

## Supplementary Material

### Supplemental Literature Search Strategy

**Data sources:** Online search of EMBASE and PubMed/MEDLINE for all relevant publications was conducted. Search terms were ‘extracorporeal membrane oxygenation’ OR ‘ECMO’ OR ‘extracorporeal life support’ OR ‘ECLS’ OR ‘artificial heart/lung’ AND ‘leukocytes’ OR ‘white blood cells’ OR ‘immune response’.

**Study selection and data extraction:** Retrospective, randomised trials, observational and physiologic studies specifically report on leukocyte modulation during ECMO and published by 1<sup>st</sup> May 2020 were included to inform this narrative review. Non-English articles, and published abstracts that were later published into full journal articles were excluded.

**Supplemental Table 1. Brief description of leukocyte activation and adhesion surface antigens/markers discussed.**

Surface markers	Assessed cell type in the reported ECMO studies	Function
CD11b	Neutrophils	Part of the integrin family, essential to regulating leukocyte adhesion to the endothelium and migration. This mediates the inflammatory response and cell infiltration to the site of injury or infection as part of early host immune defence. It is co-expressed with CD18 ( $\beta_2$ -integrin CD11b/CD18), the complex is known as MAC-1 and CR3. It also interacts with platelets glycoprotein and fibrinogen that triggers thrombogenicity (1, 2).
CD18	Neutrophils, monocytes, T and B lymphocytes	Part of the integrin family, essential to regulating leukocyte adhesion to the endothelium and migration. It is co-expressed with CD11b ( $\beta_2$ -integrin CD11b/CD18), the complex is known as MAC-1 and CR3. It also interacts with platelets glycoprotein and fibrinogen that triggers thrombogenicity (1, 2).
CD35	Neutrophils	Also known as CR1 that binds complement 3b and 4b, essential for clearance of foreign macromolecules. It can also differentially regulate a number of TLR responses, and regulate B lymphocyte function (3).
CD62L	Neutrophils, monocytes, T and B lymphocytes	Adhesion molecule part of the selectin family, essential to leukocyte trafficking from the circulation to the tissue (4).
CD142	Monocytes	Also known as tissue factor which ligands are Factor VIIa, and Factor Xa/TFPI. Essential for initiation of pro-thrombotic process for clotting (5).
CD161	T lymphocytes	Part of the C-type lectin receptor family. It is known to express on specific peripheral T lymphocyte subsets, which regulates IL-17 production (6).
HLA-DR	Monocytes	Also known as the MHC-II, essential for initiation of immune response. It is a peptide-loading protein for presentation to T lymphocytes acting as a bridge between innate and adaptive immune communications (7).
TLR4	Monocytes	Part of the pattern-recognition family, essential in the innate immunity. It is widely known for its recognition of exogenous pathogens (e.g. bacterial components - lipopolysaccharide and lipoteichoic acids) to fight infection, but it also recognises other endogenous molecules (e.g. fibronectin type III extra domain A) (8).

Abbreviations: CD, Cluster differentiation; CD62L, L-selectin; CR, Complement Receptor Type; HLA-DR, human leukocyte antigen DR; MHC-II, IL, Interleukin; MAC-1, Macrophage-1 antigen; Major histocompatibility complex class II; MMP, matrix metalloprotease; TLRs, Toll-like receptor

### Supplemental References

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