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**Independent
Evaluation of the
Framework
for Integrated Care
*(SECURE STAIRS)***

**Technical Annex:
Economic final report**

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1. Summary

The appraisal and evaluation of policies and interventions is a key part of the decision-making process for policy makers. Being able to assess the costs and benefits enables evidence-based decisions so that decision makers use limited budgets to best effect and ensures that interventions deliver value for money.

The economic analysis was tasked with answering the question 'is the Framework for Integrated Care (SECURE STAIRS) cost-effective?' It aimed to build on and reflect the data on benefits in the main evaluation. Threshold cost utility analysis was used to consider 'How effective would the Framework for Integrated Care (SECURE STAIRS) need to be to be cost-effective?' In other words, in the interim report the question addressed was 'What would "good" look like, and is the taxpayer willing to pay for it?', in terms of benefits to children, young people, staff and employers, and wider society.

Well established NICE methodology and decision-making rules about willingness to pay were used to estimate the benefit to children, young people, and staff in the threshold analysis. This approach is useful to decision makers' judgments, especially while implementation or roll out matures and study data is emerging, as it estimates the scale of change required for an intervention to be of value.

The complexity of the Framework for Integrated Care (SECURE STAIRS) is a reflection of the deep and lived culture change it aims to achieve across sites to benefit the life chances of vulnerable, high risk children and young people in the Children and Young People's Secure Estate (CYPSE).

Methods

The following approach was taken to inform the illustrative threshold analysis in this final report:

- Using realistic methodology, a priori theories and stories were formed for the Framework for Integrated Care (SECURE STAIRS) input (time spent) to the CYPSE using expert opinion. Staff time was costed using published unit costs, as is normal for economics evaluations.
- Advice and support were sought from Peer Power experts who have lived experience.
- A large systematic review of published utility values was conducted to:
 - inform the threshold analysis with published Quality Adjusted Life Years (QALYs) to enable estimates of the potential value of the Framework for Integrated Care (SECURE STAIRS) to children and young people
 - included studies were also used to summarise the types of impacts of using interventions for children and young people reported by existing economic evaluations, and
 - to assess the cost impacts of using interventions for children and young people reported by existing UK economic evaluations.
 - identify relevant QALYs to illustrate the potential benefits of the Framework for Integrated Care (SECURE STAIRS) to children and young people, and the potential of long-term cost savings.
- Study data was used to estimate the potential benefits of the Framework for Integrated Care (SECURE STAIRS) to children, young people, and staff. The potential of long-term cost savings was also considered and discussed by the panel of representatives of children and young people,

- front life staff and mental health professionals implementing the Framework.
- NICE guidance on Wellbeing at Work (2009) was used to inform the cost saving estimates to employers.
 - Semi structured interviews were held with Secure Children’s Home (SCH) staff to inform the process of change.

Analysis

Four areas are summarised here: staff burnout; benefits to the employer; benefits to children and young people; enabling deep and lived cultural change.

1. Staff burnout

Threshold analysis

A range of QALYs from a systematic review and economic analysis for the NICE Public Health Guidance on Mental Wellbeing at Work (2009) were used to inform the analysis. The range of QALYs were generated from efficacy reported in three studies, Bergdahl et al (2005); Jones and Johnston (2000); Butterworth et al (2006) using depression free days as the clinical outcome.

Table A Threshold analysis: staff burnout

	Example 1: lowest range QALY in NICE analysis	Example 2: highest range QALY in NICE analysis
Willingness to pay (WTP) for 1 QALY	£30,000	£30,000
QALY: Mental wellbeing at work NICE 2009, economic report	0.0243	0.0406
Sub-total (QALY x WTP)	729	1,218
Probability of burnout staff survey (SCH and YOI phase 3)	42.27%	42.27%
Cost-effective intervention threshold per staff member [sub-total x probability of burnout from staff survey]	£308	£515
Estimated cost of the Framework for Integrated Care (SECURE STAIRS) time given by a clinical lead to train and support operational staff	£1,200	£1,100
Residual cost to fund from employer cost savings?	£892	£585
% of intervention remaining to fund from cost saving	74%	53%

There is qualitative evidence that suggests staff wellbeing has improved as a result of the Framework for Integrated Care (SECURE STAIRS).

A CuSP officers view of burnout [source: researcher’s field notes, programme implementation national conference 2019]:

A CuSP officer spoke about his recent experience of working with complex children and young people with challenging behaviour on a care and separation unit. *“It was all about the burnout. I felt I was doing a very good job, I got on well with the challenging young people, and spent time with them but because of that I came into contact with a lot of conflict.”* After 6-9 months on the unit colleagues recognised the officer had *“a lot of burnout and it was affecting me”*. He went on

to say that “*SECURE STAIRS came along, and the timing was perfect time for me*”. It confirmed how he treated the children and young people, it also put psychological support around him and the other staff.

Consideration by the panel: staff burnout

The panel noted that the QALY values for burnout (NICE 2009), in the second row of table B, are at the lower end of QALY estimates generated for other public health interventions, such as those for workplace interventions to promote physical activity (QALYs 0.05 to 0.12) and environmental interventions to promote physical activity (QALY 0.125).

The panel noted that about 50-70% of the cost of time given by the clinical lead to train and support operational staff (e.g. 1 newly implementing unit) for the Framework for Integrated Care (SECURE STAIRS) could be paid for by improving the wellbeing of staff by avoiding burnout.

The panel discussed their own experiences of implementation and the following benefits were raised:

- Much more goodwill amongst staff.
- Good partnership between custodial staff and health care staff.
- Children and young people are better supported, enjoying formulations, and having a voice.
- Staff enjoy work more “more like it was 20 years ago”.

A significant barrier also discussed by the panel was the frequent redeployment of operational staff in Young Offender Institutions (YOIs) which was seen to undermine the development of trusting relationships and reduced morale in trained staff.

2. Benefits to the employer

Hourly pay was costed in the analysis at YOI operational staff band 3 (39 hour week Additional Committed Hours and 17% unsocial) plus 35% for assumed overhead costs, as an illustration. This salary band could be replaced e.g. by other indicative salaries in sites or units.

Absenteeism: efficacy of interventions and potential cost savings (NICE, 2009)

Variables in the absenteeism analysis include:

- Rates of work-related stress estimated using published Health and Safety executive data (2019).
- Evidence from the NICE systematic efficacy review (2009) which suggests that work-site interventions can reduce the rate of absenteeism due to work-related stress, depression or anxiety by between 5% and 46% at follow-up.

Results of the cohort analysis (NICE, 2009) reported sickness absence due to work-related stress, depression, or anxiety costs employers about £2,875 per affected employee per year. The “public administration and defense” sector has the highest absence costs per employee (i.e. in excess of this average).

Presenteeism: efficacy of interventions and potential cost savings (NICE, 2009)

Presenteeism is not a matter of ‘shirking responsibilities’ at work, rather it is about people ‘hanging in there’ and carrying on despite their symptoms.

Variables in the presenteeism analysis include published:

- On the job productivity losses among distressed workers, ranging from 13% relative to non-distressed workers, to 36% in workers who reported depression, anxiety and stress (NICE 2009).
- Interventions in the literature review (NICE 2009) showed that productivity could increase from 2-3% and up to 22% compared to baseline.

The consistent evidence is that the cost of presenteeism (decreased work performance while at work) is higher than the cost of absenteeism. For each employee suffering from work-related stress, depression or anxiety, the employer costs of reduced on-the-job performance are between £2,345 and £9,375 per affected employee per year. Again, the “public administration and defense” sector has the highest presenteeism costs per employee.

Labour turnover

Evidence on turnover is not drawn from the NICE (2009) guidance as they did not identify any. Variables used in our analysis include:

- The cost of turnover based on data from a study reported in 2014 by Oxford economics <https://www.acas.org.uk/index.aspx?articleid=4857>
- A range of turnover rates identified from published reports:
 - 10% for the Prison Service Pay Review 2019 (all secure estate including adults)
 - 40% from a report at a YOI in 2019 <https://www.justiceinspectors.gov.uk/hmiprisoners/wp-content/uploads/sites/4/2019/06/HMYOI-Werrington-Web-2019.pdf>.
- The impact of The Framework for Integrated Care (SECURE STAIRS) was estimated at 10%, 25% and 50% to illustrate potential savings.

Table B below is a summary of the analysis of the potential impact of reduced burnout, absenteeism, presenteeism and staff turnover in theoretical sites of 200 and 500 employees. The cost of keeping one male age 15-17 in a YOI ranges from £103,675 to £135,468 per annum, with an average of £113,071 (MoJ information release, October 2018).

Table B Summary of potential benefit to staff and cost savings to the employer

	Site 200 staff	Site 500 staff	Cost per employee on site			Ref in economics report
Burn out - improving staff wellbeing						
Cost time given to operational staff on a unit	£240,000.00	£600,000.00	£1,200.00			Table 12
Less cost of QALY loss avoided (burnout)	£82,3000	£205,750.00	£411.50			Table 22: mid point [(308 + 515) divided by 2]
Sub-total - remaining cost	£157,700.00	£394,250.00	£788.50			
Potential to reduce employer costs /improve productivity			Potential saving per employee on site			
			Min est	Mid est	Max est	
Absenteeism			£3.50			Table 23
				£17.90		Table 23 (min + max) /2
					£32.30	Table 23
Presenteeism			£38.67			Table 24
				£510.20		Table 24 (min + max)/2
					£981.73	Table 24
Turn over			£150.00			Table 25
				£1,575.00		Table 25 (min + max)/2
					£3,000.00	Table 25
Subtotal saving estimates			£192.17	£2,103.10	£4,014.03	
Subtotal, cost savings to employer at mid-point estimates	£420,620.00	£1,051,550				
Total: remaining potential for cost savings (mid-point estimates)	-£262,920.00	-£657,300.00		-£1,314.60		Sub-total for burn out residual cost less* sub-total

Potential cost savings

The cost of the Framework for Integrated Care (SECURE STAIRS) per child or young person across the secure estate varies considerably, and recently estimated at over £6,000 per child/young person reached (source Financial comparison of work streams, November 2019).

Cost savings to the employer may pay for a considerable proportion of The Framework for Integrated Care (SECURE STAIRS), see Table B above. At the mid-point estimate of potential cost savings to the employer, around £2,100 per employee could be spent before the Framework's costs exceeded potential savings. We estimate that around £790 of the potential savings estimate is already been used to support staff. Therefore around another £1,300 (£2,100- £790) per employee might be spent, and could be considered an effective investment.

Panel consideration: Benefits to staff and to the employer

The panel noted the potential for significant cost savings to the employer. The panel felt that staffing levels and consistency of staff were key to successful implementation. They also considered that The Framework for Integrated Care (SECURE STAIRS) has the potential to address low morale, and to reduce high risk violent behaviour in children and young people.

What remains unknown is the impact of implementing the Framework for Integrated Care (SECURE STAIRS) on absenteeism, presenteesim and turnover. The impact on turnover may be the most uncertain factor of those we have estimated because we do not have published evidence for the impact of interventions that address staff mental health and wellbeing. We note the Prison Service Pay Review (including adults) 2019, gives the following reasons for the high turnover rate:

- loss of staff who work long hours in excess of 37 hours per week;
- low morale;
- increase in serious assaults and violence;
- labour market (i.e. low rates of pay in the secure estate and better opportunities elsewhere).

The Framework for Integrated Care (SECURE STAIRS) is not expected to influence the factor of the labour market and this limitation will need to be taken into consideration.

The panel noted The Framework for Integrated Care (SECURE STAIRS) may not be cost-effective in terms of improved wellbeing of staff alone. However, per worker the mid-point estimate of cost savings would suggest that the intervention for staff alone may realise significant cost savings to the employer. In addition, it should be noted the benefit to staff is an interim outcome and takes no account of the subsequent benefit to children and young people as a result of culture change.

3 Improved wellbeing for children and young people

Insufficient data limited the threshold analysis for children and young people. While statistically significant change is evidenced for some high risk behaviours, this is limited to a relatively small sample of complete cases for all sites, or small data sets for SCHs alone. Qualitative change in children and young people is reported and long term follow up data is required to evidence if the changes seen in the numerical data sets are sufficient to be considered cost effective.

Consideration by the panel: Improved wellbeing of children and young people

The panel carefully considered the experience and views of children and young people, with lived experience, regarding the Framework for Integrated Care (SECURE STAIRS).

At the Peer Power focus group children and young people said that the most important thing was a trusting relationship. When they arrived at a secure setting, they felt all hope was gone. The help received [from staff before implementation] was insufficient, there was no meaningful engagement and children and young people wanted someone to talk to. They also believed consistency was important.

Children and young people said they would want the framework to:

- Enable the feeling that “it was going to be okay”, being in a secure setting was not the end of the world – the child or young person would be able to get through it and move on.
- Enable them to leave a setting and not feel “like you’re going to re-offend”.
- Help understanding of their own past to inform their future – realising not everything was their fault. E.g. they wanted to understand the role of trauma and how it can affect your life and how you respond to people.
- Prepare them for finding a job, finding a home etc. when they left a secure setting.

Children and young people had looked at the Framework for Integrated Care (SECURE STAIRS). Their feedback is summarized below:

- The children and young people thought the Framework for Integrated Care (SECURE STAIRS) could have made a big difference to them.
- They were amazed to see that children and young people could be involved in their own formulations and felt this would allow trust to develop.
- They emphasised that there is not a “quick fix”, not one conversation, but a journey that would take time.
- They liked the “My Story” concept and saw it as a chance for their voice to be heard and a way of allowing power to be more equal “because power is a big thing” in secure settings.
- Finding out that staff were trained to share their “stuff” as part of the Framework for Integrated Care (SECURE STAIRS) implementation and training was seen as very good.
- Knowing things are not always your fault is important and takes away the fear of stigma.

Overall, the children and young people at the Peer Power focus group expressed optimism and hope about the impact of implementation of the Framework for Integrated Care (SECURE STAIRS) on children and young people. The panel emphasised that these perspectives should be highly valued and taken into account by decision makers.

4. Enabling deep and lived cultural change: The experiences of two SCHs

Like all data, the quantitative data gathered in this evaluation is best understood in context. Change never exists in a vacuum, it is rare that a change process starts only with the introduction of a new initiative such as The Framework for Integrated Care (SECURE STAIRS). The process of change has often begun before an initiative is announced. Throughout the process of this evaluation, it was clear that for some organisations, especially the SCHs, appeared to be in a process of change that predated the formal implementation of the Framework for Integrated Care (SECURE STAIRS). We felt it important to capture and record the narrative of change that

exists to give a deeper context to the qualitative and quantitative data gathered in the evaluation, and suggest that bigger changes may have taken place across the secure estate. The experiences of two SCHs were analysed using in depth qualitative interview data.

SCH Context: restorative approach

Both SCHs reported significant and lived cultural change (**Mechanism**) that was enabling a therapeutic approach towards children (**Mechanism**). Both sites recognised the restorative approach (**Context**) that acted as an important precursor for change. Both sites had been able to advance and deepen change significantly as a result of new resources from The Framework for Integrated care (SECURE STAIRS) that continues to move culture away from what they called “a punitive approach” enabled by a welcoming leadership approach (**Mechanism**), willingness to work with health, and a significant change of practice towards a trauma informed, formulation driven, therapeutic approach. Both sites reported that as a result of cultural change a significant reduction in restraints (**Interim Outcome**) was achieved over a period of two years.

Sustaining significantly reduced restraints, might hallmark the first early and major change interim outcome, as a result of successful implementation, in any site across the secure estate. Encouragingly it was echoed in some YOI units, at the Professional Collaboration Network meetings, the end of phase 3.

If...then... statements 2 SCH sites: achieving a low level of restraints

If a site has leadership capability that leads by example, is committed (**Mechanisms**) to and models a restorative approach alongside, or even before, a therapeutic approach was introduced (**Context**).

“We did a lot of role modelling ... with incident management and leading by example”

Restorative approach 2010: “The boss was a big fan and that’s where it started”

Then Staff hear a consistent and coherent message from leadership about the purpose, direction and mechanisms for change (**Mechanisms**).

“Willingness to accept it from the management team you know - we are going to work out how to work together rather than be confrontational”

Then some staff (e.g. 50%) will move to a restorative/therapeutic approach (**Mechanisms**), there will be resistance.

“Lots of staff resistance. It was an awful time and an awful experience but we really persisted with that restorative approach”

“A simple example was we had a restraint that really didn't need to happen - I'm going back 2 years from now - in that a staff member twisted and broke his ankle in 5 places. How long do you think it took him to get over that and come back to work?”

“And if you are doing that every day it has a cumulative effect on you, and you go off sick.

Whereas if you are not doing it every day, the atmosphere is different and you feel better to come

into work and then you are not going to be off sick are you.”

And then the experience of staff changes and is driven by an underlying understanding of the young person (**Mechanisms**).

“2 years ago, I remember having a conversation through a door with a girl, with nothing in the room. So, there has been a shift as I've not seen this more recently.”

Then restraints can be dramatically reduced in 2-year time frame (**Interim Outcome**).

“We do not have a high level of restraints [now, since STAIRS] and that has come down.”

Over 1,000 restraints pa in a 12-bed home reduce to 150 pa in two years 2010-12.

“Our restraints are down something like 70% or so now”

“Took 2 years to achieve this change.”

SCH Primary mechanism: Persistence and capability of leadership

While the depth of cultural change was significant in both SCH sites, one site stood apart as having extremely deep and lived, cultural change that was pervasive, embedded and sustained (**Interim outcome**) through more complex layers of further organisational and cultural change. The sites described how they were already on a trajectory of change, and how The Framework for Integrated Care (SECURE STAIRS), gave them a set of values, objectives and resources that helped them coalesce around the changes that were already in progress. The Framework for Integrated Care (SECURE STAIRS), effectively legitimised the direction of travel and it was this legitimisation, alongside an enhanced team (**Mechanism**), facilitated the pace of change.

This has been achieved by exceptional leadership capability that relentlessly retains and prioritises a focus on the needs of the child/young person (**Mechanism**), working to transform organisational and professional boundaries (**Mechanism**), and thereby transformation in behaviours of the children and young people in their care (**Outcome**).

This leadership is hallmarked by both persistence and capability and the primary factor in enabling successful cultural change. The capacity of this leadership encompasses an analytical approach to challenges and problem solving, an unacceptance of 'silos' in all its forms, and ability to continually reactivate and recover a lived therapeutic culture that is 'alive', open to testing ideas and continuously enabling learning at all levels of the organisation. The leadership in this SCH understood that to sustain culture (**Interim Outcome**) ways of working need to continue to move, renew and grow. For example, having deeply embed a therapeutic approach to the child/young person they are now implementing the 'PACE' approach 'for each other' as staff, 'hold' emotion for other colleagues on the unit. ('PACE' seeks to build up a connection and a safe place for open communication to develop). The exceptional depth of lived cultural change took ten years, accelerated at pace through The Framework for Integrated Care (SECURE STAIRS). Sustained, deeply lived, pervasive and 'alive' cultural change, may be the hallmark of mature implementation over time.

If...then... statements 1 SCH site: Sustained, deeply lived, pervasive and 'alive' cultural change

If there is a commitment to change and a set of values that resourced leadership can coalesce around, giving legitimacy to the change

(Context + Mechanism)

If leadership persists in its commitment to a therapeutic approach **(Mechanism)**

And Proactively takes steps to get all the remaining staff on board

e.g. valuing contribution of all staff

e.g. staff who do not agree with the changes leave **(Mechanisms)**

Then leadership can enable culture change, through an analytical approach to working through 'barriers'

e.g. integration of teams that work together **(Mechanism)**

Then all staff work together to support the child (rather than undermining each other) **(Mechanism)**

And If leadership capability persists in its commitment proactively creates alignment in the senior team

Then, change can be sustained and permeate all levels **(Mechanism)**

Then deeper cultural change (slowly) happens and a more

"Before STAIRS I started to think about children much more therapeutically - what is the common denominator for all of these children? All the children have had some sort of trauma and it's usually abuse ... At that point I realised that trauma was what we needed to think about as a Home".

"Funding for extra psychologist and CAHMS and other health roles trajected change far quicker than I had ever anticipated (we had been on a slow burn) and we now take an extremely therapeutic approach"

"50% of staff into it and the rest said it was a copout for the kids and it wasn't really dealing with behaviour, and that is the issue!"

"A key issue is valuing staff and support them more effective because they get the short end of it often. ... Care staff ... are here all weekend end ... health not even there and that was understandably a problem (to solve)."

"Looking back, it took a lot - in that first 4 years we lost 18 staff who just didn't believe in working with kids differently and thought it was a load of rubbish and they needed to leave"

"Took 3 years to address integrated rotas, staffing, and teams across health, education and care"

"...start to pull us together and integrate us in a way we had not been before"

We had a lovely example recently we had a new member of staff in the education team and she came to a formulation meeting. She sent an email thanking the CAMHS worker because what she had taken from it had helped and she immediately had a better outcome with the young person. ... that's what we are looking for. Increased empathy and attunement and that helps with the therapeutic parenting."

"Some people were not in the right post e.g. head of education was not the right person, ditto health and I had to make some key decisions about those leadership posts which I did over 12 months."

"What sustains us? The Manager has ...been open minded to therapeutic and trauma informed approaches and he does not have that normal general defensiveness against health. He has invited me [health] in and that is incredibly helpful. We have a great relationship and that has enabled change at all levels, right thorough the home. It took a long time Our offices are next door to each other! A few steps way and I'm in the Home. I'm physically present I think makes a difference. It's a fantastic place to work, lovely to see the progress. I really enjoy working here".

"Social care approach is based on interventions that have been used for a very long time and related to behaviour.

focused shared vision can emerge with all staff (**Mechanism**)

Then integration of teams can deepen (**Mechanism**)

And If Leadership has the capability to continually reactivate and recover a lived therapeutic culture that is 'alive', open to testing ideas and continuously enabling learning at all levels of the organisation.

e.g. all staff implement the PACE model

e.g. resourced staff supervision and therapeutic support

Then staff can recover (**Interim Outcome**)

Then cultural change can be sustained, renew and grow (**Interim outcome**)

e.g. next step 'PACE' for staff group

e.g. new recruitment process

"Psychological model will focus on the causes of the behaviour and the story of that child and then what interventions to do we have to put in place to resolve some of the causes of the behaviour."

"That focus [child trauma] has been our strength."

"It's taken 7 years to change the culture in a 10 bedded home".

"Years ago, hands on a child would have happened if a child swore at a member of staff. But now, the PACE and de-escalation stuff staff do is so good- they spend hours with them. They are accepting curiosity and accepting of emotion (not behaviour) and reasons why - staff do it extremely well."

"Just in terms of transparency of conversation. I never thought I'd be in a room where staff say 'this kid is really affecting me' because 10 years ago that would not have happened and been seen as a sign of weakness but I see it as a sign of strength."

"We have staff wellbeing meetings here every week where we get to talk about how the kids are impacting us individually and as a group and they have been really successful"

"We are always talking about compassion with each other especially when you get things like splitting the staff group. Used to be a huge problem but now it isn't"

"...next step is to do PACE for each other, staff, which is more of a challenge. Patience thresholds for children is one thing but with other staff is another issue."

"And that (trauma) ethos and narrative is now in recruitment"

"All our questions are psychologically driven because lots of staff are attracted to care with their own issues, unresolved issues and the home was triggering them, and we wanted to explore that a lot more in our interview process."

Conclusion

The cost analysis for staff shows potential for the Framework for Integrated Care (SECURE STAIRS) to make significant cost savings to the employer as a result of culture change. Based on the experience and discussion in the panel and professional network meetings there is a strong argument to support implementation of the Framework for Integrated Care (SECURE STAIRS). Implementation may not only realise a saving worth a significant proportion of the cost of the framework, but will bring improved capability in the system (wellbeing to staff).

This is further supported by the qualitative interviews with SCH staff who report significant reduction in incidents and that a change in staff morale is possible within a two-year time frame in these small institutions. Sustaining significantly reduced restraints, might hallmark the first early and major change (interim outcome), as a result of successful implementation, in any site across the secure estate. Encouragingly it was echoed in some YOI units, at the Professional Collaboration Network meetings, at the end of phase 3.

Deeply lived, mature, and sustained cultural change has also been demonstrated in the SCH analysis. This is a journey SCHs seem especially advantaged in because of the restorative approach that predates The Framework for Integrated Care (SECURE

STAIRS). Change has been accelerated by the Framework for Integrated Care (SECURE STAIRS) and the primary mechanism identified to enable and sustain this change is resourced leadership. This leadership is characterised by its persistence, leading by example and finding ways to ensure all staff to 'come on board', its analytical approach, an intelligent management of 'active' culture that continues to strive for excellence, and a relentless focus on trauma informed approach to the child and staff.

The SCH sites described how they were already on a trajectory of change, and how the Framework for Integrated Care (SECURE STAIRS), gave them a set of values, objectives and resources that helped them coalesce around the changes that were already in progress. The Framework for Integrated Care (SECURE STAIRS), effectively legitimised the direction of travel and it was this legitimisation, alongside an enhanced team that facilitated the pace of change. Sustained, deeply lived, pervasive and 'alive' cultural change, may be the hallmark of mature implementation over a longer time frame.

At this stage of implementation there is insufficient evidence to show that improvements in wellbeing to children and young people *alone* would enable the Framework of Integrated Care (SECURE STAIRS) to be considered cost-effective. Statistically significant change is evidenced for high risk behaviours in SCHs and further demonstrated and explained in the qualitative analysis. However, there is an absence of quantitative data for YOIs, which as larger organisations with more complex leadership and staffing structures appear to be more challenged. This appears to impact their ability to sustain cultural changes that have a lasting and positive impact on all the children and young people in their care.

To be conclusive long term follow up data is required to evidence the value of change in the life chances of children and young people. The need for a trusting relationship, consistency, and the hope about implementation expressed by children and young people was highly valued by the panel who felt this effect should be given significant weight. Not only is there cause for optimism that sustained implementation will achieve deeply lived cultural change in the sector it is already demonstrated in the SCH analysis.

