

# INTRACRANIAL PRESSURE and CUSHINGS TRIAD

...decorticate = flexion;  
 ...decerebrate = extension

MAP = mean arterial pressure;

$$MAP \simeq DP + \frac{1}{3}PP$$

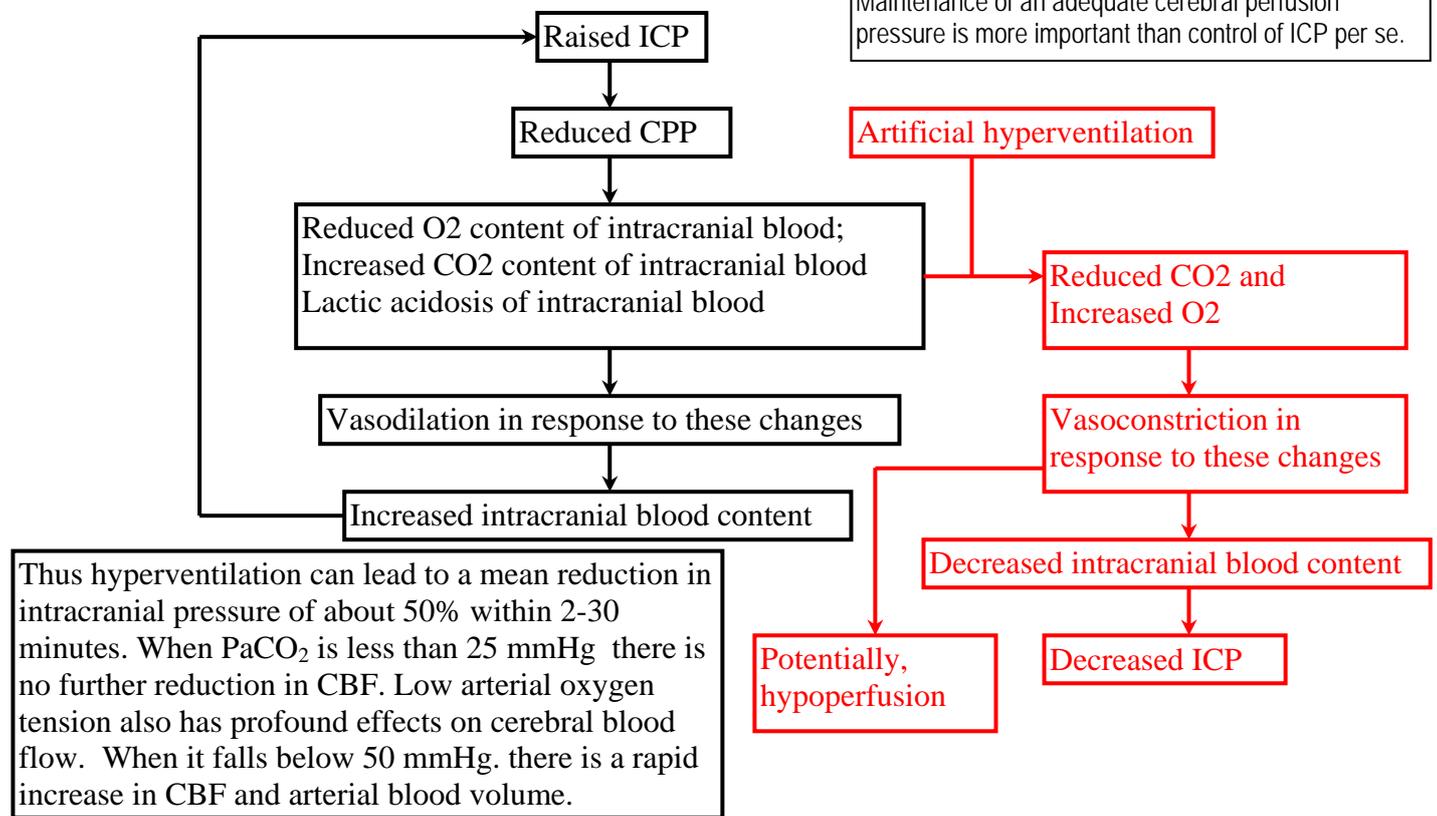
Where DP is the diastolic pressure and PP is the pulse pressure (the difference between systolic and diastolic). It is believed that a MAP of greater than 60 mmHg is enough to sustain the organs of the average person under most conditions.

$$CPP = MAP - ICP$$

CPP = Cerebral Perfusion Pressure  
 = in adults should be around 70mmHg

ICP = Intracranial Pressure  
 Normal ICP = 0 to 10 mmHg in adults  
 = 0 to 10 mmHg in children  
 = 0 to 5 mmHg in infants  
 Above 15 mmHg = intracranial hypertension  
 Above 20mmHg = risk of focal ischaemia  
 Above 50mmHg = risk of global ischaemia  
 Maintenance of an adequate cerebral perfusion pressure is more important than control of ICP per se.

AUTOREGULATION of cerebral blood flow keeps the CPP steady with an MAP range of 60 to 160mmHg . At 60mmHg the vessels are maximally dilated and at 160 they are maximally constricted.



## HYPERTENSION:

The rise of MAP to compensate for increasing ICP is an adrenergic response, chiefly alpha-adrenoceptor-mediated, with both increased cardiac output (predominantly stroke volume, and hence increased pulse pressure) and increased vascular resistance peripherally. This response is said to originate either in the ischaemic hypothalamus (as a result of ischaemia-induced excitatory neurotransmitter release).