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*Centre of Excellence in*  
**CHILD TRAUMA**

## The stress system response to maltreatment

One physiological response to exposure to stress is the release of the 'stress hormone' cortisol, which prepares the body to take urgent action – the 'fight or flight' response. A certain amount of stress is normal for all children in their daily lives and their inbuilt systems for managing physical, emotional and social stress will be further developed through actual experience. However, acute stress experienced over a prolonged period can have a negative impact on the physiology of the brain (Woolgar, 2013).

When a critical level of cortisol is reached a feedback loop (known as the HPA axis) is activated. This decreases the activity of the stress system in order to protect the body (Woolgar, 2013). In maltreated children, the system can be either chronically elevated or chronically suppressed. The former is associated with anxiety and fearfulness, preparing the child for further threats, while the latter prepares the child for functioning as well as they can in an adverse environment.

Three linked areas of the brain are particularly sensitive to chronic stress: the amygdala, the hippocampus and the prefrontal cortex. The amygdala is associated with emotion. A new born baby has little or no emotional regulation, so the caregiver helps their baby learn to self-soothe by offering reassurance. If the amygdala is overstimulated by repeated stress, however, it can become overactive so that the child perceives threat everywhere and responds in a highly emotional way to minor incidents (Brown and Ward, 2013).

The hippocampus and prefrontal cortex develop throughout childhood and are involved in governing higher cognitive functions, such as planning and reasoning, as well as self-regulation and mood and impulse control. Damage to the prefrontal cortex caused by chronic stress can impede the development of these skills and has consequences for future learning, behaviour and health (Brown and Ward, 2013)

These changes are a form of adaptation to poor caregiving environments. The adaptations may be unhelpful if the child moves to a safer environment, where they may misinterpret nurturing behaviour in an anxious or threatening way. However, there is evidence that moving to such an environment can help to stabilise this dysregulation (Woolgar, 2013).