2. Introduction

2.1 Study aims

The overarching aim of the evaluation was to examine whether the implementation of the Framework for Integrated Care (SECURE STAIRS) changed culture in secure settings to focus on whole-system approaches to creating positive change for all children and young people. To assess the implementation of the Framework for Integrated Care (SECURE STAIRS) and the extent to which it transformed culture and practices in the children and young people secure estate to be trauma-informed, developmentally-attuned, and psychological-based, we examined a range of questions, organised by the following five overarching topic questions:

1. Did culture and practices change to underpin care for children and young people using multi-agency, co-produced formulations?
2. Did emotional and relational safety increase between staff and children or young people and between staff across agencies?
3. Were staff cared for better?
4. Does the *Framework for Integrated Care (SECURE STAIRS)* have the potential to improve the life chances for children and young people?
5. Is it possible for the potential impact of the *Framework for Integrated Care (SECURE STAIRS)* to provide good value for money in terms of outcomes for children, young people, and staff?

This Economics Report focusses on the last question. Within this, other questions explored are: What is the cost-effectiveness of a Framework for Integrated Care (SECURE STAIRS)? For the December 2019 milestone the question will be 'How effective would a Framework for Integrated Care (SECURE STAIRS) need to be to be cost-effective?' [ref Steering Group slides 25.10.18]

2. A Framework for Integrated Care (SECURE STAIRS) and the economic analysis

The Children and Young's People Secure Estate in England covers accommodation for children and young people placed by local authorities and the Youth Justice System, placed for justice and/or welfare reasons, and includes:

- Secure Children's Homes,
- Secure Training Centres, and
- under-18's Young Offender Institutions.

The Framework for Integrated Care (SECURE STAIRS) aims to support trauma-informed care and formulation-driven, evidence-based, whole-systems approaches to creating change for children and young people within the Children and Young People's Secure Estate (CYPSE) [Taylor, Shostak, Rogers, & Mitchell, 2019].

Below, we outline the Framework for Integrated Care (SECURE STAIRS) by the different SECURE STAIRS elements, provided by NHS England and NHS Improvement.

S	Staff with the skill sets appropriate to the interventions that are needed.
E	Emotionally resilient staff who are able to remain child-centred in the face of challenging behaviour.
C	Cared for staff: through supervision and support.
U	Understanding across the secure setting of child development, attachment, trauma and other relevant key theories.
R	Reflective system: staff who are able to consider the impact of trauma at all levels.
E	'Every interaction matters': a whole system approach.

S	Scoping: The presenting situation is assessed with clarity around the child or young person's pathway and life narrative.
T	Targets: Staff, children and young people and the 'home' environment agree on the goals for the child or young person's time within the secure setting.
A	Activators: All children and young people have an agreed psycho-bio-social, developmentally informed, multi-factorial formulation (understanding not based on diagnosis) that clarifies what activates problems for them.
I	Interventions: Specialist and core interventions, driven by the formulation and incorporating the risk assessment. Ensuring interventions are tailored to each child or young person's risks and needs with content, intensity and timing of the intervention specified.
R	Review and revise: Clear 'real-life' outcome monitoring by the secure setting and 'home', including the frequency and severity of high risk behaviours and of movement towards goals, regularly evaluated using a formulation-based approach at multidisciplinary reviews.
S	Sustain: Sustainability planning from the outset around maintaining goals upon release and the transition to 'home' or other services.

3. Methods

3.1 Realistic evaluation

The evaluation used realistic methodology (Pawson, 1997) to consider the Context (C) and Mechanisms (M) required to produce the desired Outcomes (O). In complex services this methodology is insightful but challenging. Context, Mechanisms and Outcomes (CMOs) are known to 'ripple' (Jagosh, 2015) and produce new effects. For example, at different stages of implementation mid-point outcomes can become active mechanisms and thereby produce new outcomes.

To operationalise the approach, and before data collection commenced, "If...then..." statements (Pearson, 2015) were drafted for the three typologies within the overall study logic model (fig 1). These statements were created with advice and support from clinical leads in the implementation and research team, and further revised with input from the panel meeting in March 2020.

What young people said

Peer Power supported the evaluation with expert advice from children and young people with lived experience of both community mental health services and of secure settings (health and justice) from August 2018. The research team wish to acknowledge with sincere thanks Peer Power's ongoing support.

This support has included:

- Describing what happened to children and young people to inform the development of initial 'If...then...', statements to build an initial theory of change in 2018. We drew pictures and pathways to explain what happened and how a child or young person felt going into the secure estate and seeing CAMHS staff.
- Quarterly catch ups with the youth experts to discuss emerging findings.
- A two and a half hour focus group was held with young people in November 2019 to discuss what "good" would look like, what were the most important outcomes for children and young people; and what they, as tax payers themselves, now or in the future, felt was of value and worth investing in.

Section 4.3 summarises both the field notes taken by the members of the research team, and notes of the focus group from Peer Power (Appendix A).

3.2 Outcomes

Mental wellbeing is "...a state of wellbeing in which the individual realises his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community." (WHO, 2004)

The *a priori* primary outcome measure for the study was the CORS, which measures general mental health and functioning (see Full Report).

For the economic analysis the primary outcome was quality-adjusted life-years (QALYs), calculated using the EQ-5D-Y measure of health-related quality of life (Williams, 1995; Brooks, 1996). This method of economic evaluation is known as cost utility analysis. The EQ-5D-Y comprises a five-item questionnaire in the domains of mobility, self-care, usual activities, pain/discomfort and anxiety/depression, which classifies individuals into one of 243 health states, each associated with a score that can be used to calculate QALYs. In addition, it contains a visual analogue scale (VAS) on which children or young people rate their own health between 0 (worst imaginable health state) and 100 (best imaginable health state). The measure has been used extensively and its psychometric properties are adequate (Brooks, 1996).

QALYS allow the benefit of interventions for different mental health conditions to be compared.

At the interim report stage, it was anticipated that the relationship between the CORS and QALY outcomes would not be known (as data collection was ongoing). To bridge this gap in outcomes a systematic review of published evidence was undertaken, in the population of children and young people with high risk behaviour. Work at that stage was to prepare a short list of potential QALYS that may be relevant to the study findings once they are available.

During the study the interim outcome of staff burnout was noted as important.

3.3 Systematic review methodology

A large, complex systematic review was undertaken to identify from the literature QALYs and utility values for children and young people with, or at risk of developing, mental health problems who are in, or at risk of entering, the youth justice system, or who are in secure residential homes.

The primary aim of the review was to identify relevant and credible values for health utility weights and Quality Adjusted Life Years (QALYs) which could be used in the health economics modelling for the Community F:CAMHS (a separate but related project) and the Framework for Integrated Care (SECURE STAIRS) evaluations, while study results were awaited.

This was a challenging systematic review. Usually systematic reviews have more tightly defined populations, interventions, and outcomes. However, in this case a broad investigation of literature was undertaken, across complex populations. Interpretation and application of the results needs to be carefully undertaken.

During the review two further elements of impact were addressed as they were considered potentially relevant to the impact on wider society:

- Reporting of utility values of victims e.g. of violent crime, were added to the main narrative review findings.
- The included papers were reconsidered (a review within a review) to identify whether there was evidence that interventions in the UK resulted in cost savings compared to normal care, and to identify other costs, benefits and harms to wider society (see 3.3.2). Additional papers submitted by the research team's clinical experts were also considered.

The limitation of this 'add on' approach is acknowledged in that evidence on the wider benefits and harms have not been systemically searched for. However, the need for, and focus of, another very large systematic review, could be clearly defined and directed by the results of the interim report if additional evidence is required to support decision making.

3.3.1 The systematic review: utility values

Systematic searching and study selection

A systematic search for English language studies was conducted in the following databases from January 2000 to June 2018: Web of Science Advanced Collection (Science Citation Index Expanded; Social Science Citation Index Expanded; Arts and Humanities Citation Index; Conference Proceedings Citation Index – Science edition; Conference Proceedings Citation Index – Social Science + Humanities edition; Emerging Sources Citation Index (2015-); Book Citation Index (2005-)); Medline; BIOSIS Citation Index; BIOSIS Previews; Cochrane Central Database of Controlled Trials (CENTRAL) [Cochrane Library]; SciELO Citation Index) and EconLit. Studies

were identified using search terms for mental health and behaviour disorders combined with terms for quality of life assessment scales, the criminal justice system, children and young people and health economic analysis (see Appendix C for details of the search strategy).

A first round of citation title and abstract screening was conducted to remove clearly irrelevant studies. A second round of abstract screening was then undertaken, and any potentially relevant study was listed (using a simple Excel datasheet). Full copies of these studies were obtained for assessment for inclusion/exclusion.

In addition, published NICE guidance was hand-searched for any health economics analysis that appeared to meet our inclusion criteria. Potentially relevant reports were added to the Excel spreadsheet for further assessment.

Inclusion criteria

Economic evaluations, randomised controlled trials with an economics component and systematic reviews of these studies were included along with cost utility analyses, cost-effectiveness analyses and primary research to develop health-related quality of life measures. Studies including children and young people aged 10 – 21 years were included. Studies including only adults aged over 21 years, or mixed populations where the mean age was above 21 years were excluded. Studies in children and young people with any mental illnesses and/or conduct disorders/oppositional defiant disorders or exhibiting high risk behaviour where there was risk of harm to themselves, others, property; or criminal activity were included. Also included were studies involving children and young people in secure institutions or known to any part of the youth justice system or education EBD provision e.g. pupil referral units, and secure welfare homes. Studies comparing any intervention used to improve or prevent deterioration in children and young people's mental health and/or high risk behaviour with any non-therapeutic control (including care as usual) and studies comparing an intervention with another active intervention, were included in the review. For the purposes of this review, we focused on outcomes that were related to health-related quality of life along with any mental health or behaviour-related outcome. (See Appendix D for review protocol).

Searching and study selection was initially carried out by one senior researcher. Uncertainties were resolved through discussion with another researcher and a clinical expert advisor.

Data extraction

Data extraction was conducted by one experienced reviewer. Information on participant and study characteristics, costs, mental health and/or behaviour outcomes, quality of life outcomes and cost-effectiveness were extracted directly into evidence tables (using Word). Study characteristics included the country, duration and components of the intervention and control conditions, numbers of participants and method of health economic analysis. Participant characteristics included age, primary disorder, and baseline severity score. Summary cost data were recorded to give an indication of intervention costs and how they had been calculated. Data for self and clinician-rated outcomes were extracted for clinical outcomes and health-related quality of life outcomes used in the health economic analysis.

Quality assessment

The overall quality of evidence for each outcome was assessed using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach

(Guyatt et al, 2011). Evidence was downgraded by one or two levels based on the following factors: a) risk of bias (taking in to consideration selection bias, performance bias, detection bias, attrition bias and reporting bias); b) inconsistency of results (heterogeneity between study effect sizes, defined as $I^2 > 50\%$); c) indirectness (poor applicability of the study population, intervention, control or outcomes) e.g. when there was uncertainty about degree of therapist input; d) imprecision of results (judged based on width of confidence intervals and/or adequacy of sample size or e) publication bias. After all factors had been considered an overall evidence rating was assigned for each outcome as follows: 1) "high" (very certain that the true effect lies close to that of the estimate of effect); 2) "moderate" (moderately certain that the true effect lies close to the estimate of effect); 3) "low" (certainty of the effect estimate is limited and the true effect may be substantially different from the estimate of the effect); 4) "very low" (very little certainty of the effect estimate and the true effect is likely to be substantially different from the estimate of effect (Balsham et al, 2011).

GRADE tables reporting quality (certainty) assessment of key outcomes for all included studies are reported in Appendix G.

3.3.2 The systematic review: economic evaluations of interventions for children and young people

The objectives of this systematic review are as follows:

- To identify which type of social benefits (e.g. improved utility and prevented crime), societal harms, costs and cost savings of interventions of interest have been considered/suggested by existing economic evaluations, in order to inform the structure of a *de novo* economic model.
- To examine whether use of interventions for children and young people resulted in additional cost, were cost neutral, or cost saving compared to no interventions in the UK.

For the second objective (to assess the cost impacts of using interventions for children and young people), only cost data from the UK was extracted because cost outcomes vary greatly across different countries due to difference in local economy, healthcare system and social system. Therefore, cost outcomes reported by economic evaluations conducted in the UK were deemed to be most relevant to assess the cost impacts of using interventions for children and young people.

In addition to the exclusion criteria used in the systematic review above (and summarized in the PICO table), the following exclusion criteria were applied just for this reconsideration of reviewed studies (the "review within a review"):

- studies that do not include a treatment-as-usual group;
- studies that only assessed pharmacological interventions;
- studies which are not cost-effectiveness analysis (CEA).

3.4 Cost utility threshold analysis

Cost utility analysis is a form of cost-effectiveness analysis that uses utility as a common outcome. Utilities measure our preferences under uncertainty, which is appropriate for health interventions as future health is uncertain (Drummond, 2003). The preferred measure used for the NHS is the quality-adjusted life year (QALY) (NICE technical manual, 2014). This measure allows us to consider both people's quality of life and the length of life they will gain as a result of a healthcare intervention, with one year in perfect health being equal to one QALY. Expressing

health benefits as QALYs allows comparisons between different populations and different conditions.

In order to include health outcomes in an economic evaluation it requires QALY data on the time spent in each health state, this may be health states where the condition is not well managed or health states where the condition is well managed. From this it is possible to measure the QALY gain of additional time spent in the improved health state over a given time period.

Using the QALYs reported in the published literature, a 'what if?' analysis was undertaken. Here the NICE cost-effectiveness threshold is used to work backwards to find the number of children and young people who would need to experience an improvement in health outcomes for the Framework for Integrated Care (SECURE STAIRS) to be considered cost-effective. A willingness to pay threshold of £30,000 for a perfect year of health was used. This reflects the health inequality experienced by this population who have a disproportionate amount of complex mental health needs. In addition, the opportunity cost of doing nothing is high in terms of victims of crime, downstream costs to the public sector of risks that are not contained.

For a standard economic evaluation, the cost-effectiveness of an intervention is compared to the next best alternative:

$$\frac{\text{Incremental cost A compared to B}}{\text{Incremental Effect A compared to B}} = \text{Incremental Cost Effectiveness Ratio (ICER)}$$

The currently accepted decision rule in the NHS for what ratio of incremental cost to incremental effect would be considered good value for money is £20,000-£30,000 per QALY gained (NICE technical manual 2012). This means the NHS should be willing to pay £20,000 - £30,000 for an intervention that improves health outcomes equivalent to one year of life in full health. So, it is possible to work backwards from the NICE cost-effectiveness threshold and calculate the health improvement needed for an intervention to be considered cost-effective.

$$\frac{\text{Incremental cost A compared to B}}{\text{ICER (£20,000)}} = \text{Incremental effect A compared to B}$$

3.5 Costs

A societal perspective was taken for the overall economic analysis.

The Framework for Integrated Care (SECURE STAIRS) is a complex organisational change with a wide-ranging scope that aims to profoundly change culture in the secure estate. The main input is staff time, for example to train and support staff, to take part in joint formulations, and sometimes time spent to support children and young people directly. It was not possible to estimate time spent on support to staff, and to support children and young people while implementation was beginning. Time estimates were used from experts, and from the panel. National unit costs are regularly published for the NHS in UK pounds sterling and these were applied to the costs of staff time, as is usual for economics evaluations.

Costs contribute to this analysis in two main ways:

- The input of staff time in the new service, particularly relevant for direct cases in the cost utility analysis (e.g. with QALY changes for children and young people)

- The potential savings to employers and the wider and downstream costs, benefits, and savings to wider society.

For the QALY 'what if' threshold analysis, only face to face contact time was used. Face-to face contact time with clients or staff is the usual method of calculating salary costs for economic modelling, in relation to the QALY outcomes for children and young people or staff.

For the potential cost savings to employers' results of a systematic review and economic analysis were used to provide estimates, for example the impact of work based interventions on staff stress, depression and anxiety.

The potential scale of the benefits and cost savings to the public sector and wider society were summarised from both the included studies in the systematic review of utility values and from references supplied by experts.

It is recognised that the approach taken in the cost utility analysis does not attempt to value the benefit of the total cost of the intervention to children and young people. However, these costs can be considered alongside the wider long-term cost savings to employers and to society.

3.6 PICO Summary

The population, intervention, comparator, and outcomes (PICO) below were described at the outset.

Study findings are required to refine them and shape the detail of the economic analysis.

PICO summary:

Population: all children and young people who are eligible for The Framework for Integrated Care (SECURE STAIRS) longitudinal study

Intervention: The Framework for Integrated Care (SECURE STAIRS)

Comparison: before implementation and/or early implementation versus late implementation

Outcomes for the child or young person are the primary outcomes: High risk behaviours and proxy QALYs to measure health related quality of life for the child or young person. We used a broad definition of health and wellbeing from the World Health Organisation.

4. Discussion: building a theory of change, what good looks like

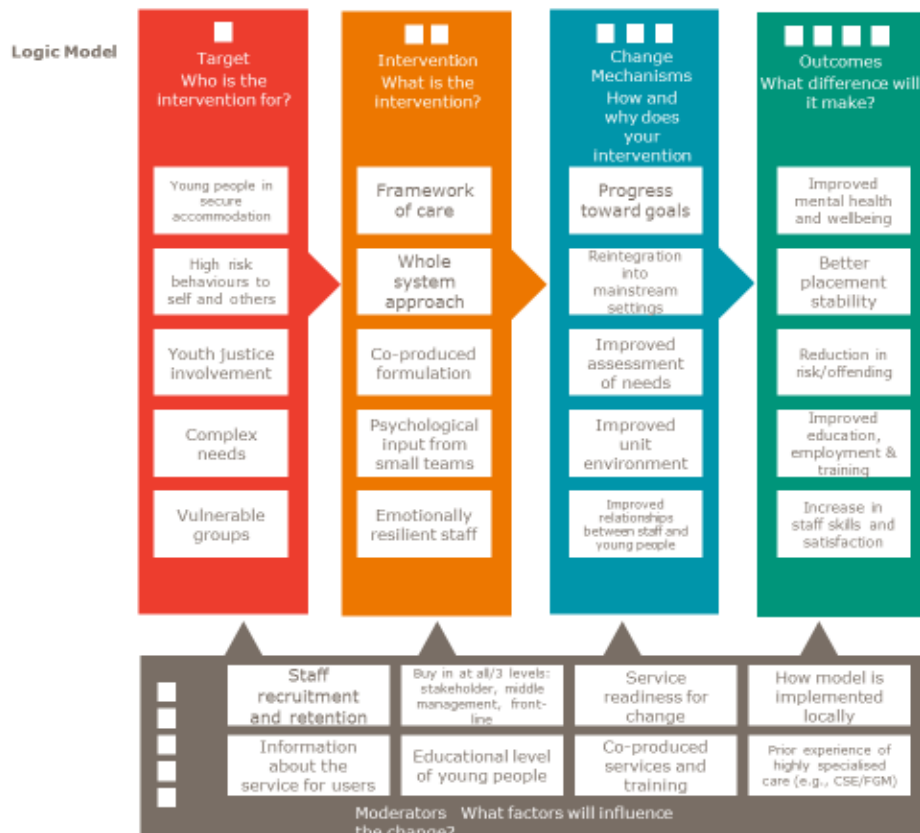


Fig 1 Study logic model [April 2019 report version]

4.1. SECURE STAIRS 'If...then...' statements for a site with mature implementation

The development of the Framework for Integrated Care (SECURE STAIRS) was based on consideration of the key elements of effective practice in interventions that have a good evidence base with young people with conduct disorder type presentations.

The table below contains theory building statements for the economic evaluation, within the framework of the study logic model (Fig 1 above) developed at the beginning of the evaluation.

Table 1 If...then... statements: the benefit to children and young people of mature Framework for Integrated Care (SECURE STAIRS) implementation

Mature implementation	Comments
<p><i>If</i> a site with deep/lived culture change implements joint formulation in week 1, that narrates 'my story'</p>	
<p><i>and</i> all staff support integrated interventions and understand the child or young person's narrative of the joint formulation, 'my story'</p>	<p>This would mean each child or young person was receiving consistent trauma-informed care with active mechanisms i.e. staff do not undermine one another</p>
<p><i>Then</i> Staff will be supported by the organisation to enact trauma informed principles of care with every interaction</p>	<p>All staff 'understand me and are working together'</p>
<p><i>Then</i>, this will help reduce perceived 'threat' in the environment and build trust so children and young people are more likely to experience staff as having their best interests at heart and reduce 'epistemic-hypervigilance' and build trust and be more open to learning and therefore,</p>	<p>Clinically significant change can be seen in children and young people in 6 weeks.</p>
<p>Children and young people will exhibit less high risk behaviour (due to reduced threat AND due to capacity to learn and adopt new strategies for managing)</p>	<p>Anxiety/behavior is worse at transition points, and therefore some children and young people come out 'worse' than they went in before the Framework for Integrated Care SECURE STAIRS</p>
<p><i>Then</i> placement stability will improve</p>	<p>Staff have a better capacity to tolerate behaviours (and these behaviours are likely to reduce); relationship between staff and children and young people improve</p>
<p><i>Then</i>, some children and young people will become more help seeking</p>	<p>It might take 2 sentences in a unit with deep culture change for help seeking behaviour to emerge in some children and young people</p>
<p><i>Then</i>, children and young people's life chances will improve in the long run (over 5 years)</p>	<p>Long term outcomes: in work, in school, housing, supportive social network</p>

4.2 The Framework for Integrated Care (SECURE STAIRS) 'If...then...' statements for staff

In 2019 it became apparent that implementation had stages of development that included not only for some recruiting a new Framework for Integrated Care (SECURE STAIRS) team, but also training CuSP officers and care staff. The table below is the first draft of 'If...then...' statements to describe this initial process of change for staff.

Table 2 DRAFT 'If...then...' statements, how change may be initiated with staff

Initial stages of staff change	Comments
<p><i>If</i> a site is committed to the Framework for Integrated Care (SECURE STAIRS) at the highest level of leadership</p> <p><i>and</i> a senior clinical lead/team is recruited to start to enable implementation</p>	
<p><i>and</i> the Framework for Integrated Care (SECURE STAIRS) team engage in:</p> <ul style="list-style-type: none"> • Co-delivery of the Framework for Integrated Care (SECURE STAIRS) with CuSP/care staff • Joint formation meetings with staff • Reflective practice with staff • Clinical/psychological support for staff • 'being available' on the unit for a few hours each week to give staff a type of 'secure attachment' 	<p>Education at this stage were not yet in the picture in this description and this appears to be a follow-on step in the implementation process.</p> <p>Note education taking part is implicit in table 1 above: mature implementation.</p>
<p><i>Then</i> staff will begin to feel more valued, supported and start to have knowledge/theory to better understand and tolerate challenging behaviours and this will lead to less burnout for some staff</p>	<p>When threat level is raised staff may revert to old behaviours</p> <p>Some staff are less burnout as intermediary outcome</p>
<p><i>Then</i> care from both the CuSP officers and health team will begin to be integrated and support each other</p>	<p>The nature of the relationship changes as perceived threat lowers for staff AND CYP. 'Small things make a big difference'</p>
<p><i>Then</i> joint formulation meetings will support improvement in CYP risk behaviors as young people begin to routinely attend and be involved in the formulation meetings</p>	<p>Staff start to put trauma informed care into practice in day-to-day care</p>

4.3 Discussion: what young people said "good" looks like

Approximately eight young people with lived experience took part in informal discussion and catch ups with the research team. In addition, four young people took part in a consultation group which was led and facilitated by Peer Power's youth engagement team and supported by a member of the research team. The notes from the focus group are in Appendix A.

The consultation group discussion included: the young people's own experiences and what had been good for them; what they thought the impact of the Framework for Integrated Care (SECURE STAIRS) could be on children and young people; what the most important difference would be, and if they thought the difference was worth the tax payers' money.

What's important and of value

Young people said that a trusting relationship changes everything and was the most important step in enabling positive change. The impact of a trusting relationship on them individually impacted the whole of their lives, including; what they wanted to

eat, when they got up, if they went to school, the respect they showed to others, doing the right thing, how they interacted with other people, and so on. They said that 'difficult' behaviour stemmed from a lack of a trusting relationship "when there is no one in your life who believes in you".

Other valuable things included:

- Being reassured it's going to be okay
- Leaving the secure estate feeling like you don't want to offend
- Feeling like a programme in the community met your need and worked for you
- Knowing support can still be available and decrease at your own speed (rather than being unavailable)
- Knowing how to get a job
- A home and knowing that how you behave makes a difference to your credit
- Stopping replication in your own families
- Understanding your own past to inform your future, sometimes things are not all your own fault

Young people highly valued the Framework for Integrated Care (SECURE STAIRS) framework and the 'my story' approach to joint formulations. They wanted the same approach rolled out to all services, across the courts, police, community services, and to Community F:CAMHS. One young person felt that this was necessary because the path into the CYPSE was so difficult for children and young people and they expected everyone who arrived in a secure estate to feel depressed and anxious if not hyper vigilant. Another young person said that arriving in the CYSPE felt like "The end, there is no more hope". Young people particularly liked the idea that, once the framework is rolled out, all children and young people could have the opportunity to take part in 'my story'. They considered that the Framework for Integrated Care (SECURE STAIRS) provided an opportunity to make a really big difference by understanding each child and young person and what had happened to them before they arrived in the secure estate. One young person said that all he wanted to do was talk to someone and he did not get the chance to be heard.

The young people told us about finding staff 'scary and daunting' and were interested in how staff were recruited, trained and how they developed the skills to be reflective and empathetic. The young people emphasised that building a trusting relationship takes time in secure settings and in the community.

5. Results

5.1 Systematic review

A complex systematic review was undertaken to identify from the literature QALYs and utility values for children and young people with, or at risk of developing, mental health problems who are in, or at risk of entering, the criminal justice system, or who are in secure residential homes.

