

Military and Disaster Medicine

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Tartu 2022



Overview

My experience during my tour in Afghanistan

Unique aspects of military medicine

Mass casualty management

The legal side of military medicine

War in Afghanistan

- 9/11 attacks in the US lead to George Bush initiating the “war on terrorism”
- Start of the war in Afghanistan on October 7th 2001
- According to the Bonn Agreement and interim government led by Hamid Karzai is installed on December 5th 2001 and an international peacekeeping force is established
- “end of major combat operations” on May 1st 2003
- security responsibilities handed over to ANDSF in mid 2013

Contested

Government Control

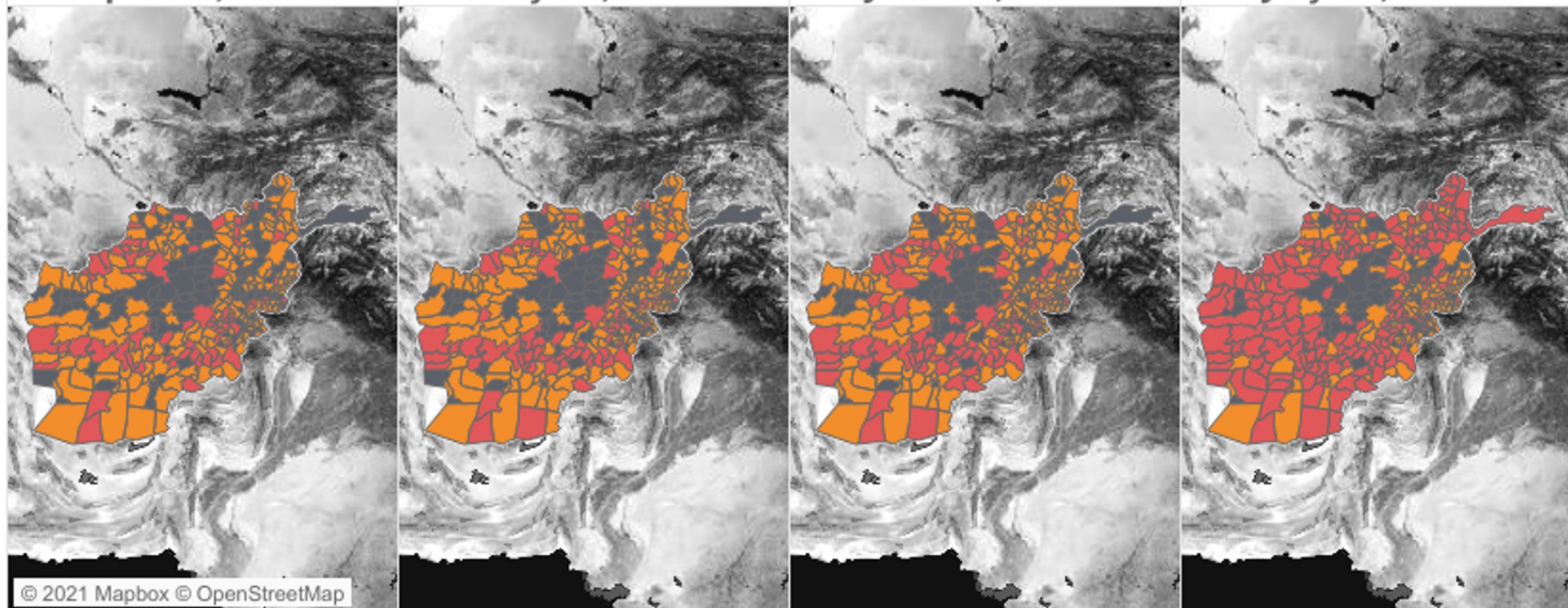
Taliban Control

April 13, 2021

May 11, 2021

June 16, 2021

July 20, 2021



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- **On August 15th 2021 Kabul falls, last NATO troops leave on the 30th**



HKIA





XR

lab

ED

OR

ICU

ward

logistics



19:35

EXIT

HALVARD

M

100

Trauma teams

- team leader + 2 MOs + anaesthesia + nurses
- designated surgical teams for each
- multinational setup, facilitated by mandatory ATLS training
- mostly ROLE 2 level treatment of battle injuries
- issues regarding logistics and space





Non-trauma

- 24 hr shifts in the ED and on the ward
- MET team
- COVID and isolation
- treatment of non-battle injuries and medical emergencies
- logistical issues - diagnostics, treatment, force maintenance



