



SPECIAL ARTICLE

Multidisciplinary consensus document on the management of massive haemorrhage (HEMOMAS document)[☆]



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Abstract Massive haemorrhage is common and often associated with high morbidity and mortality. We perform a systematic review of the literature, with extraction of the recommendations from the existing evidences because of the need for its improvement and the management standardization. From the results we found, we wrote a multidisciplinary consensus document. We begin with the agreement in the definitions of massive haemorrhage and massive transfusion, and we do structured recommendations on their general management (clinical assessment of bleeding, hypothermia management, fluid therapy, hypotensive resuscitation and damage control surgery), blood volume monitoring, blood products transfusion (red blood cells, fresh frozen plasma, platelets and their best transfusion ratio), and administration of hemostatic components (prothrombin complex, fibrinogen, factor VIIa, antifibrinolytic agents).

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PALABRAS CLAVE

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 sanguíneos;
 Plasma

Documento multidisciplinar de consenso sobre el manejo de la hemorragia masiva (documento HEMOMAS)

Resumen La hemorragia masiva es una entidad frecuente que se asocia a una elevada morbilidad y mortalidad. Ante la necesidad de la implementación y estandarización de su manejo, se realizó una revisión sistemática de la literatura, con extracción de recomendaciones en base a las evidencias existentes. A partir de las mismas se redactó un documento de consenso multidisciplinar. Desde las definiciones de hemorragia masiva y transfusión masiva, se establecen recomendaciones de actuación estructuradas en las medidas generales de manejo de las mismas (valoración clínica de la hemorragia, manejo de la hipotermia, reposición de la volemia, reanimación hipotensiva y cirugía de contención de daños), monitorización de la volemia, administración de hemocomponentes (concentrado de hemáties, plasma fresco, plaquetas, y óptima relación de administración entre ellos), y de hemostáticos (complejo protrombínico, fibrinógeno, factor VIIa, antifibrinolíticos).

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Introduction

Massive hemorrhage (MH) is a frequent condition caused by a range of circumstances including polytraumatism, peripartum, the perioperative period of different types of surgery, or gastrointestinal bleeding. It is commonly associated to important morbidity–mortality, conditioned to the underlying cause. In routine practice, the multidisciplinary management of MH is characterized by great variability; consensus-based recommendations therefore seem necessary in relation to the prevention, diagnosis, evaluation and application of the opportune therapeutic measures for controlling the bleeding.

One of the starting points is undoubtedly the need to establish an adequate definition of MH. The existing heterogeneity in interpreting the disorder means that it is difficult to establish the true incidence of MH in the different clinical scenarios; in this respect, it is considered that MH is often underestimated in terms of both its diagnosis and importance. Likewise, despite the different protocols that have been proposed to date, there is no agreement regarding the predictive value of the diagnostic tests, the best method for quantifying blood loss, the adequate assessment of treatment response, or the efficacy and safety of the recommended bleeding control measures.

Despite the efforts made in recent years to reach agreements regarding the protocols, guides and interventional algorithms referred to MH, and their diffusion, there is still an important lack of multidisciplinary consensus in our setting. The lack of scientific evidence in many of the proposed interventions, the undeniable urgency of the required treatment, and the lack of experience and specific training in the management of these situations found in some cases have pointed to the need for a consensus document, with the aim of facilitating the decision making process for all those involved in the treatment of MH. With this objective in mind, a series of experts belonging to the Spanish Society of Anesthesia and Resuscitation (*Sociedad Española de Anestesiología y Reanimación*, SEDAR), the Spanish Society of Intensive and Critical Care Medicine and Coronary

Units (*Sociedad Española de Medicina Intensiva, Crítica y Unidades Coronarias*, SEMICYUC) and the Spanish Society of Thrombosis and Hemostasis (*Sociedad Española de Trombosis y Hemostasia*, SETH) decided to draft a manuscript with an eminently practical bearing, endorsed by the mentioned scientific societies. This consensus document offers the most important and appropriate recommendations in each case, extracted from the literature and applicable to MH in all its dimensions—from early diagnosis to the last step in management and control.

From the multidisciplinary development of the document, we have underscored that its diffusion and application can contribute to improve the quality, safety and sustainability of the healthcare system, attempting to unify interventional and decision criteria.

As the authors of the initiative, we are convinced that the “*Multidisciplinary consensus document on the management of massive hemorrhage (HEMOMAS document)*” is an excellent tool with a permanent potential for modification and improvement, and that its usefulness will be confirmed over time, considering that Medicine is a very rapidly advancing field. The fundamental objective of our effort is to ensure that the document will be of help to all those involved in the management of MH. We hope to share our recommendations with these professionals, and to receive suggestions derived from their clinical practice.

Methodology

With the scientific endorsement of the mentioned three scientific societies, a group of ten experts in anesthesia, intensive care and hematology was created, with the designation of a coordinator. These experts jointly developed the contents of the document. In the month of March 2013, a literature search was made of the Cochrane Library, Medline (PubMed) and Guisalud databases, covering the last 10 years and using the combination of key words in the title or abstract: “*massive hemorrhage*”, “*massive transfusion*” and “*hemorrhagic shock*”. Based on the selected

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