Study selection

Of 3,383 citations obtained through the searches 3,281 were removed during the two rounds of screening as there was sufficient information in the title and abstract to be certain that they were not relevant to the review. The full publications for 91 studies were assessed to decide inclusion/exclusion (11 articles not obtained). In addition, 12 NICE guidelines and guideline appendices identified from the NICE

website were examined. Of the 103 papers/reports examined 28 were identified for inclusion in the current review (Appendix E for PRISMA flow diagram).

How the narrative summary is organised

The narrative summary comprises 28 included studies that contain potentially relevant utility data and study outcomes that relate to relevant populations in our evaluation. Findings from the included studies are summarized in an evidence table (Appendix F) under broad headings describing the type of study, study population, costs, clinical effectiveness and cost-effectiveness analysis, utility values and QALYs.

The structure of the narrative review is organised to inform the Panel's consideration of value for different populations.

- 5.1.1: contains utility values and QALYs for children and young people that may be relevant to the economic 'what if' analysis for young people with multiple and/or forensic needs (n=17 publications).
- 5.1.2: contains utility values and QALYs for victims of crime, (n=3 publications). Results that reported utility values for victims are shown separately so that the panel can consider both the application of these 'victim' values to our population, in light of the logic model, and the benefits to wider society.
- 5.1.3 Results that report the value of criminal activity free years and other wider societal benefits (n=5 studies) have been separated out to inform the consideration of the potential value of the Framework for Integrated Care (SECURE STAIRS).

Each of these sections is subdivided by the main outcome represented in the data, for example antisocial behaviour, depression etc. Each sub-section concludes with evidence statements.

For the summary of costs and benefits to wider society, in total, 17 economic evaluations met the inclusion criteria, including one study submitted by a clinical expert from the research team. Twelve studies from the systematic review were excluded (see Appendix I for list of excluded studies). For all included studies, the societal benefits, societal harms, cost, and cost savings of using interventions for children and young people were extracted into a table (Appendix J). In addition, a detailed breakdown of the cost trade-off was extracted for UK studies only (Appendix K).

5.1.1 Narrative summary and evidence statements, children and young people

5.1.1.1 Children and young people with, or at risk of developing, conduct disorder or ADHD

(n 4 = included studies)

Study 1: Antisocial behaviour (Dretzke et al, 2006)

A systematic review plus decision analytic modelling study conducted in the UK has sought to determine the cost-effectiveness of parent/carer training programmes for the treatment of conduct disorder in children and young people compared to alternative or no treatment. Bottom-up costings obtained from a health economics literature review were supplemented with expert opinion. These cost per family estimates were then used to calculate a total cost of providing parent/carer training programmes.

Meta-analyses of findings from the effectiveness systematic review showed a statistically significant improvement in ECBI frequency and intensity

subcategories, CBCL and DPICS measures. For example, the weighted mean difference for CBCL score was -4.36 (95% CI -7.90 to -0.81), showing an improvement in antisocial behaviour in young people whose carers were enrolled in a parent/carer training programme compared with controls.

Using the health economics model cost-effectiveness was estimated for 3 different models of programme, group community-based, group clinic-based and individual home-based across different "success" rates. Programmes were assumed to last for 10 sessions and the QoL gains assumed to last for 1 year following completion of the programme. Cost per successfully treated young person ("responder") at a 50% success rate ranged from £6,143 for an individual home-based programme to £1,006 for a clinic-based group programme. At a 10% success rate these values rose to £10,060 and £5,030 respectively.

A range of incremental cost per QALY estimates for different levels of QoL improvement were then considered, values for which, it is suggested, could be determined by expert panel if the model was to be applied to a real-life example. Results from the model showed that at a 1% improvement in QoL the ICER would be high for all programme models, ranging from £62,875 for group clinic-based programmes to £383,925 for individual home-based programmes. At 5% improvement in QoL these figures fall to £12,575 and £76,785 respectively. For the individual home-based programme model to be considered cost-effective at NICE's willingness to pay threshold, it would need to lead to an improvement of 20% in QoL. [Evidence level (EL): LOW]

Study 2: ADHD Parent Training Guideline (NICE, 2018)

Cost-effectiveness analyses compared parent training with no parent training/treatment as usual for parents of children and young people with ADHD. A number of models were developed for the guideline based on the clinical effectiveness evidence reported in the guideline's systematic review. The models were all cost utility analyses from an NHS and personal social services perspective with a time horizon of 12 months. Micro-costing was carried out for each study based on staff time (costed for consultant psychiatrists, clinical psychologists, therapy assistants and administrative support) multiplied by the number of hours of therapeutic contact reported for each study programme.

A range of utility values were identified from a systematic literature review and values chosen that were felt to best represent a UK population of children and young people with ADHD. These values were QoL scores obtained from a Dutch study using EQ-5D scores obtained from parents of children and young people with ADHD. In this study responders to treatment were defined as those taking their medication as prescribed and reported to be "functioning well"; non-responders were those not taking medication as prescribed and having some problems functioning (van der Kolk, 2014a).

The QoL (utility) score for responders was 0.83 and for non-responders was 0.74. Base case cost-effectiveness modelling was conducted for four included studies using total symptom scores obtained on a variety of validated psychometric scales. None of the parent training programmes were found to be cost-effective at a threshold of £20,000 per QALY.

A sensitivity analysis was conducted using a behavioural outcome instead of a total symptom score based upon effectiveness findings from 2 studies. The total cost for parent training was estimated as £1,288 delivering 0.7711 QALYs. The comparator of usual treatment was costed at £739 delivering 0.7601 QALYs, a QALY gain of 0.0110 for the intervention group at an incremental cost of £549 per child or young person, giving an ICER of £49,944. The relative difference between treatment responses for the two groups was approximately 13%, however the intervention costs included parent and child training and therefore was more costly than parent training alone, hence the high value for the ICER. The intervention cost would need to fall below £276 for it to be considered cost-effective at a threshold of £20,000. The authors of the report note that the modelling is quite simplistic and does not take into account wider societal costs which, if taken into consideration, might have resulted in at least some of the programmes being considered cost-effective. [EL: MODERATE]

Study 3: Severity of ADHD (Sayal et al, 2016)

A three-arm cluster RCT conducted in the UK included an economic analysis to determine the cost-effectiveness of a brief intervention for parents and teachers of primary school children at risk of ADHD. This group intervention was delivered either to parents only (3 x 2-hour sessions) or to parents and teachers (parent intervention + 1.5-hour session delivered to teachers). Costs to the family were collected using a telephone interview asking parents about all services and supports used by the child plus estimates of family-borne costs.

Severity of ADHD was measured using the Parent-rated Conners' ADHD index at 6 month follow up and showed no significant difference in scores between either intervention arm and the no intervention control group (parent only group: mean difference -1.1 (95% CI -5.1 to 2.9; combined parent+teacher group: mean difference -2.1 (95% CI -6.4 to 2.1).

All three study groups showed an improvement in QoL scores measured using the EQ-5D-Y: control group 0.007; parent only group 0.10; parent+teacher 0.019, although again there was no statistically significant difference between groups. Primary cost-effectiveness analysis showed an incremental cost per one-point improvement in the Conners' ADHD index of £29 for the parent only intervention and £134 for the combined intervention. If only the direct costs of the intervention are considered the ICER for each programme model are £46 for the parent-only programme and £77 for the combined programme per one-point improvement on the parent-rated Conners' ADHD index. At a willingness to pay threshold of £31 per one-point improvement in the Conners' ADHD index the parent-only programme is likely to be considered cost-effective. [EL: LOW]

Study 4: Response to pharmacological treatment for ADHD (NICE 2018)

The guideline on pharmacological treatment for ADHD included two health economic systematic reviews, the first of which examined the cost-effectiveness of first-line drug treatments for ADHD whilst the second looked at second-line drug sequencing.

First-line treatments

The systematic review was comprised three cost-effectiveness analyses of various sequences of methylphenidate (immediate release (IR), modified release (MR) and extended release (XR)), atomoxetine and dexamphetamine to determine which drug is most cost-effective as a first choice of treatment given different options of sequencing. Utility values based on EQ-5D data were used in one version of the model and were reported for responders and non-responders to medication (not defined), being 0.837 and 0.773 respectively.

Costs based on drug costs plus resource use (psychiatrist, paediatrician and GP consultations and blood tests) ranged from £1,098 to £1,563 per child or young person. Costs in studies based on drug treatments only ranged from £265 to £615 per child or young person. The NICE guideline updated one of the models reported to take into account the increase in cost of dexamphetamine since the model was first published, this adjustment meant that the most cost-effective first drug of choice changed from being dexamphetamine to methylphenidate (IR).

Modelling across the three included studies suggested that both atomoxetine and methylphenidate (XR) could be considered cost-effective, with small incremental QALY gains of approximately 0.01 to 0.04, although the degree of uncertainty around the reported findings is not reported and reported ICERs are very sensitive to changes in utility values. [EL: LOW]

Second-line drug sequencing

The second systematic review looked at the cost-effectiveness of different drug sequencing options for children and young people who had previously received medication to which they were either intolerant or non-responsive. The review includes seven studies: two studies comparing an atomoxetine treatment algorithm with standard care or no care (sub-groups from Hong, 2009 and Cottrell, 2008); three studies comparing types of methylphenidate (XR) with methylphenidate (IR) Van der Schans, 2015; Schawo, 2015 and Faber, 2008); one study comparing guanfacine (XR) added to long-acting stimulants compared with long-acting stimulants alone (Lachaine, 2016); and one study comparing lisdexamfetamine with atomoxetine (Zimovetz, 2016).

The two studies comparing atomoxetine with no treatment report quite different cost-effectiveness findings, £12,370 (Cottrell, 2008) vs £21,528 (Hong, 2009). The reason for this difference is explained by the difference in cost of atomoxetine between the two studies (being twice as high in the European Hong study). It is also noted that neither study took into consideration the insomnia side effect reported for atomoxetine which may have reduced its cost-effectiveness.

The three studies comparing methylphenidate (XR) with methylphenidate (IR) all show methylphenidate (XR) to be cost-effective. Findings do vary however, with two studies (Van der Schans, 2015 and Schawo, 2015) showing methylphenidate (XR) to be dominant (cheaper and more effective) than methylphenidate (IR) and the third reporting an ICER of about £10,000 (Faber, 2008).

The two later studies are updates of the earlier Faber study and differences between the studies explain these different findings. For example, in the Faber study there was no sub-optimal state in the comparator arm, but rather the model used a non-compliance state which had the same costs attached to it

as the optimal state, meaning there may have been lower costs in the comparator arm leading to a larger incremental cost for consultations and other intervention costs. In addition, the medication costs were approximately five times higher in the Faber study.

The cost utilities are from different sources in all three papers and are much closer together in the Faber study leading to a smaller incremental QALY. These factors together contribute to the higher ICER in the earlier study. Some differences are also apparent between the two later studies. In the Van der Schans (2015) study the medication costs are lower in the medikinet/Equasym arm compared to methylphenidate OROS and there are lower costs associated with resource use in this arm because more children and young people are "optimal" compared to those in the methylphenidate (IR) arm. These factors combine to give a cost saving of £449 in this model.

In Schawo (2015) the transition probabilities between the treatment options are very different from those reported in the other two studies. For example, restarting treatment after it is stopped is included and this occurs more frequently in the OROS arm meaning additional high costs associated with alternative treatments are greater in the methylphenidate (IR) arm which may explain the large cost saving associated with methylphenidate OROS in this study.

One single study (Lachaine, 2016) compared adding guanfacine (XR) to long-acting stimulants with long-acting stimulants alone and found an associated QALY gain of 0.028 which equated to 6.57 patient weeks with a response, giving an ICER of £13,321. Probabilistic sensitivity analysis showed 95% probability of the intervention being cost-effective, with the ICER being sensitive to changes in the calculation of transition probabilities and the initial health state distribution assuming all patients started in the severe state.

Finally, a seventh study included in the NICE (2018) review compared lisdexamfetamine with atomoxetine (Zimovetz, 2016). Treatment effects used in the health economic model were based on a 9-week trial of the 2 drugs and findings equated to a QALY gain of 0.011 and an ICER of £1,586 for lisdexamfetamine compared with atomoxetine. Probabilistic sensitivity analysis showed an 86% probability of the intervention being cost-effective.
[EL: LOW]

Evidence statements: Children and young people with, or at risk of developing, conduct disorder or ADHD (n=4 included studies)

Study 1: Antisocial behaviour (Dretzke et al, 2006)

Parent/carer training programmes for the treatment of conduct disorder in children and young people compared to an alternative or no treatment. 'What.. if' type analysis based on hypothetical estimates of QALY gains based on a one point improvement on the ECBI intensity, ECBI frequency or CBCL scales.

- Based on a willingness to pay threshold of £20,000 per QALY the QALY gain required for cost-effectiveness to be attained (using ECBI scale) was 0.0069 QALYs for group community based parent training, 0.0048 for group clinic-based training and 0.0300 for individual home-based training. [EL: LOW]

Study 2: ADHD Parent/carer Training guideline report (NICE, 2018)

The economic analysis used utility values from a Dutch QoL survey undertaken using the EQ-5D (Van der Kolk, 2014a). A response to treatment was defined as a child or young person who was taking their medication and reported by their parents/carers to be "functioning well".

- The utility score for a child or young person with ADHD who responded to treatment was 0.83 and for a child or young person who was a non-responder was 0.74.
- Sensitivity analysis using a behavioural outcome delivered a QALY gain of 0.0110 for the intervention group [EL: MODERATE]

Study 3: Severity of ADHD (Sayal et al, 2016)

A 3-arm RCT investigated the cost-effectiveness of a brief parent/carer-teacher intervention for children and young people at risk of ADHD. The primary outcome, severity of ADHD, was measured using the Parent/Carer-rated Conners' ADHD index at 6 month follow up. There was no significant difference in scores between either intervention arm and the no intervention control group (parent only group: mean difference -1.1 (95% CI -5.1 to 2.9; combined parent/carer+teacher group: mean difference -2.1 (95% CI -6.4 to 2.1).

- All 3 study groups showed an improvement in EQ-5D-Y QoL scores at 6 months: control group 0.007; parent/carer only group 0.10; parent/carer+teacher 0.019, although again there was no statistically significant difference between groups. Cost-effectiveness is therefore uncertain. [EL: LOW]

Study 4: Pharmacological treatment for ADHD (NICE, 2018)

The economic analysis used utility values based on EQ-5D data (King, 2006) for the health economic analysis for first line sequencing of treatment.

- The QALY for a child or young person with ADHD who responded to treatment was 0.837 and for a child or young person who was a non-responder was 0.773, although response to treatment is not defined. [EL: LOW]

This NICE guideline also developed health economic models for second line sequencing of pharmacological therapy.

- Incremental effects between treatment groups across studies for responders to treatment compared to non-responders is reported in QALYs. In the 2 studies where effect size is derived from RCT data the utility values are derived from a UK study using the standard gamble method. In the first study (Cottrell 2008) the QALY gains for responders compared to non-responders are: 0.03, 0.0235, 0.0181 and 0.0320 for the different drug sequences investigated.
- In the second RCT-based study the incremental QALY gain is 0.039 for the drug sequence investigated (Hong, 2009). [EL: LOW]

5.1.1.2 Children and young people with autism and behaviour that challenges
(n=1 publication)

Study 1: Autism and behaviour that challenges (NICE, 2013)

The NICE guideline for children and young people with autism (2013) includes a health economic model to assess the cost-effectiveness of antipsychotic drugs for the management of challenging behaviour in children and young people with autism. The model takes the perspective of the UK NHS and personal social care and has a time horizon of 32 weeks. The modelled intervention is treatment with the antipsychotic drugs risperidone and aripiprazole. A positive response rate was defined as at least 25% improvement on the ABC-irritability scale. The interventions, the time horizon and the outcome definition are derived from studies identified by the effectiveness systematic review undertaken for the guideline.

Costs for the model included only the cost of acquiring the antipsychotic medications as health care professional time was assumed to be equal in both treatment and comparison groups and treatment with a placebo was assumed to accrue no cost. Costs incurred by behaviour that challenges was not modelled due to the unavailability of relevant data. Mean total costs per 100 children and young people with autism was calculated to be £846 for risperidone tablets; £14,385 for risperidone oral solution; £20,433 for risperidone oral dispersible tablets; and £50,965 for aripiprazole tablets.

A common adverse effect associated with the antipsychotic medication, excessive weight gain, was included in model as a factor leading to a decrease in utility scores. Utility values for hyperactivity were used in the model as a proxy for behaviour that challenges, taken from Tilford (2012) which gives values of 0.72 to mild hyperactivity and 0.66 to moderate hyperactivity. Children and young people were assumed to have moderate levels of hyperactivity at the start of treatment and improve to mild levels if the treatment was successful. A relapse in symptoms was defined as a return to moderate levels of hyperactivity for the purposes of the model. The probability of a positive response to treatment compared to placebo after 8 weeks was 0.239.

Based on these inputs and taking into consideration the risk of relapse and risk of weight gain, the mean total QALYs for successful antipsychotic treatment was calculated as 42.20 QALYs per 100 children and young people. Total QALYs for placebo treatment was 41.36, giving a QALY gain of 0.84 QALYs per 100 children and young people over 32 weeks of the trial period. The resulting ICER vs placebo for the three preparations of risperidone were: £1,003 per QALY for

Evidence statement: Children and young people with autism and behaviour that challenges (n=1 publication)

Study 1: Autism and behaviour that challenges (NICE 2013)

A health economic model assessed the cost-effectiveness of antipsychotic drugs for the management of challenging behaviour in children and young people with autism compared with placebo. The probability of a positive response to treatment compared to placebo after 8 weeks was 0.239.

- Taking into account the risk of relapse and the disutility associated with possible weight gain (side effect of treatment) the mean total QALYs gain was estimated as 0.84 QALYs per 100 children and young people over 32 weeks of the trial period. [EL: LOW]

tablets; £17,065 per QALY for oral solution and £24,240 per QALY for oral dispersible tablets. The ICER for aripiprazole tablets was £30,461 per QALY. Risperidone tablets and oral solution thus both fall below NICE's lower threshold for cost-effectiveness (at £20,000). [EL: LOW]

5.1.1.3 *Children and young people with challenging behaviour and learning disabilities*

(n=1 publication)

Study 1: Challenging behaviour and learning disabilities (NICE, 2015)

The NICE guideline for challenging behaviour and learning disabilities (2015) includes two health economics models. The first model assessed the cost-effectiveness of group parent training compared with waitlist controls for managing challenging behaviour in children and young people with learning disabilities. The model takes the perspective of the UK NHS and personal social care and has a time horizon of 61 weeks (9 weeks of intervention plus 52 weeks follow up).

The intervention comprised 9 weeks of parent training plus 2 booster sessions during follow up for parents of children and young people whose behaviour improved. A positive response was defined as a clinically significant improvement on either the ECBI-Problem, the CBCL- Externalising Behaviour or the DBC-Total Behaviour Problem. The interventions, the time horizon and outcome definitions were derived from eight studies identified by the effectiveness systematic review undertaken for the guideline. The risk ratio of non-improved behaviour that challenges of parent training versus waitlist controls was derived from a meta-analysis of these reviewed studies. The one-year probability of relapse after improvement of behaviour was estimated to be 0.50 for parent training and 0.60 for waitlist controls.

The utility values used in the health economics model were taken from the study by Tilford et al (2012) based on HUI3 scores obtained from carers of children and young people with autism (see appendix L for a summary of this paper). Scores used for differences in levels of hyperactivity were used as a proxy for changes in behaviour that challenges in children and young people with a learning disability. For the health economic analysis children and young people at the start of the intervention were ascribed a value that related to a moderate level of hyperactivity (HUI3 value 0.66) and a response to treatment was represented by an improvement to a mild level of hyperactivity (HUI3 value 0.72), a gain of 0.06. Children and young people that relapsed were assumed to return to a value that equated to a moderate level of hyperactivity.

The estimated costs for parent training were modelled on eight group sessions lasting two hours each, with each group including 10 families and run by a clinical psychologist (Band 8a) and a mental health nurse (Band 5). Including salaries, overheads, and capital overheads the intervention was estimated to cost £333 per family, rising to £416 if the two booster sessions were included. The intervention cost of waitlist controls was zero.

The health economics model suggested that parent training would result in an additional 1.33 QALYs per 100 children and young people compared with waitlist controls, at an additional cost of £36,219. The ICER of parent training vs waitlist was £27,148 per QALY. The cost-effectiveness acceptability curve suggested that the probability of parent training being cost-effective compared with waitlist was

0.29 at the lower NICE threshold of £20,000 per QALY and 0.52 at the upper threshold of £30,000 per QALY. [EL: MODERATE]

A second decision-tree model was developed for the guideline to assess the cost-effectiveness of three interventions for sleep problems in children and young people with a learning disability: psychosocial interventions, melatonin, psychosocial interventions plus melatonin (combination therapy) compared with waitlist controls. The intervention duration was modelled as 12 weeks and the outcome defined as either an improvement in sleep problems or no improvement (no further details provided). Follow up was over a period of 26 weeks thus the time horizon for the model was 38 weeks (12 weeks intervention plus 26 weeks follow up).

The economic analysis took an NHS and personal social services perspective. Cost inputs for the model were intervention costs only as no other relevant cost data was identified (including rates of side-effects).

Effect outcomes were derived from a meta-analysis of three RCTs reviewed in the guideline. The SMD of improvement for psychosocial intervention vs waitlist was -0.85; the risk ratio of non-improvement for melatonin vs psychosocial intervention was 0.73; the risk ratio of non-improvement for combination therapy vs psychosocial intervention was 0.27. The probability of non-improvement in waitlist controls was estimated and tested at 4 values: 0.900, 0.925, 0.950, 0.975. The 26-week probability of relapse was estimated as 0.40.

Utility scores were identified from Tilford et al, 2012 with mild sleep problems given a score of 0.73 and severe sleep problems 0.61.

Intervention costs were estimated as £447 for psychosocial intervention based on 4 sessions of CBT lasting 50 minutes each with a clinical psychologist (Band 8a). Three different formulations of melatonin were tested in the model: modified-release tablets (£65 over 12 weeks), oral solution (£211) and oral suspension (£410) (the latter two require special payments as they do not hold a UK product license). Monitoring was also included in the costings: one out-patient visit to a consultant-led clinic (unit cost £172) and five home visits by community nurses (£70 per hour including travel time). Combination therapy was costed as the sum of psychosocial therapy plus melatonin therapy. Waitlist was costed as zero. Findings from the model showed that combination therapy with modified-release tablets is likely to be the most cost-effective intervention for sleep problems in children and young people with a learning disability. At a probability of non-improvement under waitlist of 0.950 the QALY gain was 0.023 compared with waitlist controls with an ICER of £17,406 per QALY. Melatonin tablets alone were also found to be cost-effective with a QALY gain of 0.011 compared with waitlist controls with an ICER of £15,496 per QALY. The probability of combination therapy (with melatonin tablets) being cost-effective at the NICE lower threshold of £20,000 per QALY ranged from 0.39 to 0.53 depending upon the baseline probability of non-improvement from waitlist). [EL: VERY LOW]

Evidence statements: for children and young people with challenging behaviour and a learning disability (n=1 publication)

Study 1: Challenging behaviour and learning disability (NICE, 2015) A de novo health economic model assessed the cost-effectiveness of group parent/carer training for the management of challenging behaviour in children and young people with a learning disability compared with waitlist controls. The risk ratio of non-improvement of behaviour following parent training compared with controls was 0.72. [EL: MODERATE]

- Group parent/carer training was found to result in a 1.33 QALY gain per 100
- Children and young people receiving treatment compared with waitlist controls

A second health economic model assessed the cost-effectiveness of three interventions for sleep problems in children and young people with a learning disability compared with waitlist controls: psychosocial intervention, melatonin and combination therapy of both psychosocial intervention plus melatonin. The SMD of improvement for psychosocial intervention vs waitlist was -0.85; the risk ratio of non-improvement for melatonin vs psychosocial intervention was 0.73; the risk ratio of non-improvement for combination therapy vs psychosocial intervention was 0.27. [EL: VERY LOW]

- Sleep problems : Combination therapy of melatonin in tablets and psychosocial intervention was considered cost-effective in the management of sleep problems. QALY gain per child 0.023.

5.1.1.4 Children and young people involved with the criminal justice system (depression exemplar)

(n= 1 study)

Study 1: Psychological and mental health difficulties in children and young people who offend, depression exemplar (Richardson et al, 2015)

A UK report used two systematic reviews of screening accuracy and treatment effectiveness for psychological and mental health difficulties in children and young people who offend, plus decision analytic modelling, to determine the cost-effectiveness of treatment for depression. Depression was chosen as an exemplar for the model as it is the most common mental health condition identified for this population (15%). A study identified for the systematic review comparing group CBT with life skill training provided effectiveness data and other clinical parameters to populate the health economics model e.g. average group size (10.4 children and young people). The number of depression free days for each individual over the 64 weeks of the trial period was reported as 23.8 days for group CBT and 21.56 days for life skills training, with 15% of the CBT group still being depressed at 64 weeks compared with 23% of the life skills training group. A utility weight of mild depression (0.685) was assumed for days depressed based on an average baseline BDI score of 16.6; and a utility weight of 0.85 for non-depressed days. Using these figures health utilities were calculated for the full study period for group CBT and life skills training. Incremental QALYs of treatment were then calculated by taking the difference between the two groups averaged over 52 weeks, giving a QALY gain of group CBT over life skills training of 0.0113 QALYs. Using costs derived from the literature the model gave an estimated cost per QALY of £17,542 for group CBT with 1 therapist and £33,393 for group CBT with two therapists. There was insufficient evidence to prove the modelled exemplar of screening for depression was cost-effective. [EL: VERY LOW]

Evidence statements: for children and young people involved with the criminal justice system (depression exemplar) (n=1 publication)

Study 1: Psychological and mental health difficulties in young people who offend, depression exemplar (Richardson et al, 2015)

A UK report used two systematic reviews of screening accuracy and treatment effectiveness for psychological and mental health difficulties in young people who offend, plus decision analytic modelling, to determine the cost effectiveness of treatment for depression. The intervention was CBT (based on CWD-A course) vs life skills course

QALYs over one year

- Group CBT: 0.0113 QALY gain per individual compared to control.