NO SMOKING
WITHIN 50FT
OF ENTRANCE

General situation

- low but constant threat of violence
- frequent training exercises to maintain readiness
- debriefs and workshops
- lots of free time











Military medicine

Until the middle of the 19th century public health and sanitation was poor, causing lots of deaths outside of combat and trauma care was primitive

Widespread recognition of need for modern medical structures at the turning of the century

WW I: ambulances, aid stations and field hospitals, improvements in wound care, surgery led to a decrease in mortality

WW II: widespread use of i/v fluids and transfusions, antibiotics, endotracheal intubations, improvements in thoracic and vascular surgery

Military medicine

Major advancements during the last two decades:

bleeding control: CAT tourniquets, clotting dressings, self application

fluid resuscitation: (fresh) whole blood transfusions, departure from massive crystalloid infusions towards permissive hypotension

improved point-of-injury medical care

improved evacuation logistics, 10-1-2 rule for critical patients

damage control surgery/resuscitation

Differences from civilian medicine

Patient population: major focus on traumatic injuries and different injury composition (penetrating injuries); generally healthy and fit young individuals

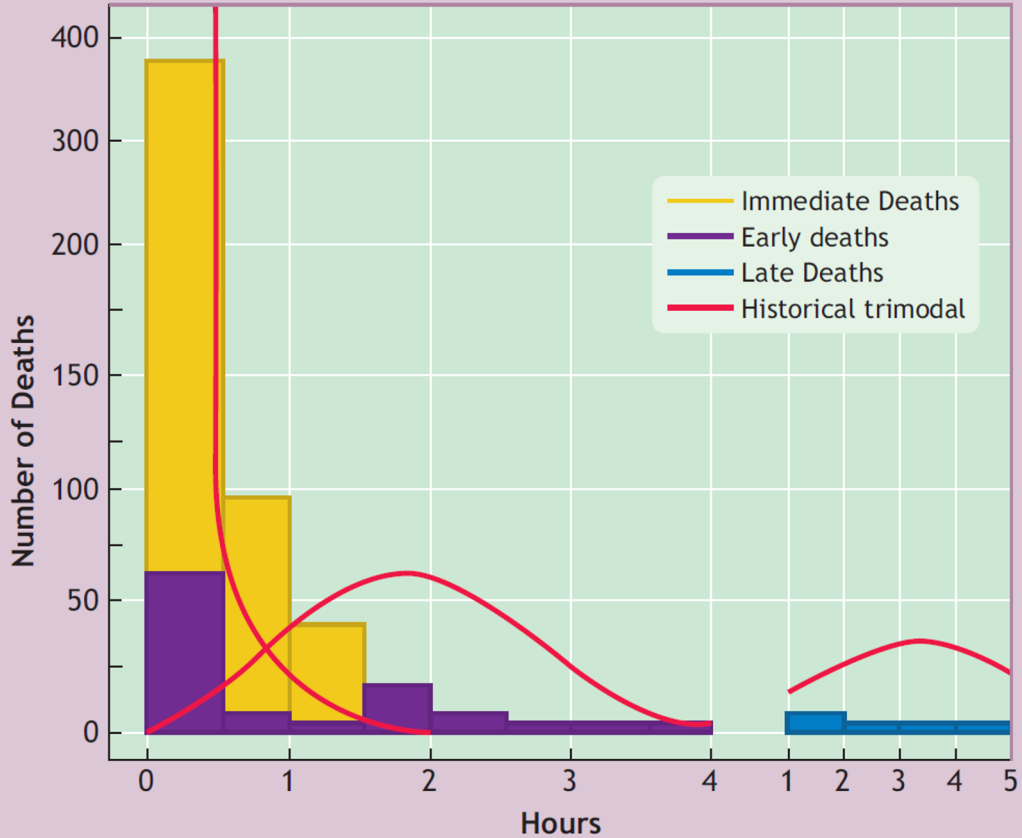
Military focus: patient care may come second to combat readiness, focus on early rehabilitation and possible return to duty

Complicated logistics: limited care under fire, multiple levels of progressively more sophisticated care

Limited resources: diagnostic and therapeutic equipment is limited, resupply is often unreliable, care must be provided under threat of hostile action

Increased number of casualties, frequently mass casualties

Timing Distribution of Trauma Deaths Compared With the Historical Trimodal Distribution



Injury mechanisms

High impact GSWs: extensive internal tissue damage, kinetic energy often transferred to distant tissues, damaging bones and blood vessels

