

## KONFERENČNÍ ABSTRAKT / CONFERENCE ABSTRACT

# USE OF LOW TITRE O WHOLE BLOOD IN THE CZECH REPUBLIC

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### Background

Massive bleeding is a leading cause of death in polytrauma, especially in young people. Traumatic hemorrhagic shock in adults has a mortality approaching 20% at 24 hours post-injury. High morbidity and mortality is caused by the „lethal diamond“ – hypothermia, acidosis, hypocalcemia and trauma induced coagulopathy. Using early hemostatic resuscitation procedures can in many cases improve survival. In the last two decades the evidence for the lifesaving benefits of Low Titre Group O Whole Blood (LTOWB) in bleeding trauma patients has increased in both the prehospital settings as well as in hospital.

### Aims

Review of LTOWB use in the Czech Republic

### Methods

LTOWB began to be gradually produced and used in the Czech Republic in June 2020. The LTOWB is leucoreduced, RhD-negative with titers of anti-A and -B of <256, TRALI risk mitigated and with a shelf life of either 14 or 21 days depending on the manufacturer. Unused LTOWB units are 1-3 days before expiry reprocessed into RBCs (usable for another 21 days) and plasma (discarded).

### Results

Between June 2020 and June 2024, a total of 2,741 units of LTOWB have been produced in the Czech Republic, of which a total of 2,504 units have been transfused to 1,148 patients. A detailed overview of production is given in Table 1 and an overview of use in Table 2 and Table 3.

## Conclusion

LTWB is viable product to use in the treatment of massive bleeding, especially in polytrauma with the development of hemorrhagic shock. The rationale for the use of LTWB early in the resuscitation of massively bleeding patients is multifactorial: provides a balanced resuscitation that simultaneously addresses oxygen debt and coagulopathy, is a more concentrated product that contains a smaller quantity of anticoagulant and preservative solutions compared with an equivalent amount of reconstituted WB from blood components, the cold stored platelets in WB improve hemostasis more effectively compared to platelet units stored at room temperature.

**Table 1.** Production of LTOWB in the Czech Republic (06/2020 – 06/2024).

Blood Transfusion Establishment	University Hospital Hradec Králové	Military University Hospital Prague	University Hospital Ostrava	University Hospital Olomouc	Czech Republic total
Start of production LTWB	June 2020	June 2020	June 2020	January 2023	June 2020
Produced units of LTWB	1762	449	467	63	2741

**Table 2.** The use of LTOWB in Czech Republic (06/2020 – 06/2024).

Medical Facility / Blood Transfusion Establishment	Initiating the use of LTWB	Bleeding cases	Transfused units of LTWB	Transfused patients with LTWB
University Hospital Hradec Králové	June 2020	polytrauma - emergency admission	887	391
		other severe bleeding cases	487	181
Military University Hospital Prague	June 2020	polytrauma - emergency admission	194	80
		other severe bleeding cases	42	20
University Hospital Ostrava	June 2020	polytrauma - emergency admission	249	184
		other severe bleeding cases	109	84
University Hospital Prague - Motol	June 2022	polytrauma - emergency admission	59	38
		other severe bleeding cases	13	12
University Hospital Olomouc	January 2023	polytrauma - emergency admission	30	15
		other severe bleeding cases	14	12
Air ambulance service Hradec Králové	June 2020	polytrauma - prehospital	227	122
Air ambulance service Ostrava	June 2020	polytrauma - prehospital	19	19
Air ambulance service Army of Czech Republic Plzeň	January 2024	polytrauma - prehospital	0	0
Air ambulance service Olomouc	January 2024	polytrauma - prehospital	0	0

**Table 3.** The use of LTOWB in Czech Republic – total (06/2020 – 06/2024).

Reporting period	Bleeding cases	Transfused units of LTWOB	Transfused patients with LTWOB
06/2020 – 06/2024)	polytrauma - emergency admission	1593	698
	other severe bleeding cases	665	309
	polytrauma - prehospital	246	141
	total	2504	1148

**Keywords:** Whole Blood; Massive Bleeding