There was insufficient evidence to prove the modelled exemplar of screening for depression was cost effective. [EL: VERY LOW]

5.1.1.5 *Children and young people with anxiety or depression*

(n=7 studies)

Study 1: Anxiety free days (Bodden et al, 2008).

An RCT conducted in the Netherlands has investigated the cost-effectiveness of family CBT compared with individual CBT for children and young people with primary anxiety disorders. Figures for costs and treatment effectiveness used in the health economics model were derived from the primary trial data. Micro, bottom-up costing was carried out using cost diaries completed by families, costs of parental leisure/work time lost and treatments, with values obtained from literature and Dutch tariffs respectively.

The primary outcome used in the health economics analysis was anxiety free days, defined using scores on the Anxiety Disorder Interview Schedule (ADIS), reported for the young person and for the family as a whole. At 12 month follow up the proportion of anxiety free days for children and young people was 68% for individual CBT and 53% for family CBT; this difference is not statistically significant.

The incremental difference in total societal costs for the two models of therapy was found to be €386 over 15 months, with family CBT being more costly than individual CBT. The gain in utility score at one year follow up was 0.08 for individual CBT and 0.11 for family CBT. The number of QALYs was 1.18 for individual CBT and 1.15 for family CBT (out of a possible 1.25 because cost-effectiveness was modelled over 15 months). The ICER based on cost per QALY indicated that individual CBT dominated family CBT (less costly and more effective), although the differences in cost and effectiveness were modest. Similar findings were reported when using family anxiety free days rather than child or young person anxiety free days. [EL: VERY LOW]

Study 2 Recovery from anxiety (Creswell et al, 2017)

An RCT, conducted in the UK, has compared the cost-effectiveness of two treatments for anxiety in primary school-aged children, brief guided parent-delivered CBT, and solution-focused brief therapy. For the purposes of the trial

a range of CAMHS healthcare staff were trained to deliver the therapies (two hours training plus fortnightly supervision).

A societal perspective was adopted for the health economic analysis, with parents being asked to record patient level direct and indirect resource use using diaries, including parental lost work and leisure time and lost school time for the child. Brief guided parent-delivered CBT was found to be less costly than solution-focused brief therapy, with a mean difference in societal cost of -£448.

The primary outcome for the effectiveness analysis was clinician-rated recovery, measured using the Clinical Global Impressions of Improvement (CGI-I) and rated as "much" or "very much" improved. At six month follow up the proportion of children who were rated as much or very much improved were similar between the two therapy groups, 66% children in the brief guided parent-delivered CBT and 72% children in the solution-focused brief therapy group.

QoL scores for the cost-effectiveness analysis were measured using the Child Health Utility 9D (CHU-9D), with scores on the EQ-5D-Y being used in a sensitivity analysis. EQ-5D-Y values for parent-delivered CBT were: 0.82 at baseline and 0.87 at six month follow up. The values for solution-focused brief therapy were 0.80 at baseline and 0.91 at six month follow up. The scores on both scales were found to be very similar between the two interventions both pre-treatment and at six month follow up, resulting in a mean QALY gain over the trial period of 0.006 (calculated using CHU-9D scores). Taking sampling uncertainty into account the probability that brief guided parent-delivered CBT is cost-effective in comparison with solution-focused brief therapy is 96% based on NICE's willingness to pay threshold of £20,000 - £30,000 per QALY gained. [EL: VERY LOW]

Study 3 High risk of depression (Stallard et al, 2013)

A large UK RCT sought to determine whether classroom-based CBT is a cost-effective treatment for secondary school children and young people at high risk of depression compared with controls (usual personal, social and health education (PSHE) and an attention control comprising usual PHSE with two additional facilitators). Effectiveness was measured in terms of symptoms of depression using the Short Mood and Feelings Questionnaire (SMFQ) and QoL was assessed using child-completed EQ-5D.

Costs of providing the interventions calculated from project records of resource use and costs for health-related resource use were collected via parent-completed questionnaires. At 12 month follow up SMFQ scores were found to have decreased for high risk children and young people in all three trial arms, with no difference between arms. The adjusted difference in score means for classroom-based CBT was 0.97 (i.e. approx. 1 point higher) compared with usual PSHE and -0.63 compared with attention control PSHE.

QoL were also found to change very little between baseline and 12 months post intervention, with scores at baseline being high and increasing very slightly at follow up (incremental change in score for classroom-based CBT 0.009; for attention control PSHE 0.016 versus usual PSHE). The (adjusted) cost per person of classroom-based CBT was estimated to be £526 compared with £385 for usual PHSE and £517 for attention control PHSE. The

incremental cost-effectiveness analysis showed that classroom- based CBT was both more costly and less effective than usual PHSE (as was attention control PHSE). However, no results demonstrated cost-effectiveness within NICE's decision rules of willingness to pay, because the interventions were not proved effective enough at reducing symptoms of depression in adolescents in school. [EL: HIGH]

Study 4: Depression (Byford et al, 2007)

A UK RCT has assessed the cost-effectiveness of combined selective serotonin inhibitors (SSRIs) vs. SSRIs plus CBT for the treatment of major depression in adolescents. Effectiveness was measured using the HoNOSCA for global mental impairment and the EQ-5D for health-related quality of life. The study took a broad service perspective including health care, social care, and education with a follow up of 28 weeks. Cost-effectiveness was explored through the calculation of ICERs.

Total mean costs per participant over the 28-week follow-up period based on estimated health care costs plus education, social services, voluntary and private sector costs were £4640 (SD £4516) for SSRIs alone and £6940 (SD £11,122) for CBT+SSRIs. Health outcome findings showed that both study groups improved over the course of the study as assessed by the HoNOSCA and the EQ-5D, but there was no significant difference between groups; HoNOSCA 1.24 (95% CI -1.05 to 3.52), EQ-5D: -0.04 (95% CI -0.12 to 0.04).

QALYs gained over 28 weeks for children and young people in the CBT+SSRI group was calculated as 0.36 and for the SSRI group as 0.38 (difference -0.02 (95% CI -0.07 to 0.05)). Children and young people in the CBT+SSRI group attended significantly more sessions than those in the SSRI group (mean number of sessions: 11.3 vs 7.0) and had more days as in-patients (5.8 vs 0.6). Given that there was no difference in effectiveness between the two groups and CBT+SSRI was more costly it can be concluded on face value that SSRIs alone is a more cost-effective intervention. This was tested further with plotting of cost-effectiveness acceptability curves which suggested that, at best, there was a 26% probability that CBT+SSRI is more cost-effective than SSRIs in terms of HoNOSCA scores, and a 4% probability in terms of QALYs.

The author notes that although improvements were evident in the group as a whole (mean baseline EQ-5D self-rated health status score 57, increasing to 72 at 28 weeks), these participants were still reporting scores lower than the UK population norm for children and young people under 25 years of age (mean 86.49; source Kind, 1999). [EL: LOW]

Study 5: Depression free days (Domino et al, 2008)

A US RCT has investigated the cost-effectiveness of three treatments for major depressive disorder (MDD) compared with pill placebo. The intervention groups comprised 12 weeks therapy with either fluoxetine alone, CBT alone or combination therapy (CBT+fluoxetine). Children and young people aged between 12 and 18 years diagnosed with MDD using the DSM-IV scale were recruited into the trial from academic and community clinics. Depression was assessed using the Children's Depression Rating Scale - Revised (CDRS-R) score at baseline, six and 12 weeks and scores obtained converted into depression free days (DFDs). Scores were obtained based on symptoms for the previous week and linearly interpolated between endpoints of each period

to obtain a score for each day. A daily score <29 was coded as “depression free”; a daily score >45 was coded as having full depressive symptoms and daily scores 29 – 45 were coded to be proportionately depression free.

QALYs for the health economic modelling were then calculated (using metrics developed in adult populations) from DFDs. Modelling was conducted from a societal perspective and included drug costs, sessions of CBT, costs of out-of-protocol service use (e.g. in-patient episodes, school-based counselling services) as well as caregiver costs (time and travel costs).

Overall, across all treatment groups, there was a decrease in scores on the CDRS-R from baseline to 12 weeks which equated to 22 DFDs, giving an average QALY gain of 0.16. Both fluoxetine and combination therapy were shown to be effective compared with placebo. CBT alone was found to be not effective compared with placebo (effectiveness values not reported). Overall, total costs for combination therapy were significantly higher than other study groups at \$2,832 compared with \$2,287 for CBT alone and \$942 for fluoxetine (placebo: \$841).

The most cost-effective treatment was fluoxetine alone at a cost of \$23,737 per QALY gained. Combination therapy was estimated to cost \$123,143 per QALY gained. The analysis is sensitive to the utility loss ascribed to depressive disorder, with both fluoxetine and combination therapy becoming cost-effective at a \$100,000 threshold at a utility loss of 0.6 for depressive disorder. [EL: VERY LOW]

Study 6: Major depressive disorder (Haby et al, 2004)

An Australian health economics study has modelled the cost-effectiveness of CBT and SSRIs compared with usual care for the treatment of children and young people with MDD. The modelling looked at the overall government and individual costs over one year based on an incidence of depression of 1.5% in children and young people aged 6 – 17 years (n=10, 952 receiving the intervention).

A composite outcome was used for clinical effectiveness based upon a standardized mean difference of continuous outcome measures for depression, anxiety, mood and HRQoL from a meta-analysis of findings from reviewed evidence. Incidence and costs were estimated based upon values from Australian national reports. Assumptions for typical treatment programmes were based upon clinical expert opinion and national practice guidelines. Values for duration of illness were calculated based upon international published data. Disability weights (DWs) used in the health economic modelling were based upon the Dutch weighting system (Stouthard et al, 1997) which gives a weight of 0.76 for severe depressive disorder, 0.35 for moderate depressive disorder and 0.14 for mild depression.

The effect sizes (standardized mean differences, SMD) calculated from a meta-analysis of four studies were 0.41 (95% CI 0.15 to 0.67) for CBT and 0.29 (95% CI 0.11 to 0.46) for SSRIs compared with usual care (non-evidence based care provided mainly by a GP with no SSRIs). Adherence of at least 50% was assumed for the purposes of modelling. CBT delivered by a public psychologist was found to be the most cost-effective programme of treatment delivering a health benefit of 360 disability adjusted life years (DALYs) (95% CI 120 to 920) at an incremental cost of A\$3.4 million (95% CI

A\$1.7 million to 6.3 million) giving an ICER of A\$9,000 (95% CI A\$3,900 to 24,000).

Treatment with SSRIs was also found to be cost-effective compared with usual care with first line treatment delivering a health benefit of 230 (95% CI 88 to 510) DALYs at a cost per DALY of A\$5.4 million (95% CI A\$3.1 million to 8.6 million) giving an ICER of A\$23,000 (95% CI A\$13,000 to 53,000).

Findings were very similar for SSRIs as a second line treatment following CBT. Consideration of second stage filters highlighted some concerns over the feasibility of implementing CBT in terms of ensuring an adequate workforce (numbers of appropriately trained staff) and the provision of government funding to ensure access via primary care. The development of implementation arrangements were also of concern given that the cost-effectiveness assumed steady state operation. [EL: VERY LOW]

Study 7 Depression (Wright et al, 2016)

A US RCT compared the cost-effectiveness of a collaborative care treatment programme for depression with usual care. The collaborative care programme comprised an initial face-to-face engagement meeting, delivery of evidence-based treatments with follow up by master's level clinicians. Usual care comprised receipt of depression screening results undertaken for the trial with usual access to mental health services and medications.

Children and young people with depression aged 13-17 were invited to participate in the study if they scored 10 points or more on the 9-item Patient Health Questionnaire (PHQ-9) or if they met the diagnostic criteria for major depression on the Kiddie Schedule for Affective Disorder and Schizophrenia and had a Child Depression Rating Scale-Revised (CDRS-R) score of 42 or higher. Depression was assessed at baseline, six months, and 12 months. Depression severity was calculated using CDRS-R scores obtained at these time points linearly interpolated to obtain a daily CDRS-R score. The scores obtained were rated as follows: CDRS-R score ≤ 23 - not depressed; score 24-42 - mildly depressed; score > 42 - moderately to severely depressed.

These depression scores were mapped onto utility values for depression in order to obtain a daily utility score for each study participant. No depression was given a utility rating of 1.0; mild depression 0.8 and moderate to severe depression 0.6.

Costs were estimated from a payer perspective using a micro-costing approach to calculate how much each type of therapeutic contact costed (including therapist and administrative support time). This cost was multiplied by actual number of contacts recorded for each participant and costs related to additional service use inpatient visits, medication and emergency department visits added. The overall costs for the 12-month duration of the study were calculated as \$6636 (95% CI \$5013 to \$8852) per young person in the intervention group and \$5752 (95% CI \$3814 to \$7952) for those receiving usual care. Based on CDRS-R scores the YP in the intervention group had a mean daily utility value of 0.78 (95% CI 0.75 to 0.80) compared to 0.73 (95% CI 0.71 to 0.76) in the usual care group, with a net QALY gain of 0.04 (95% CI 0.02 to 0.09).

This study reports effectiveness in terms of QALYs based upon CDRS-R scores but does not report CDRS-R scores nor numbers or proportion of children and

young people found to be not depressed, mildly depressed or moderately-severely depressed. The mean ICER was \$18,239 per QALY gained (dominant to \$24,408). In 25.9% of bootstrapped cases the intervention was both less expensive and more effective than usual care. [EL: LOW]

Evidence statements: utility values for children and young people with anxiety or depression (n=7 studies)

Study 1: Anxiety free days (Bodden 2008)

An analysis based on RCT findings investigated the cost-effectiveness of individual CBT compared with family CBT for children and young people with anxiety. The primary outcome was recovery from anxiety (assessed using the ADIS). At one year follow up the proportion of children and young people free from anxiety in the individual CBT group was 68% compared with 53% in the family CBT group (not statistically significant). [EL: VERY LOW]

- The gain in utility scores at one year follow up was 0.08 for individual CBT compared with a corresponding value of 0.11 for family CBT. The number of QALYs was 1.18 for individual CBT and 1.15 for family CBT.

Study 2 Recovery from anxiety (Creswell 2017)

A UK RCT study has compared the cost-effectiveness of two treatments for anxiety in primary school-aged children, brief guided parent/carer-delivered CBT and solution-focused brief therapy. The primary outcome was recovery from anxiety defined as “much” or “very much” improved (measured using the CGI-I). Sixty-six per cent of children in the brief guided parent-delivered CBT and 72% children in the solution-focused brief therapy group. [EL: VERY LOW]

- EQ-5D-Y values for parent-delivered CBT were: 0.82 at baseline and 0.87 at six month follow up. The values for solution-focused brief therapy were 0.80 at baseline and 0.91 at six month follow up. QALY gain over the six month trial period was 0.006 (95% CI -0.009 to 0.02). That brief guided parent-delivered CBT is cost-effective.
- There was a 26% probability that CBT+SSRI is more cost-effective than SSRIs in terms of HoNOSCA scores, and a 4% probability in terms of QALYs.

Study 3 Symptoms of depression (Stallard et al, 2015)

A health economic analysis of classroom-based CBT for children and young people at high risk of developing symptoms of depression has compared the intervention with usual PSHE and an attention control PHSE. The primary outcome was symptoms of depression assessed using the Short Mood and Feelings Questionnaire (SMFQ) at 12 month follow up. The adjusted difference in mean on the SMFQ was 0.97 (p=0.067) for classroom-based CBT compared with usual PSHE, and -0.63 (p=0.249) for classroom-based CBT compared with attention control PHSE. [EL: HIGH]

- QALYs changed very little between baseline and 12 months post intervention, (incremental change in score for classroom-based CBT 0.009; for attention control PSHE 0.016 versus usual PSHE). The incremental cost-effectiveness analysis showed that classroom-based CBT was both more costly and less effective than usual PHSE (as was attention control PHSE). However, no results demonstrated cost-effectiveness within NICE’s decision rules of willingness to pay, because the interventions were not proved effective enough at reducing symptoms of depression in adolescents in school

Continued below...

Continued ... Evidence statements: utility values for children and young people with anxiety or depression (n=7 studies)

Study 4: Depression (Byford et al, 2007)

A UK RCT has assessed the cost-effectiveness of combined selective serotonin inhibitors (SSRIs) vs. SSRIs plus cognitive behavioural therapy (CBT) for the treatment of major depression in adolescents (Byford et al, 2007). Effectiveness was measured using the HoNOSCA for global mental impairment and the EQ-5D for health-related quality of life. [EL: LOW]

- Health outcome findings showed that both study groups improved slightly over the 28 weeks of the study, but there was no significant difference between groups: HoNOSCA 1.24 (95% CI -1.05 to 3.52), EQ-5D -0.04 (95% CI -0.12 to 0.04). QALYs gained over 28 weeks for young people in the CBT+SSRI group was calculated as 0.36 and for the SSRI group as 0.38 (difference -0.02 (95% CI -0.07 to 0.05)).
- The author notes that although improvements were evident in the group as a whole (mean baseline EQ-5D self-rated health status score 57, increasing to 72 at 28 weeks), these participants were still reporting scores lower than the UK population norm for young people under 25 years of age (mean 86.49; Kind, 1999)

Study 5: Depression free days (Domino 2008)

An RCT investigated the cost-effectiveness of three treatments for MDD in adolescents compared with pill placebo (Domino et al, 2008). The intervention groups comprised 12 weeks therapy with either fluoxetine alone, CBT alone or combination therapy (CBT+fluoxetine). The primary outcome for the study was recovery from depression (assessed using the CDRS-R) reported as depression free days (DFDs). [EL: VERY LOW]

- Overall, across all treatment groups, there was a decrease in scores on the CDRS-R from baseline to 12 weeks which equated to 22/84 DFDs, giving an average QALY gain of 0.16.
- Both fluoxetine and combination therapy are at least as cost-effective in the short-term as other treatments commonly used in primary care (using a threshold of \$125,000/QALY). Fluoxetine is more cost-effective than combination therapy after 12 weeks of treatment

Study 6: Major depressive disorder (Haby et al, 2004)

A health economics study has modelled the cost-effectiveness of CBT and SSRIs compared with usual care for the treatment of children and young people with MDD. A composite outcome was used for clinical effect based upon measures for depression, anxiety, mood and HRQoL. The effect sizes (standardized mean differences, SMD) were 0.41 (95% CI 0.15 to 0.67) for CBT and 0.29 (95% CI 0.11 to 0.46) for SSRIs compared with usual care. Adherence of at least 50% was assumed for the purposes of modelling. [EL: VERY LOW]

- The health benefit in terms of disability adjusted life years (DALYs) were calculated as 360 for CBT compared with usual care and 230 for SSRIs (first line treatment) compared with usual care for a modelled sample of 10, 952 children and young people (for each individual - CBT: 0.03287; SSRIs: 0.0210).
- The authors conclude CBT provided by a public psychologist is the most effective and cost-effective option for the first-line treatment of MDD in children and adolescents.

Study 7: Depression (Wright et al, 2016)

An RCT compared the cost-effectiveness of a collaborative care treatment programme for depression with usual care (Wright et al, 2016). Depression severity was calculated using CDRS-R scores and mapped onto utility values for depression in order to obtain a daily utility score for each study participant. No depression was given a utility rating of 1.0; mild depression 0.8 and moderate to severe depression 0.6. [EL: LOW]

- Based on CDRS-R scores there was a net QALY gain of 0.04 (95% CI 0.02 to 0.09) for children and young people in the intervention group compared to usual care. The study reports effectiveness in terms of QALYs based on CDRS-R scores but does not report depression-related effectiveness outcomes. Results suggest collaborative care for adolescent depression is cost-effective with 95% CI which is far below the willingness-to-pay threshold.

5.1.1.6 Children and young people with post-traumatic stress disorder (PTSD)

(n=1 study)

Study 1: Recovery from PTSD (Shearer et al, 2018)

A cost utility analysis based upon UK RCT findings has been conducted to determine the cost-effectiveness of cognitive therapy for PTSD (CT-PTSD) compared to a waitlist control group. Children and young people aged 8-17 years were recruited into the trial if they had experienced a traumatic event in the previous 2-6 months and met the ICD-10 diagnostic criteria for PTSD. The treatment group received weekly individual CT-PTSD sessions for 10 weeks. Although the final sample sizes were small (CT-PTSD group n=10; control group n=11) the effect size suggests this sample is large enough to detect a meaningful difference with 1/10 in the intervention group having PTSD at 11 weeks compared with 9/11 in the control group.

Costs of the intervention were based on staff costs, service use and medication use. One hour of CT-PTSD was costed at £138 per hour. The 14 participants recruited to the intervention arm of the trial received an average of 636.25 minutes of contact time and attended an average of 8.3 sessions. The mean total costs per person of the intervention was £1,463.

A Markov model was developed to estimate the cost-effectiveness of CT-PTSD over a 3-year time horizon from a UK NHS and personal social services perspective. QALYs were developed based on parent reported SDQ scores which were then converted to CHU-9D scores. QALYs for a year free from PTSD were calculated as 0.7725 compared to a QALY value of 0.7386 for PTSD. The health economics model showed a QALY gain over two years of 0.0352 at an additional cost of £627 compared with usual care, giving an ICER of £17,779 per QALY.

Probabilistic sensitivity analysis (PSA) was conducted to measure uncertainty in the model, the findings from which showed that the probability of the intervention being cost-effective at the NICE threshold of £20,000 to £30,000 was 31% to 45%. Over 3 years CT-PTSD was found to be even more cost-effective with an ICER of £2,205 (PSA 60% to 69%). Sensitivity analysis using complete case data showed CT-PTSD had a 69% - 75% probability of being cost-effective at the NICE threshold. Adding staff training costs to the model increased the 3-year ICER to £16,187 and reduced probability that CT-PTSD would be cost-effective at NICE £20,000 - £30,000 to 51% - 62%. [EL: LOW]

Evidence statements: utility values for children and young people with post-traumatic stress disorder (PTSD) (n=1 study)

Study 1: Recovery from PTSD (Shearer et al, 2018)

A cost-utility analysis has compared the cost-effectiveness of cognitive therapy for PTSD with usual care. The primary study outcome was presence or absence of PTSD (ICD-10 criteria). The number of children and young people with PTSD at the end of the study period of 11 weeks was 4/14 (29%) for the intervention group compared with 11/15 (73%) for the comparison group (including imputed values). [EL: LOW]

- The QALY gain over the trial period was 0.0095 (adjusted).

5.1.1.7 *Children at risk of insecure attachment*

(n=1 publication)

Study 1: Attachment difficulties (NICE, 2015)

The NICE guideline on children's attachment includes a Markov model to estimate the cost- effectiveness of psychosocial interventions aimed at promoting attachment in children on the edge of care. The model takes the perspective of the UK NHS and personal social care and has a time horizon of 11 years. The three interventions used in the health economics model were identified through the systematic review undertaken for the guideline development: video feedback; parental sensitivity and behaviour training; and home visiting plus parent-child psychotherapy. All interventions are in addition to standard care. The population for the model is again based on those identified in the literature, described as children on the edge of care, and includes children living in poverty, children whose mothers have mental health problems, children whose mothers substance misusers, children whose mothers are adolescents, children whose mothers are in custody, and children at risk of child abuse or poor parenting as assessed by local social services. For the purpose of the model the children are assumed to enter the intervention at the age of 2 years and are followed up until age 13 years.

Costs for inclusion in the model are based on intervention costs only and were drawn from published literature, published UK costings reports and guideline group expert opinion. Durations of the interventions were estimated by the guideline group based on usual UK practice and costs per child for each intervention calculated as £760 for video feedback; £1,140 for parental training; and £6,687 for home visiting plus psychotherapy.

Children were assumed to enter the intervention securely attached to their parent or carer and the two outcomes modelled were either that they remained attached or developed non-secure attachment. The effectiveness of the interventions in terms of attachment was based upon findings reported in the literature reviewed (one RCT for each intervention). All three interventions were found to be effective when implemented in addition to standard care compared with standard care alone, with home visiting and psychotherapy being the most effective (risk ratio of non-secure attachment, RR=0.580) and video feedback the least effective (RR=0.750).

Utility values for the model were identified from published literature (Petrou et al, 2010) and scores for children with mental health problems described as having "emotional difficulties" were used as a proxy for children with attachment difficulties. Non-secure attachment was assigned a utility value of 0.760 and secure attachment of 0.888. Results from the health economic analysis showed that QALYs gained per 100 children were as follows: video feedback vs standard care, 3.91 QALYs; parental training vs video feedback, 1.39 QALYs; home visiting and psychotherapy vs parental training, 9.45 QALYs. It should be noted that the latter two comparisons reported do not exist in the literature and the values here were based upon effectiveness findings calculated by the modellers based on the RCT data for the intervention vs standard care.

ICERs for each intervention were calculated as: video feedback vs standard care £19,437 per QALY; parental training vs video feedback £27,487 per QALY; home visiting plus psychotherapy £58,404 per QALY. Thus, at the NICE lower threshold for WTP of £20,000 per QALY the video feedback intervention was found to be the most cost-effective intervention. This finding held true following probabilistic sensitivity analysis although it was found that this result was sensitive to a number of model inputs including the relative risk of non-secure attachment associated with video feedback and differences between the QoL scores between secure and non-secure attachment. [EL: LOW]

Evidence statement: Children and young people children at risk of insecure attachment (n=1 publication)

Study 1: Attachment difficulties (NICE, 2015)

Evidence statement for health-related utility values: A health economic model developed for the NICE Guideline for Attachment Difficulties in Children and Young People (2015) compared three psychosocial interventions to promote attachment: video feedback, parental sensitivity and behavioural training and home-visiting plus parent-child psychotherapy, all in addition to standard care. The risk ratios for the primary outcome of insecure attachment for the three interventions plus standard care were reported as 0.750, 0.690 and 0.580 respectively compared with standard care alone. [EL: LOW]

- The model estimated additional QALYs per 100 children and young people for each intervention but with different comparisons as follows: video feedback vs standard care 3.91 QALYs; parental training vs video feedback 1.39 QALYs; home visiting plus psychotherapy vs parental training 9.45 QALYs.

