

ANNEX 4

Measurement of central venous pressure

In seriously ill patients with shock or renal failure in whom clinical assessment of the jugular venous pressure is difficult or considered inaccurate, a central venous catheter should be inserted percutaneously. In those with no haemostatic problems, a catheter may be inserted into the jugular or subclavian vein provided adequate facilities for a sterile procedure and subsequent nursing are available. However, patients who have been bitten by vipers may have obvious haemostatic problems or may develop coagulopathy. In these cases, the antecubital approach is by far the safest as haemostasis can be achieved by local pressure. A long catheter (at least 50-70 cm for an adult) is required (Fig 45). The catheter is connected via a three-way tap and pressure tubing to a manometer. The whole system is filled with sterile isotonic saline. Before readings can be taken, the zero on the manometer must be aligned as accurately as possible with the horizontal plane of the left atrium. A simple spirit-level (eg a 20 ml glass ampoule with bubble, taped to a ruler) can be used to locate the manometer zero at the same height as an appropriate chest-wall landmark, such as the mid-axillary line, in the supine patient (Fig 46) or the sternal angle in a patient sitting up at 45°. There should be strict attention to asepsis. Infection and thrombosis are potential complications; especially if the catheter remains in place for a long time.



Figure 45 : Central venous pressure monitoring in a patient with shock after Russell's viper bite, in a township hospital in rural Myanmar. A 70 cm long catheter was inserted into an antecubital vein (Seldinger percutaneous guidewire technique) and advanced until its tip was in the superior vena cava. An extension tube connects with a simple saline manometer whose zero point is at the level of the mid-axillary line. (Copyright DA Warrell)

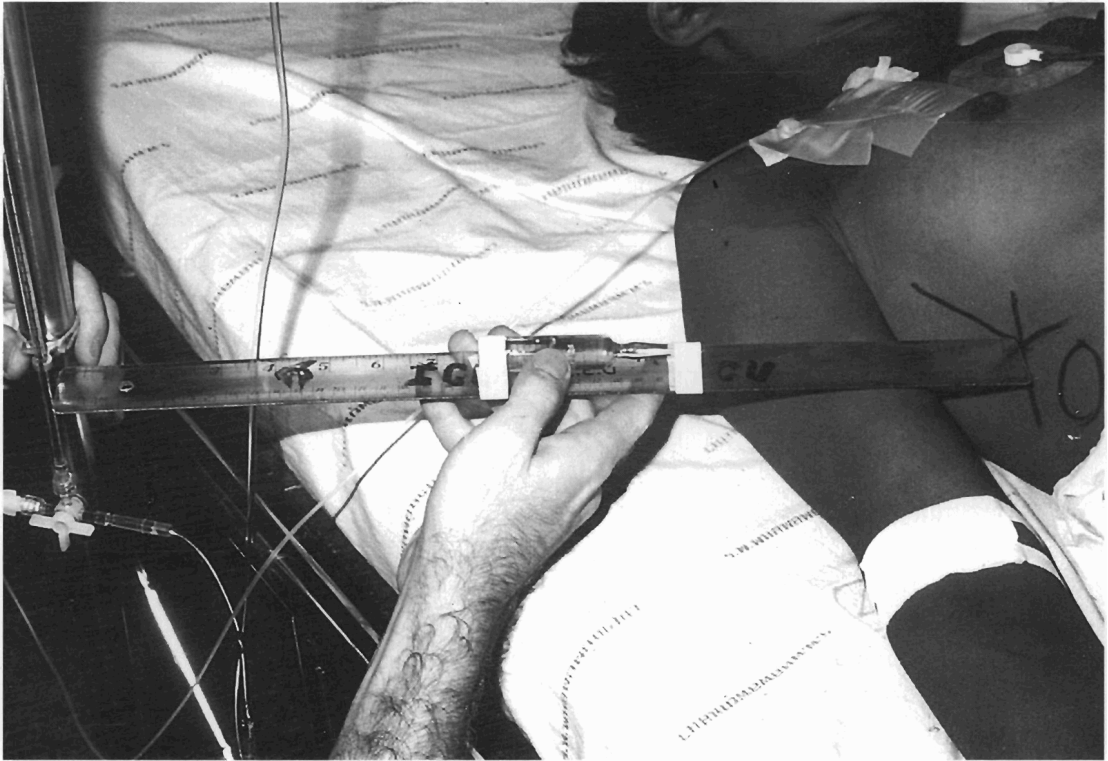


Figure 46 : Adjusting the zero point of the central venous pressure manometer to the mid-axillary line, using a home-made ruler-plus-glass-ampoule “spirit level”. (Copyright DA Warrell)