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**Summary**

- There is strong evidence linking adverse childhood experiences (ACEs) and poor outcomes in adulthood both in terms of mental and physical health.
- Gaps in both the evidence base and research priorities still exist. These relate to identifying and assessing children who have experienced ACEs, and in addition, also relate to the development and, importantly, the evaluation of interventions.
- Existing gaps include whether sensitive periods during childhood exist, the role of resilience/protective factors, the causal relationships, biological mechanisms and relative risk of ACEs that lead to negative outcomes.
- ACEs affect individual children differently and chronic exposure appears to increase the risk of poor outcomes in adulthood, meaning interventions should also be tailored to the communities, families and individual children affected.
- Generally there needs to be better evaluation of interventions and dissemination of this information to ensure that their use is evidence based.
- More input from affected communities, clinicians, funding bodies and Government departments is required to identify research priorities and ensure gaps in the evidence-base are addressed.

**Introduction**

1. The Academy of Medical Sciences promotes advances in medical science, and promotes the translation of these into healthcare benefits for society. Our elected Fellowship includes the UK's foremost experts drawn from a broad and diverse range of research areas.
2. We welcome the opportunity to respond to the House of Commons Science and Technology Committee inquiry into evidence-based early-years intervention. Our response has been informed by engagement with a number of our Fellows with expertise in this area.
3. Our submission focuses on the evidence-base and existing gaps linking ACEs with poor adult health outcomes and related interventions.

**Q1. What is the evidence-base for the link between ACEs and long-term negative outcomes?**

4. ACEs can be broad in nature, and include mental/physical/sexual abuse, neglect, parental dysfunction/mental illness, or parental loss. There is strong evidence linking ACEs with

long-term negative outcomes such as mental health,<sup>1,2,3,4</sup> social functioning, occupational stability, living standard, wellbeing, physical health<sup>5,6</sup> and risk of premature death.<sup>7</sup>

5. However, literature reviews highlight a lack of consistency and clarity concerning the definition, measurement and assessment of ACEs.<sup>8</sup> It is not always clear where the line is drawn between normative stress experiences and ACEs. There is also ambiguity as to whether low socioeconomic status (SES) should be considered as a form of ACE, or as a contributing factor to negative adult outcomes. Risk of exposure to ACEs may be more common in low SES environments.<sup>9,10</sup> Poverty is a powerful predictor of mental health issues, as it also predicts many other causes of mental distress.<sup>11</sup>
6. There are links between poverty, brain development and behaviour that suggest that children with low SES have a higher chance of behaving in ways that could harm their health, and reduce life expectancy. Evidence is emerging that our capacity to resist environments that tempt us to overeat, smoke, drink excessively, or be physically inactive is influenced by the strength of our 'executive functioning'. Executive functioning skills (EFs) refer to the mental processes required when you have to pay attention, when going on 'auto pilot' would be ill advised or insufficient. EFs are essential for mental health, physical health, success and for cognitive, social and psychological development.<sup>12</sup> Children living in low SES settings face a double hit: living in environments that contain more cues for unhealthy behaviours, combined with a reduced EF skills to resist those cues.<sup>13,14</sup> Further research is required to examine the roles of emotional processing and executive function skills in linking ACEs with negative outcomes in adulthood.<sup>15</sup>
7. There are several different methods of measuring ACEs. Most require self or parent report and assess up to 20 factors, most often including: parental incarceration, domestic violence, household mental illness, familial suicide and household alcohol or substance abuse. The methods usually use numeric, cumulative risk scoring methodology.<sup>16</sup> The same

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<sup>1</sup> Mars B, Heron J, Crane C, *et al.* (2014). *Differences in risk factors for self-harm with and without suicidal intent: Findings from the ALSPAC cohort.* J Affect Dis **168**, 407-14.

<sup>2</sup> Geoffroy M-C, Gunnell D, Power C. (2014) *Prenatal and childhood antecedents of suicide: 50-year follow-up of the 1958 British Birth Cohort Study.* Psychol Med **44**, 1245-1256.

<sup>3</sup> Lereya ST, Winsper C, Heron H, *et al.* (2013). *Being bullied during childhood and the prospective pathways to self-harm in late adolescence.* J Am Acad Child Adolesc Psychiatry **52**, 608-618.

<sup>4</sup> Jenkins J, Madigan S, Arseneault L. *Psychosocial adversity*, p.330. In Rutter M, *et al.* Edition 5 (2015) Rutter's child and adolescent psychiatry. Wiley-Blackwell; Oxford.

<sup>5</sup> Bellis, MA, Hughes K, Leckenby N, *et al.* (2014). *Measuring mortality and the burden of adult disease associated with adverse childhood experiences in England: a national survey.* J Public Health **37(3)**, 445-454.

