



**Combat Medical System**  
for ArmA 2 game

## **Combat Medical System**

Readme & documentation

Summary of CMS documentation

**CMS Team**  
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## About Combat Medical System

**Combat Medical System** is a modification for **Arma 2**.

**CMS** is a medical system based upon the **Trauma Combat Casualty Care** courses taught to thousands of US and UK military and civilian law enforcement medical professionals. This system will allow for players to feel the stress of trying to treat their teammates in the heat of battle in the most austere of situations, it will allow for an expanded medical system based on reality.

This document contains basic documentation and instructions on how to use CMS. More detailed documentation is available in the Bohemia Interactive Forums release thread.

### Requirements:

- Combined Operations
- Community Base Add-ons (@CBA)
- Advanced Combat Environment (@ACE) (OPTIONAL)
- Advanced Combat Radio Environment (@ACRE) (OPTIONAL)

*This modification is required to be run on both the server and all clients!*

### Installation:

We strongly recommend using mod folders. You should never put addons inside the default addons folder.

Extract the contents of the ZIP file into your:

*C:\Program Files\Bohemia Interactive\Arma2 folder.*

Then either use a mod folder launcher or modify your start up link include the @CMS Mod folder eg:

*"C:\Program Files\Bohemia Interactive\Arma2\arma2oa.exe" -mod=@CMS*

Once you launched your mod, you can place down the module in the editor (F7) '(CMS) *Combat Medical System*.

CMS is enabled once you launch your mission. For further usage please read the documentation provided with this download.

### Reporting Issues or requesting features:

Please use the [Bug tracker](#) to report any issues or feature requests.

## Contact

The team lead (**Glowbal**) can be contacted on the Bohemia Forums through the private messaging system or release thread of this software on said forums.

Additionally you can contact the CMS team through **Skype** in the dedicated Skype channel. Contact **Rye** on the Bohemia Interactive forums for details.

## Classnames

### Weapons:

"cms\_firstaidkit"

### Magazines:

"cms\_bandage\_basic"

"cms\_packing\_bandage"

"cms\_tourniquet"

"cms\_splint"

"cms\_morphine"

"cms\_epinephrine"

"cms\_plasma\_iv"

"cms\_blood\_iv"

"cms\_saline\_iv"

"cms\_quikclot"

"cms\_nasopharyngeal\_tube"

"cms\_plasma\_iv\_500"

"cms\_blood\_iv\_500"

"cms\_saline\_iv\_500"

"cms\_plasma\_iv\_250"

"cms\_blood\_iv\_250"

"cms\_saline\_iv\_250"

"cms\_opa"

"cms\_bandageElastic"

"cms\_liquidSkin"

"cms\_chestseal"

"cms\_atropine"

## Features

- ACE Support
  - Options in the ACE interaction menu for medical, drag, vehicle casualty management
- ACRE Support
- Bleeding
- Custom damage handling & hit detection script
- Custom equipment and items with models
- Various treatment possibilities including tourniquets, IV's and medication.
- Dragging, carrying, loading/unloading of casualties (inside vehicles)
- Overdose
  - When given/taken too many drugs, has adverse effects
- Refill blood volume with IVs
- Heart Rate, Blood Pressure
  - Including various possible conditions such as cardiac arrest
- Medical Menu
  - Visual representation of injury status
  - Various options for treatment, examining and more
  - Shortcut keys for most actions
- Triage card
  - Triage Card system with treatment history and casualty tier levels
- Screen effects for players
- Option to disable/enable CMS
  - All units
  - Player Teams only
  - Players only
- Vehicle Casualty management
  - See all vehicle crews medical status
  - Interact with vehicle crew from inside or outside the vehicle
- Various modules and settings to make CMS easier or harder.

## Features Explained

### Bleeding

When a person gets an open wound, he/she will start to bleed. After an extended period, the person will have lost such a large amount of blood that he/she can pass out and eventually die if left unattended.

When a player is bleeding, he/she will get a visual representation on the screen with a flashing red image. A lower waiting time between the flashes, means heavier bleeding.

### Heart Rate

Heart rate is influenced by a multiple factors. The amount of bleed in the unit's veins is one of them. The less blood, the harder the heart will pump. However if the blood pressure is high it will go slower regardless of blood volume.

Heart rate is also affected by movement. A person can get a raised heart rate by sprinting for extended periods.

### Handle Damage Script

Getting hit by a bullet, catch in an explosion or being involved in a car crash all damage the person. CMS got a custom made script that handles this damage and determines what kind of injury has been taken and the results of this.