Fragmenting weapons: modern shells are less lethal but have a higher chance of generating injuries leading to increased morbidity

Explosives: combination of blunt+penetrating trauma, burns and overpressure injuries

More conventional trauma remains: motor vehicle collisions, falls, lacerations etc

Trauma care

Care under fire: first aid provided by self and squad level focusing on massive hemorrhage and airway patency, focus on fire superiority

Tactical field care: cABCDE approach once no longer under effective fire

Damage control surgery: aggressive, early reversal of hemorrhage and coagulopathy with quick transition/evacuation to the next level of care

Definitive care deferred to advanced facilities, often civilian



Logistics

Main goal is to maintain combat readiness - treatment and evacuation is dependent on the tactical situation

Two different approaches:

A: *scoop and run* - focus on early evacuation to advanced care

B: forward surgical/advanced medical teams

Evacuation chain from point of injury → ROLE 1 → ROLE 2 → ROLE 3/4



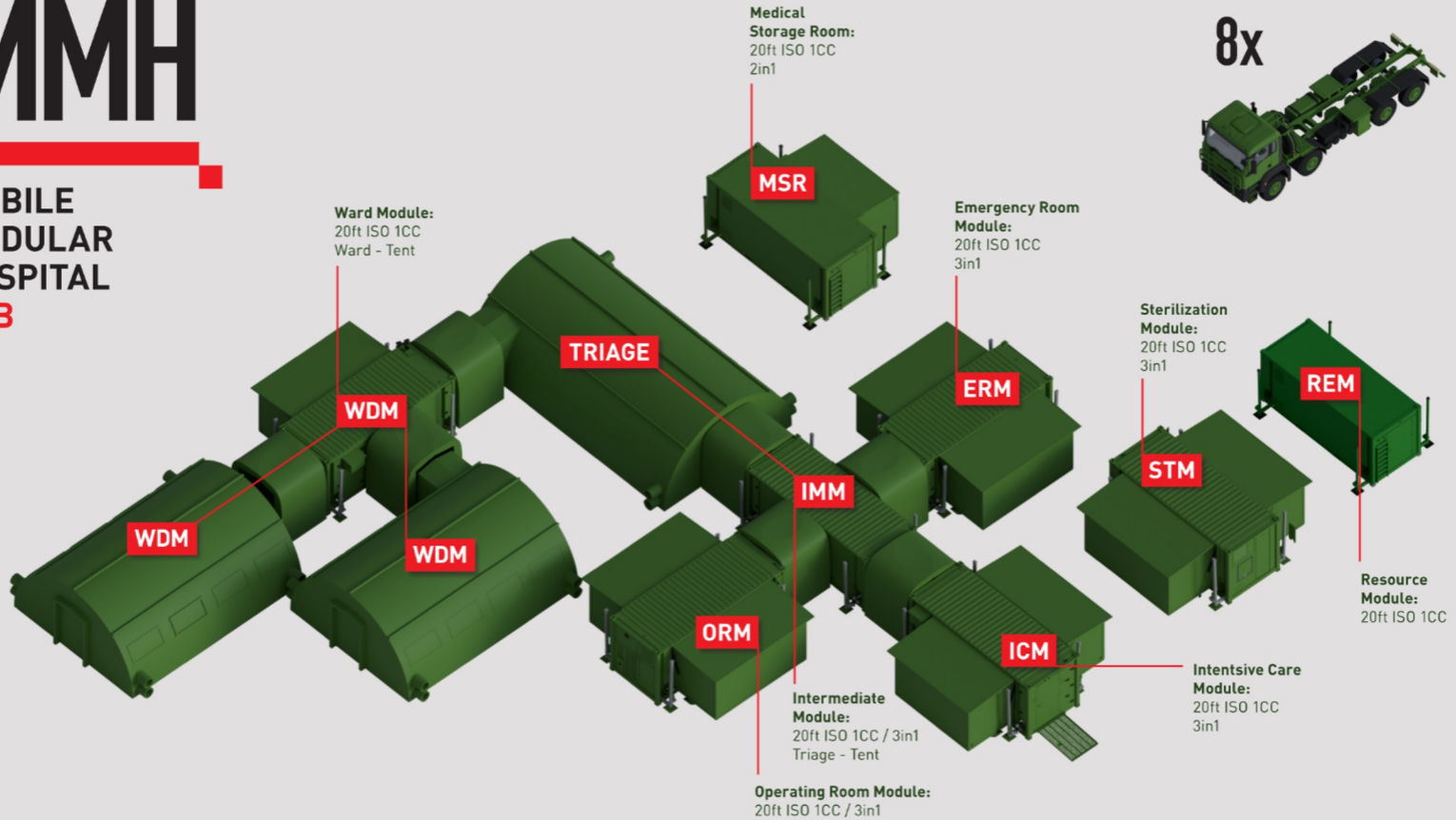






MMH

MOBILE MODULAR HOSPITAL R2B







What defines a mass casualty incident?

