



Fig. 92.1 Cerebral autoregulation: CBF, ICP, and MAP as functions of CPP.

All three panels share the same x-axis (CPP 0–220 mmHg) and are coupled by the identity $CPP = MAP - ICP$. Vertical dashed lines mark the lower (LLA = 60 mmHg) and upper (ULA = 150 mmHg) limits of autoregulation (yellow zone). **A.** CBF is pressure-independent across the plateau. **B.** ICP ≈ 10 mmHg within the plateau; it rises steeply below the LLA (exhausted vasodilatory reserve) and above the ULA (breakthrough hyperperfusion / vasogenic oedema). Dashed red line = critical ICP of 20 mmHg. **C.** MAP = CPP + ICP: within the plateau ICP is constant so MAP rises linearly with CPP at slope = 1 (green curve); outside the plateau the rising ICP forces MAP to increase disproportionately to sustain the same CPP (slope > 1). Orange dashed line = minimum MAP target at the LLA (≈ 70 mmHg); red dashed line = ULA MAP ceiling (≈ 160 mmHg). Green band = normal MAP range (65–100 mmHg). The diagonal grey reference shows the theoretical MAP–CPP line if ICP were zero.