

Cerebral blood flow (CBF) is the blood supply to the brain in a given period of time. In an adult, CBF is typically 750 millilitres per minute or 15% of the cardiac output. This equates to an average perfusion of 50 to 54 millilitres of blood per 100 grams of brain tissue per minute. CBF is tightly regulated to meet the brain's metabolic demands. Too much blood (a clinical condition of a normal homeostatic response of hyperemia) can raise intracranial pressure (ICP), which can compress and damage delicate brain tissue. Too little blood flow (ischemia) results if blood flow to the brain is below 18 to 20 ml per 100 g per minute, and tissue death occurs if flow dips below 8 to 10 ml per 100 g per minute. In brain tissue, a biochemical cascade known as the ischemic cascade is triggered when the tissue becomes ischemic, potentially resulting in damage to and the death of brain cells. Medical professionals must take steps to maintain proper CBF in patients who have conditions like shock, stroke, cerebral edema, and traumatic brain injury.

Cerebral blood flow is determined by a number of factors, such as viscosity of blood, how dilated blood vessels are, and the net pressure of the flow of blood into the brain, known as cerebral perfusion pressure, which is determined by the body's blood pressure. Cerebral perfusion pressure (CPP) is defined as the mean arterial pressure (MAP) minus the intracranial pressure (ICP). In normal individuals, it should be above 50 mm Hg. Intracranial pressure should not be above 15 mm Hg (ICP of 20 mm Hg is considered as intracranial hypertension). Cerebral blood vessels are able to change the flow of blood through them by altering their diameters in a process called cerebral autoregulation; they constrict when systemic blood pressure is raised and dilate when it is lowered. Arterioles also constrict and dilate in response to different chemical concentrations. For example, they dilate in response to higher levels of carbon dioxide in the blood and constrict in response to lower levels of carbon dioxide.

In the present book, fifteen typical literatures about Cerebral blood flow (CBF) published on international authoritative journals were selected to introduce the worldwide newest progress, which contains reviews or original researches on Cerebral blood flow (CBF). We hope this book can demonstrate advances in Cerebral blood flow (CBF) as well as give references to the researchers, students and other related people.<sup>1</sup>

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<sup>1</sup> [https://en.wikipedia.org/wiki/Cerebral\\_circulation#Physiology](https://en.wikipedia.org/wiki/Cerebral_circulation#Physiology)