eTable 2a. Grey zone clinical practices in the **emergency department** according to level of evidence (review phase) and expert opinion (consultation phase)

eTable 2b. Grey zone clinical practices in **general trauma surgery** according to level of evidence (review phase) and expert opinion (consultation phase)

eTable 2c. Grey zone clinical practices in the **intensive care unit** according to level of evidence (review phase) and expert opinion (consultation phase)

eTable 2d. Grey zone clinical practices in **orthopaedics** according to level of evidence (review phase) and expert opinion (consultation phase)

eReferences.

**eTable 2a. Grey zone clinical practices in the emergency department according to level of evidence (review phase) and expert opinion (consultation phase)**

|  |  |  |
| --- | --- | --- |
| **Clinical practices in the emergency department** | **Level of evidence†****I-RCT to IV-expert consensus****Number of studies** | **Expert opinion‡****1-clearly low value to 5-clearly beneficial****Number of experts** |
| Hospital admission in isolated sternal fractures with normal cardiac enzymes (troponin) and normal ECG[1]◊  |  |  |
| Hospital admission in pediatric isolated skull fracture with GCS=15, normal neurological exam and low-energy injury mechanism[2-7] |  |  |
| Cervical collar retention in obtunded or intubated trauma patient with no injuries detected on cervical spine CT[8-10] |  |  |
| Thoracolumbar spine X-Ray in patients with no complaints of thoracolumbar spinal pain, normal mental status and normal neurological and physical examination[11] |  |  |
| Repeat head CT in adult mild TBI with negative initial CT and on anticoagulant and/or antiplatelet therapy[12-24] |  |  |
| Repeat head CT in adult mild complicated TBI[12 25-30] |  |  |
| Chest CT in pediatric blunt thoracic trauma with normal mediastinal silhouette on X-RayNICE[31 32] |  |  |
| Abdominal CT in adult blunt abdominal trauma with normal physical exam and negative FAST[33-43] |  |  |
| Routine panels in pediatric blunt abdominal trauma[44] |  |  |
| Head MRI in adult TBI who received timely helical CT with a new generation scannerNQF, NICE[45-49] |  |  |
| Aerodigestive tract endoscopy in penetrating neck injury with negative neck exploration[50] |  |  |
| Esophagography in esophageal injury with pneumomediastinum but a negative CT[51] |  |  |
| Massive transfusion in trauma, negative on a validated score (e.g. TASH, revised MTS, ABC)[52 53] |  |  |
| Thoracotomy in pediatric blunt trauma with cardiac arrest[54] |  |  |
| Cardiopulmonary resuscitation in trauma, resuscitation >15 mins and no immediate reversible cause[55] |  |  |

†**Level of evidence of clinical practices based on study design**,I, RCT or SR of RCT; II, prospective studies, quasi-randomized studies, SR of level II studies; III, case-control, case series, cross-sectional, retrospective, SR of level III studies; IV, expert consensus, narrative review, other

‡**Level of agreement of consulted experts on the value of clinical practices**,1, clearly low-value; 2, possibly low-value; 3, controversial; 4, possibly beneficial; 5, clearly beneficial; 6, undecided

◊See eReferences for table’s references

ABC, Assessment of Blood Consumption; CT, computed tomography; ECG, electrocardiogram; FAST, Focused Assessment with Sonography in Trauma; GCS, Glascow Coma Scale; MRI, magnetic resonance imaging; MTS, Massive Transfusion Score; NICE, National Institute for Health and Care Excellence; NQF, National Quality Forum; RCT, randomized controlled trial; SR, systematic review; TASH, Trauma Associated Severe Hemorrhage; TBI, traumatic brain injury

**eTable 2b. Grey zone clinical practices in general trauma surgery according to level of evidence (review phase) and expert opinion (consultation phase)**

|  |  |  |
| --- | --- | --- |
| **Clinical practices in surgery** | **Level of evidence†****I-RCT to IV-expert consensus****Number of studies** | **Expert opinion‡****1-clearly low value to 5-clearly beneficial****Number of experts** |
| Hospital admission for stable patients with an abdominal anterior stab wound, negative FAST and negative wound explorationEAST [1-3]◊ |  |  |
| Hospitalisation > 24 hours for penetrating abdominal trauma with non-operative management, reliable abdominal examination, and minimal or no abdominal tendernessEAST [1] |  |  |
| Follow-up imaging for blunt grade IV renovascular renal injury with non-operative management and no clinical deterioration[4] |  |  |
| Follow-up imaging for blunt grade I-III renal injury with non-operative management and no clinical deterioration[4 5] |  |  |
| Stent graft for minimal aortic injury with regression on follow-up CTA[6] |  |  |
| Decompression, diversion, exclusion for full thickness duodenal laceration managed with damage control surgery[7] |  |  |
| Foley catheter for temporary hemostasis in gaping cardiac injury[8] |  |  |
| Prophylactic nasogastric decompression following emergency laparotomy for abdominal injury[9] |  |  |
| Complex surgery for duodenal injury from low-velocity gunshot wound with <50% circumference[10] |  |  |
| Damage control laparotomy for pediatric trauma[11 12] |  |  |
| Surgical management of penetrating zone II neck injury without hard signsEAST [13-16] |  |  |
| Surgical management of grade III-IV pancreatic injury in patients who are hemodynamically stable and have no hollow organ injuries[17 18] |  |  |
| Surgical management of blunt grade IV-V renal injury in patients who are hemodynamically stable[2 18-23] |  |  |
| Surgical management of blunt isolated splenic or liver injury in patients with no peritonitis who are hemodynamically stable or unstable but responsive[20 22 24-27] |  |  |
| Surgical management of penetrating transmediastinal injury in patients who are hemodynamically stable and are either negative on CT or positive on CT but negative on esophagoscopy/esophagography, bronchoscopy or angiography[28] |  |  |

