

Supplementary Materials:

Supplementary File 1: Methods

General

A Series of PubMed searches were conducted to identify articles related to each topic that is discussed in the article. Generally, only articles published within the last 30 years were selected (January 1990–January 2020) and only articles published in English were considered. Specific search queries can be found below.

Cardiac Arrest

<p>Box S1. Search strategy for Identifying Cardiac Arrest Articles in PubMed</p> <p>("Heart attack" OR "Cardiac arrest" OR Asystole OR "Ventricular Fibrillation" OR "Pulseless electrical activity")</p> <p>AND</p> <p>(In hospital OR Hospitalized OR Hospital OR "Emergency Department" OR Emergency)</p> <p>AND</p> <p>(Therapy)</p> <p>AND</p> <p>(Review[Publication Type] OR Systematic review[Publication Type] OR Meta-Analysis[Publication Type])</p> <p>AND</p> <p>(English[Language]))</p> <p>AND</p> <p>("1990/01/01"[Date—Publication]: "2020/01/01"[Date—Publication])</p> <p>NOT</p> <p>(Takotsubo OR "Dilated cardiomyopathy" OR Pregnancy OR Pediatric OR animal)</p>

This search strategy was refined to identify articles relating to cardiac arrest and identify articles detailing both in-hospital cardiac arrest and out-of-hospital cardiac arrest. Emphasis was placed on identifying articles with reference to therapeutic

guidelines for this pathology. Restrictions were placed on article type in order to narrow the search results, clinical trials were not considered with the understanding that large meta-analyses and reviews would cover the treatment modalities that are employed in clinical practice while more experimental treatment modalities are not the focus of this review. Exclusion terms (Takotsubo, Dilated cardiomyopathy, Pregnancy, Pediatric, Animal) were selected based on initial search results and chosen to narrow search results and exclude unrelated articles. This search strategy generated 3042 results. Within this article pool, further searches were conducted related to terms covered in the article: Phases of cardiac arrest, ACLS, mortality, incidence, transport, “reperfusion injury”, predictors of survival, “reactive oxygen species”, perfusion, “vital organ”, “oxygen”, “complications”. These searches produced 465 unique articles which were screened and reviewed. Of this selection, 40 full length articles were referenced within the review.

Blood Transfusions in Cardiac Arrest

Box S2. Search strategy for Identifying Articles Detailing Blood Transfusions in Cardiac Arrest Resuscitation in PubMed
("Heart attack" OR "Cardiopulmonary arrest" OR "Cardiac arrest" OR "Ventricular Fibrillation") AND ("Blood Transfusion" OR "Intravenous fluid" OR Red blood cell Transfusion OR Volume Replacement) AND (English[Language])) AND (("1990/01/01"[Date – Publication]: "2020/01/01"[Date – Publication]))

A separate search was performed to investigate the use of blood transfusions as a therapeutic option for cardiac arrest as the previous search parameters detailing general therapies for cardiac arrest was lacking in this area. The search was expanded to include clinical trials and different keywords were employed. This search strategy generated 317 results. Of these articles, 133 articles were screened based on relevance and ultimately 4 full length articles were included within the review.

Hemoglobin-Based Oxygen Carriers

Box S2. Search strategy for Identifying Hemoglobin-Based Oxygen Carrier Articles in PubMed
("Hemoglobin based oxygen carrier" OR "Red cell substitute" OR OxyVita) AND (English[Language]) AND (("1990/01/01"[Date – Publication]: "2020/01/01"[Date – Publication]))

A broad PubMed search was performed on hemoglobin-based oxygen carriers to allow for a thorough discussion. The search strategy outlined generated 317 articles, 269 articles were screened, and 14 full length articles were included within the review. The review conducted covered the breadth of the topic of hemoglobin-based oxygen carriers and we also performed a focused review on articles pertaining to OxyVita as it was the hemoglobin-based oxygen carrier we selected for in-depth investigation and to hypothesize about its potential application as an example for the application of this class of products in general. Two additional articles were included within the review which were identified as references within the screened articles. These articles were

selected for their importance in the field and their ability to elaborate on ideas discussed in the article. These articles were by Natanson et. al. and Ning et. al.