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major incident - a situation where the location of the incident, number of casualties and/or type of injuries mandates the use of emergency procedures and/or reserves

mass casualty event - an event where the casualties exceed the resources to provide complete individual care

Both definitions stress the importance of the balance between **available** and **required resources**

Complex incidents - damage to infrastructure or medical resources

Structured approach

Command & control

Safety

Communication

Assessment

Triage

Treatment

Transport

Structured approach

Command & control

COMMAND & CONTROL

Safety

Command: vertical authority within each service

Communication

Control: horizontal authority between services

Assessment

Cordoning in order to effectively control resources and keep out third parties

Triage

Command tiers:

Treatment

Gold: strategic; for regional coordination

Transport

Silver: tactical - area of incident

Bronze: specific focus of activity

Structured approach

Command & control

SAFETY

Safety

Self: risk assessments, PPE, safe distance etc.

Communication

Scene: ambulance safety officer responsible for all personnel on site

Assessment

Survivors: removal away from hazards, dry and warm covering, decontamination

Triage

Treatment

Maintain safety until incident is cleared and all resources have left scene

Transport

Structured approach

Command & control

COMMUNICATION

Safety

Usually tends to be the greatest point of failure

Communication

Goal is to be complete, accurate and timely

Assessment

Handheld radios, cellular, runners - depending on the situation

Triage

Treatment

Transport

Structured approach

Command & control

ASSESSMENT

Safety

Initial assessment:

Communication

Major incident declared

Assessment

Exact location

Triage

Type of incident

Treatment

Hazards

Transport

Access/egress

Number of casualties (approximation)

Equipment (and services) **needed**

Continuous reassessment: **HANE**

Levels of medical care

Triage - primary (sieve) and secondary (sort)

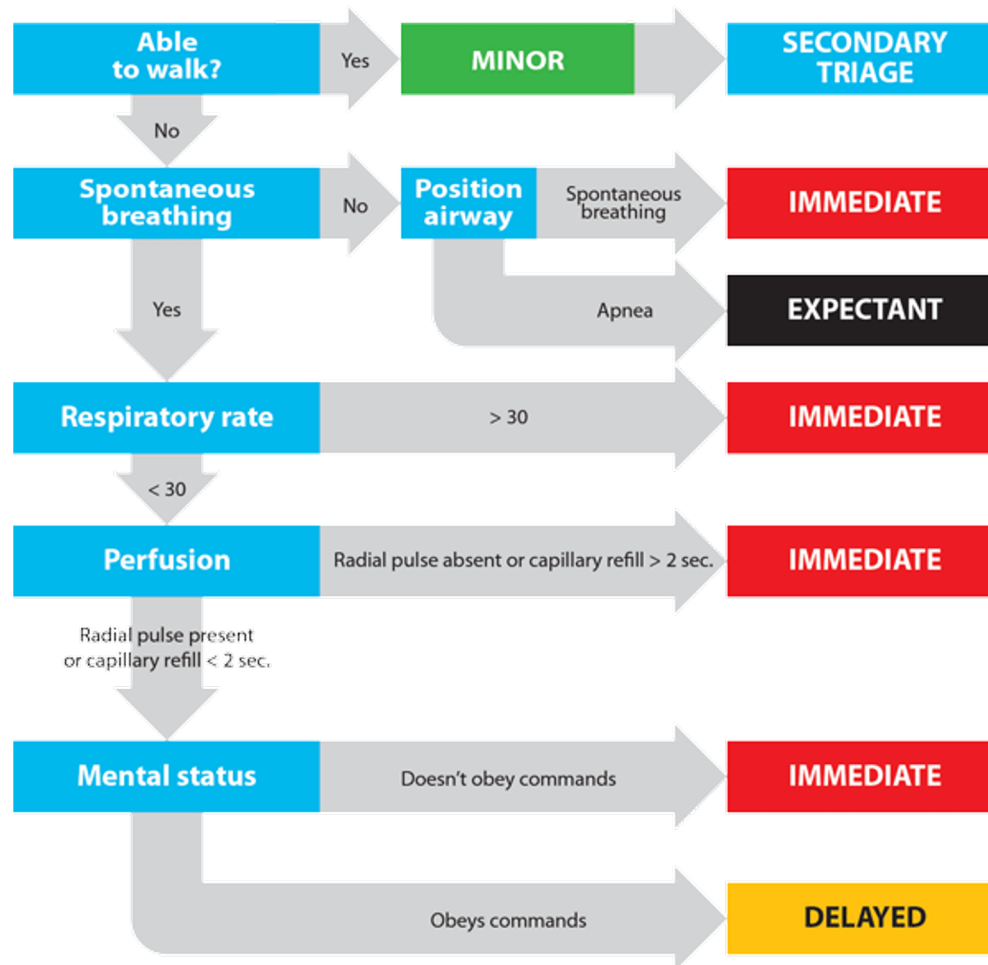
First aid - hemorrhage, airways, breathing