5.1.1.8 Children and young people leaving care

(n=1 publication)

Study 1: Employment (NICE, 2010)

The NICE guideline on support services for transition to adulthood/leaving care for looked after children and young people includes an economic cohort model to determine the costs and benefits of transition support services modelled over a life-time horizon. The model takes the perspective of UK public services including health and social care, education and training, and the criminal justice system. Inputs into the model were drawn from a systematic review comprising seven effectiveness studies.

The most common reported outcome was employment, used in five of the studies. The economic model is applied to all five sets of employment findings separately to determine whether the transition intervention can be considered cost-effective in each case.

Costs for the model were derived from a range of sources including official UK government reports and published literature. The average estimated costs of transition services used per young person was £24,429. EQ-5D scores calculated from the Health Survey for England data (2008) were used for the outcome states used in the model which included anxiety/depression, employment, criminal/offending behaviour and mortality.

Using multivariate regression analysis the EQ-5D scores were then used to determine how the utility score was affected by age, gender, employment status and depression resulting in the following QoL coefficients: age: -0.00234; female: 0.004237; unemployed: -0.08977; depressed: -0.028679. Running the health economics model using these values and the employment findings showed that four of the five transition support interventions were likely to be cost-effective. In all these studies there was a small benefit associated with the intervention and, despite the fact that the difference in effectiveness between study groups was only statistically significant in one study, findings from the model suggested that the transition support intervention was dominant over no intervention in all of these four cases. This finding is probably due to the model being applied over a lifetime and taking a perspective across all public services with inputs associating employment with reduced anxiety/depression and reduced criminal activity.

Using the most recent trial as an example, Georgiades et al (2005) the total discounted costs for the transition service intervention was calculated to be £60,176 compared with £160,547 for no transition service intervention. The total discounted QALY per person for the transition service intervention was 47.08 (over a lifetime) compared with 46.09 for no transition service, and incremental discounted QALY of 0.99 per young person over a lifetime, giving an ICER of -£101,292 per QALY. The negative ICER reflects the negative incremental cost i.e. the intervention is cost saving compared to no intervention.

In one study (Lemon, 2005; cited in NICE 2010) although transition support was found to be less costly than no transition support (£79,696 vs £97,472) employment (defined as having a job immediately after leaving care in this study) was lower in the transition support group compared to the no transition support group (58.4% vs 73.8%) resulting in a higher QALY associated with the no transition support group (46.91) compared with the transition support group (46.82). The ICER for the intervention was £204,561 showing it to be far above the NICE willingness to pay threshold of £20,000 to £30,000 per QALY. [EL: VERY LOW]

Evidence statements: Children and young people leaving care (n=1 publication)

Study 1: Employment (NICE, 2010)

A health economic model developed for the NICE Support Services for Children and Young People Leaving Care guideline (2010) compared support services to no support services for looked after young people leaving care. The primary outcome used for the health economics analysis was employment. The model is applied to findings from five effectiveness studies, the results obtained using inputs from the most recent study (Georgiades et al, 2005) are reported here as an example. Twenty-seven per cent of young people in the support services group were unemployed on leaving care compared with 92% in the comparison group. [EL: VERY LOW]

- The discounted mean QALY gain per young person over a lifetime was calculated to be 0.99 QALYs.

5.1.2 Narrative summary and evidence statements, victims

5.1.2.1 Children and young people involved with the criminal justice system, with utility values for victims

(n= 1 publication)

Study 1: Harmful sexual behaviour (NICE, 2016)

The first report is the economic analysis for the NICE Public Health Guideline on harmful sexual behaviour. This report used decision-analytic modelling to determine the cost-effectiveness of multi-systemic therapy for problem sexual behaviours (MST-PSB) and CBT for the treatment of children and young people demonstrating harmful sexual behaviours. The effect sizes and some of the costs used in the model were taken from two US RCTs with cost-benefit analysis.

The first trial (Borduin and Dopp, 2015) compared MST-PSB with group or individual CBT (defined as "usual community services") for children and young people (mean age 14 years) who had been arrested for a serious sexual offence. Treatment was delivered over 30.8 weeks for both study groups with 8.9 years follow up. The study found that the re-offending rate was lower for the MST-PSB group than the CBT group, 41.67% vs. 75.01%. Using UK data, the cost of treatment per young person was estimated as £11,147 for MST-PSB and £5,216 for CBT. Other inputs into the health economics model included the number of sexual offenders arrested per year (n=4,209; 2013/14 data for England and Wales); costs to the criminal justice system (£33,245 for MST-PSB; £3,662 for CBT); and an average of 3 victims per offender with a QALY loss of 0.16 per victim (figures derived from published UK literature). Although MST-PSB was found to be more expensive to deliver than CBT it was also more effective in terms of reduced re-offending rates thus the total costs of MST-PSB were lower due to reduced costs to the criminal justice system (£55.8 million vs. £96.0 million), and was associated with lower QALY losses in victims (-75 vs. -331) thus providing a 255 net QALY gain over 8.9 years. MST-PSB was found to be cost-effective compared with CBT over an 8.9-year time horizon, with a net benefit of £45.3 million (including QALYs gained where QALYs are valued at £20,000 each to reflect NICE's lower threshold). Sensitivity analyses showed that these findings were robust to variations in effectiveness values for MST-PSB and cost of MST-PSB.

The second study (Carpentier et al, 2006) compared CBT with play therapy for the treatment of children with sexual behaviour problems referred to an out-patient clinic (age 5 – 12 years). Both treatment groups received 12 x one-hour sessions and were followed up for 10 years. The cost of CBT was calculated to be £2,248 per child and the cost of play therapy £1,174 per child. The likelihood for being arrested for a sexual offence at the end of the follow period was significantly lower for children in the CBT group compared with the play therapy group. Using the same modelling method as applied to the Borduin and Dopp (2015) findings CBT was found to be cost-effective compared to play therapy with a net benefit of £23.4 million over 10 years when considering all offences and a net benefit of £2.5 million when considering sexual offences alone. Sensitivity analysis demonstrated that the threshold cost at which CBT no longer generated a net benefit compared with play therapy was £7,812 per young person. Similarly, if the rate for sexual

offending post-CBT were to reach 10.5% the intervention would no longer generate a net benefit.

The health economics model developed for the NICE guideline drew on data from a number of sources. As well as an estimate for the number of juvenile sex offenders was based upon Home Office (2006) statistics and an NSPCC freedom of information request. Further population demographics were taken from findings from a large demographic study carried out in the UK (Hackett et al. 2013) which reported that 66% of children who had been identified as displaying harmful sexual behaviour often had experienced abuse and 38% were identified as having learning difficulties. The research also showed that children displaying harmful sexual behaviour were likely to have health problems mostly related to mental health (Hackett et al, 2013). No evidence was found for the impact in terms of QALYs that interventions to treat harmful sexual behaviour have on children with these behaviour patterns. So instead, to assess any potential impact on QALYs as a result of an intervention, the NICE report looked at it from the victim's perspective. Evidence of the (discounted) QALY losses for adults who have experienced crime, in particular sexual crimes were reported as: homicide 17.791; serious wounding 0.191; other wounding 0.031; common assault 0.007; rape 0.561; sexual assault 0.16; robbery 0.28 (Dolan et al., 2005). The number of victims per offender used in the analysis was three, based on the study by Hackett et al (2013). The QALY estimates presented by Dolan et al (2005) are based on physical injury categories from the British Crime Survey. The estimates take into account the psychological trauma as well as the physical impacts associated with the crime (Acute Stress Disorder and PTSD). The calculation of the QALY estimates are based on the Global Burden of Disease study's disability weightings and take into account the duration of time spent in the health state. [EL: LOW]

Evidence statement: Children and young people involved with the criminal justice system, with utility values for victims (n=1 study)

Study 1: Harmful sexual behaviour (NICE, 2016)

The economic model took the perspective of victims of crime, and used reduction in future offending as the main outcome. [EL: LOW]

- The proportion of re-offenders in the intervention group receiving multi-systemic therapy (MST) was 41.67% compared to 75.01% in the comparison (CBT) group, representing a QALY gain to victims of sexual crime of 255 QALYs over 8.9 years (assumed that each perpetrator had three victims).

5.1.2.2 Children and young people who are victims of violent injury

(n=2 included studies)

Study 1: Firearm injury (Chong et al, 2015)

A cost-utility analysis modelling study conducted in the USA sought to determine the cost-effectiveness of a hospital-based violence intervention programme (HVIP) compared with treatment as usual for children and young

people presenting at the study hospital with a firearm injury. The HVIP was an intensive individual and family case management intervention including access to victim restitution funds, assistance with insurance, help with medical costs and transport to and from medical appointments, help obtaining education or employment support, help obtaining a drivers' license and referral to mental health services. The effectiveness outcome was annual recidivism which was identified from hospital records as being 2.5% for children and young people who had been enrolled in the HVIP and 4% for those receiving standard care. Costs and clinical outcomes were estimated using hospital records. The utility value for violent injury identified from literature was 0.70 for the year following the injury and 0.84 for subsequent years. Using these data base case findings for an 18 year old with a firearm injury who survives to hospital discharge were found to be very similar between the HVIP and usual care, with an incremental cost of HVIP of \$59 more than standard care and an incremental gain of 0.02 QALYs. The ICER for HVIP compared with standard care was \$2,941 per QALY. [EL: VERY LOW]

Study 2: Intentionally injured by another person (Juillard et al, 2014)

A similar cost-utility modelling study was conducted in the USA to investigate the cost-effectiveness of a HVIP compared to usual care. Again, hospital data was used to determine the annual recidivism rate which was found to be 0.9% for the HVIP and 3.2% for standard care. The population sample in this study was children and young people intentionally injured by another person and the HVIP was very similar to the intervention described above (Chong et al, 2015). The same values of 0.70 and 0.84 were used for utility values following violent injury. Additional QALYs were added to all surviving children and young people for the final year of the five-year time horizon based on a life expectancy of 77 years.

The incremental cost of the HVIP was -\$31 (i.e. \$31 less expensive than standard care), with an incremental QALY gain of 0.24. HVIP was, therefore, found to be both less expensive and more effective in terms of QALY gain (dominant) compared with usual care. [EL: VERY LOW]

Evidence statements: utility values for children and young people who are victims of violent injury (n=2 studies)

Firearm injury (Chong et al, 2015)

An economic evaluation of a hospital-based violence intervention programme (HVIP) compared with standard care found that the programme was effective and reduced annual recidivism, with a reported rate of 2.5% compared with 4% for standard care. [EL: VERY LOW]

- The utility values used for the years following violent injury were 0.70 for the first year and 0.84 for subsequent years. The QALYs gained were 4.64 for the HVIP and 4.62 for standard care.

Intentionally injured by another person (Juillard et al, 2014)

A similar study comparing an HVIP to standard care was also found to be effective compared with standard care. [EL: VERY LOW]

- It reported the annual recidivism rates as 0.9% for the intervention compared to 3.2% for standard care, giving QALY gains of 25.58 and 25.34 respectively over 5 years.

5.1.3 Narrative summary and evidence statements, wider implications

5.1.3.1 Children and young people involved with the criminal justice system

(n=2 studies)

Study 1: Criminal Activity Free Years (CAFYs) in offending youth (Schawo et al, 2012)

[NB added here because we do not know how equivalent CAFYs are to QALYs]

A study conducted in the Netherlands used economic modelling, ongoing trial data and data derived from literature to compare functional family therapy (FFT) with treatment as usual (defined as CBT or MST) to determine which was the more cost-effective in reducing criminal behaviour in offending youth. The outcome used for the model was defined in terms of Criminal Activity Free Years (CAFY) rather than QALYs in order to better reflect the desired outcome from treatment using a societal perspective. Based on findings reported in the literature it was assumed that the annual recidivism rate amongst adolescents was 33% and that FFT reduced annual recidivism, on average, 42.5% more effectively than other interventions. Costs for the model were derived from an ongoing trial of FFT and included direct health and welfare costs plus indirect costs outside of health and welfare including costs to the criminal justice system. From the health economic analysis, it was determined that the number of CAFYs for FFT exceeded the number for treatment as usual by 6.88 years, with incremental cost savings of €8,577. These values give an ICER from the base case model of €1,246 per CAFY with FFT giving better effects at lower costs than treatment as usual (FFT is said to be dominant over treatment as usual). [EL: VERY LOW]

Study 2: Criminal activity free years (CAFY's) for children and young people in domestic foster home in contact with the criminal justice system (Eeren et al, 2015)

A later Dutch economic study compared the cost-effectiveness of FFT with a domestic foster home for young people in contact with the criminal justice system. Findings for cost-effectiveness were obtained from two published studies and a value of information analysis applied to these findings to ascertain whether further economic research to try to reduce uncertainty in the findings would represent a good use of resources. Criminal activity free years was used as the outcome measure to assess the clinical and cost-effectiveness of the interventions, and figures for societal willingness to pay for a CAFY estimated using published values across a range of criminal activities. Using a societal perspective involving both healthcare and non-health care costs the cost of one completed course of FFT for a young person was estimated to be €10,900 and one period of stay at the Course House (defined as 10 months) €37,800. The health economic analysis was conducted over a time horizon of 20 years and found the cost of the two interventions to be €249,000 for the Course House and €222,200 for FFT. The Course House was found to be more effective, resulting in 12.4 CAFYs over 20 years compared with 11.7 CAFYs for FFT. The difference in cost divided by the difference in CAFY's between the Course House and FFT gave an ICER for the Course House of €39,000 per CAFY compared with FFT. The societal willingness to pay value for one CAFY was calculated to be €71,000. The net monetary benefit (NMB) of each intervention was calculated by multiplying the CAFYs gained by the WTP value per CAFY and subtracting the intervention's

cost. This gave an NMB of the Course House of €641,200 compared with €618,700 for FFT i.e. the Course House was found to be more cost-effective than FFT based on these estimates. [EL: VERY LOW]

5.1.3.2 *Children and young people with, or at risk of developing, conduct disorder or ADHD*

(n=3 included studies)

Study 1: Averting risk of conduct disorder (Foster et al, 2006).

A US study has evaluated the cost-effectiveness of an extensive school-based programme aimed at averting cases of conduct disorder in children identified at being at risk of developing the disorder. The "Fast Track" project was delivered to children identified in kindergarten and delivered over a period of nine years. The intervention consisted mainly of group parent and child sessions aimed at improving parenting skills, social skills of children and young people, peer relations and academic capability.

Twenty-two two-hour sessions were delivered weekly in the first year of the project, reducing to nine monthly sessions for children in 3rd grade and above. For older children mentoring was introduced plus workshops and individualized intervention plans for those in 7th – 10th grade. Costs of delivering the programme were estimated from the perspective of the provider based on annual budgets and project costings including staff salaries, overhead costs (e.g. rent) and miscellaneous costs (e.g. supplies). These costings gave an overall average across study sites of \$58,283 per child.

The ICER for the whole study sample was calculated to be \$3,481,433 per case of conduct disorder averted, with a very high level of uncertainty around the accuracy of this value (standard error (SE) based on bootstrapping \$81,000,000). Societal WTP was derived based on published values and updated for 2004 and estimated to be \$1,000,000 per case of conduct disorder averted. At this level of WTP it can be seen the Fast Track intervention was found not to be cost-effective.

A sub-group analysis was performed, dividing the study sample into children found to be at high risk of developing conduct disorder (those scoring >90th percentile on screening measures) and those at lower risk of developing conduct disorder (those scoring 70th- 90th percentile). For children at lower risk the intervention was found to be not effective (and therefore not cost-effective) at averting cases of conduct disorder.

However, for those at higher risk the ICER was calculated as \$752,103 per case of conduct disorder averted. Again, there was a high degree of uncertainty around this figure (SE \$3,588,311) but health economic estimates indicated that there was a 69% probability that the intervention could be considered cost-effective.

Similar findings were reported for the secondary outcome of index crimes averted (e.g. armed robbery). However, for the secondary outcome of acts of interpersonal violence averted the intervention was found to be not cost-effective across all study groups. [EL: VERY LOW]

Study 2: ADHD: getting into trouble and behaviour at school (Foster et al, 2007).

A four-arm clinical RCT compared community-based care (treatment as usual) with medication management, behavioural therapy and combined therapy (medication plus behavioural therapy) for children aged 7 – 10 years diagnosed with ADHD. Children receiving medical management had their medication carefully titrated and had monthly consultations with a physician who was also in regular contact with the child's teacher. The behavioural therapy group received a multicomponent therapy including parent training, a two-part school intervention and an intensive summer treatment programme. Each treatment lasted 14 months.

A cost-effectiveness analysis was conducted using trial data and a payer perspective on costs, including both direct costs of providing the therapies (mostly salary costs); drug costs and costs to families. Sub-group analyses were performed for different population groups: children with ADHD plus anxiety; children with ADHD plus conduct disorder and children with ADHD plus both anxiety and conduct disorder. Mean costs of the different treatment modalities for children with ADHD alone were found to be \$979 (95% CI \$807 to \$1,151) for medical management; \$6,133 (95% CI \$5,749 to \$6,516) for behavioural therapy and \$7,064 (95% CI \$6,815 to \$7,314) for combined therapy.

Treatment outcomes were measured using the Columbia Impairment Scale (CIS). All treatments resulted in an improvement in child functioning as measured using this scale, with intervention groups resulting in greater mean improvements compared with the community care group for almost all population sub-groups (the exception being children with ADHD plus conduct disorder for whom behavioural therapy gave slightly worse overall results compared with community care). The mean improvements in CIS score for children allocated to the community care group ranged from -0.21 (95% CI -0.71 to 0.29) (children with ADHD plus anxiety) to -0.93 (95% CI 1.23 to -0.62) (children with ADHD plus conduct disorder). The largest improvements in CIS score were seen for children with ADHD plus conduct disorder and anxiety and ranged from -0.78 (95% CI -1.17 to -0.39) (children in community care) to -1.59 (95% CI -1.92 to -1.26) (children in combined therapy).

Translating the CIS scores into more practical terms: for children with ADHD plus conduct disorder moving from community care to combination therapy reduced the likelihood that "getting into trouble" is a "bad problem" from 19% to 7%; for children with ADHD plus anxiety moving from community care to any of the other therapies reduced the likelihood that "behaviour at school" is a "bad problem" from 50% to 10%.

Cost-effectiveness analysis was conducted using net benefit calculations and plotting cost-effectiveness acceptability curves (CEAC). The WTP figure corresponded to 1 standard deviation in improvement in functioning as assessed on the CIS scale. For each value of WTP the net benefits (NB) were calculated for each individual (NB = (improvement in functioning x WTP) minus costs). Bootstrapping was used to determine the probability that a given treatment had the highest NB. To develop the CEAC WTP was plotted against the probability that a given treatment had the highest NB. Overall, at

modest levels of willingness to pay (up to \$50,000) for 1 SD improvement in functioning medical management was almost certain to be cost-effective.

At higher levels of WTP (above \$50,000) combination therapy became more likely to be cost-effective. Behaviour therapy was dominated, other treatments were found to be more effective and less costly. There was some variation in these findings for different population sub-groups. Medical management was cost-effective across all sub-groups but at a lower WTP threshold (approx. \$20,000), for children with ADHD plus anxiety behaviour therapy was more cost-effective above this threshold whilst for children with ADHD plus anxiety and conduct disorder combined therapy was likely to be the most cost-effective treatment above a WTP threshold of around \$20,000. This study illustrates how different thresholds for willingness to pay can alter the cost-effectiveness of different treatments. At higher levels of WTP taking into account, for example, savings to the criminal justice system further downstream, more costly interventions can be considered cost-effective, whereas a short-term perspective on WTP may result in less costly interventions being preferred at the expense of potential savings that would be made in the future. [EL: LOW]

Study 3: Economic burden of ADHD (Matza et al, 2005)

A wide-ranging systematic review of the economic burden of ADHD included summary findings from three studies of the cost-effectiveness for treatment of ADHD using methylphenidate (MPH) compared with placebo (Matza et al, 2005). For medical management the cost per each QALY gained ranged from \$15,509 to £27,766 in the two studies that used QALYs as an outcome measure. A third study reported costs per each additional point in the Conners' Teacher Rating Scale as \$93 per point, or \$560 for a six-point gain (one standard deviation). [EL: VERY LOW]

Evidence statements: Children and young people with, or at risk of developing, conduct disorder or ADHD (*n*= 3 included studies)

Study 1: Averting risk of conduct disorder (Foster et al, 2006)

This study evaluated society's willingness to pay (WTP) in a cost-effectiveness analysis of an extensive school-based programme (the Fast Track project) delivered over 9 years aimed at averting cases of conduct disorder in children identified at being at risk of developing the disorder. [EL: VERY LOW]

- Sub group analysis for those at higher risk: the ICER was calculated as \$752,103 per case of conduct disorder averted. There was a high degree of uncertainty around this figure (SE \$3,588,311) but health economic estimates indicated that there was a 69% probability that the intervention could be considered cost-effective.

Study 2: ADHD, getting into trouble and behaviour at school (Foster et al, 2007).

A 14 month therapy and medication-based programme for children with conduct disorder estimated society's WTP for cases averted or number of responders to treatment relative to the costs of the programme. [EL: LOW]

- Treatment outcomes were measured using the Columbia Impairment Scale (CIS). For children with ADHD plus conduct disorder moving from community care to combination therapy reduced the likelihood that "getting into trouble" is a "bad problem" from 19% to 7%; for children with ADHD plus anxiety moving from community care to any of the other therapies reduced the likelihood that "behaviour at school" is a "bad problem" from 50% to 10%.
- The WTP figure corresponded to 1 standard deviation (SD) in improvement in functioning as assessed on the CIS scale. For each value of WTP the net benefits (NB) were calculated for each individual (NB = (improvement in functioning x WTP) minus costs). Bootstrapping was used to determine the probability that a given treatment had the highest NB. To develop the CEAC WTP was plotted against the probability that a given treatment had the highest NB. Overall, at modest levels of willingness to pay (up to \$50,000) for 1 SD improvement in functioning medical management was almost certain to be cost-effective. At higher levels of WTP (above \$50,000) combination therapy became more likely to be cost-effective. Behaviour therapy was dominated, other treatments were found to be more effective and less costly.
- Findings varied for population sub-groups. Medical management was cost-effective across all sub-groups but at a lower WTP threshold (approx. \$20,000), for children with ADHD plus anxiety behaviour therapy was more cost-effective above this threshold. Whilst for children with ADHD plus anxiety and conduct disorder combined therapy was likely to be the most cost-effective treatment above a WTP threshold of around \$20,000.

Study 3: Economic burden of ADHD (Matza et al, 2005)

- A wide-ranging systematic review reported cost-effectiveness for treatment of ADHD using methylphenidate (MPH) compared with placebo (Matza et al, 2005). For medical management the cost per each QALY gained (1 QALY) ranged from \$15,509 to £27,766 in the two studies. [EL: VERY LOW]

5.1.3.3 *Studies to develop or test the validity of health utility values*

(*n*=3 included studies of which *n*=2 used by NICE guidelines)

See Appendix L for this sub-section, and Appendix M for the summary table of potentially useful values.

5.2 Potential application of the systematic review findings: discussion

This section explores the potential application of the review findings, to inform judgments about the value of the Framework for Integrated Care (SECURE STAIRS) to children, young people, and wider society.

5.2.1 Summary review findings: potential QALY outcomes for children and young people

Prior to study data being available a systematic review was conducted primarily to establish QALYs available from the published literature. Tables 3 – 4 below summaries the findings of the review alongside discussion on their potential application in the economic analysis.

How relevant the studies are to the population of the Framework for Integrated Care (SECURE STAIRS) was then ranked by the research clinical leads, clinical advisor and the economics team so that the 'best fit' proxy could be used in the economic analysis.

