

**The European guideline on management of major bleeding and coagulopathy following trauma:  
Fourth edition**

Rossaint R, Bouillon B, Cerny V, Coats TJ, Duranteau J, Fernández-Mondéjar E, Filipescu D, Hunt BJ, Komadina R, Nardi G, Neugebauer EAM, Ozier Y, Riddez L, Schultz A, Vincent J-L, Spahn DR

- 1 **Additional data file 1.** MeSH terms and limits applied to address guideline literature queries were performed on 30 January 2015; some additional
- 2 and/or newer citations may have been added ad hoc in response to professional society and peer reviewer requests.

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Question	Query	Limit
<b>I INITIAL RESUSCITATION AND PREVENTION OF FURTHER BLEEDING</b>		
<b>1</b>	<b>Does coagulopathy have an effect on outcome in patients with different types of injury?</b>	
	"Wounds and Injuries"[MeSH] AND "Blood coagulation disorders"[MeSH]	Clinical Trial, Meta-Analysis, Practice Guideline, Randomized Controlled Trial, Review, Humans, English, 2012-end
<b>2</b>	<b>Does control of acid-base balance during the initial resuscitation affect outcome?</b>	
	"Wounds and Injuries"[MAJR] AND "Acid-Base Equilibrium"[MeSH]	Humans English 2012-end
<b>3</b>	<b>Does the degree of initial bleeding affect coagulopathy?</b>	
<b>4</b>	<b>Does the degree of initial bleeding affect outcome?</b>	
	"Wounds and Injuries"[MeSH] AND "Hemorrhage"[MeSH] AND "Hemostasis"[MeSH]	Humans English 2012-end
<b>5</b>	<b>Does initial resuscitation with respect to haemostasis have an effect on outcome in patients with different types of injury?</b>	
	("Wounds and Injuries"[MeSH] OR "injuries"[Subheading] OR "Craniocerebral Trauma"[MeSH] OR "Trauma Severity Indices"[MeSH] OR "Trauma Centers"[MeSH] OR "Cumulative Trauma Disorders"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Abducens Nerve Injury"[MeSH] OR "Optic Nerve Injuries"[MeSH] OR "Coma, Post-Head Injury"[MeSH] OR "Facial Nerve Injuries"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH] OR "Emergency Treatment"[MeSH] OR "Emergencies"[MeSH] OR "Critical Care"[MeSH] OR "Emergency Treatment"[MeSH]) AND ("Resuscitation"[MeSH] OR "Resuscitation Orders"[MeSH]) AND ("Hemostatic Techniques"[MeSH] OR "Hemostasis"[MeSH])	Humans English 2012-end
<b>6</b>	<b>Is wound compression effective in preventing bleeding and coagulopathy?</b>	

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a	("Wounds and Injuries"[MeSH] OR "injuries"[Subheading] OR "Craniocerebral Trauma"[MeSH] OR "Trauma Severity Indices"[MeSH] OR "Trauma Centers"[MeSH] OR "Cumulative Trauma Disorders"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Abducens Nerve Injury"[MeSH] OR "Optic Nerve Injuries"[MeSH] OR "Coma, Post-Head Injury"[MeSH] OR "Facial Nerve Injuries"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH] OR "Emergency Treatment"[MeSH] OR "Emergencies"[MeSH] OR "Critical Care"[MeSH] OR "Emergency Treatment"[MeSH]) AND ("Resuscitation"[MeSH] OR "Resuscitation Orders"[MeSH]) AND ("Hemostatic Techniques"[MeSH] OR "Hemostasis"[MeSH]) AND ("Bandages"[MeSH] OR "Tourniquets"[Mesh])	Humans English 2012-end
b	("Hemostatic Techniques"[MeSH] OR "Hemostasis"[MeSH]) AND ("Bandages"[MeSH] OR "Tourniquets"[Mesh])	Humans English 2012-end
c	"Tourniquets"[Mesh]	Humans English 2012-end
<b>7</b>	<b>Does the duration of the pre-hospital phase of initial resuscitation have an effect on outcome in patients with haemorrhagic shock?</b>	
	"Shock, Hemorrhagic"[MeSH] AND ("Emergency Medical Services"[MeSH] OR "Emergencies"[MeSH] OR "Ambulances"[MeSH] OR "Emergency Medical Technicians"[MeSH] OR "Emergency Treatment"[MeSH] OR "Emergency Medical Tags"[MeSH] OR "Emergency Nursing"[MeSH] OR "Emergency Medicine"[MeSH] OR "Emergency Medical Service Communication Systems"[MeSH] OR "Air Ambulances"[MeSH]) AND (pre-hospital OR prehospital)	Humans English 2012-end
<b>8</b>	<b>Does the amount of bleeding and type of injury influence the selection of the hospital to which the trauma patient should be transported?</b>	
	"Health Care Category"[MAJR] AND "Hemorrhage"[MeSH] AND "Wounds and Injuries"[MeSH] AND ("Emergencies"[MeSH] OR "Emergency Treatment"[MeSH] OR "Emergency Medicine"[MeSH] OR "Emergency Medical Technicians"[MeSH])	Humans English 2012-end
<b>9</b>	<b>Does the gender of the bleeding trauma patient affect outcome?</b>	
<b>10</b>	<b>Does the age of the bleeding trauma patient affect outcome?</b>	
a	"Wounds and Injuries"[MeSH] AND "Hemorrhage"[MeSH] AND "Hemostasis"[MeSH] AND ("sex"[MeSH Terms] OR "Age Factors"[Mesh])	Humans English
b	"Wounds and Injuries"[MeSH] AND "Blood coagulation disorders"[MeSH] AND ("sex"[MeSH Terms] OR "Female"[Mesh] OR "Male"[Mesh] OR "Age Factors"[MeSH] OR "Aged"[MeSH] OR "Geriatrics"[Mesh])	Humans English 2012-end
<b>11</b>	<b>Is there a specific coagulation disorder associated with traumatic injury?</b>	
	"Wounds and Injuries"[MeSH] AND "Hemorrhage"[MeSH] AND "Hemostasis"[MeSH] AND "Blood Coagulation Disorders"[Mesh]	Humans English
<b>12</b>	<b>Should ventilation strategy be targeted to maximize oxygenation?</b>	
	("Craniocerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH]) AND ("Extracorporeal Membrane Oxygenation"[Mesh] OR "Respiration, Artificial"[Mesh] OR "Positive-Pressure Respiration"[Mesh] OR "Pulmonary Ventilation"[Mesh] OR "Intermittent Positive-Pressure Ventilation"[Mesh] OR "Continuous Positive Airway Pressure"[Mesh])	Humans English 2012-end
<b>13</b>	<b>Is tracheal intubation required in all patients?</b>	
<b>14</b>	<b>Is there a rationale to support a delay in tracheal intubation?</b>	