Resuscitation - generally performed in the casualty collection point; oxygen, fluids, traction splints, c-collar, pain relief

Advanced medical care - dependent on resources and situation, includes surgical airways or intubation, ventilation, CPR etc.

Preparation for transport - splints, vacuum mattresses etc.

Figure 1: START method for adults



RTS coded values	Respiratory Rate	Systolic Blood Pressure	Glasgow Coma Scale score
4	10–29 ("normal")	>89 ("good radial pulse")	13–15
3	>29 ("fast")	76–89 ("weak radial pulse")	9–12
2	6–9 ("slow")	50–75 ("femoral pulse")	6–8
1	1–5 ("gasp")	1–49 ("only carotid pulse")	4–5
0	0 ("no respiration")	0 ("no carotid pulse")	3



“Failing to plan is planning to fail”

Disaster preparedness

Prevention - striving to prevent incidents from human causes as much as possible

Planning - EMS, hospitals, potential disaster locations, regional and national emergency resources, SOPs for disaster management

Equipment - PPE, medical equipment requirements, decon etc. In civilian context readiness to manage pediatric casualties is always necessary

Training - education (eg MIMMS), exercises (“table top”, triage, comms, interdisciplinary)

Education of the general public - eg. Stop the Bleed campaign in US

Legal aspects of military medicine

ICRC - founded in 1863 as a neutral relief agency

The Geneva Conventions: first adopted in 1864 by 12 European states

1st Convention (1864→1929→1949)