<sup>6</sup> Holman DM, Ports KA, Buchanan ND, *et al.* (2016). *The association between adverse childhood experiences and risk of cancer in adulthood: a systematic review of the literature.* Pediatrics **138(S1)**, S81-S91

<sup>7</sup> Brown DW, Anda RF, Tiemeier H, *et al.* (2009). *Adverse childhood experiences and the risk of premature mortality.* Am J Prev Med **37(5)**, 389-96.

<sup>8</sup> McLaughlin KA. (2016). *Future directions in childhood adversity and youth psychology.* J Clin Child Adolesc Psychol **45(3)**, 361-382.

<sup>9</sup> Soares AL, Howe LD, Matijasevich A, *et al.* (2016). *Adverse childhood experiences: prevalence and related factors in adolescents of a Brazilian birth cohort.* Child Abuse Negl **51**, 21-30.

<sup>10</sup> Hatch S, Dohrenwend B. (2007). *Distribution of traumatic and other stressful life events by race/ethnicity, gender, SES and age: a review of the research.* Am J Community Psychol **40(3-4)**, 313-32.

<sup>11</sup> Read J. (2010). *Can poverty drive you mad? 'Schizophrenia', socio-economic status and the case for primary prevention.* NZ J Psychol **39(2)**, 7-19.

<sup>12</sup> Diamond A. (2013). *Executive functions.* Annu Rev Psychol **64**, 135-168.

<sup>13</sup> Stringhini S, Sabia S, Shipley M, *et al.* (2010). *Association of socioeconomic position with health behaviors and mortality.* JAMA **303(12)**, 1159-66.

<sup>14</sup> Moffitt TE, Arseneault L, Belsky D, *et al.* (2011). *A gradient of childhood self-control predicts health, wealth and public safety.* Proc Natl Acad Sci USA **108(7)**, 2693-8.

<sup>15</sup> McLaughlin KA. (2016). *Future directions in childhood adversity and youth psychopathology.* J Clin Child Adolesc Psychol **45(3)**, 361-382.

<sup>16</sup> Bethell, CD, Cale A, Hudziak J, *et al.* (2017). *Methods to assess adverse childhood experiences of children and families: toward approaches to promote child well-being in policy and practice.* Acad Pediatr **17(7S)**, S51-S69.

review suggests that research into a single standardised ACE measuring method would help accurately evaluate the link between ACEs and long term outcomes.

8. It should be noted that many studies in this area of research are retrospective, which present challenges for the evidence-base as they are difficult to validate. Adults' recollection of early-years experiences can be biased by their subsequent health and wellbeing.<sup>17</sup> Prospective studies provide the strongest data but the number of such studies is limited and fixed by the specific cultural and social context of the period in which they were carried out.

*Q1a: Are there gaps in this evidence-base?*

9. Further research is required to address aspects in this field, such as whether particular sensitive periods exist for first exposure to ACE during childhood. Some studies suggest early-childhood exposure increases risk of negative adult outcomes including increased susceptibility to mental health problems,<sup>18</sup> other studies however showed that the time of first exposure had no impact on particular outcomes, such as suicide risk.<sup>19</sup>
10. It is still unclear how other aspects such as protective and resilience factors influence whether an individual will develop negative outcomes in adulthood. Little information exists that allows us to predict which children do well and remain resilient and which develop negative outcomes after being exposed to ACE. These gaps limit the ability to decide the best ways to encourage the development of resilience in ACE exposed children, or whether it would be better to try to enhance their general competence in handling stress.
11. There remains a knowledge gap around the biological pathways and the developmental mechanisms involved in linking ACEs to adult outcomes. The degree to which negative outcomes are mediated through either continued adversity, or through the ACE being embedded within neuropsychological, immune, neuroendocrine or epigenetic change needs to be determined. Mechanisms which are being investigated and requiring further research include epigenetic changes,<sup>20</sup> neurobiological effects<sup>21</sup> and other biological correlates,<sup>22</sup> including changes in the biological stress response.<sup>23</sup>
12. Physical health outcomes which have been highlighted as warranting further research into the mechanisms linking them with ACEs include cancer,<sup>24</sup> diabetes,<sup>25,26</sup> chronic pain<sup>27</sup> and

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<sup>17</sup> Reuben A, Moffitt TE, Caspi A, et al. (2016). *Lest we forget: comparing retrospective and prospective assessments of adverse childhood experiences in the prediction of adult health*. Child Psychol Psychiatry **57(10)**, 1103-12.

<sup>18</sup> Sheridan MA, Fox NA, Zeanah CH, et al. (2012). *Variation in neural development as a result of exposure to institutionalization early in childhood*. Proc Natl Acad Sci USA **109**, 12927-12932.

<sup>19</sup> Gomez SH, Tse J, Wang Y, et al. (2017). *Are there sensitive periods when child maltreatment substantially elevates suicide risk? Results from a nationally representative sample of adolescents*. Depress Anxiety **34(8)**, 734-741.

<sup>20</sup> Vaiserman AM. (2015). *Epigenetic programming by early-life stress: evidence from human populations*. Dev Dyn **244(3)**, 254-65.