Most types of damage will result in open wounds. However a car crash can sometimes only give pain or in future versions, broken bones, a collapsed lung or internal bleeding. The same applies to explosions and pressure waves.

The most common type of injury will be the bullet wound. There are obviously many different types and variations of bullets. The most basic ones have been taken into account with the calculations.

It also looks at where the person has been injured; a head injury can result in dead much faster as a leg injury. Likewise an injury to the torso can cause more damage if successful due to the presence of vital organs.

### Enable/Disable CMS



We like to make everything as customisable as possible to suit your play style. Part of this is allowing you to decide what units will run CMS and which ones will be excluded. For many Communities, only having CMS for players is enough. Some also want to include friendly AI or every AI on the map.

For this, we have included three modules. When placing multiple modules on the map, the one that limits the most counts. This means if you place down **Enable Player Teams** and **Enable Player Only** modules, **only players** will have CMS **enabled**.



## Advanced Wounding Module



The advanced wounding module is designed to provide extra challenge for medical personnel during a CASEVAC and to force a player to visit a medical facility (any medic tent) after being injured.

In essence it means that once you bandage a medium or large wound, the wound gets put into a list with bandaged wounds, instead of disappearing entirely. These bandaged wounds can partly open again, requiring a new bandage to be placed. This simulates soaked bandages. Small wounds will not be placed in the list.

The type of bandage matters as well: While packing bandages are highly effective at stopping large wounds from bleeding, they will require a new bandage later on, for example.

## No instant death Module



No instant death is a basic revive script that instead of killing a unit, put's the unit in an unconscious state for a defined amount of seconds. Default is 10.

After the timer runs out, the unit dies, unless before that time the unit has been revived using a medkit in a medical facility. It is meant to make CMS a little easier.

Use the following variable to adjust the timer:

*CMS\_REVIVE\_TIMER = 60; // NUMBER, amount of seconds before a unit dies if no proper treatment has been given*

## Medical Roles Module



When enabled this enforces medical roles for treatment: A regular unit is not able to perform all actions anymore. Things such as applying an IV would now require a CMS defined medic.

To define someone as a medic, simply use the setvariable scripting command:

*this setvariable["cms\_medicClass",true];*

## Medical Clutter

CMS has a clutter script for some treatment options. It will spawn used items around the unit you are treating. It will automatically de-spawn after a certain amount of time. Since this is running client side, you can adjust the timer to whatever amount of seconds you like.

To do this, go to your **userconfig** folder. Open the **cms** folder and inside you find a file called **client.hpp**.

Open this file with notepad or any other text editor. Inside, find the variable called **CMS\_CLUTTER\_CLEANUP** and adjust the number.

## Medical Menu

The medical menu from CMS is divided into three parts. The left part is examining the patient as well as any movement related options.

The middle displays all information and information related options such as the triage card, which is a toggle able option. It also contains the visual representation of the patient's body injuries for open wounds. If the patient has any open wounds on one of his for body parts, it will show up as red. The darker the part, the more pressing the injury is.



CMS Medical Menu

The right part of the menu contains all the treatment related options, such as bandaging, medication and CPR.

On the top of the menu, little symbols can appear providing additional information over the patient. These symbols can be: *Losing too much blood, Has a tourniquet, has an IV.*



The triage card, which is part of the information part of the menu, is useful for medical teams. It will display what kind of treatment has been given to the patient.

In the example right, you can see that this person has been given one times (1x) morphine and Epinephrine. This can assist you in determining what patient needs the most urgent attention and what has already been given.

The triage card also contains triage levels. You can assign those with the buttons on the right of the card.



## Treatment & Usage

### Assessment

It is essential when treating a casualty that you fully assess each of the areas of the casualty to determine not only the injuries but the priority of each in severity. You must then make note of the triage card due to:

- A. You need to take note of the casualties' stats.*
- B. To be check what if any medication has been given.*

Once all these steps have been established you can then move on to treatment.

### Treatment

Blood is essential above all things in keeping a casualty alive. The volume of liquid in a casualties system affects the heart rate, blood pressure and ability to pump medication around the system.

A reduction in the volume of liquid massively affects the body and in turn is a hindrance to recovery. This may not does mean throwing bag after bag of blood into a casualty, in fact without first stemming the blood flow from a wound you may as well throw it on the floor.

*It is essential you stem all blood flow before anything else!*

However you may come across a casualty with such significant blood loss that you may need to be introducing liquids into the system as you are stemming blood flow. This would require two persons on the scene; one person to give fluids and one to stem blood flow.