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		("Emergencies"[MeSH] OR "Emergency Treatment"[MeSH] OR "Emergency Medicine"[MeSH] OR "Emergency Medical Technicians"[MeSH] OR "Wounds and Injuries"[MeSH] OR "Craniocerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH]) AND "Intubation, Intratracheal"[Mesh] AND ("timing"[All Fields] OR "early"[All Fields] OR "late"[All Fields] OR "delay"[All Fields] OR "defer"[All Fields])	Humans, English, 2012-end/
15		<b>Does the type of injury influence the selection of the hospital?</b>	
		("Trauma Severity Indices"[Mesh]) AND "Trauma Centers"[Mesh] AND "Wounds and Injuries"[Mesh] OR "Regional Medical Programs"[Mesh])	Humans, English, Systematic Review
<b>II DIAGNOSIS AND MONITORING OF BLEEDING</b>			
1		<b>Is there evidence to support a correlation between the mechanism of injury and the risk of bleeding?</b>	
		"Wounds and Injuries"[MAJR] AND "Hemorrhage"[MeSH] AND correlation[All Fields]	Humans English 2012-end
2		<b>Which clinical signs are most appropriate to detect the patient who is actively bleeding?</b>	
		"Wounds and Injuries"[MeSH] AND "Hemorrhage"[MeSH] AND ("Emergencies"[MeSH] OR "Emergency Treatment"[MeSH] OR "Emergency Medicine"[MeSH] OR "Emergency Medical Technicians"[MeSH]) AND ("Diagnosis"[MeSH] OR "Signs and Symptoms"[MeSH])	Humans English 2012-end
3		<b>Which laboratory parameters (biochemical tests) are most appropriate to detect the patient who is actively bleeding?</b>	
		"Wounds and Injuries" [MeSH] AND "Hemorrhage" [MeSH] AND ("Clinical Chemistry Tests"[MeSH] OR "Monitoring, Physiologic" [MeSH] OR "Chemistry, Clinical"[MeSH] OR "Biological Markers"[MeSH] OR "Intercellular Signaling Peptides and Proteins"[MeSH])	Humans English 2012-end
4		<b>Which imaging diagnostic tools are most appropriate to detect the patient who is actively bleeding?</b>	
		"Wounds and injuries"[MeSH] AND "Hemorrhage"[MeSH] AND "Diagnostic Imaging"[MeSH] AND ("Emergencies"[MeSH] OR "Emergency Treatment"[MeSH] OR "Emergency Medicine"[MeSH] OR "Emergency Medical Technicians"[MeSH])	Humans English 2012-end
5		<b>Is there evidence to support the use of a specific score to assess the extent of bleeding?</b>	
6		<b>Is the ATLS shock classification still a valid classification system?</b>	
		"Hemorrhage"[MeSH] AND "Trauma Severity Indices"[MeSH] AND "Wounds and Injuries"[MeSH]	Humans English 2012-end
7		<b>Which coagulation monitoring tools are most appropriate to detect the patient who is actively bleeding?</b>	
	a	("Wounds and Injuries/diagnosis"[MAJR] OR "Hemorrhage/diagnosis"[MAJR] OR "Blood Coagulation Disorders/diagnosis"[MAJR] OR "Blood Coagulation Factors/analysis"[MAJR] OR "Blood Coagulation Factors/diagnostic use"[MAJR]) AND ("Point-of-Care Systems"[Mesh] OR "Thrombelastography"[Mesh])	Humans English 2012-end

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	b	("Wounds and Injuries/diagnosis"[MAJR] AND "Hemorrhage/diagnosis"[MAJR]) AND ("Tomography, X-Ray"[Mesh] OR "Tomography, X-Ray Computed"[Mesh] OR "Multidetector Computed Tomography"[Mesh] OR "Ultrasonography"[Mesh] OR "Peritoneal Lavage"[Mesh])	Humans English 2012-end
<b>8</b>	<b>Which coagulation monitoring tools are most appropriate to detect post-traumatic coagulopathy?</b>		
		"Wounds and Injuries"[MeSH] AND ("Hemorrhage"[Mesh] OR "Disseminated Intravascular Coagulation"[Mesh]) AND ("Emergencies"[MeSH] OR "Emergency Treatment"[MeSH] OR "Emergency Medicine"[MeSH] OR "Emergency Medical Technicians"[MeSH]) AND ("Diagnosis"[MeSH] OR "Monitoring, Physiologic"[MeSH] OR "Point-of-Care Systems"[Mesh] OR "Thrombelastography"[Mesh] OR "Predictive Value of Tests"[Mesh])	Humans English 2012-end
<b>9</b>	<b>Does the type of monitoring tool used have an impact on outcome?</b>		
		"Wounds and Injuries"[MeSH] AND ("Hemorrhage"[Mesh] OR "Disseminated Intravascular Coagulation"[Mesh]) AND ("Emergencies"[MeSH] OR "Emergency Treatment"[MeSH] OR "Emergency Medicine"[MeSH] OR "Emergency Medical Technicians"[MeSH]) AND "Outcome Assessment (Health Care)"[Mesh] AND ("Pathological Conditions, Signs and Symptoms"[Mesh] OR "Diagnosis"[MeSH] OR "Point-of-Care Systems"[Mesh] OR "Thrombelastography"[Mesh] OR "Predictive Value of Tests"[Mesh])	Humans English 2012-end
<b>10</b>	<b>Using which coagulation monitoring tools can the effectiveness of therapeutic measures be monitored?</b>		
<b>11</b>	<b>Is there any advantage to thrombelastometry performed at the bedside?</b>		
<b>12</b>	<b>Is there any advantage to thrombelastometry performed in the central laboratory?</b>		
		"Wounds and Injuries"[MeSH] AND ("Blood Coagulation"[Mesh] AND "Blood Coagulation Disorders"[Mesh]) OR "Hemorrhage "[MeSH] OR "Shock, Hemorrhagic"[MeSH]) AND "Treatment Outcome"[Mesh] AND "Therapeutics"[Mesh] AND ("Emergencies"[MeSH] OR "Emergency Treatment"[MeSH] OR "Emergency Medicine"[MeSH] OR "Emergency Medical Technicians"[MeSH]) AND ("Diagnosis"[MeSH] OR "Monitoring, Physiologic" [MeSH] OR "Point-of-Care Systems"[Mesh] OR "Thrombelastography"[Mesh])	Humans English 2012-end
<b>13</b>	<b>Do early detection or diagnostic assessment of coagulation status influence outcome?</b>		
		"Wounds and Injuries"[MeSH] AND ("Hemorrhage"[Mesh] OR "Disseminated Intravascular Coagulation"[Mesh]) AND ("Emergencies"[MeSH] OR "Emergency Treatment"[MeSH] OR "Emergency Medicine"[MeSH] OR "Emergency Medical Technicians"[MeSH]) AND ("Diagnosis"[MeSH] OR "Monitoring, Physiologic"[MeSH] OR "Point-of-Care Systems"[Mesh] OR "Thrombelastography"[Mesh]) AND ("Early Medical Intervention"[Mesh] OR "Early Diagnosis"[Mesh])	Humans English
<b>14</b>	<b>Which type of intervention should patients with abdominal and/or thoracic bleeding receive?</b>		
		("Wounds and Injuries"[MeSH] OR "Emergencies"[MeSH] OR "Emergency Treatment"[MeSH] OR "Emergency Medicine"[MeSH] OR "Emergency Medical Technicians"[MeSH]) AND ("Hemorrhage"[Mesh] OR "Disseminated Intravascular Coagulation"[Mesh]) AND ("Thorax"[Mesh] OR "Abdomen"[Mesh] OR "Abdominal Cavity"[Mesh])	Humans English 2012-end
<b>15</b>	<b>Does the use of 'hybrid' shock/resuscitation/operating theatre facilities improve outcome in polytrauma patients?</b>		
		("Emergencies"[MeSH] OR "Emergency Treatment"[MeSH] OR "Emergency Medicine"[MeSH] OR "Emergency Medical Technicians"[MeSH] OR "Wounds and Injuries"[MeSH] OR "Craniocerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH]) AND ("Health Facility Size"[Mesh] OR "Facility Design and Construction"[Mesh])	Humans English 2012-end
<b>III</b>	<b>TISSUE OXYGENATION, TYPE OF FLUID AND TEMPERATURE MANAGEMENT</b>		
<b>1</b>	<b>What is the corridor for the haematocrit to be achieved for adequate tissue oxygenation?</b>		