Studies were ranked as follows:

- Good match
- quite good
- less good
- not a good match

Table 3 for section 5.1.1 Summary QALYs for children and young people (CYP) at risk of developing, mental health problems who are in, or at risk of entering, the criminal justice system, or who are in secure residential homes

Reference	Population, Intervention and Comparison	Clinical / behaviour outcome and findings	Utility values and QALYs	DRAFT potential applicability Key: Good , quite good , less good , not a good match
Children and young people with, or at risk of developing, conduct disorder or ADHD (n=4 publications)				
Dretzke et al 2006 (HTA)	CYP with conduct disorder Parent/carer training programmes vs no intervention	Outcome: antisocial behaviour Responder to treatment programme -defined as a one-point improvement on psychometric scale: ECBI Intensity score ECBI Frequency score Study considers CBCL scale equivalent	QALY gain required for one-point improvement on ECBI scale to be considered cost-effective at £30,000 threshold: ECBI frequency scale: <ul style="list-style-type: none"> Group community-based parent training: 0.0069 Group clinic-based: 0.0048 Individual home-based: 0.0300 ECBI intensity scale: <ul style="list-style-type: none"> Group community-based parent training: 0.0015 Group clinic-based: 0.0010 Individual home-based: 0.0063 	Reasonable match – QALYs can be used in our analysis The PT interventions are about changing the ‘culture’ of the care environment so have relevance to the Framework for Integrated Care (SECURE STAIRS) approach too. ‘Reliable Change Index’ (RCI). For the CBCL this is calculated to be a shift of 4.80 points or more on the total score for the CBCL (Debra Theobald McClendon (2009) Relative Sensitivity to Change of Psychotherapy Outcome Measures for Children and Adolescents: A Comparison Using Parent- and Self-Report Versions of the CBCL/6-18, BASC-2, and Y- OQ-2.01 – Dissertation Bringham Young) Explore multiplying incremental QALY by 4.8 to reach clinical significance in sensitivity analysis?
NICE ADHD – Parent training 2018 (from van der Kolk et al, 2014)	CYP with ADHD Parent training programme (sometimes multi-component also involving teachers) vs treatment as usual or wait list control	Outcome: “functioning well” As described by parents/carers -response to programme defined as CYP taking medication and as “functioning well”	Utility values: <ul style="list-style-type: none"> Responder: 0.83 Non-responder: 0.74 Difference: 0.09 QALY gain: 0.0110	Reasonable match – QALYs can be used in our analysis

Table 3 for section 5.1.1 Summary QALYs for children and young people (CYP) at risk of developing, mental health problems who are in, or at risk of entering, the criminal justice system, or who are in secure residential homes

Reference	Population, Intervention and Comparison	Clinical / behaviour outcome and findings	Utility values and QALYs	DRAFT potential applicability Key: Good , quite good , less good , not a good match
Sayal et al 2016	<p>Primary school children at risk of ADHD</p> <p>Combined parent+teacher vs parent-only group intervention based on 1-2-3 Magic vs no intervention (control)</p>	<p>Outcome: Severity of ADHD – measured using Parent-rated Conners’ ADHD index. Assessed at 6 months.</p> <p>Parent only intervention: Mean difference -1.1 (95% CI - 5.1 to 2.9) Not signif.</p> <p>Combined parent+teacher: Mean difference -2.1 (95% CI - 6.4 to 2.1) Not signif.</p> <p>Combined intervention associated with greater reduction in parent-reported hyperactivity symptoms compared to parent only intervention: Mean difference: -5.3 (95% CI -10.5 to -0.01); p=0.05</p>	<p>HRQoL over 6 months – EQ-5D-Y (mean (SD))</p> <p>Control arm</p> <ul style="list-style-type: none"> • Baseline: 0.815 (0.257) • 6 months: 0.822 (0.279) <p>Parent only</p> <ul style="list-style-type: none"> • Baseline: 0.734 (0.370) • 6 months: 0.834 (0.292) <p>Combined Parent+teacher</p> <ul style="list-style-type: none"> • Baseline: 0.771 (0.294) • 6 months: 0.790 (0.418) 	<p>Do not use - no significant change in symptoms. No QALY data</p> <p>Do not use in the Framework for Integrated Care (SECURE STAIRS) – very young sample – very behavioural intervention</p>

Table 3 for section 5.1.1 Summary QALYs for children and young people (CYP) at risk of developing, mental health problems who are in, or at risk of entering, the criminal justice system, or who are in secure residential homes

Reference	Population, Intervention and Comparison	Clinical / behaviour outcome and findings	Utility values and QALYs	DRAFT potential applicability Key: Good , quite good , less good , not a good match
	<p>CYP with ADHD</p> <p>Different sequencing of ADHD medications (atomoxetine (ATX), immediate release methylphenidate (IR-MPH), extended release methylphenidate (XR-MPH), lisdexamfetamine, dexamphetamine) vs no treatment</p>	<p>Outcome ADHD: Response to pharmacological treatment</p> <p>First line sequencing</p> <p>(not defined but will probably vary as effectiveness based on number of different studies)</p>	<p>Utility values reported in 2 included studies</p> <p>King 2006 –QALYs</p> <ul style="list-style-type: none"> • Responders: 0.837 • Non-responder: 0.773 • Difference: 0.064 <p>Cottrell 2008 – utility values from UK study using standard gamble method</p> <ul style="list-style-type: none"> • Responder without side effects for ATX: 0.959 • Responder without side-effects for XR-MPH: 0.930 • Responder without side-effects IR-MPH: 0.913 • Unmedicated CYP: 0.88 	<p>Do not use. Very weak application, meds only and no consideration of reduction of risk for others</p>

<p>NICE ADHD – pharmacological treatments (first line sequencing) 2018</p> <p>King 2006</p> <p>Cottrell 2008</p> <p>Hong 2009</p>	<p>CYP with ADHD</p> <p>Different sequencing of ADHD medications (atomoxetine, immediate release methylphenidate, extended release methylphenidate, guanfacine extended release, lisdexamfetamine) vs no treatment</p>	<p>ADHD: Response to pharmacological treatment 2nd line</p> <p>Response to treatment (not defined but will probably vary as effectiveness based on number of different studies)</p>	<p>Utility values reported in 7 included studies</p> <p>2 studies based on RCT evidence reported here:</p> <p>Cottrell 2008 - utility values from UK study using standard gamble method</p> <ul style="list-style-type: none"> • Subgroup 1: 0.03 • Subgroup 2(a) (includes IR-MPH): 0.0235 • Subgroup 2(b) (includes XR-MPH): 0.0181 • Subgroup 3: 0.0320 <p>QALY gains for responders compared to non-responders are:</p> <ul style="list-style-type: none"> • 0.03, 0.0235, 0.0181 and 0.0320 for the different drug sequences investigated. <p>Hong 2009: the incremental QALY gain</p> <ul style="list-style-type: none"> • 0.039 for the drug sequence investigated ATX vs no treatment 	<p>Do not use</p>
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Table 3 for section 5.1.1 Summary QALYs for children and young people (CYP) at risk of developing, mental health problems who are in, or at risk of entering, the criminal justice system, or who are in secure residential homes

Reference	Population, Intervention and Comparison	Clinical / behaviour outcome and findings	Utility values and QALYs	DRAFT potential applicability Key: Good , quite good , less good , not a good match
Children and young people with autism and behaviour that challenges (n=1 publication)				
NICE Autism in Children and Young People 2013	CYP with autism and behaviour that challenges Antipsychotic treatment vs placebo	Outcome: Level of hyperactivity (used as a proxy for challenging behaviour); measured with ABC-irritability scale Start of treatment: assumed to have moderate level of hyperactivity Positive response/treatment successful: mild hyperactivity After 8 weeks of treatment: Probability of response: 0.239 Risk ratio of weight gain (side-effect; multiplicative function in model): 0.959 Probability of relapse at 24 weeks' follow up: 0.179	Utility values for hyperactivity <ul style="list-style-type: none"> Moderate: 0.66 Mild: 0.72 Mean total QALYs per 100 CYP (over 32 weeks of trial) <ul style="list-style-type: none"> Antipsychotic medication: 42.20 Placebo: 41.36 QALY gain: 0.84 for 100 CYP (taking into account disutility of weight gain and probability of relapse) 	Do not use – likely to be different population
Children and young people with challenging behaviour and learning disabilities (n=1 publication)				
	Children and young people with learning disability Group parental training vs wait list	Outcome: Managing challenging behavior Group training cost-effective	Utility score HUI3 hyperactivity (used by NICE in absence of other data) <ul style="list-style-type: none"> Mild hyperactivity 0.72 Moderate 0.66 QALY gain: parent training <ul style="list-style-type: none"> group parent training v wait list 1.33 per 100 families of children and young people receiving treatment 	May have some relevance to approach in the Framework for Integrated Care (SECURE STAIRS) of group training staff?

Table 3 for section 5.1.1 Summary QALYs for children and young people (CYP) at risk of developing, mental health problems who are in, or at risk of entering, the criminal justice system, or who are in secure residential homes

Reference	Population, Intervention and Comparison	Clinical / behaviour outcome and findings	Utility values and QALYs	DRAFT potential applicability Key: Good , quite good , less good , not a good match
<p>NICE Managing challenging behavior in Children and Young People with Learning Disability 2015 (Tilford 2012 Autism data used as a proxy utility value in absence of other data for model)</p>	<p>CYP with learning Disability Model compared psychosocial, pharmacological, and combined interventions for the management of sleep problems</p>	<p>Outcome: management of sleep problems Combination therapy of melatonin in tablets and psychosocial intervention considered cost-effective in the management of sleep problems</p>	<p>Utility score HUI3 hyperactivity (used by NICE in absence of other data)</p> <ul style="list-style-type: none"> • Mild sleep problems • Moderate 0.66 <p>QALY gain per child</p> <ul style="list-style-type: none"> • 0.023 	<p>Could be used</p>
Children and young people involved with the criminal justice system (depression exemplar) (n=1 publication)				
<p>Richardson et al 2015 (HTA)</p>	<p>Young offenders with depression CBT (based on CWD-A course) vs life skills course</p>	<p>Outcome: Depression free days over 64 weeks Group CBT: 23.8 Life skills: 21.56 Model used utility values for mild depression and no depression</p>	<p>Health-related utility weights:</p> <ul style="list-style-type: none"> • Mild depression: 0.685 • Moderate: 0.59 • Non-depressed: 0.85 <p>QALYs over one year</p> <ul style="list-style-type: none"> • Group CBT: 0.0113 QALY gain per individual compared to control. 	<p>Use for the Framework for Integrated Care (SECURE STAIRS)</p> <p>The study used a forensic sample so comparison is fine - but cannot assume all children and young people with depression will also have behavioural issues – but it is more likely. Children and young people, and especially young men, tend to be more 'irritable' when depressed which increases likelihood of behavioural difficulties</p>

Table 3 for section 5.1.1 Summary QALYs for children and young people (CYP) at risk of developing, mental health problems who are in, or at risk of entering, the criminal justice system, or who are in secure residential homes

Reference	Population, Intervention and Comparison	Clinical / behaviour outcome and findings	Utility values and QALYs	DRAFT potential applicability Key: Good , quite good , less good , not a good match
Children and young people with anxiety or depression (n=7 publications)				
Bodden et al 2008	Children and young people with primary anxiety disorder Individual vs family CBT	Outcome: Recovery from anxiety reported as anxiety free days (from ADIS score) At start of study: (assumed) 100% children and young people have anxiety At 1 year follow up: Individual CBT: 68% children and young people free from anxiety Family CBT: 53% children and young people free from anxiety	QALYs (mean (SD)) from EQ-5D scores Individual CBT: dominated family <ul style="list-style-type: none"> Pre-treatment: 0.87 (0.13) Post treatment 0.96 1-year follow-up: 0.95 (0.11) Family CBT: <ul style="list-style-type: none"> Pre-treatment: 0.83 (0.20) Post treatment: 0.92 1-year follow-up: 0.94 (0.10) Gain in utility score at 1 year follow up: ICBT: 0.08 FCBT: 0.11 QALYs (mean (SD)): ICBT: 1.18 (0.9) FCBT: 1.15 (0.11) QALYs calculated out of a possible 1.25 for 15 months)	Clinical expert has suggested this is not quite the right population for the Framework for Integrated Care (SECURE STAIRS)
Creswell et al 2017	Children and young people with anxiety Brief guided parent-delivered CBT vs solution-focused brief therapy	Outcome Recovery from anxiety – defined as “much” or “very much” improved (clinician-rated CGI-I score) At 6 months: Brief guided parent-del CBT: 45/68 (66%) is likely to be a cost-effective alternative Solution-focused brief therapy: 49/68 (72%)	Difference in EQ-5D-Y scores from baseline to 6 months post-treatment: <ul style="list-style-type: none"> Brief guided parent-del. CBT: +0.05 Solution focused brief therapy: +0.11 QALYs gained: mean difference between groups in base-case analysis = 0.006 (95% CI -0.009 to 0.02) No report of QALY change from baseline	Less good for the Framework for Integrated Care (SECURE STAIRS)

Table 3 for section 5.1.1 Summary QALYs for children and young people (CYP) at risk of developing, mental health problems who are in, or at risk of entering, the criminal justice system, or who are in secure residential homes

Reference	Population, Intervention and Comparison	Clinical / behaviour outcome and findings	Utility values and QALYs	DRAFT potential applicability Key: Good , quite good , less good , not a good match
Stallard et al 2013 (HTA)	Children and young people at high risk of developing symptoms of depression Classroom-based CBT vs usual PSHE and attention control PHSE	Outcome: Symptoms of depression – measured using SMFQ scores at 12 month follow up SMFQ adjusted difference in means: Classroom-based CBT vs usual PSHE: 0.97 (95% CI -0.34 to 2.28) Classroom-based CBT vs attention control PSHE: -0.63 (95% CI -1.99 to 0.73) Note: Not effective enough to be cost-effective at NICE WTP threshold	EQ-5D preference-based index (possible range -0.594 to 1.0) (mean (SD)) Classroom-based CBT: <ul style="list-style-type: none"> • Baseline: 0.916 (0.1484) • 12 months: 0.925 (0.1585) Usual PHSE: <ul style="list-style-type: none"> • Baseline: 0.929 (0.1348) • 12 months: 0.941 (0.1291) Attention control PHSE: <ul style="list-style-type: none"> • Baseline: 0.914 (0.1464) • 12 months: 0.915 (0.1656) QALYs <ul style="list-style-type: none"> • Classroom-based CBT: 0.90 (SD 0.12) • Usual PHSE: 0.91 (SD 0.16) • Attention control PHSE: 0.89 (SD 0.12) 	Less good
Byford et al, 2007	CYP with major or probably major depression SSRIs vs SSRIs+CBT (both provided in addition to usual care)	Outcome: depression Improvement in global mental health assessed with HoNOSCA. At 28 weeks (Mean (SD)) CBT+SSRI: 15.39 (8.58) SSRI: 14.52 (8.26) Difference: 1.24 (95% CI -1.05 to 3.52)	Utility value (from EQ-5D) At 28 weeks (mean (SD)) CBT+SSRI: 0.36 (0.15) SSRI: 0.38 (0.14) Difference: -0.02 (95% CI -0.07 to 0.05) Authors not pop norm 86.49 for under 25s QALY difference between groups 0.02	NB: no TAU group, but our study has not a TAU group either

Table 3 for section 5.1.1 Summary QALYs for children and young people (CYP) at risk of developing, mental health problems who are in, or at risk of entering, the criminal justice system, or who are in secure residential homes

Reference	Population, Intervention and Comparison	Clinical / behaviour outcome and findings	Utility values and QALYs	DRAFT potential applicability Key: Good , quite good , less good , not a good match
Domino et al, 2008	Children and young people with MDD Fluoxetine alone vs CBT alone vs fluoxetine	Outcome: Recovery from depression expressed as depression free days (assessed using CDRS-R scale) Improvement across all study groups: 22 (SD 20.9) depression free days, in an 84-day period	QALYs gained across all study groups: 0.162 (SD 0.023)	Less good for the Framework for Integrated Care (SECURE STAIRS) or no good?
Haby et al, 2004	Children and young people with MDD CBT vs usual care SSRIs vs usual care	Outcome: Depression (composite score based on depression, anxiety, low mood and HRQoL scores) CBT vs usual care: SMD 0.41 (95% CI 0.15 to 0.67) SSRIs vs usual care: SMD 0.29 (95% CI 0.11 to 0.46)	DALYS For population-based sample (n=10,952): <ul style="list-style-type: none"> • CBT: 360 DALYs • SSRIs: 230 DALYs For each individual: <ul style="list-style-type: none"> • CBT: 0.03287 • SSRIs: 0.0210 	No not use – DALYS not useful for interim analysis
Wright et al, 2016	Children and young people with depression Collaborative care treatment programme vs usual care	Depression severity (CDRS-R scores) CDRS-R score: <ul style="list-style-type: none"> • not depressed ≤ 23 • mildly depressed score 24-42 – • moderately to severely depressed score >42 Clinical effectiveness not reported e.g. numbers depressed etc.	Utility values for depression: <ul style="list-style-type: none"> • No depression: 1.0 • Mild depression: 0.8 • Moderate/severe depression: 0.6 QALY <ul style="list-style-type: none"> • Usual care 0.73 • Intervention group 0.78 • Difference 0.05 	Study does not fulfill the criterion of reporting a clinical effect size that can be mapped on to a corresponding change in QALY. Can not be used

Table 3 for section 5.1.1 Summary QALYs for children and young people (CYP) at risk of developing, mental health problems who are in, or at risk of entering, the criminal justice system, or who are in secure residential homes

Reference	Population, Intervention and Comparison	Clinical / behaviour outcome and findings	Utility values and QALYs	DRAFT potential applicability Key: Good , quite good , less good , not a good match
Children and young people with post-traumatic stress disorder (PTSD) (n=1 publication)				
Shearer et al, 2018	Children and young people with PTSD Cognitive therapy for PTSD vs usual care	Outcome: Recovery from PTSD (PTSD vs PTSD-free based on ICD-10 criteria) At end of treatment (11 weeks): CT-PTSD: 4/14 (28.6%) still with PTSD Usual care: 11/15 (73.3%) still with PTSD	QALYs Over 11 weeks: <ul style="list-style-type: none"> • CT-PTSD: mean 0.1979 (SD 0.0137) • Usual care: mean 0.1823 (SD (0.0188) • Difference: 0.0156 • Adjusted difference (used in model): 0.0095 QALYs for a year: <ul style="list-style-type: none"> • Free from PTSD: 0.7725 • With PTSD: 0.7386 	Less good - but only QALY for trauma symptoms/disorder Additional information from study: In peace time, more than half of children and adolescents will experience, or witness, traumatic events e.g. violence, abuse, vehicle accidents, housefires, deaths and injuries (Copeland et al, 2007). It is estimated that 16% of children and adolescents exposed to trauma will go on to develop post-traumatic stress disorder (PTSD) (Alisic et al, 2014). Untreated, PTSD in children and adolescents tends to have a chronic course and high comorbidity with other mental health disorders such as anxiety, depression and severe behavioural problems (Bolton et al, 2000; Fletcher et al, 1996).

Table 3 for section 5.1.1 Summary QALYs for children and young people (CYP) at risk of developing, mental health problems who are in, or at risk of entering, the criminal justice system, or who are in secure residential homes

Reference	Population, Intervention and Comparison	Clinical / behaviour outcome and findings	Utility values and QALYs	DRAFT potential applicability Key: Good , quite good , less good , not a good match
Children and young people at risk of insecure attachment (n=1 publication)				
<p>NICE Attachment Difficulties in CYP 2015 (Petrou 2010)</p>	<p>Children and young people on the edge of care</p> <p>Psychosocial interventions to promote attachment</p> <p>3 interventions identified:</p> <p>Video feedback</p> <p>Parental sensitivity and behavioural training</p> <p>Home-visiting plus parent-child psychotherapy</p> <p>All in addition to standard care vs standard care alone</p>	<p>Insecure attachment (vs remain securely attached)</p> <p>Risk ratios for 3 interventions plus standard care compared with standard care alone:</p> <p>Video feedback: RR=0.750</p> <p>Parental training: RR=0.690</p> <p>Home visiting + psychotherapy: RR=0.580</p> <p>Absolute risk of non-secure attachment at end of intervention: 0.390 (from standard care arms of 3 trials)</p>	<p>Additional QALYs per 100 children and young people:</p> <ul style="list-style-type: none"> • Video feedback vs standard care: 3.91 • Parental training vs video feedback: 1.39 • Home visiting + psychotherapy vs parental training: 9.45 <p>QALY change per child</p> <ul style="list-style-type: none"> • 0.0391 • 0.0139 • 0.0945 <p>[Petrou 2010 utility scores inform first bullet:</p> <ul style="list-style-type: none"> • Non-secure attachment 0.760 • Secure attachment 0.888] 	<p>Can use for the Framework for Integrated Care (SECURE STAIRS)</p>

Table 3 for section 5.1.1 Summary QALYs for children and young people (CYP) at risk of developing, mental health problems who are in, or at risk of entering, the criminal justice system, or who are in secure residential homes

Reference	Population, Intervention and Comparison	Clinical / behaviour outcome and findings	Utility values and QALYs	DRAFT potential applicability Key: Good , quite good , less good , not a good match
<i>Children and young people leaving care (n=1 publication)</i>				
NICE Support Services for Children and Young People Leaving Care 2010	<p>Looked after children and young people</p> <p>Support services for transition to adulthood/leaving care vs no support services</p>	<p>Outcome: Employment (employed vs not employed)</p> <p><u>Example: Georgiades 2005</u></p> <p>Transition support group</p> <ul style="list-style-type: none"> • Employed full-time: 22% • Employed part-time: 51% • Unemployed: 27% <p>No transition support group</p> <ul style="list-style-type: none"> • Employed full-time: 8% • Employed part-time: 0% • Unemployed: 82% 	<p>Using findings from Georgiades (2005):</p> <p>Total QALYs</p> <ul style="list-style-type: none"> • Transition support: 119.15 • No transition support: 120.36 <p>Discounted QALY over a lifetime:</p> <ul style="list-style-type: none"> • Transition support: 47.08 • No transition support: 46.09 • Incremental QALY: 0.99 <p>[to check - use -0.09 incremental discounted QALY]</p>	<p>Can use for the Framework for Integrated Care (SECURE STAIRS)</p>

5.2.2. Summary review findings, potential QALY outcomes for victims

Table 4 for section 5.1.2 Summary QALYs for children and young people who are victims

Reference	Pop, Intervention and Comparison	Clinical / behaviour outcome and findings	Utility values and QALYs	DRAFT potential applicability. Key: Good , quite good, less good, not a good match
Children and young people who are victims of harmful sexual behaviour (n=1 publication)				
NICE Harmful Sexual Behaviour in CYP 2016 Economic analysis report (includes values from Dolan 2005)	CYP arrested for a serious sexual offence Multi-systemic therapy (MST) for problem sexual behaviours vs usual community services (group or individual CBT)	Outcome: harmful sexual behaviour - re-offending rate MST: 41.67% Usual services: 75.01% NB. NICE report used adult QALYS	QALYs in victims of crime (societal perspective) • 255 QALYs gained over 8.9 years Other potential discounted QALY losses (change) in adults as a result of crime: (Dolan 2005) • Homicide 17.791 • Serious wounding 0.191 • Other wounding 0.031 • Common assault 0.007 • Rape 0.561 • Sexual assault 0.16 • Robbery 0.28	See narrative review of guideline: (Hackett et al. 2013) which reported that 66% of children and young people who had been identified as displaying harmful sexual behaviour often had experienced abuse and 38% were identified as having learning difficulties
Children and young people who are victims of violent injury (n=2 publications)				
Chong et al, 2015	Children and young people with firearm injury Hospital-based violence intervention program (HVIP) vs standard care	Outcome: firearm injury annual recidivism HVIP: 2.5% Standard care: 4%	Utility values for violent injury: • 0.70 for year following injury • 0.84 for subsequent years QALYs over 5 years • HVIP: 4.64 Standard care: 4.62 Incremental gain of 0.02 QALYs	Note the main argument in the paper is that the intervention is less expensive and more effective than no violence intervention programme i.e. net savings because of injury recidivism (and employment in the programme)
Juillard et al, 2014	Children and young people intentionally injured by another person.	Outcome: intentional injury - recidivism: HVIP: 0.9%	QALYs over 5 years • HVIP group: 25.58 • Standard group: 25.34	

Table 4 for section 5.1.2 Summary QALYs for children and young people who are victims

Reference	Pop, Intervention and Comparison	Clinical / behaviour outcome and findings	Utility values and QALYs	DRAFT potential applicability. Key: Good , quite good, less good, not a good match
	Hospital-based violence intervention program (HVIP) vs standard care	Standard care: 3.2% Case fatality rate for violent injury: 8.8%	For typical programme size of n=100: QALY gain: 24 QALY gain per CYP: 0.24	

5.2.3 Summary review findings, wider implications

Objective 1 – To identify types of impacts of using interventions for children and young people reported by existing economic evaluations.

Societal benefits

A bar chart showing the frequency of societal benefits reported by included studies is presented in Figure 2. The most frequently reported social benefits of using interventions for children and young people are: prevented violence/antisocial behaviour (5/17, 29.4%), improved mental health symptoms (5/17, 29.4%), and improved recovery rate of mental health disorders (3/17, 17.6%).

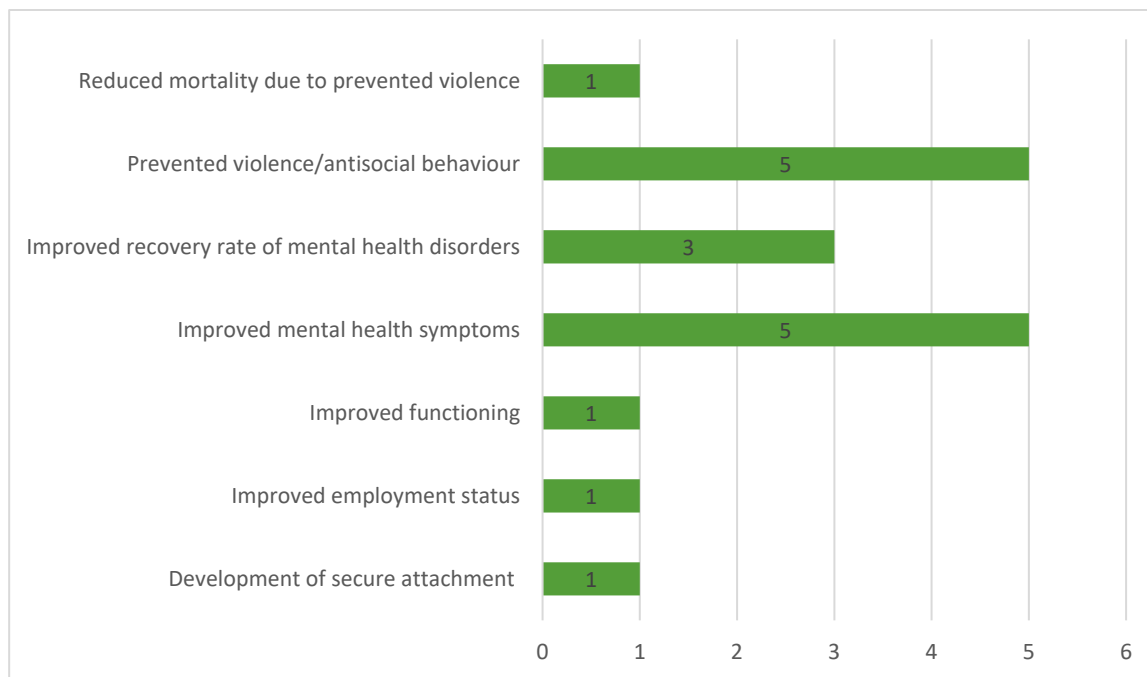


Figure 2: Frequency of societal benefits reported by included studies

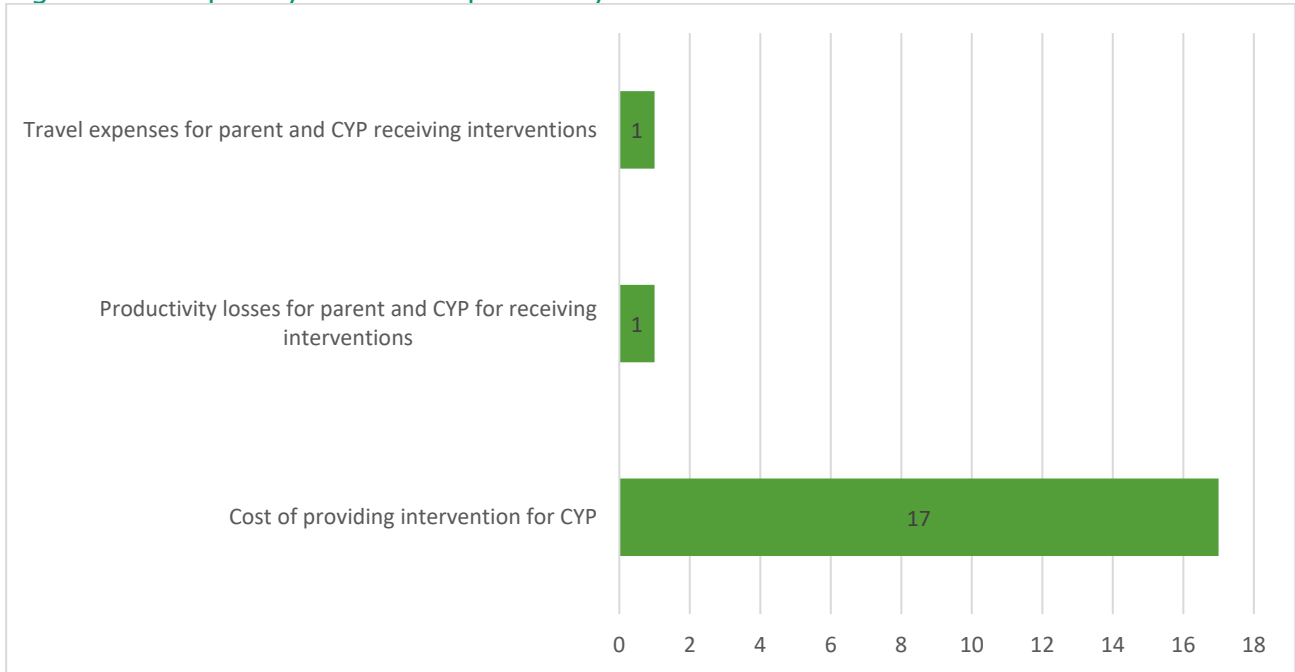
Societal harms

None of the included studies reported any societal harms of using interventions for children and young people.