In the event of this occurring and you are alone, you must continue to give fluids in-between every attempt at stemming blood flow.

Once you have reduced blood flow from the wounds, you can then begin to increase the blood volume. In the field this will be done with the application of Saline. Once you are satisfied that the patient has sufficient blood volume you can begin to apply medication making a new note of the triage card to check the casualties stats.

### Blood and Plasma IV

Blood and Plasma must never be taken into the field. This is due to:



- A. It would become useless unrefrigerated in a matter of 30 minutes.*
- B. If it burst on your person, you would be covered in it.*

There are specific ratios in which Blood and Plasma must be given, these must be adhered to, to ensure quick and speedy recovery.

1 BLOOD = 1 PLASMA

**Saline**

Saline is a solution of water and salt. It is given to a patient who has lost enough blood for it to affect the body due to its lack of blood volume known as "Hypovolemia". This can be carried in the field and applied as often as required.

**Medication**

Medicine is a wonderful creation and can be used to alleviate many problems. However it can also be deadly when used incorrectly. You must after each application of medication, check your casualties stats and take note of the effect of the medication has upon them.

**Morphine**

Morphine is used to alleviate large amounts of pain. Has an effect similar to Heroin due to its opiate properties. Must only ever be given once, and only when bleeding has been reduced to a minimum. Morphine must never be given to a casualty with a low heart rate, as it can stop the heart.

**Epinephrine**

Used to increase heart rate and blood pressure and alleviate unconsciousness. Epinephrine is a synthetic form of Adrenaline, which is naturally produced in the body. It can also be applied to counter-act the effects of Atropine. Be careful though, as it may only be given once.



*Epinephrine must never be given to a casualty with a high heart rate or blood pressure.*

**Atropine**

A muscle relaxant used in the field to reduce heart rate. You may find a casualty with a dangerously high heart rate. It can also be applied to counter-act the effects of Epinephrine. When this is the case you can apply Atropine to reduce the pressure on the heart. Given as required.



## Equipment

### Bandages

#### Field Dressing

A regular bandage used to stem blood flow.



#### Elasticated Bandage

A bandage with an elastic property, that when stretched over a wound due to its elasticity will contract applying increased pressure and therefore an increased ability to stem blood flow.



#### Quikclot

These are normal bandages that have been infused with a natural anti-coagulant (makes blood clot). When applied these bandages release the impregnated anti-coagulant and make the blood clot, increasing the stemming of blood flow from a wound.



#### Packing Bandage

These bandages are used to plug a large opening in a wound, essentially filling the gap within the body where tissue may have been lost and the application of any bandage is not sufficient to stem the flow of blood.



#### CAT (Combat Applied Tourniquet)

This is a piece of equipment used to stem blood flow by compressing an area above the wound on a limb. Although this is the best way to stem blood loss in a casualty, it must be removed after 5 minutes to ensure the limb does not become further damaged by lack of oxygen.



## Advanced

### Splint

When the bones of a limb have been broken or fractured, it is essential to immobilise the limb to ensure further trauma is restricted. The bones of a broken or fractured limb can shift internally. This may cause further internal trauma, or in some instances rupture through the skin. Applying the splint reduces this to almost nil.



### Nasopharyngeal Tube

This is used on a casualty when they have sustained too much damage to the mouth area, and you are unable to access the airway. It is used by inserting the tube into the nasal passage and round down the back of the throat to create another airway access point.



### Liquid Skin

When a casualty has sustained burns, it is important to cover the burnt area in order to prevent infection which is high in burn cases. Liquid Skin is applied to the burnt area and creates an artificial skin-like coating which prevents foreign bodies entering the burn site, and reduces scar tissue.



### Chest Seal

For use with open sucking chest wounds (Pneumothorax). It features a circular design and one-way valve designed to let air and blood escape while preventing either from re-entering.



## Hands on

There will come a time when you need to treat a body using your own physicality. These are the fundamentals of basic medicine and all soldiers should be trained in these techniques, and also when it is appropriate to apply them.

### CPR (Cardio-Pulmonary Resuscitation)

This is done by manually pumping the heart of a casualty, when they no longer have the ability to do so themselves naturally.

### Direct Pressure

When a casualty has sustained an injury that is bleeding, you may be faced with a situation where you have applied a bandage but bleeding still continues. By applying direct pressure you are using your hands to basically create a seal over the wound whilst also pressing down hard to minimize the gaps in the wound between the damaged tissue.

## Credits

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