Emergency Vascular Access in Children

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Emergency Vascular Access in Children

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Principles
- Obtain IV access on arrival in all children with a potentially significant injury or illness
- Prefer: 2 short, large diameter peripheral lines
- If 3 peripheral IV attempts not successful within 90 seconds, perform advanced method
- The advanced methods described below should only be performed by personnel with adequate training and experience in performing the procedures in children
- Replace advanced lines once patient stable

Peripheral IV
- Dorsal hand and greater saphenous veins preferred sites
- Immobilize extremity before attempt
- Use largest cannula vessel will allow
- Monitor site frequently

Intraosseous
- For children ≤6 years of age
- Anteromedial tibia, 1.5 cm below tibial tuberosity
- Ensure fluids infuse freely by gravity before infusing by pump. If not, do not use.
- May use for resuscitation meds
- Secure needle, monitor well
- Remove within 6 hours

Cutdown
- Greater saphenous or basilic veins
- Cephalic or basilic vein if potential abdominal trauma
- Steps: immobilize area, sterilize, anesthetize, then incise skin, mobilize vein with clamp, loop vein with ligature, insert catheter, secure catheter, dress site
- Broadest, shortest catheter vein will allow

Central Line
- High complication rate in children. Should be attempted only after other techniques have failed, and only by those with experience in the procedure in children
- Femoral route preferred
- Seldinger technique
- Secure catheter, apply occlusive dressing
- Monitor extremity closely for signs of vascular compromise

Fig. 1: Proportional IV cannula flow rates.

Fig. 2: Intraosseous needle in the anteromedial tibia.

Fig. 3: Location of basilic vein cutdown anterior to medial humeral condyle.

Fig. 4: Cutdown

Location of greater saphenous vein cutdown anterior to medial malleolus

Greater saphenous vein mobilized with a clamp

Ligature used for traction and exposure as catheter introduced

Fig. 5: Femoral venous access via Seldinger technique.