Costs

A bar chart showing the frequency of costs reported by included studies is presented in Figure 3. All included studies considered the cost of providing interventions for children and young people (17/17, 100%). One study considered the travel expense for parents and children and young people receiving interventions (1/17, 5.9%) and one study considered productivity losses for parents and children and young people for receiving interventions (1/17, 5.9%).

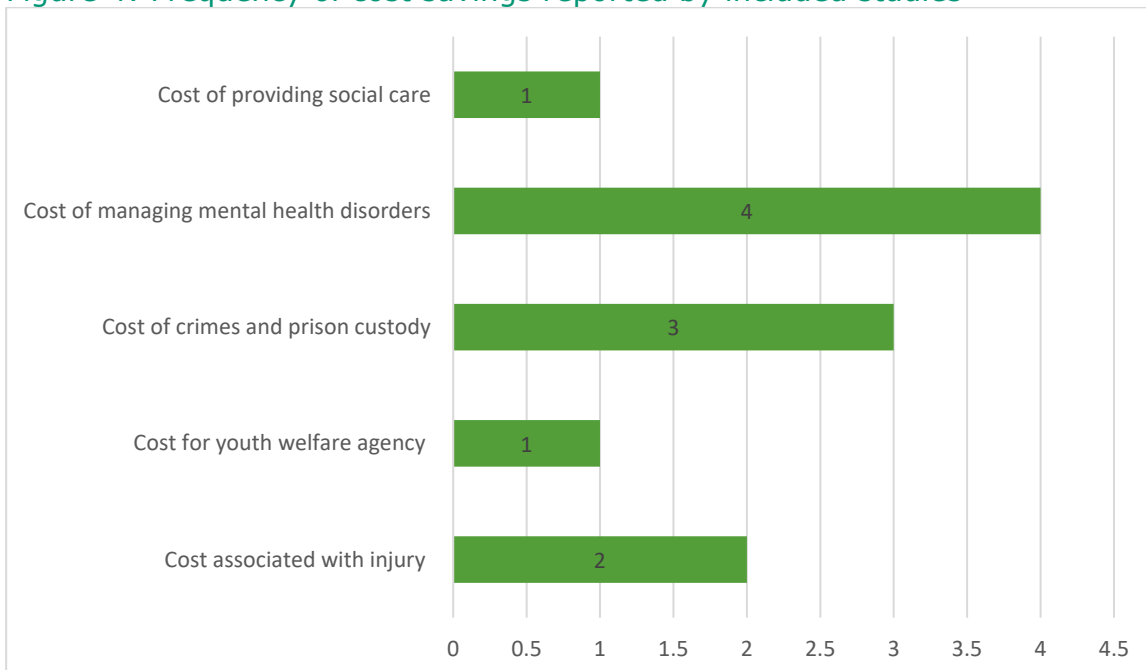
Figure 3: Frequency of costs reported by included studies



Cost savings

Ten studies (10/17, 58.8%) did not report cost savings as a result of using interventions for children and young people. The frequency of cost savings reported by the remaining seven studies (7/17, 41.2%) is presented in Figure 4. The most commonly considered cost savings are: reduced cost of managing mental health disorders (4/17, 23.5%), reduced cost of crimes and custodial sentences (3/17, 17.6%) and reduced cost associated with injury (2/17, 11.8%).

Figure 4: Frequency of cost savings reported by included studies



Objective 2 – To assess the cost impacts of using interventions for CYP reported by existing UK economic evaluations

Of the nine economic evaluations conducted in the UK, seven studies (7/9, 77.8%) reported that use of interventions for children and young people resulted in

additional cost compared to no interventions. It should be noted that of these seven studies, two studies (Dretzke et al, 2005; NICE Attachment Difficulties Guideline, 2015) were model-based economic evaluations but did not model any type of cost savings. The remaining five studies only considered the cost savings to one or two sectors:

- the NICE ADHD Guideline (update), 2018 and Shearer et al, 2018 only considered cost savings to the NHS;
- Richardson et al, 2015 only considered cost savings to the Criminal Justice System;
- Sayal et al, 2016 and Stallard et al, 2013 only considered cost savings to the NHS and Personal Social Services.

Two studies (NICE Transition to Adults' Services Guideline, 2016; Fonagy et al, 2018) took a societal perspective for measuring cost savings, and both found that use of intervention resulted in cost savings compared to no interventions. The cost savings were mainly caused by reduction in crime related cost, followed by reduction in treatment cost of mental health disorders.

In the UK, the cost of crime reported in the studies ranged from £550 (cybercrime) to £3,217,740 per case (homicide). The annual cost of treating mental health disorders in a UK study (reported in Euros) ranged from €11,687 (anxiety disorders) to €19,238 per patient (mood disorders).

5.3 Cost utility analysis

5.3.1 Study data used: benefits to children, young people, and staff

Children and young people

Study data on outcomes for children and young people reports high risk behaviours. Of the 12 sites that submitted high risk behaviour data, 6 submitted data (all of which were SCHs) for all three time points, for 213 children and young people in total.

Table 5 Study data: High Risk Behaviour for complete cases for 6 SCHs

High Risk Behaviours	At Entry		6-8 weeks into placement		At Release		P value [sufficient data]
	% High Risk	N	% High Risk	N	% High Risk	N	
Absconding	82.86	116/140	71.43	100/140	46.43	65/140	<i>p</i> -value < 0.00001. Significant at <i>p</i> < .01.
Food-based difficulties	<3	<3	0	0/53	0	0/53	<i>n/a</i>
Oppositional behaviours	27.4	20/73	16.44	12/73	10.96	8/73	<i>p</i> -value is .011651. Significant at <i>p</i> < .05.
Self-Harm & Suicide Attempts	28.75	46/160	18.75	30/160	20.62	33/160	not significant at <i>p</i> < .05.
Sexually harmful behaviours	30.14	22/73	28.77	21/73	43.83	32/73	not significant at <i>p</i> < .05.
Substance misuse	33.33	37/111	25.22	28/111	19.82	22/111	<i>p</i> -value .022666. Significant at <i>p</i> < .05.
Violent behaviours	45.86	72/157	33.12	52/157	33.12	52/157	<i>p</i> -value .020949. Significant at <i>p</i> < .05.
Vulnerabilities	69.06	96/139	57.55	80/139	56.83	79/139	not significant at <i>p</i> < .05.
No. complete cases = 213							

Ref: Supplementary study data. Frequencies of one or two are suppressed (<3).

Table 6 Study data: High Risk Behaviour for complete cases, 4 Late implementing SCH sites

High Risk Behaviours	At Entry		6-8 weeks into placement		At Release		P value [sufficient data]
	% High Risk	N	% High Risk	N	% High Risk	N	
Absconding	83.33	45/54	68.52	37/54	68.52	37/54	Not significant at <i>p</i> < .05.
Food-based difficulties	<3	<3	0	0/53	0	0/53	<i>n/a</i>
Oppositional behaviours	27.4	20/73	16.44	12/73	10.96	8/73	The <i>p</i> -value is .011651. Significant at <i>p</i> < .05.
Self-Harm & Suicide Attempts	39.73	29/73	30.14	22/73	32.88	24/73	Not significant at <i>p</i> < .05.
Sexually harmful behaviours	30.14	22/73	28.77	21/73	43.84	32/73	Not significant at <i>p</i> < .05.
Substance misuse	34.48	20/58	24.14	14/58	22.41	13/58	Not significant at <i>p</i> < .05.
Violent behaviours	47.22	34/72	25	18/72	25	18/72	The <i>p</i> -value is .005505. Significant at <i>p</i> < .01.
Vulnerabilities	64.81	35/54	53.7	29/54	66.67	36/54	Not significant at <i>p</i> < .05.
No. complete cases = 119							

Ref: Supplementary study data. Frequencies of one or two are suppressed (<3).

Table 7 Study data: High Risk Behaviour for complete cases, 1 Early implementing SCH

High Risk Behaviours	At Entry		6-8 weeks into placement		At Release		P value [sufficient data]
	% High Risk	N	% High Risk	N	% High Risk	N	
Absconding	82.56	71/86	73.26	63/86	32.56	28/86	<i>p-value < 0.00001. Significant at p < .01.</i>
Food-based difficulties	NA	0/0	NA	0/0	NA	0/0	<i>n/a</i>
Oppositional behaviours	NA	0/0	NA	0/0	NA	0/0	<i>n/a</i>
Self-Harm & Suicide Attempts	19.54	17/87	9.2	8/87	10.34	9/87	<i>Not significant at p < .05.</i>
Sexually harmful behaviours	NA	0/0	NA	0/0	NA	0/0	<i>n/a</i>
Substance misuse	32.08	17/53	26.42	14/53	16.98	9/53	<i>Not significant at p < .05.</i>
Violent behaviours	44.71	38/85	40	34/85	40	34/85	<i>Not significant at p < .05.</i>
Vulnerabilities	71.76	61/85	60	51/85	50.59	43/85	<i>p-value .004615. Significant at p < .01.</i>
No. complete cases = 94							

Ref: Supplementary study data.

Staff

Staff survey responses are reported as shown in table 8:

Table 8 Staff survey - burnout: March 2021

Item	Phase 1: Mean	Phase: 95% Confidence Interval	Phase 2: Mean	Phase 2: 95% Confidence Interval	Phase 3: Mean	Phase 3: 95% Confidence Interval	Comparator (Kristensen et al., 2005)
Overall	45.96/100	43.79-48.12	44.53/100	41.96-47.10	42.27/100	39.24-45.30	32.6-33.0
YOI	43.78/100	39.11-48.45	39.51/100	34.87-44.14	53.30/100	45.40-61.20	32.6-33.0
SCH	47.22/100	44.36-50.09	45.52/100	42.31-48.73	39.32/100	36.22-42.43	32.6-33.0
STC	44.29/100	39.6-48.99	50.28/100	41.5-59.07	-	-	32.6-33.0

N = 204-383. Higher scores indicate higher levels of burnout. Kristensen, T. S., Borritz, M., Villadsen, E., & Christensen, K. B. (2005). The Copenhagen Burnout Inventory: A new tool for the assessment of burnout. *Work & Stress*, 19(3), 192-207.

Ref: Supplementary study data.

The table above reports the final evaluation data. While SCH burnout appears to have decreased (although there is very slight overlap in the confidence intervals) it has probably increased for YOIs in phase 3, but the wider confidence interval suggests more uncertainty for the YOI position.

5.3.2 Unit costs

One late implementing focus study site was used to illustrate the unit costs below. This site was selected based on access to the clinical lead by the researcher at a Professional Collaborative Network meeting in November 2019.

Face to face with child or young person, time in formulation meetings an example

Question: what time is given face to face with children and young people by the Framework for Integrated Care (SECURE STAIRS) team at:

- joint formulation
- other new activity instigated directly because of the Framework for Integrated Care (SECURE STAIRS)?

At this stage joint formulations were not yet taking place. However, MDTs were taking place in November 2019, without 'the lads joining in yet'. It was anticipated that these sessions would become joint formulation meetings with children and young people participating. The formulation costs will be relevant to the analysis of benefits to children and young people. Other sites seem to be using a similar timeframe but split over more than one session. During 2020 and national lock down sites reported that 2.5 hours for work on reflective practice and supervision was also representative of time spent.

Table 9 The Framework for Integrated Care (SECURE STAIRS) time given to MDT meetings

Activity: Late focus study site, one unit of 6 boys	SECURE STAIRS funded staff	Time	Comment
MDT on unit (no longer 'in health' area)	Psychologist 8c (started)	2.5 hours each week	Staff have experienced that 'health' also have knowledge to share and see joint sharing of info an advantage e.g. who is the best person to interact with a child or young person.

Staff

The time that the Framework for Integrated Care (SECURE STAIRS) clinical leads may give to operational staff is estimated as an illustration and includes:

- Reflective practice sessions
- Co-delivered training
- the Framework for Integrated Care (SECURE STAIRS) specific training

The Framework for Integrated Care (SECURE STAIRS) clinical lead time: estimate of annual time with operational staff

The data in the tables below are based on a presentation given at the November 2019 PCN meeting and follow up discussion with other clinical leads.

Table 10 Estimate of the Framework for Integrated Care (SECURE STAIRS) staff support time given to one unit

Activity: YOI late focus study site, 1 unit: 6 boys	SECURE STAIRS funded staff	Time	Comment
<i>Time: Provide a framework for practice (leadership) that is relationally based and provides a secure base for staff to work from:</i>			
'Being on' the unit each week – to give staff 'an attachment'	Clinical lead	1 hour each week	Average since August 2019
<i>Sub-total 52 weeks pa</i>		52 hrs pa	
<i>Reflective practice time</i>			
Giving support to 1 session per month, 3-4 staff on their training afternoon. (To be led in future by secure institution psychiatrist not the Framework for Integrated Care (SECURE STAIRS) staff)	Psychologist 8	2 hrs per month	Secure institution staff see the need for help so that they 'don't take it out on the family at home'.
Reflective practice 1:1 with caseload manager	Psychologist 8	1 per month	
<i>Sub-total assume 12 sessions</i>		36 hrs pa	
<i>Training time</i>			
Training in groups of roughly 2 groups of 5 staff: National Modules (A-E) A_B only 10-11 operational staff (includes some time for caseload manger and wing governor etc)	Psychologist 8		NB. 'other units have less staff' i.e. are more stretched Training may also include 1 wing governor, 1 case load manager of unit
	Module A 2-6 hours	2-6 hrs, average 4 hrs (x2 pa)	
	Module B 7.5 hours	7.5 hours (x2 pa)	
<i>Sub-total per annum assume</i>		23 hours pa	$(4+7.5) \times 2$
Total estimated time per annum		111 hours pa	
Estimate for the Framework for Integrated Care (SECURE STAIRS) clinical lead time for each staff member (n=11) in a theoretical full year		10.09	

The Framework for Integrated Care (SECURE STAIRS) staff time: estimate of time, joint formulation for children and young people

The data below was based on a presentation and follow up discussion with the clinical lead at in a late implementing focus study site (November 2019) at the PCN meeting. The estimates below are the initial stages of implementation.

Costs

The cost of the Framework for Integrated Care (SECURE STAIRS) per child or young person across the secure estate varies considerably. Recent estimates have reported the cost per child or young person to be £3,779 per annum (source Financial comparison of work streams, from Sue Sherrard, November 2019).

The cost of keeping one male age 15-17 in a YOI ranges from £103,675 to £135,468 per annum, with an average of £113,071 (MoJ information release, October 2018). This suggests that the Framework for Integrated Care (SECURE STAIRS) represents less than 3.4% of the cost of a place at a YOI.

The late implementing focus YOI site has 118 places for children and young people. The Framework for Integrated Care (SECURE STAIRS) team model for the site can be found in Appendix B. The site received Framework for Integrated Care (SECURE STAIRS) funding (2019) £446,000 [source NHS England Oct 2019].

Table 11 Published unit costs

Post	Unit costs	Reference
Psychologist 8	£114 per working hour	Unit Costs of Health and Social Care 2020 PSSRU
Consultant psychiatrist	£116 per hour (includes overheads and capital costs in unit costs)	Unit Costs of Health and Social Care 2020 PSSRU

Table 12 Illustration of costs: time given by the Framework for Integrated Care (SECURE STAIRS) to staff support/training

Activity: unit: 6 boys	Framework funded staff	Time	Comment	Cost per staff member n11
Attachment (leadership?) time				
'Being on' unit each week – to give staff 'an attachment'	Clinical lead	1 hour each week	Average since August 2019	
<i>Sub-total 52 weeks pa</i>		52 hrs pa		$(£114 \times 52) / 11 = £538.91 \text{ pa}$
Reflective practice time				
Giving support to 1 session per month, 3-4 staff on their training afternoon. (To be led in future by secure institution Psychologist not framework staff)	Psychologist 8c	2 hrs per month	Secure unit staff see the need for help so that they 'don't take it out on the family at home'. Reflective practice starts next month (Dec 2019)	
Reflective practice 1:1 with caseload manager	Psychologist 8c	1 per month		
<i>Sub-total assume 12 sessions</i>		36 hrs pa		$(£114 \times 36) / 11 = £373.09$
Training time				
Training in groups of roughly 2 groups of 5 staff:	Psychologist 8c		NB 'other units have less staff' i.e. are more stretched	
National Modules (A-E) A_B only	Module A 2-6 hours	4 hrs (x2 pa)	2-6 hrs, average = 4 hrs	
10-11 operational staff (includes some time for caseload manager and wing governor etc)	Module B 7.5 hours	7.5 hours (x2 pa)	Training may also include 1 wing governor, 1 case load manager of unit	
<i>Sub-total per annum assume $(4+7.5) \times 2$</i>		23 hours pa		$(£114 \times 23) / 11 = £238.36$
Total estimated time per annum		111 hours pa		$(£114 \times 111) / 11 = £1,150.36$
The Framework for Integrated Care (SECURE STAIRS) clinical lead time for each staff member (n11) in a theoretical year		10.09		10.09 x £114 = £1,200 (rounded up) per staff member pa

5.3.3 Potential QALYs considered against high risk behaviours

In the table below the utility values from the systematic review are summarised against the high risk behaviour categories collected as outcomes in the evaluation data. QALYs for substance misuse and self-harm were not identified in the systematic review. A search of NICE guidance subsequently produced the values in the table below.

Studies were selected as relevant to the high-risk behaviours were colour coded: **Good match**; quite **good**; **less good**; not **a good match**.

Table 13 Summary table of potentially relevant QALYS for high risk behaviours			
High Risk Behaviour in data spec at entry and 6-8 weeks later	Potential QALYS to use in analysis	Represents x-y change in behaviour	Study Ref and clinical lead comments
Risk to self			
Self-harm and suicide attempts	0.0118	Outcome: repeat episodes of self-harm Usual care versus MACT in 16-65 yr. olds)	Byford 2003: NICE Self harm in over 8, Long term management 2011 -
Substance misuse	0.064	18 -29yr olds QoL reduction over 6 months - based on cocaine use risk in the age group	Wagner & Anthony 2002: NICE Drug Misuse Prevention, 2016. NB The Wagner & Anthony 2002 paper estimates of the percentage of cocaine users who become dependent to be 15%, and the subsequent annualised risk of 1.2% for 18-29-year old's (NICE economics p.59). They note that these figures are for dependency, not non-dependent cocaine use.
	0.32	Associated with cannabis use. The impact of interventions on health-related quality of life has been accounted for by a reduction in QALYs, resulting from a utility decrement for psychosis.	NICE Drug Misuse Prevention, 2016. NB The economics report for the Drug Misuse Prevention Guidance (2016) also notes cannabis use is more prevalent than cocaine use in the UK. However, it may be less applicable for a young population given the following: "Psychosis cases and arrests associated with cannabis use are likely to happen later in an individual's lifetime, but a cross-sectional effect was assumed in the analysis. Another limitation is that the literature is still not unanimous about the evidence for a causal link between cannabis use and psychosis."
Food based difficulties	- -		None identified
Absconding	-		None identified. (Can we use the attachment QALY (0.0945 or 0.0391?) in the row below as a proxy? No!)
Vulnerabilities	<ul style="list-style-type: none"> • 0.0391 • 0.0139 • 0.0945 	Outcome: Insecure attachment to secure attachment <ul style="list-style-type: none"> • Video v standard care; • Parental training v video • Home visiting +psychotherapy vs parental training 	NICE Attachment Difficulties in CYP 2015 Notes from clinical experts/leads Quite Good/Good – the Framework for Integrated Care (SECURE STAIRS) is primarily an approach to improve attachment relationships. The interventions are more focused on parent /child dyad than could be expected in secure estate but the philosophy behind the intervention is a good fit. Outcomes seem to centre on attachment quality rather than direct behavioural measures
	0.034	Outcome free from PTSD v with PTSD Gain over 11 weeks	Shearer et al, 2018 Notes: not a good fit for Trauma but it is the one study we have found with a QALY in CYP

Table 13 Summary table of potentially relevant QALYS for high risk behaviours

High Risk Behaviour in data spec at entry and 6-8 weeks later	Potential QALYs to use in analysis	Represents x-y change in behaviour	Study Ref and clinical lead comments
High Risk Behaviour in data spec at entry and 6-8 weeks later	Potential QALYs to use in analysis	Represents x-y change in behaviour	Study Ref and clinical lead comments
	0.0113	Outcome: Depression free days Young offenders	Richardson et al, 2015 Notes Some use – shows impact of reducing depression has on recidivism which can assume to include some risk-to others behaviour
Risk to others			
Violent	0.02	Outcome: firearm injury, annual recidivism	Chong et al, 2015
	0.24	Outcome: Intentional injury, Annual recidivism rate	Juillard et al, 2014 (0.7 utility) Notes: Close link between injury and violence perpetrator assumed (as does Home Office gangs matrix register). Moderate usefulness – makes big assumptions that victim of violence also being a perpetrator, which poses many limitations. Intervention is target at the individual rather than culture change but does have some aspects.
Oppositional	0.0300	Outcome: antisocial behaviour Individual home-based treatment programme, 1 change in the Eyberg scale (education scale for disruptive behaviour)	Dretzke et al, 2006 HTA reasonably good fit – some of the children may be quite young in the study and it is children living at home but the PT interventions are about changing the ‘culture’ of the care environment so have relevance to the Framework for Integrated Care (SECURE STAIRS) approach
	0.0110	Outcome: “functioning well” As described by parents/carers - response to programme defined as CYP taking medication and as “functioning well”	NICE ADHD – Parent/carer training 2018 (from van der Kolk et al, 2014)
	0.013	Outcome: Managing challenging behaviour in CYP with learning disability Group training	NICE Managing Challenging Behavior in CYP with Learning Disability 2015 NB based on Autism utility values (Tilford)

Table 13 Summary table of potentially relevant QALYS for high risk behaviours			
High Risk Behaviour in data spec at entry and 6-8 weeks later	Potential QALYS to use in analysis	Represents x-y change in behaviour	Study Ref and clinical lead comments
Sexually harmful behaviours		Outcome Rape: 0.561 victims Outcome: Sexual assault: QALY 0.16	NICE Harmful sexual behavior Guideline in children and young people 2016 Hackett et al (2013): for 66% Note: See narrative review of guideline: (Hackett et al. 2013) which reported that 66% of children and young people who had been identified as displaying harmful sexual behaviour often had experienced abuse and 38% were identified as having learning difficulties See below for similar discussion about application to our population How much more likely are our population to have been victims themselves? <i>Notes from clinical team</i> This is based on the assumption that perpetrators of sexually harmful behaviours are likely to also have been victims.

5.3.4 Threshold analysis, benefits to children and young people

Qualitative data in the final evaluation report suggests that implementation of staff training and formulations positively impacts the development of trusting relationships with children and young people, and it is theorised that high risk behaviors will continue to reduce over time as deep and lived culture change is embedded.

Using the quantitative evaluation data (tables 5-7 above) threshold analysis was undertaken to estimate how much change in high risk behaviors alone would be required and how long children and young people would need to be stable for the formulation meeting to be considered cost-effective.

Complete cases

In the data set for all complete cases, statistically significant improvements are seen in four out of eight high risk behaviours [table 5]. While we do not have a published QALY for 'absconding' the cost of formulations for 213 complete cases is equally shared between the four behaviours. The results are summarised in 'If ...then...' statements.

