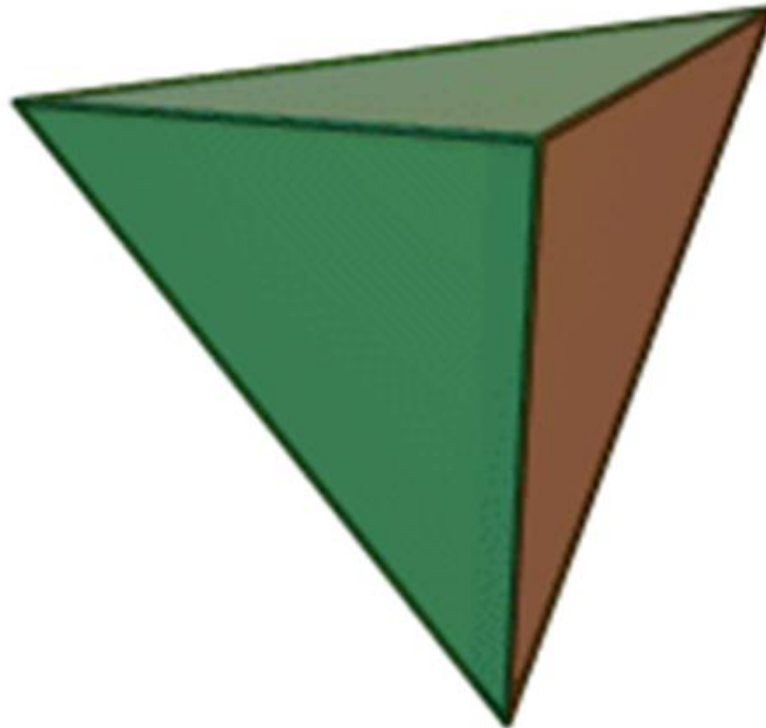
The paradigm of trauma management courses:

- Physiologic approach ABC's
- Treat life-threatening injuries first
- Early transfer
- Skill-based and decision-based
- Instrumental for the “golden hour”

THE TETRAHEDRON OF COMPETENCE IN TRAUMA CARE



Individual surgical skills and
operative decision-making
Advanced surgical trainee
Trauma center and non-trauma
center surgeon
Added anesthetic (DATC) and
nursing (DpNTC) modules



ATLS



DSTC: Definitive Surgical Trauma Care

International Association for Trauma and Surgical Intensive Care

Since 2006

Main goal: Improve exposure of advanced surgical trainees to operative management and decision making in severe trauma

The course for the “second-hour”:

- Solid-organ, retroperitoneal and intrathoracic injuries
- Animal model of severe bleeding
- Damage control techniques
- Decision-making

DATC: Definitive Anesthetic Trauma Care

Equivalent to DSTC but for advanced residents and practitioners in Anesthesiology
First world course in Coimbra – 2009

Now a well-established training platform

- Dedicated program (difficult airway, massive transfusion, neurotrauma)
- Common lectures and case discussions with DSTC
- Common surgical session in the animal lab