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	"Hematocrit"[MeSH] AND ("Oxygen Consumption"[MeSH] OR "Blood Gas Monitoring, Transcutaneous"[MeSH] OR "Blood Gas Analysis"[MeSH] OR "Gases"[MeSH] OR "Cell Respiration"[MeSH] OR "Blood Substitutes"[MeSH] OR "Blood Chemical Analysis"[MeSH] OR "Respiratory Function Tests"[MeSH] OR "Oximetry"[MeSH] OR "Blood Pressure"[MeSH] OR "Venous Pressure"[MeSH] OR "Hypotension"[MeSH]) AND ("Emergencies"[MeSH] OR "Emergency Treatment"[MeSH] OR "Emergency Medicine"[MeSH] OR "Emergency Medical Technicians"[MeSH] OR "Wounds and Injuries"[MeSH] OR "Cranio-cerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH])	Humans English 2012-end
<b>2</b>	<b>How should volume loading be managed?</b>	
	("Blood Substitutes"[MeSH] OR "Fluorocarbons"[MeSH] OR "Plasma Substitutes"[MeSH] OR "Fluorocarbons"[MeSH] OR "Plasma Substitutes"[MeSH] OR "Fluid Therapy"[MeSH] OR "Rehydration Solutions"[MeSH] OR "Solutions"[MeSH] OR "Colloids"[MeSH] OR "Sodium Chloride"[MeSH] OR "Saline Solution, Hypertonic"[MeSH]) AND ("Wounds and Injuries"[MeSH] OR "Cranio-cerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH]) AND ("Infusions, Parenteral"[MeSH] OR "Infusions, Intravenous"[MeSH])	Humans English 2012-end
<b>3</b>	<b>Does the blood pressure achieved during initial resuscitation influence morbidity or outcome in the trauma patient?</b>	
	("Blood Pressure Determination"[MeSH] OR "Blood Pressure"[MeSH] OR "Blood Pressure Monitoring, Ambulatory"[MeSH] OR "Hypertension"[MeSH] OR "Venous Pressure"[MeSH] OR "Hypotension"[MeSH]) AND ("Wounds and Injuries"[MeSH] OR "Cranio-cerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH]) AND ("Emergencies"[MeSH] OR "Emergency Treatment"[MeSH] OR "Emergency Medicine"[MeSH] OR "Emergency Medical Technicians"[MeSH])	Humans English 2012-end
<b>4</b>	<b>Does the type of fluid used for initial resuscitation influence morbidity or outcome in the trauma patient?</b>	
	("Blood Substitutes"[MeSH] OR "Fluorocarbons"[MeSH] OR "Plasma Substitutes"[MeSH] OR "Fluorocarbons"[MeSH] OR "Plasma Substitutes"[MeSH] OR "Fluid Therapy"[MeSH] OR "Rehydration Solutions"[MeSH] OR "Solutions"[MeSH] OR "Colloids"[MeSH] OR "Sodium Chloride"[MeSH] OR "Saline Solution, Hypertonic"[MeSH]) AND ("Wounds and Injuries"[MeSH] OR "Cranio-cerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH]) AND ("Emergencies"[MeSH] OR "Emergency Treatment"[MeSH] OR "Emergency Medicine"[MeSH] OR "Emergency Medical Technicians"[MeSH])	Humans English 2012-end
<b>5</b>	<b>Does controlled mild hypothermia (34°C) affect outcome or morbidity in the trauma patient compared to normothermia?</b>	
	("Hypothermia"[MeSH] OR "Gastric Hypothermia"[MeSH] OR "Hypothermia, Induced"[MeSH] OR "Circulatory Arrest, Deep Hypothermia Induced"[MeSH]) AND "Outcome and Process Assessment (Health Care)"[MeSH] AND ("Wounds and Injuries"[MeSH] OR "injuries"[Subheading] OR "Cranio-cerebral Trauma"[MeSH] OR "Trauma Severity Indices"[MeSH] OR "Trauma Centers"[MeSH] OR "Cumulative Trauma Disorders"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Abducens Nerve Injury"[MeSH] OR "Optic Nerve Injuries"[MeSH] OR "Coma, Post-Head Injury"[MeSH] OR "Facial Nerve Injuries"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH])	Humans English 2012-end
<b>6</b>	<b>Which types of colloids are appropriate for use under which circumstances in the bleeding trauma patient?</b>	