†**Level of evidence of clinical practices based on study design**,I, RCT or SR of RCT; II, prospective studies, quasi-randomized studies, SR of level II studies; III, case-control, case series, cross-sectional, retrospective, SR of level III studies; IV, expert consensus, narrative review, other

‡**Level of agreement of consulted experts on the value of clinical practices**,1, clearly low-value; 2, possibly low-value; 3, controversial; 4, possibly beneficial; 5, clearly beneficial; 6, undecided

◊See eReferences for table’s references

CT, computed tomography; CTA, CT angiography; EAST, Eastern Association for the Surgery of Trauma; FAST, Focused Assessment with Sonography in Trauma; RCT, randomized controlled trial; SR, systematic review

**eTable 2c. Grey zone clinical practices in the intensive care unit according to level of evidence (review phase) and expert opinion (consultation phase)**

|  |  |  |
| --- | --- | --- |
| **Clinical practices in the intensive care unit** | **Level of evidence†****I-RCT to IV-expert consensus****Number of studies** | **Expert opinion‡****1-clearly low value to 5-clearly beneficial****Number of experts** |
| Neurosurgical consultation in adults with acute mild complicated TBI[1]◊ |  |  |
| Decompressive craniectomy in severe TBI with diffuse injury and refractory ICP[2-5] |  |  |
| Decompressive craniectomy in severe TBI as a standard of careACS, BTF [2-6] |  |  |
| Inferior vena cava filter for prevention of PE in isolated acute TBI with intracerebral hemorrhage and no DVT[7] |  |  |
| ICP monitoring in adults with severe TBI, normal CT and not more than one of the following criteria: aged>40, unilateral or bilateral posturing, systolic blood pressure <90 mmHgACS [8-10] |  |  |
| Neurological assessments hourly >24h in adults admitted to the ICU with mild or moderate TBI who are stable[11] |  |  |
| Neurological assessments hourly >24h in adults admitted to the ICU with severe TBI who are stable[11] |  |  |
| Antibiotic combination therapy to cover gram negative bacilli as standard of care in trauma patients with ventilator-associated pneumonia[12] |  |  |
| Antibiotic combination therapy to cover gram negative bacilli and MRSA as standard of care in trauma patients with ventilator-associated pneumonia[12] |  |  |
| Postoperative antibiotic prophylaxis in penetrating abdominal trauma with no hollow viscus injury[13] |  |  |
| Antibiotic prophylaxis in basal skull fractures with evidence of CSF leakage[14-16] |  |  |
| Antibiotic prophylaxis >24h post-operation in penetrating abdominal trauma with or without hollow viscus injuryEAST[17] |  |  |
| Antibiotic prophylaxis for external ventricular drain placement in adults with TBI[18] |  |  |
| Barbiturates in adults with severe TBIBTF[5 18-21] |  |  |
| Dopamine antagonists (methylphenidate, amantadine, and bromocriptine) in adults with severe TBI[22] |  |  |
| Antiseizure prophylaxis <1 week in adults with severe TBI and no seizure activity[18 23 24] |  |  |
| Neuromuscular blocking agents in TBI with no refractory intracranial hypertension[25] |  |  |
| Octreotide as routine post-operative prophylaxis to prevent fistula in pancreatic injuries[26] |  |  |
| Hypertonic saline solution in severe TBI[7] |  |  |
| Early hypertonic saline solution in TBI when intracranial pressure is not monitored[27] |  |  |
| Plasma transfusion with international normalized ratio <1.3 in TBI[28] |  |  |
| Therapeutic hypothermia in spinal cord injury[29] |  |  |
| Hyperbaric oxygen therapy in TBI[19 30-32] |  |  |
| Parenteral nutrition in trauma patients with no contraindications for enteral nutrition[25] |  |  |
| Immunisation following angiographic embolization in splenic injury[33] |  |  |
| Bed rest immobilization in blunt renal, hepatic or splenic injury[34] |  |  |

†**Level of evidence of clinical practices based on study design**,I, RCT or SR of RCT; II, prospective studies, quasi-randomized studies, SR of level II studies; III, case-control, case series, cross-sectional, retrospective, SR of level III studies; IV, expert consensus, narrative review, other

