



## Appendix E: Developmental Impact of Adverse Childhood Experiences (ACEs)

### ACEs can increase the risk of biomedical disease in four ways:

- **Chronic stress impacts development (allostatic load):** Chronic toxic stress in early childhood is mediated by chronic hypercortisolemia and proinflammatory cytokines. This is associated with long term changes in multiple brain circuits and systems, particularly those that affect mood control, social attachment, anxiety, executive function, memory, and learning. Therefore, ACEs can have negative impacts on health and wellbeing even without the presence of health risk behaviours.
- **Health-risk behaviours as coping strategies:** Behaviours such as excessive substance use and over-eating can provide immediate pharmacological and/or psychological benefit when patients are faced with stress and adversity. Over time, chronic “self-medicating” behaviours increase the risk of disease and poorer health outcomes later in life.<sup>11</sup>
- **Harmful risk environments:** The environments where patients grow up can affect the likelihood and impact of ACEs. Examples include: poverty, stigma, intimate partner violence, colonialism and social marginalization.<sup>11</sup>
- **Intergenerational transmission:** Toxic stress caused by ACEs can influence heritable epigenetic changes,<sup>31</sup> and parenting practices can also be influenced by the parent’s own ACE history.

**Table 3. Potential negative health outcomes associated with having a history of ACEs<sup>14,15</sup>**

Health Challenges		Social Challenges
<ul style="list-style-type: none"> <li>• Ischemic heart disease</li> <li>• Respiratory disease, e.g., chronic obstructive pulmonary disease</li> <li>• Cancer</li> <li>• Gastrointestinal disease</li> <li>• Headaches</li> <li>• Sleep disturbances</li> <li>• Obstetrical complications</li> <li>• Fractures</li> </ul>	<ul style="list-style-type: none"> <li>• Somatic pain</li> <li>• Depression</li> <li>• Anxiety</li> <li>• Post-traumatic stress disorder</li> <li>• Borderline personality disorder</li> <li>• Suicide attempts</li> <li>• Concurrent mental health conditions</li> <li>• Excessive substance use, e.g., alcohol, tobacco, stimulants, opioids</li> </ul>	<ul style="list-style-type: none"> <li>• Challenges at work and school</li> <li>• Intimate partner violence</li> <li>• Sexual, verbal, physical violence</li> <li>• Unintended pregnancy</li> <li>• Poor quality of life</li> <li>• Psychological distress</li> <li>• Low socioeconomic status</li> </ul>