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	("Wounds and Injuries"[MeSH] OR "Craniocerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH]) AND ("Emergencies"[MeSH] OR "Emergency Treatment"[MeSH] OR "Emergency Medicine"[MeSH] OR "Emergency Medical Technicians"[MeSH]) AND "Colloids"[MeSH]	Humans English
<b>7</b>	<b>Which types of crystalloids are appropriate for use under which circumstances in the bleeding trauma patient?</b>	
<b>8</b>	<b>Is the use of Ringer's lactate appropriate in patients with severe head injury?</b>	
	("Wounds and Injuries"[MeSH] OR "Craniocerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH]) AND ("Emergencies"[MeSH] OR "Emergency Treatment"[MeSH] OR "Emergency Medicine"[MeSH] OR "Emergency Medical Technicians"[MeSH]) AND ("Sodium Chloride"[MeSH] OR "Saline Solution, Hypertonic"[MeSH])	Humans English
<b>9</b>	<b>Is there an appropriate use of vasopressors or inotropic agents in the bleeding trauma patient?</b>	
<b>10</b>	<b>Are vasopressors or inotropic agents harmful in the bleeding trauma patient?</b>	
	("Emergencies"[MAJR] OR "Emergency Treatment"[ MAJR] OR "Emergency Medicine"[ MAJR] OR "Emergency Medical Technicians"[ MAJR] OR "Wounds and Injuries"[ MAJR] OR "Craniocerebral Trauma"[ MAJR] OR "Cerebrovascular Trauma"[ MAJR] OR "Multiple Trauma"[ MAJR] OR "Trauma, Nervous System"[ MAJR] OR "Head Injuries, Penetrating"[ MAJR] OR "Carotid Artery Injuries"[ MAJR] OR "Head Injuries, Closed"[ MAJR] OR "Spinal Cord Injuries"[ MAJR] OR "Traumatology"[ MAJR] OR "Brain Injuries"[ MAJR]) AND ("Vasoconstrictor Agents"[Mesh] OR "Cardiotonic Agents"[MeSH])	Humans English 10 years
<b>11</b>	<b>What is the indication for the use of RBC in bleeding after trauma?</b>	
<b>12</b>	<b>Does administration of RBCs affect clinical outcome in bleeding patients?</b>	
<b>13</b>	<b>What are the risks of giving RBCs?</b>	
<b>14</b>	<b>How many RBCs are enough?</b>	
	("Wounds and Injuries"[MeSH] OR "Craniocerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH]) AND ("Erythrocytes"[MeSH] OR "Erythrocyte Transfusion"[MeSH])	Humans English 2012-end
<b>15</b>	<b>What is the effect of RBC transfusion on microcirculation?</b>	
	("Wounds and Injuries"[MeSH] OR "Craniocerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH]) AND ("Erythrocytes"[MeSH] OR "Erythrocyte Transfusion"[MeSH]) AND "Microcirculation"[Mesh]	Humans English
<b>16</b>	<b>Does the duration of RBC storage affect clinical outcome?</b>	
	("Wounds and Injuries"[MeSH] OR "Craniocerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH]) AND ("Erythrocytes"[MeSH] OR "Erythrocyte Transfusion"[MeSH]) AND "Blood Preservation"[Mesh]	Humans English
<b>17</b>	<b>What is the appropriate use of epoetin in post-traumatic anaemia?</b>	

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	("Wounds and Injuries"[MeSH] OR "Craniocerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH]) AND ("Erythrocytes"[MeSH] OR "Erythrocyte Transfusion"[MeSH] OR "Anemia"[Mesh]) AND "Erythropoietin"[Mesh]	Humans English
<b>18</b>	<b>Is there a role for iron therapy in the treatment of post-traumatic anaemia?</b>	
	("Wounds and Injuries"[MeSH] OR "Craniocerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH]) AND ("Erythrocytes"[MeSH] OR "Erythrocyte Transfusion"[MeSH] OR "Anemia"[Mesh]) AND "Iron"[Mesh]	Humans English
<b>19</b>	<b>Should treatment target cardiac output?</b>	
	("Oxygen Consumption"[MeSH] OR "Blood Gas Monitoring, Transcutaneous"[MeSH] OR "Blood Gas Analysis"[MeSH] OR "Gases"[MeSH] OR "Cell Respiration"[MeSH] OR "Blood Substitutes"[MeSH] OR "Blood Chemical Analysis"[MeSH] OR "Respiratory Function Tests"[MeSH] OR "Oximetry"[MeSH] OR "Blood Pressure"[MeSH] OR "Venous Pressure"[MeSH] OR "Hypotension"[MeSH]) AND ("Emergencies"[MeSH] OR "Emergency Treatment"[MeSH] OR "Emergency Medicine"[MeSH] OR "Emergency Medical Technicians"[MeSH] OR "Wounds and Injuries"[MeSH] OR "Craniocerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH]) AND "Cardiac Output"[Mesh]	Humans English 10 years
<b>20</b>	<b>What is the effect of different infusion fluids (colloids, crystalloids) on coagulation?</b>	
	("Wounds and Injuries"[MeSH] OR "Craniocerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH]) AND ("Hemorrhage"[Mesh] OR "Disseminated Intravascular Coagulation"[Mesh]) AND ("Colloids"[MeSH] OR "Sodium Chloride"[MeSH] OR "Saline Solution, Hypertonic"[MeSH])	Humans English 10 years
<b>21</b>	<b>Is there a role for hypertonic solutions in polytrauma patients?</b>	
<b>22</b>	<b>Is there a role for hypertonic solutions in patients with traumatic brain injury?</b>	
	("Wounds and Injuries"[MeSH] OR "Craniocerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH]) AND ("Hemorrhage"[Mesh] OR "Disseminated Intravascular Coagulation"[Mesh]) AND "Hypertonic Solutions"[Mesh]	Humans English 10 years
<b>23</b>	<b>Does the age of the patient affect clinical outcome?</b>	
	("Wounds and Injuries"[MeSH] OR "Craniocerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH]) AND ("Erythrocytes"[MeSH] OR "Erythrocyte Transfusion"[MeSH]) AND ("Age Factors"[MeSH] OR "Aged"[MeSH] OR "Geriatrics"[Mesh])	Humans English 10 years
<b>24</b>	<b>Does the minimisation of blood sampling volume and frequency improve outcome?</b>	
	("Hemorrhage"[Mesh] OR "Disseminated Intravascular Coagulation"[Mesh]) AND "Blood Specimen Collection"[Mesh]	Humans English 10 years
<b>IV</b>	<b>RAPID CONTROL OF BLEEDING</b>	