DpNTC: Definitive Perioperative Nurse Trauma Care

Equivalent to DSTC but for perioperative nurses

First world course in Coimbra – 2007

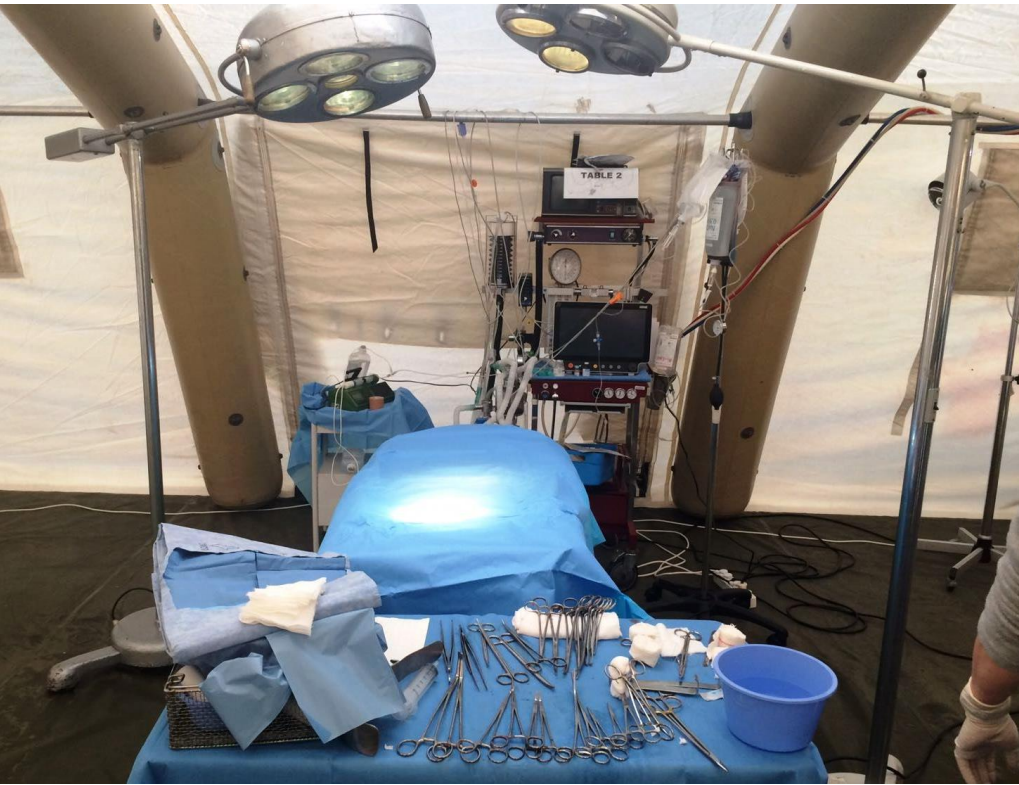
- 13 courses
- 146 nurses trained

Goals:

- Technical specificities of trauma surgery
- Damage control techniques
- “Out of the box” resources – planning and preparation
- Teamwork



Hands-on: Surgical skills session



Hands-on: Surgical skills laboratory

INJURY

Abdominal

Diaphragmatic laceration
Splenic injury
Gastric injury
Duodenal
Pancreatic injury
Small / large bowel injury
Renal injury
Ureteric injury
Biliary injury
Liver injury

Vena cava injury

Aorta or iliac artery injury
Abdominal closure

Pelvic

Pelvic injury

Thoracic

Cardiac stab wound (inflicted with a size 10 blade)

PROCEDURE

Suture repair
Mobilization / splenorrhaphy / splenectomy
Suture repair / lesser sac exploration
Suture repair / patch
Suture / staple distal pancreatectomy
Bowel ligation / suture
Nephrorrhaphy / wedge excision / nephrectomy
Ligation with delayed repair // stent / ureterostomy
Ligation / stenting
Blunt fracture of the liver and haemorrhage control
Hepatic vascular isolation
Control and repair techniques
Mobilisation and control of the retrohepatic cava
Control techniques
Damage control procedure
Temporary abdominal wall closure
Intra-abdominal pressure measurement

Intraperitoneal packing
Extraperitoneal packing

Subxiphoid window
Perform left antero-lateral thoracotomy
Proceed to median sternotomy
Perform cardiac repair
Proceed to clamshell incision
Perform tractotomy and lung repair

Live, fully anesthetized animal model
Under **strict veterinarian supervision**

The instructors perform **controlled injuries**, of increasing severity

The candidates have to proceed to:

- Immediate **control of bleeding**
- **Strategic thinking**
 - Resources
 - Patient physiology
- **Surgical repair**
 - Damage control
 - Definitive repair

Team training

Anesthesiologists



Surgeons



Nurses



Excellent opportunity to train communication

Simulation LAB
SIX Step Approach to Communication

STEP 1
BEFORE Patients arrives to hospital/ theatre

A - Age and other patient details
T - Time of incident
M - Mechanism
I - Injuries Sustained
S - Signs
T - Treatment and Trends

Keep it clear, concise and objective!
Avoid information overflow!
Use direct and closed loop communication!

STEP 2
PREPARE all before patient arrives to hospital / theatre

Surgeon ↔ Scrub Nurse
Anaesthetist ↔ Anaesthesia Nurse

Blood Bank | ICU | Angiography

STEP 3
BEFORE SURGERY

<p>Surgeon:</p> <ul style="list-style-type: none"> • Correct patient • Clinical & imaging findings • Surgical plan 	<p>Anaesthetist:</p> <p>T (temp) B (BP, blood given, blood gas) C (clotting) & other issues</p>
<p>Nurses:</p> <ul style="list-style-type: none"> • All material needed for DCS/Anesthesia 	<p>Confirm</p> <ul style="list-style-type: none"> • Antibiotics • TXA • Blood available <p>Communicate plan for induction</p>