<sup>21</sup> McCrory EJ, Gerin MI, Viding E. (2017). *Annual research review: childhood maltreatment, latent vulnerability and the shift to preventative psychiatry- the contribution of functional brain imaging*. J Child Psychol Psychiatry **58(4)**, 338-357.

<sup>22</sup> Danese A, McEwen BS. (2012). *Adverse childhood experiences, allostasis, allostatic load, and age-related disease*. Physiol Behav **106(1)**, 29-39.

<sup>23</sup> Kalmakis KA, Chandler GE. (2015). *Health consequences of adverse childhood experiences: a systematic review*. J Am Assoc Nurse Pract **27(8)**, 457-65.

<sup>24</sup> Holman DM, Ports KA, Buchanan ND, et al. (2016). *The association between adverse childhood experiences and risk of cancer in adulthood: a systematic review of the literature*. Pediatrics **138(S1)**, S81-S91.

<sup>25</sup> Huang H, Yan P, Shan Z, et al. (2015). *Adverse childhood experiences and risk of type 2 diabetes: A systematic review and meta-analysis*. Metabolism **64(11)**, 1408-18.

<sup>26</sup> Huffhines L, Noser A, Patton SR. (2016). *The link between adverse childhood experiences and diabetes*. Curr Diab Rep **16(6)**, 54.

<sup>27</sup> Nelson SM, Cunningham NR, Kashikar-Zuck S. (2017). *A conceptual framework for understanding the role of adverse childhood experiences in paediatric chronic pain*. Clin J Pain **33(3)**, 264-270.

post-traumatic growth phenomena.<sup>28</sup> The mechanisms underlying mental health and wellbeing outcomes in response to ACE exposure requiring further investigation include substance abuse vulnerability,<sup>29</sup> suicide,<sup>30</sup> intimate partner violence,<sup>31</sup> psychosis,<sup>32</sup> and homelessness.<sup>33</sup>

13. Screening measures to identify children affected by ACEs, have been suggested to require additional research,<sup>34</sup> in conjunction with an improved understanding of the accuracy ACE self-report, as these can contain numerous false-negative reports.<sup>35,36</sup>
14. Many studies are not population-based, making studies small and potentially biased. There are few studies which address ACE risk in particular groups (for example BME communities or high risk subgroups such as multiply deprived children living with serious parental mental illnesses). There is also a lack of studies evaluating the outcomes of ACE exposure in developing countries.<sup>37</sup>

*Q1b: Which specific adverse childhood experiences produce the greatest adverse impact?*

15. It is likely that different types of ACE impact on adulthood in varying ways. However there is a lack of clarity in this area and the literature highlights examining the effects of particular types of ACEs as a research priority.<sup>38,39</sup> For example, a systematic review found associations between physical abuse and psychological abuse and any type of cancer and an association of sexual abuse with specific types of cancer. However, the same review also identified two studies which reported no association between physical and sexual abuse and specific types of cancer.<sup>40</sup> Another systematic review comparing the relationship of different types of ACEs with diabetes found that neglect had the strongest influence, while physical abuse had the least strong influence on later diabetes.<sup>41</sup>
16. Long-term adversity appears to be more damaging than single events. Many children are not exposed to one type of ACE. For example, poverty and parental substance dependence are linked to child deprivation, neglect and a lack of exposure to resilience factors. Chronic

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<sup>28</sup> Sapienza JK, Masten AS. (2011). *Understanding and promoting resilience in children and youth*. *Curr Opin Psychiatry* **24(4)**, 267-73.

<sup>29</sup> Somaini L, Donnini C, Manfredini M, et al. (2011). *Averse childhood experiences, genetic polymorphisms and neurochemical correlates in experimentation with psychotropic drugs among adolescents*. *Neurosci Biobehav Rev* **35(8)**, 1771-8.

<sup>30</sup> Sachs-Ericsson NJ, Rushing NC, Stanley IH, et al. (2016). *In my end is my beginning: developmental trajectories of adverse childhood experiences to late-life suicide*. *Aging Ment Health* **20(2)**, 139-65.

<sup>31</sup> Montalvo-Liendo N, Fredland N, McFarlane J, et al. (2015). *The intersection of partner violence and adverse childhood experiences: implications for research and clinical practice*. *Issues Ment Health Nurs* **36(12)**, 989-1006.

<sup>32</sup> Dvir Y, Denietolis B, Frazier JA. (2013). *Childhood trauma and psychosis*. *Child Adolesc Psychiatr Clin N Am* **22(4)**, 629-41.

<sup>33</sup> Davies BR, Allen NB. Rev (2017). *Trauma and homelessness in youth: psychopathology and intervention*. *Clin Psychol* **54**, 17-28.

<sup>34</sup> Finkelhor D. (2017). *Screening for adverse childhood experiences (ACEs): cautions and suggestions*. *Child Abuse Negl*. No pagination specified.