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<b>1</b>	<b>Can the mechanism of injury (e.g. blunt vs. penetrating trauma) be used as a determinant for deciding which patients in haemorrhagic shock are candidates for surgical bleeding control?</b>	
	"Wounds and Injuries"[MAJR] AND "Hemorrhage"[MeSH] AND "Shock, Hemorrhagic"[MeSH] AND ("Emergencies"[MeSH] OR "Emergency Treatment"[MeSH] OR "Emergency Medicine"[MeSH] OR "Emergency Medical Technicians"[MeSH])	Humans English 2012-end
<b>2</b>	<b>Does angiographic embolisation improve the outcome of patients with haemorrhagic shock and pelvic ring disruption?</b>	
	"Embolization, Therapeutic"[MeSH] AND ("Shock, Hemorrhagic"[MeSH] OR "Fractures"[MeSH])	Humans English 2012-end
<b>3</b>	<b>What are the characteristics of patients with free intraabdominal fluid according to FAST in whom secondary diagnostics (i.e. CT scan) can be safely performed?</b>	
	"Wounds and Injuries"[MeSH] AND ("Diagnostic Imaging"[MeSH] OR "Ultrasonography"[MeSH]) AND "Ascitic Fluid"[MeSH]	Humans English 2012-end
<b>4</b>	<b>What characterises the patient in haemorrhagic shock in whom immediate aortic cross-clamping is warranted?</b>	
<b>5</b>	<b>Does use of an intra-aortic balloon catheter reduce bleeding or improve clinical outcomes?</b>	
	"Wounds and Injuries"[MAJR] AND ("Hemorrhage"[MeSH] OR "Shock, Hemorrhagic"[MeSH]) AND ("Emergencies"[MeSH] OR "Emergency Treatment"[MeSH] OR "Emergency Medicine"[MeSH] OR "Emergency Medical Technicians"[MeSH]) AND ("Angioscopy"[MeSH] OR "Heart-Assist Devices"[Mesh] OR "Cardiovascular Surgical Procedures"[MeSH] OR "Minimally Invasive Surgical Procedures"[Mesh] OR "Intra-Aortic Balloon Pumping"[Mesh])	Humans English 10 years
<b>6</b>	<b>Does the elapsed time from admission to OR influence outcome for trauma patients who need emergency surgery?</b>	
	("Emergency Medical Services"[MeSH] OR "Emergencies"[MeSH] OR "Emergency Treatment"[MeSH] OR "Critical Care"[MeSH]) AND "Hemorrhage"[MeSH] AND "Outcome and Process Assessment (Health Care)"[MeSH] AND ("Wounds and Injuries"[MeSH] OR "injuries"[Subheading] OR "Cranio-cerebral Trauma"[MeSH] OR "Trauma Severity Indices"[MeSH] OR "Trauma Centers"[MeSH] OR "Cumulative Trauma Disorders"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Abducens Nerve Injury"[MeSH] OR "Optic Nerve Injuries"[MeSH] OR "Coma, Post-Head Injury"[MeSH] OR "Facial Nerve Injuries"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH])	Humans English 2012-end
<b>7</b>	<b>Does urgent surgery to control haemorrhage improve the outcome of patients with haemorrhagic shock and pelvic ring disruption?</b>	
	"Hip Fractures"[MeSH] AND "Shock, Hemorrhagic"[MeSH]	Humans English 2012-end
<b>8</b>	<b>What characterises the patient with free intraabdominal fluid according to FAST who requires immediate laparotomy?</b>	
	"Ascitic Fluid"[MeSH] AND "Laparotomy"[MeSH] AND ("Wounds and Injuries"[MeSH] OR "injuries"[Subheading] OR "Cranio-cerebral Trauma"[MeSH] OR "Trauma Severity Indices"[MeSH] OR "Trauma Centers"[MeSH] OR "Cumulative Trauma Disorders"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Abducens Nerve Injury"[MeSH] OR "Optic Nerve Injuries"[MeSH] OR "Coma, Post-Head Injury"[MeSH] OR "Facial Nerve Injuries"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH])	Humans English 2012-end
<b>9</b>	<b>What characterises the patient in haemorrhagic shock in whom packing is warranted?</b>	

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		"Wounds and Injuries"[MeSH] AND ("Ascitic Fluid"[MeSH] OR "Shock, Hemorrhagic"[MeSH] OR "Hemorrhage"[MeSH]) AND "Abdominal Injuries"[Mesh] AND ("Hemostasis, Surgical"[Mesh] OR "Hemostatic Techniques"[Mesh] OR "Surgical Procedures, Minimally Invasive"[Mesh])	Humans English 2012-end
<b>10</b>	<b>What characterises the patient in haemorrhagic shock in whom use of a tourniquet is warranted?</b>		
		"Wounds and Injuries"[MeSH] AND ("Hemorrhage"[MeSH] OR "Shock, Hemorrhagic"[MeSH]) AND "Tourniquets"[Mesh]	Humans English 2012-end
<b>11</b>	<b>Does the use of local haemostatic agents improve outcome of patients with haemorrhagic shock?</b>		
		"Wounds and Injuries"[MeSH] AND ("Hemorrhage"[MeSH] OR "Shock, Hemorrhagic"[MeSH]) AND "Hemostatic Techniques"[Mesh] AND ("Fibrin Tissue Adhesive"[Mesh] OR "Fibrin Foam"[Mesh] OR "Gelatin Sponge, Absorbable"[Mesh] OR "Thrombin"[Mesh] OR "Thromboplastin"[Mesh])	Humans English 2012-end
<b>12</b>	<b>Does urgent surgery to prevent further bleeding improve outcome for patients with haemorrhagic shock?</b>		
		"Wounds and Injuries"[MeSH] AND ("Hemorrhage"[MeSH] OR "Shock, Hemorrhagic"[MeSH]) AND "Hemostasis, Surgical"[Mesh]	Humans English 2012-end
<b>V INITIAL MANAGEMENT OF BLEEDING &amp; COAGULOPATHY</b>			
	<b>FFP</b>		
<b>1</b>	<b>What is the indication for giving FFP to patients bleeding after trauma?</b>		
<b>2</b>	<b>Does administration of FFP reduce the severity of bleeding in patients with acquired coagulation factor deficits?</b>		
<b>3</b>	<b>Does administration of FFP affect clinical outcome in bleeding patients with acquired coagulation factor deficits?</b>		
<b>4</b>	<b>What are the risks of administration of FFP?</b>		
<b>5</b>	<b>What is the recommended dose of FFP to be given?</b>		
		("Wounds and Injuries"[MeSH] OR "Craniocerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH]) AND ("Plasma"[MeSH] OR "Plasma Exchange"[MeSH])	Humans English 2012-end
<b>6</b>	<b>What is the recommended dose of FFP relative to the dose of RBCs administered?</b>		
<b>7</b>	<b>Does the relative dose of FFP:RBCs have an impact on outcome?</b>		
<b>8</b>	<b>Is there any benefit to a 1:1:1 transfusion regimen?</b>		
<b>9</b>	<b>Is there any benefit to goal-directed coagulation management using factor replacement?</b>		
		("Emergencies"[MeSH] OR "Emergency Treatment"[MeSH] OR "Emergency Medicine"[MeSH] OR "Emergency Medical Technicians"[MeSH] OR "Wounds and Injuries"[MeSH] OR "Craniocerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH]) AND ("Erythrocytes"[MeSH] OR "Erythrocyte Transfusion"[MeSH]) AND ("Plasma"[MeSH] OR "Plasma Exchange"[MeSH] OR "Blood Platelets"[MeSH] OR "Thrombocytopenia"[MeSH])	Humans English
	<b>Anti-fibrinolytic agents</b>		

