Resuscitation

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All children initially receive high-flow oxygen, preferably via - a non-rebreathe mask; this can be stopped if there is cardio - respiratory stability after a period of observation. Intubation and ventilation are required if oxygenation is inadequate or if there is a low GCS, combative behaviour, an inability to cooperate, severe burns, prolonged seizures or imminent oper - ative intervention. Ideally , seriously injured children require two large well-secured cannulae. Alongside the antecubital fossa, other suitable veins include the long saphenous a t the ankle, the femoral, the external jugular and, in neonates, scalp veins. If intravenous access cannot be established, an intra- osseous needle can be placed in the tibia (Figure 19.1) or the - humeral head, which has the benefit of being easily accessed by an anaesthetist. age-adjusted cardiovascular parameters. Initially , 10 /uni00A0 mL/kg of a warmed isotonic fluid is given. Total blood volume (TBV) is around 85 /uni00A0 mL/kg in a neonate, rising to 100 /uni00A0 mL/kg at 1 /uni00A0 month and then falling to 75–80 /uni00A0 mL/kg in a child. Major haemorrhage is defined as loss of 50% of TBV in <3 /uni00A0 hours, 100% in 24 /uni00A0 hours or >20% in <1 /uni00A0 hour, but is challenging to assess, especially in blunt trauma. Hospitals should have a major haemorrhage protocol. If the capillary refill is >2 /uni00A0 seconds and the child has lost mainly blood, then blood is given, using O rhesus-negative blood until type-specific or cross-matched blood is available. Severe trauma-induced coagulopathy is best managed by correcting specific coagulation factors and using point-of-care testing thromboelastography (TEG) and thromboelastometry (ROTEM), but if these are not available the following are given: packed cells 20 /uni00A0 mL/kg, fresh-frozen plasma 20 /uni00A0 mL/kg, platelets 10 /uni00A0 mL/kg and cryoprecipitate 5 /uni00A0 mL/kg, and repeated maintaining these ratios and aiming for 9 a haemoglobin level >80 /uni00A0 g/L, platelets >75 /uni00A0×/uni00A0 10 /L, fibrinogen >1.5 /uni00A0 g/L and activated partial thromboplastin time (APTT)/ prothrombin time (PT) <1.5 /uni00A0×/uni00A0 normal midpoint. If the major haemorrhage occurred within 3 /uni00A0 hours, a slow tranexamic acid bolus of 15 /uni00A0 mg/kg followed by an infusion (15 /uni00A0 mg/kg over 8 /uni00A0 hours) should be given.

1–3 cm Figure 19.1 The intraosseous needle is inserted into the proximal tibia’s medullary cavity about 1–3 cm below the tibial tuberosity.

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