<sup>35</sup> Anda RF, Butchart A, Fellitti VJ, et al. (2010). *Building a framework for global surveillance of the public health implications of adverse childhood experiences*. *Am J Prev Med* **39(1)**, 93-8.

<sup>36</sup> Hardt J, Rutter M. (2004). *Validity of adult retrospective reports of adverse childhood experiences: review of the evidence*. *J Child Psychol Psychiatry* **45(2)**, 260-273.

<sup>37</sup> Sapienza JK, Masten AS. (2011). *Understanding and promoting resilience in children and youth*. *Curr Opin Psychiatry* **24(4)**, 267-73.

<sup>38</sup> Humphreys KL, Zeanah CH. (2015). *Deviations from the expectable environment in early childhood and emerging psychopathology*. *Neuropsychopharmacology* **40(1)**, 154-70.

<sup>39</sup> McLaughlin KA. (2016). *Future directions in childhood adversity and youth psychopathology*. *J Clin Child Adolesc Psychol* **45(3)**, 361-382.

<sup>40</sup> Holman DM, Ports KA, Buchanan ND, et al. (2016). *The association between adverse childhood experiences and risk of cancer in adulthood: a systematic review of the literature*. *Pediatrics* **138(S1)**, S81-S91.

<sup>41</sup> Huang H, Yan p, Shan Z, et al. (2015). *Adverse childhood experiences and risk of type 2 diabetes: a systematic review and meta-analysis*. *Metabolism* **64(11)**, 1408-18.

exposure to ACEs predicts the greatest negative outcomes in general<sup>42,43</sup> with an increased risk for multiple negative outcomes including for psychosis<sup>44</sup> and asthma.<sup>45</sup>

17. Different people react differently to the same ACEs, leading to a range of outcomes in exposed individuals. Further research is required to understand the reasons for individual differences following ACE exposure, including but not limited to research into resilience and vulnerability,<sup>46,47</sup> as well as the effects of culture,<sup>48</sup> ethnicity and gender,<sup>49</sup> and mediating factors<sup>50</sup> including cognitive risk factors.<sup>51</sup>

## **Q2. Of what quality is the existing evidence-base for specific early-years interventions that aim to address adverse childhood experiences and minimise their effects later in life?**

18. A review which examined the evidence-base for youth interventions, lists 27 broadly psychotherapeutic programmes that are relevant and recognised as “well established” or “probably efficacious” and can be considered as evidence-based psychotherapies.<sup>52</sup>
19. Some literature reviews and overviews concluded that there was a lack of existing interventions in general,<sup>53</sup> and for certain populations. Many population groups were highlighted as requiring the development of interventions to address their needs, including children in foster care,<sup>54</sup> children at risk of suicide,<sup>55</sup> those experiencing intimate partner

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<sup>42</sup> Anda R, Tietjen G, Schulman E, et al. (2010). *Adverse childhood experiences and frequent headaches in adults*. *Headache* **50(9)**, 1473-81.

<sup>43</sup> Danese A, McEwen BS. (2012). *Adverse childhood experiences, allostasis, allostatic load, and age-related disease*. *Physiol Behav* **106(1)**, 29-39.

<sup>44</sup> Dvir Y, Denietolis B, Frazier JA. (2013). *Childhood trauma and psychosis*. *Child Adolesc Psychiatr Clin N Am* **22(4)**, 629-41.

<sup>45</sup> Exley D, Norman A, Hyland M. (2015). *Adverse childhood experience and asthma onset: a systematic review*. *Eur Respir Rev* **24(136)**, 299-305.

<sup>46</sup> Traub F, Boynton-Jarrett R. (2017). *Modifiable resilience factors to childhood adversity for clinical pediatric practice*. *Pediatrics* **139(5)**.

<sup>47</sup> McLaughlin KA. (2016). *Future directions in childhood adversity and youth psychopathology*. *J Clin Child Adolesc Psychol* **45(3)**, 361-382.

<sup>48</sup> Sapienza JK, Masten AS. (2011). *Understanding and promoting resilience in children and youth*. *Curr Opin Psychiatry* **24(4)**, 267-73.

<sup>49</sup> Kajeepeta S, Gelaye B, Jackson CL, et al. (2015). *Adverse childhood experiences are associated with adult sleep disorders: a systematic review*. *Sleep Med* **16(3)**, 320-30.

<sup>50</sup> Kalmakis KA, Chandler GE. (2015). *Health consequences of adverse childhood experiences: a systematic review*. *J Am Assoc Nurse Pract* **27(8)**, 457-65.

<sup>51</sup> Liu H, Atrooz F, Salvi A, et al. (2017). *Behavioural and cognitive impact of early life stress: insights from an animal model*. *Prog Neuropsychopharmacol Biol Psychiatry* **78**, 88-89.

<sup>52</sup> Weisz JR, Ng MY, Lau N. *Psychological interventions: overview and critical issues for the field*. p. 461-482. In Rutter M, et al. Edition 5 (2015) *Rutter's child and adolescent psychiatry*. Wiley-Blackwell; Oxford.