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	<b>1</b>	<b>What are the indications for anti-fibrinolytics in a bleeding patient?</b>	
	<b>2</b>	<b>What are the recommended doses of anti-fibrinolytic agents in bleeding patients?</b>	
	<b>3</b>	<b>Have anti-fibrinolytics been shown to be efficacious?</b>	
	<b>4</b>	<b>What are the risks of using anti-fibrinolytics in bleeding patients?</b>	
	<b>5</b>	<b>Which anti-fibrinolytic(s) are preferable based on comparative data and risk benefit analysis?</b>	
	<b>6</b>	<b>Which antifibrinolytic agent(s) are appropriate for use in the bleeding trauma patient?</b>	
	<b>7</b>	<b>Is the use of antifibrinolytic agents appropriate in all cases of suspected significant bleeding?</b>	
	<b>8</b>	<b>Does the timing of antifibrinolytic treatment affect outcome?</b>	
		"Antifibrinolytic Agents"[MeSH] AND ("Hemorrhage"[MeSH] OR "Brain Stem Hemorrhage, Traumatic"[MeSH] OR "Subarachnoid Hemorrhage"[MeSH] OR "Cerebral Hemorrhage"[MeSH] OR "Cerebral Hemorrhage, Traumatic"[MeSH] OR "Subarachnoid Hemorrhage, Traumatic"[MeSH] OR "Brain Hemorrhage, Traumatic"[MeSH] OR "Intracranial Hemorrhage, Traumatic"[MeSH]) NOT "Aprotinin"[Mesh]	Humans English 2012-end
	<b>9</b>	<b>Is the use of antifibrinolytic agents cost effective?</b>	
		("Hemorrhage"[MeSH] OR "Brain Stem Hemorrhage, Traumatic"[MeSH] OR "Subarachnoid Hemorrhage"[MeSH] OR "Cerebral Hemorrhage"[MeSH] OR "Cerebral Hemorrhage, Traumatic"[MeSH] OR "Subarachnoid Hemorrhage, Traumatic"[MeSH] OR "Brain Hemorrhage, Traumatic"[MeSH] OR "Intracranial Hemorrhage, Traumatic"[MeSH]) AND "Antifibrinolytic Agents"[MeSH] NOT "Aprotinin"[Mesh] AND ("Costs and Cost Analysis"[Mesh] OR "Cost-Benefit Analysis"[Mesh] OR "Cost of Illness"[Mesh] OR "Cost Savings"[Mesh] OR "Health Care Costs"[Mesh] OR "Hospital Costs"[Mesh] OR "Drug Costs"[Mesh])	Humans English
		<b>Coagulation factor concentrates</b>	
	<b>1</b>	<b>What are the indications for the use of coagulation factor concentrates in a bleeding patient?</b>	
	<b>2</b>	<b>What are the recommended doses of coagulation factor concentrates in a bleeding patient?</b>	
	<b>3</b>	<b>Have coagulation factor concentrates been shown to be efficacious?</b>	
	<b>4</b>	<b>What are the risks of using coagulation factor concentrates in bleeding patients?</b>	
		("Emergencies"[MeSH] OR "Emergency Treatment"[MeSH] OR "Emergency Medicine"[MeSH] OR "Emergency Medical Technicians"[MeSH] OR "Wounds and Injuries"[MeSH] OR "Craniocerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH]) AND ("Factor XIII"[Mesh] OR "recombinant FVIIa" [Supplementary Concept])	Humans English 2012-end
		<b>Antithrombotic management</b>	
	<b>1</b>	<b>What type of antithrombotic therapy is appropriate following traumatic injury?</b>	
	<b>2</b>	<b>How can the effect of antithrombotic agents be antagonised if necessary to support coagulation?</b>	
		("Emergencies"[MAJR] OR "Emergency Treatment"[ MAJR] OR "Emergency Medicine"[ MAJR] OR "Emergency Medical Technicians"[ MAJR] OR "Wounds and Injuries"[ MAJR] OR "Craniocerebral Trauma"[ MAJR] OR "Cerebrovascular Trauma"[ MAJR] OR "Multiple Trauma"[ MAJR] OR "Trauma, Nervous System"[ MAJR] OR "Head Injuries, Penetrating"[ MAJR] OR "Carotid Artery Injuries"[ MAJR] OR "Head Injuries, Closed"[ MAJR] OR "Spinal Cord Injuries"[ MAJR] OR "Traumatology"[ MAJR] OR "Brain Injuries"[ MAJR]) AND ("Thrombosis/prevention and control"[Mesh] OR "Venous Thrombosis/prevention and control"[Mesh] OR "Pulmonary Embolism/prevention and control"[Mesh])	Humans English 2012-end
<b>VI</b>	<b>FURTHER RESUSCITATION</b>		

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		<b><i>Goal directed therapy</i></b>	
	<b>1</b>	<b>Which coagulation monitoring tools can be used to support resuscitation?</b>	
		("Wounds and Injuries"[MeSH] OR "Hemorrhage"[Mesh]) AND ("Emergencies"[MeSH] OR "Emergency Treatment"[MeSH] OR "Emergency Medicine"[MeSH] OR "Emergency Medical Technicians"[MeSH]) AND ("Diagnosis"[MeSH] OR "Monitoring, Physiologic"[MeSH] OR "Point-of-Care Systems"[Mesh] OR "Thrombelastography"[Mesh] OR "Predictive Value of Tests"[Mesh]) AND "Resuscitation"[Mesh] AND "Blood Coagulation Tests"[Mesh]	Humans English 10 years
		<b><i>Platelets</i></b>	
	<b>1</b>	<b>What is the indication for the use of platelets in bleeding after trauma?</b>	
	<b>2</b>	<b>Does administration of platelets reduce the severity of bleeding in patients with thrombocytopenia?</b>	
	<b>3</b>	<b>Does administration of platelets affect clinical outcome in bleeding patients with thrombocytopenia?</b>	
	<b>4</b>	<b>Does administration of platelets affect clinical outcome in bleeding patients without thrombocytopenia?</b>	
	<b>5</b>	<b>What are the risks of giving platelets?</b>	
		("Blood Platelets"[MeSH] OR "Thrombocytopenia"[MeSH]) AND ("Wounds and Injuries"[MeSH] OR "Craniocerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH])	Humans English 2012-end
	<b>6</b>	<b>Does the duration of platelet storage affect clinical outcome?</b>	
		("Wounds and Injuries"[MeSH] OR "Craniocerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH]) AND ("Blood Platelets"[MeSH] OR "Thrombocytopenia"[MeSH]) AND "Blood Preservation"[Mesh]	Humans English
		<b><i>Anti-platelet agents</i></b>	
	<b>1</b>	<b>Does pre-medication with anti-platelet agents affect clinical outcome in bleeding patients with thrombocytopenia?</b>	
	<b>2</b>	<b>Does pre-medication with anti-platelet agents affect clinical outcome in bleeding patients who receive platelet therapy?</b>	
		("Wounds and Injuries"[MeSH] OR "Craniocerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH]) AND "Platelet Aggregation Inhibitors"[Mesh]	Humans English 2012-end
	<b>3</b>	<b>What is the appropriate use of platelets in the treatment of patients pre-treated with anti-platelet agents?</b>	
		("Emergencies"[MAJR] OR "Emergency Treatment"[ MAJR] OR "Emergency Medicine"[ MAJR] OR "Emergency Medical Technicians"[ MAJR] OR "Wounds and Injuries"[ MAJR] OR "Craniocerebral Trauma"[ MAJR] OR "Cerebrovascular Trauma"[ MAJR] OR "Multiple Trauma"[ MAJR] OR "Trauma, Nervous System"[ MAJR] OR "Head Injuries, Penetrating"[ MAJR] OR "Carotid Artery Injuries"[ MAJR] OR "Head Injuries, Closed"[ MAJR] OR "Spinal Cord Injuries"[ MAJR] OR "Traumatology"[ MAJR] OR "Brain Injuries"[ MAJR]) AND "Platelet Aggregation Inhibitors"[Mesh] AND ("Therapeutics"[Mesh] OR "Emergency Treatment"[Mesh] OR "Blood Platelets"[MeSH])	Humans English
		<b><i>Fibrinogen and cryoprecipitate</i></b>	
	<b>1</b>	<b>What are the indications for fibrinogen or cryoprecipitate?</b>	