STEP 4
DURING SURGERY

- **AFTER INITIAL SURGICAL CONTROL OF BLEEDING**
What was found?
What's the initial plan?
DCS vs. Definitive surgery
- **PERIODIC: 10 SECONDS EVERY 10-30 MINS**
T **Time** since the start procedure, **Temperature**
B **BP, Blood** volume given so far, **Blood gases**
C **Clotting** (i.e. ROTEM results)
S **Surgical** progress and plan
- **DURING CRITICAL MANOEUVERS**
packing, rotation, clamping, unclamping

Keep a calm and collected attitude:
"It's just another day at the job"

STEP 5
SIGN OUT

Summarize the patient's injuries / physiology
What has been done? Surgeon / Anaesthetist
What has been left untreated?
What is the plan now? Where is the patient going?
ICU | Angiography | CT

STEP 6
DEBRIEF THE TEAM

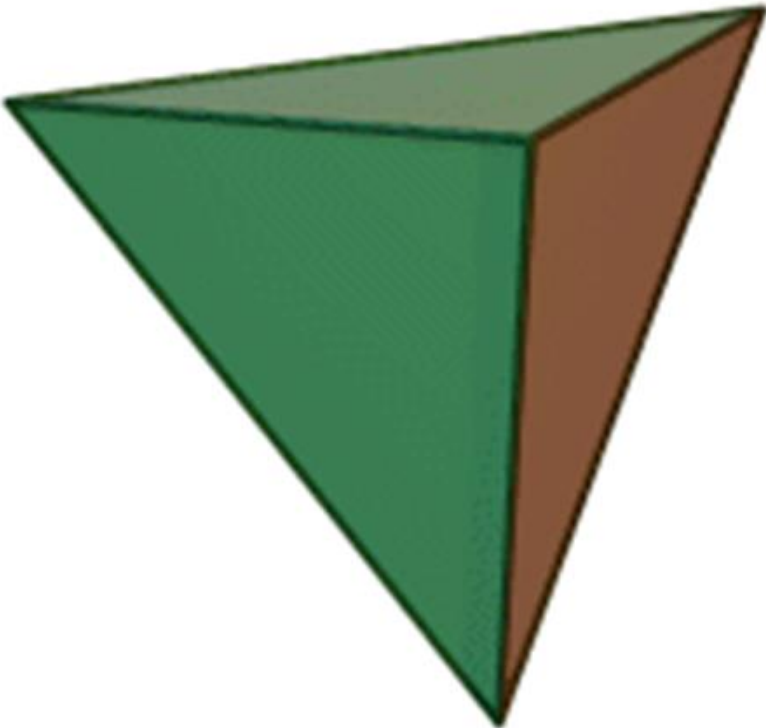
Immediately after the sign-out
What happened?

References:
• Anzilic, Hugh HC, Mearns SJ et al. Human factors in decision making in major trauma in Camp Bastion, Afghanistan. *Aer & Cell Surg Engl* 2015;9(4):262-268
• Hall M, Glavin KL, Fife R. The "10-second-for-10-minute principle" - Why things go wrong and stopping them getting worse. *Bulletin of the Royal College of Anaesthetists* 2008; 26:16.
• Billard K, et al., *Manual of Definitive Surgical Trauma Care*, 4 edition, CRC Press, 2015

The combined courses allow for training also **communication strategy** and **techniques**



THE TETRAHEDRON OF COMPETENCE IN TRAUMA CARE



ATLS



Trauma team training
Focus on non-technical skills
Trauma center management
Can be supported by local initiatives

ETC: European Trauma Course

Team management of severe trauma patients

Organized under the auspices:

- European Resuscitation Council
- **European Society for Trauma and Emergency Surgery**

As a prerequisite ATLS or relevant clinical experience in trauma management

Focus on the team approach:

- Team membership
- Team leadership
- Non-technical skills
- Debriefing after critical event

CHUC Cursos de Equipas de Trauma

One-day course

Local organization

Doctors and nurses part of the ER trauma team

- Previous clinical / technical expertise
- Focus on non-technical skills
- Review of local protocols (massive transfusion, radiology, OR preparation)

“Simulate like we work, and work like we simulate”



MRMI: Medical Response to Major Incidents

Training of multimodal response to mass casualty events

- Medical
- Rescue
- Security

Integration, command and control

Triage at several levels – identification of bottlenecks

Between 2010 and 2019:

- 21 courses
- > 1500 agents



Current challenge

Decreased operative exposure to trauma

Decreased operative exposure to thorax, great vessels, retroperitoneum

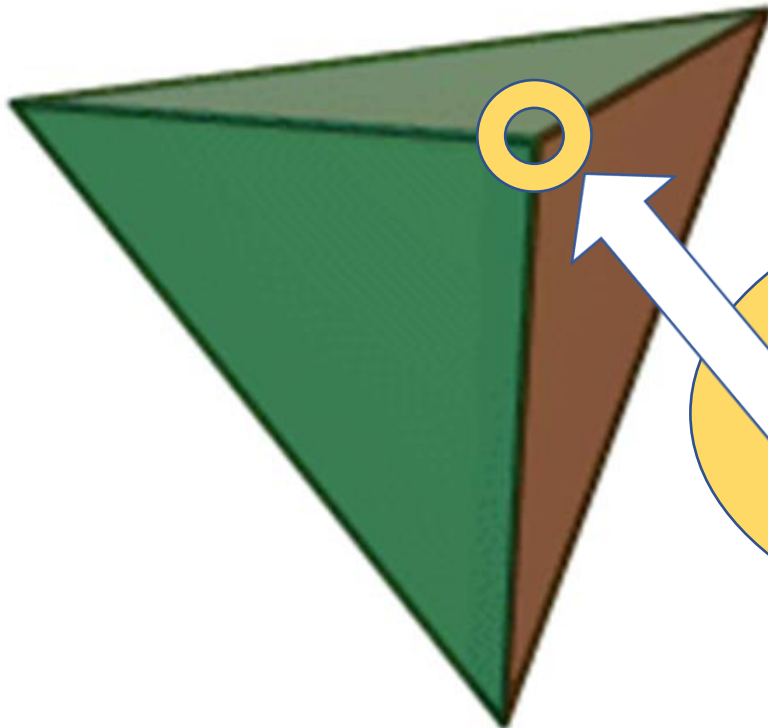
Increased relevance of laparoscopic surgery

Increased subspecialization in segments of visceral surgery

Decreased autonomy in decision-making

How can we attain and maintain competence in trauma management?

THE TETRAHEDRON OF COMPETENCE IN TRAUMA CARE



**Continuous
Specific
Training
Program**

ATLS

Training program in Trauma and Emergency Surgery

Complimentary surgical training program

On the basis of transversal competence, rather than a longitudinal one

Main objectives:

- Physiology-based decision making
- Damage control mindset
- Dexterity in simple, life-saving manouvers in the chest, abdomen and retroperitoneum

UEMS Board qualification in Emergency Surgery

Integration of undergraduate training

Trauma team training is mostly absent from undergraduate teaching

Coimbra University has started an elective in 2020

“Trauma, Emergency and Catastrophe”

- Initial management of the severely injured patient
- Principles of prehospital response
- Medical response to multiple victims
- Non-technical skills in team approach

Hopefully will attract

- Clinicians
- Instructors for current and future trauma courses



Our inspiration



Carlos Mesquita, MD



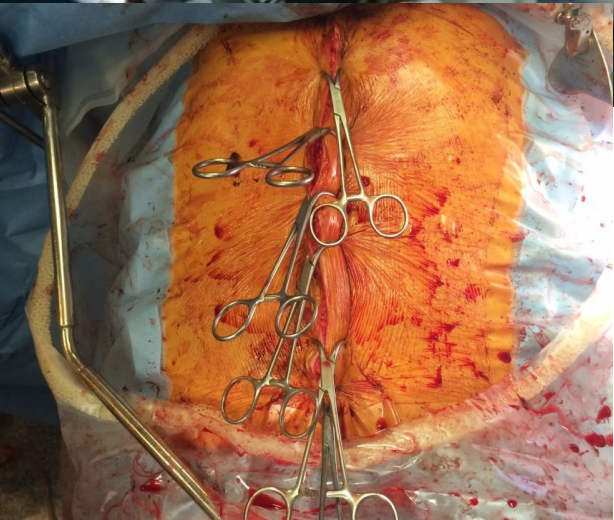
Sérgio Baptista, MD



Associação Lusitana de Trauma e Emergência Cirúrgica
Lusitanian Association for Trauma and Emergency Surgery

The New Age Trauma Group: Excellent team atmosphere





FMUC FACULDADE DE MEDICINA
UNIVERSIDADE DE COIMBRA



Lusitanian Association for Trauma
and Emergency Surgery

“Trauma surgery is stabbing someone back to life”

Thank you !

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