<sup>53</sup> Bryson SA, Gauvin E, Jamieson A, et al. (2017). *What are the strategies for implementing trauma-informed care in youth inpatient psychiatric and residential treatment settings? A realist systematic review*. *Int J Ment Health Syst* **11**, 36.

<sup>54</sup> Hambrick EP, Oppenheim-Weller S, N'zi AM, et al. (2016). *Mental health interventions for children in foster care: a systematic review*. *Child Youth Serv Rev* **70**, 65-77.

<sup>55</sup> Sachs-Ericsson NJ, Rushing NC, Stanley IH, et al. (2016). *In my end is my beginning: developmental trajectories of adverse childhood experiences to late-life suicide*. *Aging Ment Health* **20(2)**, 139-65.

violence,<sup>56</sup> obese women,<sup>57</sup> ethnic minorities,<sup>58</sup> children with co-morbid psychosis,<sup>59</sup> and young people experiencing homelessness.<sup>60</sup>

20. There are also suggestions to develop different interventions for different settings, such as those focused on families,<sup>61</sup> those with a whole community focus<sup>62</sup> and interventions to be used in primary care,<sup>63</sup> and psychiatric and residential treatment services.<sup>64</sup> Further evidence needs to be gathered on how to engage families in interventions and the value of doing so.<sup>65</sup> We need to understand the barriers to implementing trauma informed care (TIC) and how sustainable changes in practice are following TIC training<sup>66</sup>. TIC is a concept developed in the US to address the fact that many people in contact with mental health services have experienced trauma and to avoid staff practices in mental healthcare retraumatising these people, for example by pressuring a patient to accept medication which mimics previous experiences of powerlessness.<sup>67</sup> Finally, the feedback and perception of those who use mental health services and interventions need to be collected to better understand any issues regarding the mental health service experience and existing barriers to asking about childhood abuse.<sup>68</sup>
21. Literature reviews suggest that the outcomes of interventions need better evaluation.<sup>69</sup> For example in the US, the Child Adult Relationship Enhancement (CARE) intervention was developed to fill a gap in mental health services for children considered at risk of maltreatment. Since 2006 over 2000 caregivers and professionals have received CARE training. CARE represents a set of skills which help to improve interactions of any child or adolescent whilst built on the evidence-based Parent-Child Interaction Therapy (PCIT) there are currently no published evaluations of the intervention which are important for CARE to become evidence-based.<sup>70</sup>

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<sup>56</sup> Montalvo-Liendo N, Fredland N, McFarlane J, et al. (2015). *The intersection of partner violence and adverse childhood experiences: implications for research and clinical practice*. *Issues Ment Health Nurs* **36(12)**, 989-1006.

<sup>57</sup> McDonnell CJ, Garbers SV. (2017). *Adverse childhood experiences and obesity: systematic review of behavioural interventions for women*. *Psychol Trauma* **16(5)**, 1-195.

<sup>58</sup> Burnette CE, Figley CR. (2017). *Historical oppression, resilience and transcendence: can a holistic framework help explain violence experiences by indigenous people?* *Soc Work* **62(1)**, 37-44.

<sup>59</sup> Dvir Y, Denietolis B, Frazier JA. (2013). *Childhood trauma and psychosis*. *Child Adolesc Psychiatr Clin N Am* **22(4)**, 629-41.

<sup>60</sup> Davies BR, Allen NB. (2017). *Trauma and homelessness in youth: psychopathology and intervention*. *Clin Psychol Rev* **54**, 17-28.

<sup>61</sup> Figley, CR, Burnette CE. (2017). *Building bridges: connecting systemic trauma and family resilience in the study and treatment of diverse traumatized families*. *Traumatology* **23(1)**, 95-101.

<sup>62</sup> Bethell CD, Solloway MR, Guinosso S, et al. (2017). *Prioritising possibilities for child and family health: an agenda to address adverse childhood experiences and foster the social and emotional roots of well-being in paediatrics*. *Acad Pediatr* **17(7S)**, S36-S50.

<sup>63</sup> Bransford CL, Blizard RA. (2016). *Viewing psychopathology through a trauma lens*. *Soc Work Mental Health* **15(1)**, 80-98.

<sup>64</sup> Bryson SA, Gauvin E, Jamieson A, et al. (2017). *What are effective strategies for implementing trauma-informed care in youth inpatient psychiatric and residential treatment settings? A realist systematic review*. *Int J Ment Health Syst* **11**, 36.

<sup>65</sup> Bethell CD, Carle A, Hudziak J, et al. (2017). *Methods to assess adverse childhood experiences of children and families: toward approaches to promote child well-being in policy and practice*. *Academic Pediatrics* **17(7)**, S51-S69.