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	<b>2</b>	<b>What is the recommended cryoprecipitate dose in bleeding patients?</b>	
	<b>3</b>	<b>Have fibrinogen or cryoprecipitate been shown to be efficacious in bleeding patients?</b>	
	<b>4</b>	<b>What are the risks of using fibrinogen or cryoprecipitate in bleeding patients?</b>	
		("Wounds and Injuries"[MeSH] OR "Craniocerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH]) AND ("Fibrinogen"[MeSH] OR "cryoprecipitate coagulum"[Substance Name] OR "Nour-Eldin fraction"[Substance Name])	Humans English 2012-end
	<b>5</b>	<b>What is the recommended target fibrinogen level?</b>	
	<b>6</b>	<b>Which coagulation monitoring tools are most appropriate to detect fibrinogen level?</b>	
		("Emergencies"[MeSH] OR "Emergency Treatment"[MeSH] OR "Emergency Medicine"[MeSH] OR "Emergency Medical Technicians"[MeSH] OR "Wounds and Injuries"[MeSH] OR "Craniocerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH]) AND ("Fibrinogen"[MeSH] OR "cryoprecipitate coagulum"[Substance Name] OR "Nour-Eldin fraction"[Substance Name]) AND ("administration and dosage"[Subheading] OR "Monitoring, Physiologic"[Mesh] OR "Biomarkers, Pharmacological"[Mesh] OR "Drug Monitoring"[Mesh] OR "Point-of-Care Systems"[Mesh] OR "Thrombelastography"[Mesh])	Humans English 2012-end
		<b><i>Prothrombin complex concentrates</i></b>	
	<b>1</b>	<b>What is the indication for PCCs in bleeding patients?</b>	
	<b>2</b>	<b>What is the recommended dose of PCCs in bleeding patients?</b>	
	<b>3</b>	<b>Have PCCs been shown to be efficacious in bleeding patients?</b>	
	<b>4</b>	<b>What are the risks of using PCCs in bleeding patients?</b>	
	<b>5</b>	<b>Is there comparative data on the transfusion of PCCs compared with FFP in bleeding patients?</b>	
		("Wounds and Injuries"[MeSH] OR "Craniocerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH]) AND ("Thromboplastin"[MeSH] OR "Partial Thromboplastin Time"[MeSH] OR "Factor XI"[MeSH] OR "thromboplastin apoprotein, human"[Substance Name] OR "prothrombinase complex"[Substance Name] OR "Factor IXa"[MeSH] OR "Prothrombin Time"[MeSH] OR "Factor VII"[MeSH] OR "Factor IX"[MeSH] OR "prothrombin complex concentrates"[Substance Name])	Humans English 2012-end
	<b>6</b>	<b>Does treatment with PCCs affect clinical outcome in patients who received pre-injury treatment with oral anticoagulants?</b>	
		("Wounds and Injuries"[MeSH] OR "Craniocerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH]) AND ("Thromboplastin"[MeSH] OR "Partial Thromboplastin Time"[MeSH] OR "Factor XI"[MeSH] OR "thromboplastin apoprotein, human"[Substance Name] OR "prothrombinase complex"[Substance Name] OR "Factor IXa"[MeSH] OR "Prothrombin Time"[MeSH] OR "Factor VII"[MeSH] OR "Factor IX"[MeSH] OR "prothrombin complex concentrates"[Substance Name]) AND "Anticoagulants"[Mesh]	Humans English 10 years
		<b><i>Desmopressin</i></b>	
	<b>1</b>	<b>What are the indications for the use of desmopressin in a bleeding patient?</b>	