‡**Level of agreement of consulted experts on the value of clinical practices**,1, clearly low-value; 2, possibly low-value; 3, controversial; 4, possibly beneficial; 5, clearly beneficial; 6, undecided

◊See eReferences for table’s references

ACS, American College of Surgeons; BTF, Brain Trauma Foundation; CSF, cerebral spinal fluid; CT, computed tomography; DVT, deep vein thrombosis; EAST, Eastern Association for the Surgery of Trauma; ICP, intracranial pressure; MRSA, Methicillin-Resistant Staphylococcus Aureus; PE, pulmonary embolism; RBC, red blood cells; RCT, randomized controlled trial; SR, systematic review; TBI, traumatic brain injury

**eTable 2d. Grey zone clinical practices in orthopaedics according to level of evidence (review phase) and expert opinion (consultation phase)**

|  |  |  |
| --- | --- | --- |
| **Clinical practices in orthopedics** | **Level of evidence†****I-RCT to IV-expert consensus****Number of studies** | **Expert opinion‡****1-clearly low value to 5-clearly beneficial****Number of experts** |
| Follow-up consultation for adults with adequately aligned fifth metacarpal fracture[1-3]◊ |  |  |
| Follow-up consultation for adult with fifth metatarsal fracture[4] |  |  |
| Follow-up consultation for adult with non-displaced or minimally displaced distal radius fracture[3] |  |  |
| Follow-up consultation for adult with Mason I radial head and neck fracture[5] |  |  |
| Hand surgery consultation for adult hand injury without injury to the nerves, tendons or joints, skin loss or complex fractures or injuries requiring skin grafting or reconstruction[6 7] |  |  |
| Follow-up consultation for pediatric distal radial metaphysis buckle fracture[8] |  |  |
| Follow-up consultation for uncomplicated pediatric toddler fractures[9] |  |  |
| Repeat X-Ray for fractures with fixation repair and no clinical complaints[10] |  |  |
| Repeat X-Ray for torus or buckle distal radial fracture[11] |  |  |
| X-Ray on cast removal for adult ≥ 50 years old with a closed distal radius fracture, <2 cm from the distal end of the radius, living independently before the fracture[12] |  |  |
| Post-operative X-Ray for pediatric forearm fracture treated with manipulation under anesthesia with fluoroscopic guidance[13] |  |  |
| Post-operative X-Ray for pediatric pin-fixed displaced supracondylar humeral fracture[14] |  |  |
| Post-operative X-Ray of fractures treated by operative fixation with a load-sharing construct in good quality bone[15] |  |  |
| Post splinting X-Ray of non-displaced and minimally displaced fractures with no manipulation before or during immobilization[16 17] |  |  |
| Magnetic resonance imaging for suspected scaphoid fracture[18] |  |  |
| Routine in-hospital post-operative X-Ray for surgically treated thoracolumbar injuries with no clinical deterioration[19] |  |  |
| Cast immobilization for adult fifth metacarpal neck fracture[1 20] |  |  |
| Immobilization for suspected scaphoid fractures with negative computed tomography or magnetic resonance imaging[21 22] |  |  |
| Reduction and cast immobilization in fifth metacarpal neck fracture with initial angulation of less than 70 degrees[20] |  |  |
| Percutaneous pin fixation for adults with unstable, extra-articular distal radial fracture[23] |  |  |
| Syndesmotic screw removal for adult surgical ankle fracture without persistent hardware complaints (asymptotic)[24-26] |  |  |
| Radial head prosthesis in adult Mason IV radial head fracture-dislocation[27] |  |  |
| Long arm cast for pediatric (>4 years old) displaced distal third radius and ulna fractures[28] |  |  |
| Rigid cast for pediatric isolated distal fibular facture[29 30] |  |  |
| Halo vest for geriatric type II odontoid fracture[31] |  |  |
| Open Reduction and Internal Fixation (ORIF) in Mason II radial head fractures[32 33] |  |  |
| Hemiarthroplasty in patients 65 years of age and over with a proximal, four-part humeral fracture[34] |  |  |
| Supplementary cancellous bone graft in femoral, tibial or humeral fractures during renailing surgery when adequate reaming and a larger nail are used[35] |  |  |
| Surgical management in thoracolumbar burst fractures with no more than minor neurologic deficit[36 37] |  |  |
| Spinal fusion for thoracolumbar and lumbar burst fractures requiring surgery[38-41] |  |  |
| Daily pin site care for fractures with an external fixation device[42 43] |  |  |

†**Level of evidence of clinical practices based on study design**,I, RCT or SR of RCT; II, prospective studies, quasi-randomized studies, SR of level II studies; III, case-control, case series, cross-sectional, retrospective, SR of level III studies; IV, expert consensus, narrative review, other

‡**Level of agreement of consulted experts on the value of clinical practices**,1, clearly low-value; 2, possibly low-value; 3, controversial; 4, possibly beneficial; 5, clearly beneficial; 6, undecided

◊See eReferences for table’s references

RCT, randomized controlled trial; SR, systematic review

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