<sup>66</sup> Wilson A, Hutchinson M, Hurley J. (2017). *Literature review of trauma-informed care: implications for mental health nurses working in acute inpatient settings in Australia*. *Int J Ment Health Nurs*, No pagination specified.

<sup>67</sup> Sweeney A, Clement S, Filson B, et al. (2016). *Trauma-informed mental healthcare in the UK: what is it and how can we further its development?* *Ment Health Review J* **21(3)**, 174-192.

<sup>68</sup> Read J, Harper D, Tucker I, et al. (2017). *Do adult mental health services identify child abuse and neglect? A systematic review*. *Int J Ment Health Nurs*, No pagination specified.

<sup>69</sup> Bethell CD, Solloway MR, Guinosso S, et al. (2017). *Prioritising possibilities for child and family health: an agenda to address adverse childhood experiences and foster the social and emotional roots of well-being in paediatrics*. *Acad Pediatr* **17(7S)**, S36-S50.

<sup>70</sup> Gurwitsch RH, Messer EP, Masse J, et al. (2016). *Child-Adult Relationship Enhancement (CARE): An evidence-informed program for children with a history of trauma and other behavioral challenges*. *Child Abuse Negl* **53**, 138-145.

22. To be able to apply interventions effectively, further research, development and evaluation of particular approaches and interventions is necessary for ACE screening tools/approaches<sup>71</sup>, preventative interventions,<sup>72,73</sup> trauma informed educational approaches<sup>74,75</sup> and TIC approaches.<sup>76,77</sup> Reviews highlighted the need for more information on the overall costs of assessing and addressing ACEs,<sup>78</sup> cost-benefit analyses,<sup>79</sup> measures of costs saved<sup>80</sup> and cost-effectiveness.<sup>81</sup>
23. Research shows that the evidence base for many parent/family interventions aimed at improving parenting ability and child outcomes is relatively poor and therefore suggests that interventions must be appropriately targeted for optimal effect.<sup>82</sup> A study showed that the most vulnerable or most at risk children are also the most sensitive to intervention. Intervention personalisation, where interventions are tailored to the individual child, the individual family and age or developmental stage, may be important and necessary. Not all interventions are good for all children. More understanding of the optimal timing of an intervention is needed, in terms of how the intervention interacts with child experiences and characteristics,<sup>83</sup> and possible sensitive periods during development.<sup>84,85</sup>
24. The Academy of Medical Sciences' FORUM, which provides a neutral and independent platform for individuals from across academia, industry and the NHS, recently convened a roundtable to discuss the potential for a personalised approach to psychiatry. Attendees stressed the need to develop more robust, reliable (and objective) measures for mental health disorders, including new social and environmental factors that may influence mental health with a particular priority being the influence and impact in early life.<sup>86</sup>

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<sup>71</sup> Finkelhor D. (2017). *Screening for adverse childhood experiences (ACEs): cautions and suggestions*. Child Abuse Negl, no pagination specified.

<sup>72</sup> Larkin H, Felitti VJ, Anda RF. (2014). *Social work and adverse childhood experiences research: implications for practice and health policy*. Soc Work Public Health **29(1)**, 1-16.

<sup>73</sup> Mayer LM, Thursby E. (2012). *Adolescent parents and their children: a multifaceted approach to prevention of adverse childhood experiences (ACE)*. J Prev Interv Community **40(4)**, 304-312.

<sup>74</sup> Brunzell T, Stokes H, Waters L. (2016). *Trauma-informed positive education: using positive psychology to strengthen vulnerable students*. Contemp School Psychol **20(1)**, 63-83.

<sup>75</sup> Wiest-Stevenson C, Lee C. (2016). *Trauma-informed schools*. J Evid Inf Soc Work **13(5)**, 498-503.

<sup>76</sup> Bryson SA, Gauvin E, Jamieson A, et al. (2017). *What are effective strategies for implementing trauma-informed care in youth inpatient psychiatric and residential treatment settings? A realist systematic review*. Int J Ment Health Syst **11**, 36.

<sup>77</sup> Oral R, Ramirez M, Coohy C, et al. (2016). *Adverse childhood experiences and trauma informed care: the future of health care*. Pediatric Research **79(1-2)**, 227-233.

<sup>78</sup> Bethell CD, Carle A, Hudziak J, et al. (2017). *Methods to assess adverse childhood experiences of children and families: toward approaches to promote child well-being in policy and practice*. Acad Pediatr **17(7S)**, S51-S69.

<sup>79</sup> Finkelhor D. (2017). *Screening for adverse childhood experiences (ACEs): cautions and suggestions*. Child Abuse Negl, no pagination specified.

<sup>80</sup> Mayer LM, Thursby E. (2012). *Adolescent parents and their children: a multifaceted approach to prevention of adverse childhood experiences*. J Prev Interv Community **40(4)**, 304-12.

<sup>81</sup> Larkin H, Shields JJ, Anda RF. (2012). *The health and social consequences of adverse childhood experiences across the lifespan: an introduction to prevention and intervention in the community*. J Prev Interv Community **40(4)**, 263-270.