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	<b>2</b>	<b>What is the recommended dose of desmopressin in a bleeding patient?</b>	
	<b>3</b>	<b>Has desmopressin been shown to be efficacious?</b>	
	<b>4</b>	<b>What are the risks of using desmopressin in bleeding patients?</b>	
		("Emergencies"[MeSH] OR "Emergency Treatment"[MeSH] OR "Emergency Medicine"[MeSH] OR "Emergency Medical Technicians"[MeSH] OR "Wounds and Injuries"[MeSH] OR "Craniocerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH]) AND "Deamino Arginine Vasopressin"[Mesh]	Humans English 2012-end
		<b>Calcium</b>	
	<b>1</b>	<b>Under which circumstances should ionised calcium levels be monitored?</b>	
		("Emergencies"[MAJR] OR "Emergency Treatment"[ MAJR] OR "Emergency Medicine"[ MAJR] OR "Emergency Medical Technicians"[ MAJR] OR "Wounds and Injuries"[ MAJR] OR "Craniocerebral Trauma"[ MAJR] OR "Cerebrovascular Trauma"[ MAJR] OR "Multiple Trauma"[ MAJR] OR "Trauma, Nervous System"[ MAJR] OR "Head Injuries, Penetrating"[ MAJR] OR "Carotid Artery Injuries"[ MAJR] OR "Head Injuries, Closed"[ MAJR] OR "Spinal Cord Injuries"[ MAJR] OR "Traumatology"[ MAJR] OR "Brain Injuries"[ MAJR]) AND "Calcium"[MAJR]	Humans English 2012-end
	<b>2</b>	<b>What is the appropriate use of calcium chloride in the bleeding trauma patient?</b>	
		("Emergencies"[MAJR] OR "Emergency Treatment"[ MAJR] OR "Emergency Medicine"[ MAJR] OR "Emergency Medical Technicians"[ MAJR] OR "Wounds and Injuries"[ MAJR] OR "Craniocerebral Trauma"[ MAJR] OR "Cerebrovascular Trauma"[ MAJR] OR "Multiple Trauma"[ MAJR] OR "Trauma, Nervous System"[ MAJR] OR "Head Injuries, Penetrating"[ MAJR] OR "Carotid Artery Injuries"[ MAJR] OR "Head Injuries, Closed"[ MAJR] OR "Spinal Cord Injuries"[ MAJR] OR "Traumatology"[ MAJR] OR "Brain Injuries"[ MAJR]) AND "Calcium/therapeutic use"[MAJR]	Humans English 2012-end
		<b>Novel anticoagulants</b>	
	<b>1</b>	<b>Does pre-injury anticoagulant medication influence outcome?</b>	
		("Emergencies"[MAJR] OR "Emergency Treatment"[ MAJR] OR "Emergency Medicine"[ MAJR] OR "Emergency Medical Technicians"[ MAJR] OR "Wounds and Injuries"[ MAJR] OR "Craniocerebral Trauma"[ MAJR] OR "Cerebrovascular Trauma"[ MAJR] OR "Multiple Trauma"[ MAJR] OR "Trauma, Nervous System"[ MAJR] OR "Head Injuries, Penetrating"[ MAJR] OR "Carotid Artery Injuries"[ MAJR] OR "Head Injuries, Closed"[ MAJR] OR "Spinal Cord Injuries"[ MAJR] OR "Traumatology"[ MAJR] OR "Brain Injuries"[ MAJR]) AND ("Outcome Assessment (Health Care)"[Mesh] OR "Treatment Outcome"[Mesh] OR "Outcome and Process Assessment (Health Care)"[Mesh]) AND "Anticoagulants"[Mesh]	Humans English
	<b>2</b>	<b>How can drug-induced coagulation disorders be detected and diagnosed?</b>	
		("Emergencies"[MAJR] OR "Emergency Treatment"[ MAJR] OR "Emergency Medicine"[ MAJR] OR "Emergency Medical Technicians"[ MAJR] OR "Wounds and Injuries"[ MAJR] OR "Craniocerebral Trauma"[ MAJR] OR "Cerebrovascular Trauma"[ MAJR] OR "Multiple Trauma"[ MAJR] OR "Trauma, Nervous System"[ MAJR] OR "Head Injuries, Penetrating"[ MAJR] OR "Carotid Artery Injuries"[ MAJR] OR "Head Injuries, Closed"[ MAJR] OR "Spinal Cord Injuries"[ MAJR] OR "Traumatology"[ MAJR] OR "Brain Injuries"[ MAJR]) AND ("Diagnosis"[Mesh] OR "Early Diagnosis"[Mesh]) AND "Blood Coagulation Disorders"[Mesh] AND "Anticoagulants"[Mesh]	Humans English
	<b>3</b>	<b>How should drug-induced coagulopathies be managed?</b>	
	<b>4</b>	<b>Which antidotes can reverse the effects of pre-injury treatment with oral anticoagulants such as rivaroxaban, apixaban, endoxaban or dabigatran?</b>	

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	("Emergencies"[MeSH] OR "Emergency Treatment"[MeSH] OR "Emergency Medicine"[MeSH] OR "Emergency Medical Technicians"[MeSH] OR "Wounds and Injuries"[MeSH] OR "Craniocerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH]) AND ("Anticoagulants"[Mesh] OR "rivaroxaban"[Supplementary Concept] OR "apixaban"[All Fields] OR "dabigatran"[Supplementary Concept] OR endoxaban[All Fields]) AND ("Therapeutics"[Mesh] OR "Emergency Treatment"[Mesh] OR "Antidotes" [Pharmacological Action])	Humans English 2012-end
<b>VII</b> <b>GUIDELINE IMPLEMENTATION AND QUALITY CONTROL</b>		
<b>1</b>	<b>Which massive transfusion guidelines have been published?</b>	
<b>2</b>	<b>Which massive transfusion guidelines are used in clinical practice: institutional, national, international?</b>	
<b>3</b>	<b>How uniform are massive transfusion guidelines?</b>	
<b>4</b>	<b>Are massive transfusion guidelines adhered to in clinical practice?</b>	
	("Wounds and Injuries"[MeSH] OR "Craniocerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH]) AND ("Blood Transfusion"[Mesh] OR "Transfusion Medicine"[Mesh] OR "Platelet Transfusion"[Mesh] OR "Erythrocyte Transfusion"[Mesh] OR "Blood Component Transfusion"[Mesh]) AND ("Guideline" [Publication Type] OR "Evidence-Based Emergency Medicine"[Mesh] OR "Evidence-Based Practice"[Mesh] OR "Guideline Adherence"[Mesh] OR "Evidence-Based Medicine"[Mesh])	Humans English 10 years
<b>5</b>	<b>Has clinical practice in the management of polytrauma patients changed?</b>	
	("Emergencies"[MeSH] OR "Emergency Treatment"[MeSH] OR "Emergency Medicine"[MeSH] OR "Emergency Medical Technicians"[MeSH] OR "Wounds and Injuries"[MeSH] OR "Craniocerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH]) AND "Physician's Practice Patterns"[Mesh]	Humans English 2012-end
<b>6</b>	<b>Does the implementation and use of multi-disciplinary trauma treatment simulation improve outcomes?</b>	
<b>7</b>	<b>Which types of educational measure are effective in improving outcomes in trauma patients?</b>	
	("Multiple Trauma"[MeSH] OR "Traumatology"[MeSH]) AND ("Education"[Mesh] OR "Patient Simulation"[Mesh])	Humans English 10 years
<b>8</b>	<b>Does the implementation and use of treatment 'bundles' improve outcomes?</b>	
	("Emergencies"[MeSH] OR "Emergency Treatment"[MeSH] OR "Emergency Medicine"[MeSH] OR "Emergency Medical Technicians"[MeSH] OR "Wounds and Injuries"[MeSH] OR "Craniocerebral Trauma"[MeSH] OR "Cerebrovascular Trauma"[MeSH] OR "Multiple Trauma"[MeSH] OR "Trauma, Nervous System"[MeSH] OR "Head Injuries, Penetrating"[MeSH] OR "Carotid Artery Injuries"[MeSH] OR "Head Injuries, Closed"[MeSH] OR "Spinal Cord Injuries"[MeSH] OR "Traumatology"[MeSH] OR "Brain Injuries"[MeSH]) AND "Patient Care Bundles"[Mesh]	Humans English 10 years

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