2nd (1949) for maritime warfare and wounded

3rd (1929→1949) for the treatment of prisoners of war

4th (1949) for the treatment of civilian population in a war zone

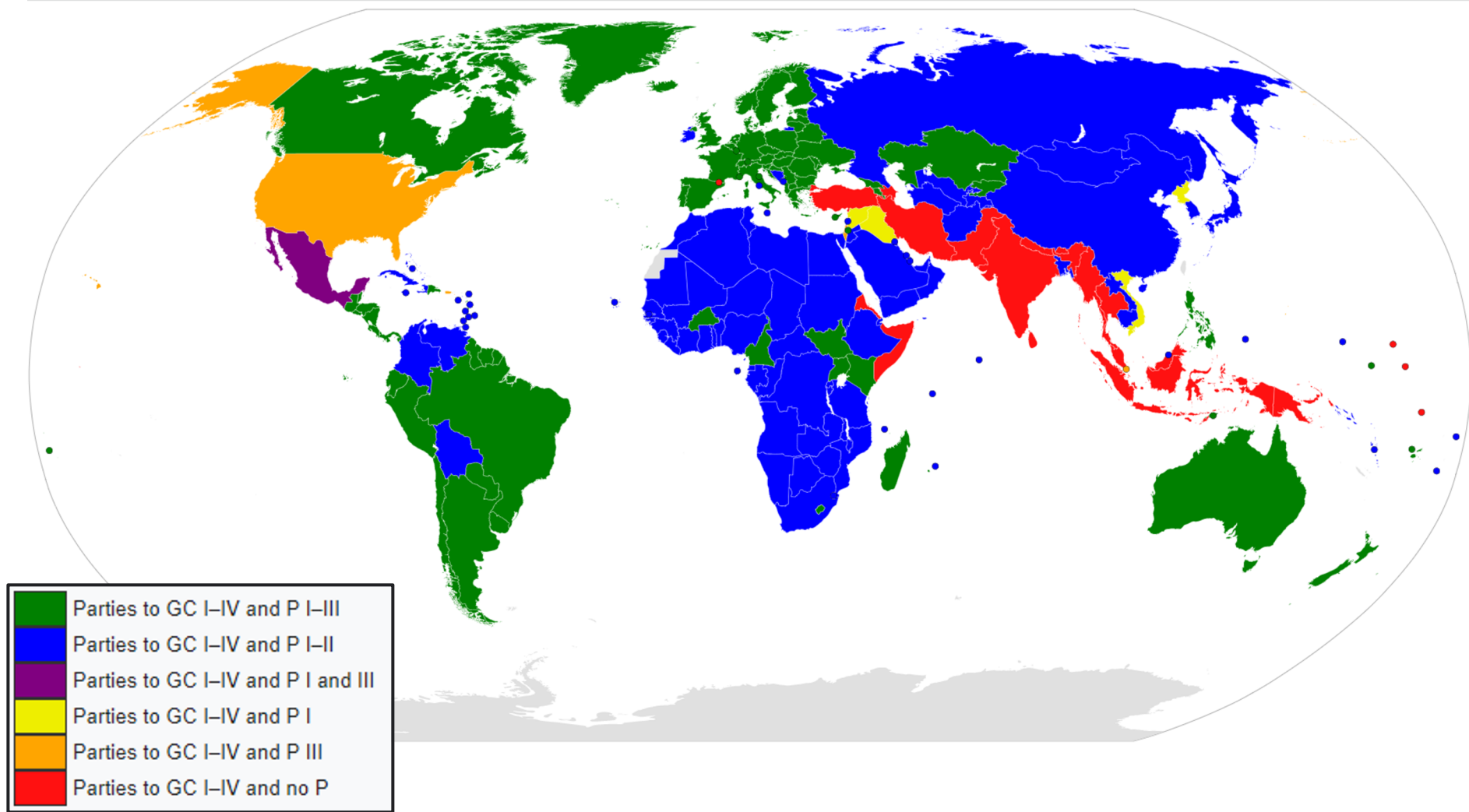
1st Protocol (1977) additions for international conflicts

2nd Protocol (1977) additions for internal conflicts

3rd Protocol (2005) establishing the Red Crystal

The Hague Conventions (1899, 1907): historical

Geneva Protocol (1925): prohibits chemical and biological warfare



Contents of the Geneva Conventions

Intend to protect people **who are not or no longer taking part of hostilities** during and armed conflict, including wounded/sick, POWs, CIVs. Also apply if only one party of the conflict is a signatory

Soldiers and POWs are not tried unless suspected of committing war crimes

Grave breaches (= war crimes) are generally willful killing, torture, inhumane treatment, willful injury to body or health, compelling to serve under hostile armed forces, deprivation of a fair trial, taking hostages and unlawful deportation, transport and confinement

Contents of the Geneva Conventions (cont.)

Medical facilities and equipment, civilians providing aid and personnel performing **exclusively** medical duties must be protected

All combatants must receive medical aid and humane treatment; the dead and wounded must be identified and information given to the opposing party

The IRC and other impartial humanitarian organisations must be allowed to provide protection and relief

POWs must be treated humanely, may not be tortured or coerced

Civilian population, objects and resources necessary for survival must be protected

Resources

Advanced Trauma Life Support Student Course Manual, 10th edition, 2018

Major Incident Medical Management and Support, 3rd edition, 2012

Battlefield Advanced Trauma Life Support, 2000

Tactical Combat Casualty Care (TCCC) Guidelines for Medical Personnel, 2021

Tintinalli's Emergency Medicine - A Comprehensive Study Guide, 9th edition, 2020

Tactical Combat Casualty Care Quick Reference Guide, 1st edition, 2017

War and Trauma: A History of Military Medicine, Charles Van Way, 2016

Lessons From the Tip of the Spear: Medical Advancements From Iraq and Afghanistan, 2012

Summary of the Geneva Conventions of 1949 and Their Additional Protocols, American Red Cross, 2011

Wikipedia: Geneva Conventions, War in Afghanistan

<https://www.cfr.org/timeline/us-war-Afghanistan>

<https://www.icrc.org/en/war-and-law/treaties-customary-law/geneva-conventions>

Battle of Kabul - HKIA, presentation by Dean Peace, 2021