<sup>82</sup> Juffer F, Bakermans-Kranenburg MJ, van IJendoorn MH. (2005). *The importance of parenting in the development of disorganized attachment: evidence from a preventive intervention study in adoptive families*. J Child Psychol Psychiatry **46(3)**, 263-74.

<sup>83</sup> Hambrick EP, Oppenheim-Weller S, N'zi AM, et al. (2016). *Mental health interventions for children in foster care: a systematic review*. Child Youth Serv Rev **70**, 65-77.

<sup>84</sup> Huang H, Yan p, Shan Z, et al. (2015). *Adverse childhood experiences and risk of type 2 diabetes: a systematic review and meta-analysis*. Metabolism **64(11)**, 1408-18.

<sup>85</sup> McCrory EJ, Gerin MI, Viding E. (2017). *Annual research review: childhood maltreatment, latent vulnerability and the shift to preventative psychiatry - the contribution of functional brain imaging*. J Child Psychol Psychiatry **58(4)**, 338-357.

<sup>86</sup> Academy of Medical Sciences (2017). *Personalised psychiatry: Summary report of a FORUM meeting held on 6 September 2017*. <https://acmedsci.ac.uk/file-download/16107617>

**Q3. To what extent do local and national government policies for early-years interventions reflect the evidence-base, what challenges exist in disseminating, accessing and using the latest evidence, and what opportunities for intervention suggested by the evidence exist but are currently not being implemented?**

25. It is claimed that evidence-based intervention programmes are little used in practice.<sup>87</sup> Some practitioners may prefer nondirective styles of intervention that are not evidence-based but rather have ideological backing. The programmes can appear too tightly organised and lead to a lack of motivation for the young patient or the therapist. There is also an issue in properly disseminating new and developing interventions, leading to service providers being unaware of many new approaches.
26. A 2016 review of TIC approaches mentioned the US as the only nation to have a national policy related to trauma.<sup>88</sup> The same review describes TIC approaches as only beginning to reach the UK and having had little impact in the UK so far, even though there is evidence that TIC systems are effective and can benefit both staff and those receiving mental healthcare. ACEs and trauma awareness were included in Scotland's Mental Health Strategy (2017-2027) and the Scottish government commissioned NHS Education for Scotland to develop a National Trauma Skills and Knowledge Framework and a National Training Plan for practitioners. Strategy documents on gender sensitive services that including trauma awareness were published by the National Mental Health Development Unit (2010) and Department of Health (2011). The Department of Health also made recommendations in 2003 which made routine enquiry of abuse, in mental health settings, compulsory and initiated a programme aimed at training staff. However, there is little evidence that trauma enquiry occurs in practice. Updates to NICE guidelines, such as to the guidance for the management of schizophrenia (NICE, 2014), may help prompt TIC being adopted. A review lists a number of barriers to implementation of TIC, including the resistance to the causal link between trauma and ACE to psychosis and mental distress and the fact that due to the continuous change to UK public services many are wary of new initiatives.<sup>89</sup>
27. Issues of dissemination and a lack of accessibility and visibility of research represent a challenge to the implementation of new research in practice. For example, a review ACEs assessment and response, highlighted that there was a lack of awareness of new research and care strategies by nurses even though they form a large proportion of frontline healthcare staff.<sup>90</sup>

**Q4. What support and oversight of research into adverse childhood experiences and relevant interventions exist, how are research priorities identified and funded, and to what extent are current interventions reviewed and contribute to the evidence-base?**

28. Funding bodies such as the Research Councils appear to recognise that this field requires additional funding. This is particularly true in the context of mental health, where several

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<sup>87</sup> Weisz JR, Ng MY, Lau N. *Psychological interventions: overview and critical issues for the field*. p.461-482. In Rutter M, et al. Edition 5 (2015) *Rutter's child and adolescent psychiatry*. Wiley-Blackwell; Oxford.

<sup>88</sup> Sweeney A, Clement S, Filson B, et al. (2016). *Trauma-informed mental healthcare in the UK: What is it and how can we further its development?* *Ment Health Review J* **21(3)**, 174-192.

<sup>89</sup> *Ibid*.

<sup>90</sup> Waite R, Gerrity P, Arango R. (2010). *Assessment for and response to adverse childhood experiences*. *J Psychosoc Nur Ment Health Serv* **48(12)**, 51-61.



different funding bodies are highlighting the relevance of early life experience (for example, the 2017 MRC mental health strategy<sup>91</sup>).

29. The Centre for Social, Genetic and Developmental Research at King's College London has conducted research to fill the gaps in many of the areas identified above, such as the Environmental Risk (E-risk) Longitudinal Twin Study that aimed to build knowledge on environmental factors contributing to disruptive behaviour in early years<sup>92</sup>. This Centre was until recently funded through an MRC research grant, and is now funded by a variety of funding bodies via competitive grant applications.
30. Often funding mechanisms are designed to be competitive between expert groups and universities rather than collaborative where groups with common or overlapping expertise are drawn together. Public and third sector funding bodies put out researcher-led or themed calls, however there may be little input from stakeholders or affected groups. There is a corresponding limitation in the effective setting of research priorities on a national basis. The James Lind Alliance (JLA) is an example of a mechanism by which affected communities can inform on research priorities. The JLA allows 'Priority Setting Partnerships' to be established with the aim of bringing patients, carers and clinicians together to identify research priorities.<sup>93</sup>
31. There is need for better coordination between research about ACEs and associated outcomes including mechanisms and research on the effectiveness of interventions, which is separately funded. The ESRC has recently extended its interests to the applications of social science to health and might become involved in an overall method of setting priorities or reviewing interventions.<sup>94</sup>

#### **Q5. What mechanisms for bringing together the collection, communication, application and review of evidence exist to ensure interventions are evidence-based?**

32. There is an urgent need for rigorous reviews of the evidence concerning ACE and the effects of interventions. Much of the scientific research in this field is fragmented and focused on specific health or social outcomes, without being more widely framed. For example, NICE produces authoritative reviews on interventions for individual disorders, but is limited by its restriction to health and social care.
33. Part of this was the key remit of the National Academy of Parenting Practitioners (NAPP)<sup>95</sup>, which closed in 2010. Its research functions have been continued by the National Academy of Parenting Research<sup>96</sup> at King's College London, with its training programmes continued by the Children's Workforce Development Council. The NAPP aimed to provide an understanding for commissioners and educators of the quality of the evidence base for the range of parenting interventions, monitor their use and co-ordinate the development of research projects and measures. The potential value of such a body remains. The model could be extended to include educational and primary care interventions.

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<sup>91</sup> Medical Research Council (2017). *Strategy for lifelong mental health research*. [www.mrc.ac.uk/documents/pdf/strategy-for-lifelong-mental-health-research/](http://www.mrc.ac.uk/documents/pdf/strategy-for-lifelong-mental-health-research/)

<sup>92</sup> King's College London (2015). *Environmental risk (E-Risk) longitudinal twin study*. [www.kcl.ac.uk/ioppn/depts/sgdp-centre/research/environmentalrisk\(e-risk\).aspx](http://www.kcl.ac.uk/ioppn/depts/sgdp-centre/research/environmentalrisk(e-risk).aspx)

<sup>93</sup> James Lind Alliance. *Priority setting partnerships*. [www.jla.nihr.ac.uk/jla-guidebook/chapter-3/priority-setting-partnerships.htm](http://www.jla.nihr.ac.uk/jla-guidebook/chapter-3/priority-setting-partnerships.htm)

<sup>94</sup> Economic and Social Research Council (2017). *Health and wellbeing*. [www.esrc.ac.uk/research/research-topics/health-and-wellbeing/](http://www.esrc.ac.uk/research/research-topics/health-and-wellbeing/)

<sup>95</sup> Department for Education (2012). *Evaluation of the NAPP's training offer in evidence based parenting programmes*. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/183457/DFE-RR186.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/183457/DFE-RR186.pdf)

<sup>96</sup> King's College London. *National Academy for Parenting Research*. [www.kcl.ac.uk/ioppn/depts/cap/research/NAPR/index.aspx](http://www.kcl.ac.uk/ioppn/depts/cap/research/NAPR/index.aspx)

34. A study set out potential developments to improve ACE and related intervention information sharing and accessibility of evidence. Their recommendations include: creating a 'living' evidence synthesis and dissemination mechanism to use existing dissemination platforms to ensure that information reaches those involved in children's health services; using existing rapid-cycle learning platforms to maintain networks of families and professionals to promote cross-sector learning and engagement; and developing open-source training and tools.<sup>97</sup>
35. The Early Intervention Foundation (one of the Government's 'What Works Centres') evaluates and provides evidence and advice on interventions to tackle the causes of social problems for children and young people.<sup>98</sup> Its evidence panel of academic experts aims to provide independent assessment of all available evidence. The Foundation works to disseminate the information to healthcare providers so that it have an impact for affected children. Its Guidebook provides detailed evidence behind 50 early intervention programmes implemented in the UK.
36. As highlighted above, there is a need for improved coordination of research in this area in order to ensure priorities are established and current gaps addressed. An expert commission that is able to develop a portfolio of research agreed by a representative panel of experts and set out a series of agreed aims, priorities, milestones and outputs could be one option of helping to address this.

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<sup>97</sup> Bethell CD, Solloway MR, Guinosso S, et al. (2017). *Prioritising possibilities for child and family health: An agenda to address adverse childhood experiences and foster the social and emotional roots of well-being in paediatrics*. *Acad Pediatr* **17(7S)**, S36-S50.

<sup>98</sup> The Early Intervention Foundation. [www.eif.org.uk/](http://www.eif.org.uk/)