Table 14 Threshold analysis: Complete cases, 'Absconding'

High risk behaviours: Absconding	Results £30,000 willingness to pay
Study data, absconding: at entry 116/140; 6-8 weeks 100/140; release 65/140. (116-65 = 51 fewer children and young people)	
Estimated cost the Framework for Integrated Care (SECURE STAIRS) clinical lead face to face time for a quarter of 213 joint formulation meetings (2.5 hrs. x 213) in a newly implementing site	£15,176.25
QALY gain needed for this to be considered cost-effective	0.51
Estimate probability of improvement	36.43%
QALY gain required for each of the 51 children and young people who may clinically improve	0.01
Published data	
No QALY data _	Unknown
QALY gain per person (51/140 people)	Unknown
Result £30,000 threshold: If 51/140 children and young people remain not at high risk for an average of [unknown] weeks each the time invested in joint formulation could be considered cost-effective	

Table 15 Threshold analysis: Complete cases, 'Oppositional behaviours'

High risk behaviours: Oppositional	Results £30,000 willingness to pay
Study data, oppositional: at entry 20/73; 6-8 weeks 12/73; release 8/73. (20 - 8 = 12 fewer children and young people)	
Estimated cost the Framework for Integrated Care (SECURE STAIRS) clinical lead face to face time for a quarter of 213 joint formulation meetings (2.5 hrs. x 213)	£15,176.25
QALY gain needed for this to be considered cost-effective	0.51
Estimate probability of improvement	16.44%
QALY gain required for each of the 12 children and young people who may clinically improve	0.042
Published data	
Utility score (NICE Attachment Difficulties in CYP 2015)	0.0391
QALY gain per person (12/73 people)	0.042 for 72 weeks
Result £30,000 threshold: If 12/73 children and young people remain not at high risk for an average of 72 weeks each the time invested in joint formulation could be considered cost-effective	

Table 16 Threshold analysis: Complete cases, 'Substance misuse'

High risk behaviours: Substance misuse	Results £30,000 willingness to pay
Study data, substance misuse: at entry 37/111; 6-8 weeks 28/111; release 22/111. (37 - 22 = 15 fewer children and young people)	
Estimated cost the Framework for Integrated Care (SECURE STAIRS) clinical lead face to face time for a quarter of 213 joint formulation meetings (2.5 hrs. x 213) in a newly implementing site	£15,176.25
QALY gain needed for this to be considered cost-effective	0.51
Estimate probability of improvement	13.51%
QALY gain required for each of the 15 children and young people who may clinically improve	0.034
Published data	
Utility score (NICE: NICE Drug Misuse Prevention, 2016)	0.32
QALY gain per person (15/111 people)	0.034 for 6 weeks
Result £30,000 threshold: If 15/111 children and young people remain not at high risk for an average of 6 weeks each the time invested in joint formulation could be considered cost-effective	

Table 17 Threshold analysis: Complete cases, 'Violent behaviours'

High risk behaviours: Violent behaviours	Results £30,000 willingness to pay
Study data, violent behaviours: at entry 72/157; 6-8 weeks 52/157; release 52/157. (72 - 52 = 20 fewer children and young people)	
Estimated cost the Framework for Integrated Care (SECURE STAIRS) clinical lead face to face time for a quarter of 213 joint formulation meetings (2.5 hrs. x 213) in a newly implementing site	£15,176.25
QALY gain needed for this to be considered cost-effective	0.51
Estimate probability of improvement	12.74%
QALY gain required for each of the 20 children and young people who may clinically improve	0.025
Published data	
Utility score (Julliard 2014)	0.24
QALY gain per person (20/157 people)	0.025 for 5 weeks
Result £30,000 threshold: If 20/157 children and young people remain not at high risk for an average of 5 weeks each the time invested in joint formulation could be considered cost-effective	

Summary 'If... Then ...' statements, all complete case data

If 213 children and young people in SCHs receive care via joint formulation meetings

And 51 children and young people with high risk behaviour 'absconding' clinically improve for an average of **x [unknown] weeks** each

And 12 children and young people with high risk behaviour 'oppositional' clinically improve for an average of **72 weeks** each

And 15 children and young people with high risk behaviour 'substance misuse' clinically improve for an average of **6 weeks** each

And 20 children and young people with high risk behaviour 'Violent behaviours' clinically improve for an average of **5 weeks** each

Then the 213 cases might be considered cost effective at a willingness to pay threshold of £30,000.

The weeks of wellbeing required vary with the type of behaviour due to both the probability of improvement in the data set and the 'value' of the QALY used as a proxy. While we do not have a suitable QALY to use as a proxy for 'absconding' this is the behaviour with the largest improvement in the data set. If one of the lower proxy QALYs were applied (e.g..0391), 12 weeks of wellbeing would be required for each of the 51 children and young people who improved.

Longer term follow up data is required to evidence whether or not the average time required for each child and young person is achievable.

Early and late implementing SCHs

In tables 6 and 7 above, statistically significant change is reported in two behaviours for the four late implementing SCHs and two behaviours in the early implementing

SCH. The cost of the formulation meetings is shared between two behaviours in each of these examples.

Table 18 Threshold analysis: 4 Late implementing SCHs, 'Oppositional behaviours'

High risk behaviours: Oppositional	Results £30,000 willingness to pay
Study data, oppositional: at entry 20/73; 6-8 weeks 12/73; release 8/73. (20 - 8 = 12 fewer children and young people)	
Estimated cost the Framework for Integrated Care (SECURE STAIRS) clinical lead face to face time for half of 119 joint formulation meetings (2.5 hrs. x 119)	£16,957.50
QALY gain needed for this to be considered cost-effective	0.57
Estimate probability of improvement	16.44%
QALY gain required for each of the 12 children and young people who may clinically improve	0.047
Published data	
Utility score (NICE Attachment Difficulties in CYP 2015)	0.0391
QALY gain per person (12/73 people)	0.047 for 82 weeks
Result £30,000 threshold: If 12/73 children and young people remain not at high risk for an average of 82 weeks each the time invested in joint formulation could be considered cost-effective	

Table 19 Threshold analysis: 4 Late implementing SCHs, 'Violent behaviours'

High risk behaviours: Violent	Results £30,000 willingness to pay
Study data, violent: at entry 34/72; 6-8 weeks 18/72; release 18/72. (34-18 = 16 fewer children and young people)	
Estimated cost the Framework for Integrated Care (SECURE STAIRS) clinical lead face to face time for half of 119 joint formulation meetings (2.5 hrs. x 119)	£16,957.50
QALY gain needed for this to be considered cost-effective	0.57
Estimate probability of improvement	22.22%
QALY gain required for each of the 16 children and young people who may clinically improve	0.035
Published data	
Utility score (Julliard 2014)	0.24
QALY gain per person (16/72 people)	0.035 for 8 weeks
Result £30,000 threshold: If 16/72 children and young people remain not at high risk for an average of 8 weeks each the time invested in joint formulation could be considered cost-effective	

Table 20 Threshold analysis: An early implementing SCHs, 'Absconding'

High risk behaviours: Absconding	Results £30,000 willingness to pay
Study data, absconding: at entry 71/86 6-8 weeks 63/86; release 28/86. (71-28 = 43 fewer children and young people)	
Estimated cost the Framework for Integrated Care (SECURE STAIRS) clinical lead face to face time for half of 94 joint formulation meetings (2.5 hrs. x 94)	£13,395.00
QALY gain needed for this to be considered cost-effective	0.45
Estimate probability of improvement	50.00%
QALY gain required for each of the 43 children and young people who may clinically improve	0.01
Published data	
No QALY data _	Unknown
QALY gain per person (43/86 people)	Unknown
Result £30,000 threshold: If 43/86 children and young people remain not at high risk for an average of [x] weeks each the time invested in joint formulation could be considered cost-effective	

Table 21 Threshold analysis: An early implementing SCHs, 'Vulnerabilities'

High risk behaviours: Vulnerabilities	Results £30,000 willingness to pay
Study data, vulnerabilities: at entry 61/85; 6-8 weeks 51/85; release 43/85. (61 - 43 = 18 fewer children and young people)	
Estimated cost the Framework for Integrated Care (SECURE STAIRS) clinical lead face to face time for half of 94 joint formulation meetings (2.5 hrs. x 94)	£13,395.00
QALY gain needed for this to be considered cost-effective	0.45
Estimate probability of improvement	21.18%
QALY gain required for each of the 18 children and young people who may clinically improve	0.025
Published data	
Utility score (Dretzke et al, 2006, HTA)	0.0391
QALY gain per person (18/85 people)	0.03 for 43 weeks
Result £30,000 threshold: If 18/85 children and young people remain not at high risk for an average of 43 weeks each the time invested in joint formulation could be considered cost-effective	

'If...then...' statements - four late and 1 early implementing SCHs

The tables in section 4 enable the following 'If... Then ...' statements for late and early SCH sites

Late implementing SCHs

If 119 children and young people in **late implementing SCHs** receive care via joint formulation meetings

And 12 children and young people with high risk behaviour 'oppositional' clinically improve for an average of **82 weeks** each

And 16 children and young people with high risk behaviour 'violent' clinically improve for an average of **8 weeks** each

Then the 119 cases might be considered cost effective at a willingness to pay threshold of £30,000.

Early implementing SCHs

If 94 children and young people in **early implementing SCHs** receive care via joint formulation meetings

And 43 children and young people with high risk behaviour 'absconding' clinically improve for an average of **x [unknown] weeks** each

And 18 children and young people with high risk behaviour 'vulnerabilities' clinically improve for an average of **43 weeks** each

Then the 94 cases might be considered cost effective at a willingness to pay threshold of £30,000.

The weeks of wellbeing required vary considerably with the type of behaviour due to both the probability of improvement in the data set and the 'value' of the QALY used as a proxy. While we do not have a suitable QALY to use as a proxy for 'absconding' this is the behaviour with the largest improvement in the data set. IF one of the lower proxy QALYs were applied (e.g..0391), 9 weeks of wellbeing would be required for each of the 43 children and young people who improved. Longer term follow up data is required to evidence if the average time required for each child is achievable.

5.3.5 Benefits to staff and employers: threshold analysis and cost savings

This section analyses the costs and savings to employers of building capability in the system. First of all, the cost that could be attributed to avoiding burnout in staff is estimated. Staff burnout is an outcome in the evaluation data set.

This is followed by a set of tables that illustrate the potential cost savings to the employer of reducing stress, depression, and anxiety in staff with less:

- Absenteeism
- Presenteeism (lost productivity while at work)
- Turnover and recruitment

Quantitatively, study data was not collected on these second set of outcomes that may benefit the employer. In the estimates below we have not included any savings as a result of reduced use of NHS resources.

Evidence from NICE guidance: Mental wellbeing at work

The study design aimed to collect staff survey data on burnout and burnout rates have remained high. QALYs used in the economic analysis below were identified from relevant NICE guidance.

QALYs for burnout: (NICE, 2009)

A systematic review and economic analysis with QALYs for burnout was identified, within the NICE Public Health Guidance on Mental Wellbeing at Work (2009). The economic analysis considers absenteeism from work and presenteeism at work, as a result of stress, depression, and anxiety. Presenteeism is not a matter of 'shirking responsibilities' at work, rather it is about people 'hanging in there' and carrying on despite their symptoms. In the wider evidence base presenteeism is considered to have a bigger impact on productivity than absenteeism.

In the NICE 2009 economic analysis QALYs gained were generated based upon efficacy reported in three studies, Bergdahl et al (2005); Jones and Johnston (2000); Butterworth et al (2006) using depression free days as the clinical outcome. In two of the studies the interventions were 4-6, 2-hour group sessions. In the third study 3 x 30-minute individual coaching sessions were used.

The total QALY gain for a cohort of 1,000 workers subject to the three modelled interventions to reduce stress at work are presented as follows:

- 24.3 QALYs (0.0243 per worker) derived from estimates of depression-free days, which were themselves derived from one of two depression-scales: BDI and SCL-90
- 40.6 QALYs (0.0406 per) worker derived directly from the SF-12 Health Survey.

It should be noted that these values are at the lower end of QALY estimates generated for other public health interventions, such as those for workplace interventions to promote physical activity (QALYs 0.05 to 0.12) and environmental interventions to promote physical activity (QALY 0.125).

Absenteeism: efficacy of interventions and potential cost savings (NICE, 2009)

In a cohort of 1,000 workers the number of full day equivalents lost were calculated. To generate net benefit to employers of work site interventions that promote mental wellbeing in the workplace, a range of literature was used in conjunction with standard methods to value health-related changes in foregone productivity due to absenteeism and presenteeism. This included data on the number of days lost, on average, per worker per year due to stress, depression, or anxiety.

The evidence from the NICE systematic review on efficacy, suggests that work-site interventions can reduce the rate of absenteeism due to work-related stress, depression or anxiety by between 5% and 46% at follow-up.

Results of the cohort analysis reported sickness absence due to work-related stress, depression, or anxiety costs employers about £2,875 per affected employee per year. This amounts to about £42 per year for each person employed in the UK. The "public administration and defence" sector has the highest absence costs per employee (i.e. in excess of this average).

Presenteeism: efficacy of interventions and potential cost savings (NICE, 2009)

The economic report for the NICE guidance notes that on the job productivity losses among distressed workers ranged from 13% relative to non-distressed workers, to 36% in workers who reported depression, anxiety, and stress. The

interventions in the literature review conducted showed that productivity could increase from 2-3% and up to 22% compared to baseline.

The consistent evidence is that the cost of presenteeism (decreased work performance while at work) is higher than the cost of absenteeism. For each employee suffering from work-related stress, depression or anxiety, the employer costs of reduced on-the-job performance are between £2,345 and £9,375 per affected employee per year. This amounts to between £27 to £109 per year for each person employed in the UK. However, the "public administration and defence" sector has the highest presenteeism costs per employee [NICE Mental Wellbeing at Work, 2009].

The cost of labour turnover was not considered in the NICE guidance because there was no evidence relating to this.

Threshold analysis: how much could cost-effective staff training contribute to the cost of SECURE STAIRS?

Assuming a willingness to pay threshold of £30,000 for the Framework for Integrated Care (SECURE STAIRS) Table 22 suggests:

- between 26%- 47% of the cost of the Framework for Integrated Care (SECURE STAIRS) time given to training and supporting staff can be met by a gain in employee mental health via burnout
- this result assumes a quality of life gain (depression free days) of 0.0243 – 0.0406 for each affected employee who suffered from stress, anxiety, or depression. NOTE: these QALY values are at the lower end of QALY estimates generated for other public health interventions, such as those for workplace interventions to promote physical activity (QALYs 0.05 to 0.12) and environmental interventions to promote physical activity (QALY 0.125).
- This change in quality of life represent depression free days measured on BDI and SCL-90 (QALY value 0.0243) and the SF-12 Health Survey (QALY value 0.0406).
- The residual 57-74% of the intervention cost would need to be met by cost savings to the employer to make the intervention cost-effective.

Table 22 Threshold analysis: staff burnout

	Example 1: lowest range QALY in NICE analysis	Example 2: highest range QALY in NICE analysis
Willingness to pay (WTP) for 1 QALY	£30,000	£30,000
QALY: Mental wellbeing at work NICE 2009, economic report	0.0243	0.0406
Sub-total (QALY x WTP)	729	1,218
Probability of burnout staff survey (SCH and YOI phase 3)	42.27%	42.27%
Cost-effective intervention threshold per staff member [sub-total x probability of burnout from staff survey]	£308	£515
Estimated cost of the Framework for Integrated Care (SECURE STAIRS) time given by a clinical lead to train and support operational staff [Table 12]	£1,200	£1,200
Residual cost to fund from employer cost savings?	£892	£685
% of intervention remaining to fund from cost saving	74%	57%

Potential cost savings to the employer

The tables below estimate the potential impact of the Framework for Integrated Care (SECURE STAIRS) on absenteeism, presenteeism and staff turnover. All estimates are based on a theoretical staffing of 200 and 500 staff in a site receiving support and training from the Framework for Integrated Care SECURE STAIRS team. The cost of operational staff band 3 is used in all calculations.

As in the NICE guidance (Mental Wellbeing at Work, 2009) the human capital method is used in tables 12 and 13, where the cost of the employer is the same as the cost of employing the absent worker.

In the table on absenteeism below, the rate of absenteeism is based on the Health and Safety Executive statistics for work related stress, anxiety, or depression (2019). It also calculates (a) that “in 2018/19 stress, depression or anxiety accounted for 44% of all work-related ill health cases and 54% of all working days lost due to ill health”. Sites could update this average with data from their own records on staff reported reason for sick leave.

The rates of efficacy for interventions reported in the NICE systematic review are used below as proxies for the Framework for Integrated Care (SECURE STAIRS).

Table 23 Potential cost savings to the secure estate employer as a result of reduced absenteeism

Item	Evidence based assumption or calculation	Theoretical site by staff size		Ref/method
Number of workers per site		200	500	
Hours of absence from stress, depression or anxiety				
Rates of work-related stress, depression or anxiety public admin and defence: number of employees affected	2.50%	5	12.5	Work-related stress, anxiety, or depression statistics in Great Britain, 2019, HSE Oct 2019
Days lost per case per annum	21.2	21.2	21.2	Ditto
Days lost for all staff cases per site	(rate x days lost)	106	265	
Hours lost for all staff cases per site	(days lost/7.4 hours in a day)	784.4	1,961.00	
Estimate of hourly pay				
'Prison officer' band 3 (39 hour week Additional Committed Hours & 17% unsocial)	£26,812.00			Prison Service Pay Review: Crown July 2020
Assumed on-costs (at 35% of pay)	£9,384.20			Assumed, not evidence based
<i>Total estimated cost of employment per worker</i>	<i>£36,196.20</i>			
Hourly rate of pay	£17.85			
Estimate of cost to employer				
Total cost to employer	hourly rate x hours lost	£14,000.15 £70.00	£35,000.37 £70.00	Human capital method: cost to an employer = cost of employing the absent workers per hour
Cost per annum to employer of absenteeism from stress, depression, and anxiety per sufferer	total cost divided by no. employees affected	£2,800.03	£2,800.03	
Potential impact of mature Framework for Integrated Care (SECURE STAIRS)?				
Improvement in absenteeism, hours saved	5% change in hours lost	39.22	98.05	NICE: Mental Wellbeing at Work, 2009 (% efficacy from systematic review)
Improvement in absenteeism, hours saved	46% change in hours lost	360.82	902.06	
Minimum cost saving of absentee hours avoided	If 5% change	£700.01 £3.50 £140.00	£1,750.02 £3.50 £140.00	per employee on site per employee affected
Maximum cost saving of absentee hours avoided	If 46% change	£6,440.07 £32.20 £1,288.01	£16,100.17 £32.20 £1,288.01	per employee on site per employee affected

Key: table 23: **Green highlights** = cells that could be populated from data from a unit

Blue highlights = could be renewed with other assumptions

Table 24 Potential cost savings to the secure estate employer as a result of reduced presenteeism

Item	Evidence based assumption/calculation	Theoretical staff size in a site		Reference
Number of workers per site		200	500	
Hours of absence from stress, depression of anxiety				
Number of cases of work burnout	42.27%	84.54	211.35	Phase 3 SCH, YOI
Hours worked per week	37			
Hourly rate of pay	£17.85			As in table above
Paid hours worked per year per employee (37 x 52) less 38 days leave (281.2 hours)	1643			
Total hours worked by all staff reporting burnout	(Paid hours worked pa x cases)	138,899.22	347,248.05	
Impact on productivity				
Paid hours lost while at work due to work-related stress, depression, or anxiety,	13%	18,056.90	45,142.25	NICE: Mental Wellbeing at Work, 2009 (% impact on productivity, data from systematic review)
Paid hours lost while at work due to work-related stress, depression, or anxiety	36%	50,003.72	125,009.30	
Estimate of cost to employer of lost productivity				
Minimum cost	Paid hours lost at 13% impact x hourly rate for all employees on site	£322,283.59	£805,708.97	Min cost pa
		£1,611.42	£1,611.42	Per employee on site
Cost per annum to employer of presenteeism from stress, depression, and anxiety per sufferer	Total cost divided by no. employees affected	£3,812.20	£3,812.20	Per employee affected
Maximum cost	Paid hours lost at 36% impact x hourly rate all employees on site	£892,477.62	£2,231,194.06	Max cost pa
		£4,462.39	£4,462.39	Per employee on site
Cost per annum to employer of presenteeism from stress, depression, and anxiety per sufferer	Total cost divided by no. employees affected	£10,556.87	£10,556.87	Per employee affected

Item	Evidence based assumption/calculation	Theoretical staff size in a site		Reference
Potential impact of SECURE STAIRS				
Improvement in min productivity (13%) hours saved	2.40%	433.37	1,083.41	NICE: Mental Wellbeing at Work, 2009 (% improvement in efficacy used in economic analysis)
Improvement in max productivity (36%) hours saved		1,200.09	3,000.22	
Improvement in min productivity (13%) hours saved	22%	3972.52	9,931.29	
Improvement in max productivity (36%) hours saved		11,000.82	27,502.05	
Cost saving at lower efficacy rate of intervention				
Minimum cost saving of absentee hours avoided on site	2.40%	£7,734.81	£19,337.02	NICE: Mental Wellbeing at Work, 2009 (% improvement in efficacy from systematic review)
Per employee		£38.67	£38.67	
Maximum cost saving of absentee hours avoided		£21,419.46	£53,548.66	
Per employee		£107.10	£107.10	
Cost saving at higher rate of efficacy of intervention				
Minimum cost saving of absentee hours avoided	22%	£70,902.39	£177,255.97	NICE: Mental Wellbeing at Work, 2009 (% improvement in efficacy from systematic review)
Per employee on site		£354.51	£354.51	
Maximum cost saving of absentee hours avoided		£196,345.08	£490,862.69	
Per employee onsite		£981.73	£981.73	

Key: table 24 above

pink highlight = 13% impact on productivity

purple highlight = 36% impact on productivity

The cost of presenteeism is estimated to be higher than the cost of absenteeism and this is consistent in the published evidence.

The costs of staff turnover can be categorised into: costs of exit of the employee; cover costs; costs of recruiting; knowledge transfer and training.

Two approaches were used to estimate these costs.

- The cost of cover was estimated using the human capital method, as above (see Appendix Q)
- The cost of productivity losses and recruitment costs which are estimated in the table below

ACAS report [<https://www.acas.org.uk/index.aspx?articleid=4857>] the average cost in the UK of replacing a staff member who leaves is £30,000. About £5,000 of this is attributed to logistical costs of recruitment, the remaining £25,000 represent the productivity loss of an average of 28 weeks that it takes new workers to reach optimum productivity. These figures are used in the table below.

There is no data in the NICE guidance on either the prevalence of resignations, or efficacy of interventions to reduce staff turnover, as a result of improved levels of stress, depression, and anxiety. We have assumed a range of turnover and efficacy rates. Therefore, these result are the most tentative estimates in this section.

Table 25 Potential cost savings to the secure estate employer as a result of reduced recruitment and productivity loss

Item	Evidence based assumption/ calculation	Theoretical staff size in a site		Reference
Staff turnover				
Number of workers per site		200	500	
a) Turnover rate all staff groups	10%	20	50	Prison Service Pay Review 2019
b) Turnover rate pa	40%	80	200	https://www.justiceinspectors.gov.uk/hmiprisons/wp-content/uploads/sites/4/2019/06/HMYOI-Werrington-Web-2019.pdf
Estimated cost to employer				
IF assume half of turnover is due to stress, depression or anxiety for lower turnover rate (10%)	(half of leavers per site)	10	25	-
IF assume half of turnover is due to stress, depression or anxiety for higher turnover rate (40%)	(half of leavers rate per site)	40	100	-
Lost productivity: 1 new recruit to get 'up to speed'	£25,000.00			https://www.acas.org.uk/index.aspx?articleid=4857
Cost of recruiting 1 person	£5,000.00			ditto
Cost of 10% recruitment	productivity loss	£250,000.00	£625,000.00	
	recruitment cost	£50,000.00	£125,000.00	
Total 10% recruitment		£300,000.00	£750,000.00	(£1,500 per employee on site)
Cost of 40% recruitment	productivity loss	£1,000,000.00	£2,500,000.00	
	recruitment cost	£200,000.00	£500,000.00	
Total 40% recruitment		£1,200,000.00	£3,000,000.00	(£6,000 per employee on site)
Potential impact of the Framework for Integrated Care (SECURE STAIRS): Cost saving to employer				
Improved retention 10%	10% improvement	£30,000.00	£75,000.00	(£150.00 per employee on site)
Improved retention 40%%		£120,000.00	£300,000.00	(£600 per employee on site)
Improved retention 10%	25% improvement	£75,000.00	£187,500.00	(£375 per employee on site)
Improved retention 40%%		£300,000.00	£750,000.00	(£1,500 per employee on site)
Improved retention 10%	50% improvement	£150,000.00	£375,000.00	(£750 per employee on site)
Improved retention 40%%		£600,000.00	£1,500,000.00	(£3,000 per employee on site)

Notes to table 14:

Gold highlight = 10% turnover rate

Blue highlight = 40% turnover rate

Discussion

- These results are illustrative because, beyond the results of the staff survey, absenteeism, presenteeism and turnover are not informed by the study results. However, we note that the staff survey in our study showed 42.27% of staff reported work burnout and a comparator (Kristensen et al., 2005) of 32.60 % in a similar staff group i.e. there appears to an opportunity for 25% reduction in burnout in the the Framework for Integrated Care (SECURE STAIRS) staff population.

The impact on turnover is the most uncertain. The Prison Service Pay Review 2019, gives the following reasons for high turnover rate:

- loss of staff who work long hours in excess of 37 hours pw
- low morale
- increase in serious assaults and violence
- labour market (i.e. low rates of pay in the secure estate and better opportunities elsewhere)

Table 26 Summary of potential benefit to staff and cost savings to the employer

	Site 200 staff	Site 500 staff	Cost per employee on site			Ref in economics report
Burn out - improving staff wellbeing						
Cost time given to operational staff on a unit	£240,000.00	£600,000.00	£1,200.00			Table 12
Less cost of QALY loss avoided (burnout)	£82,3000	£205,750.00	£411.50			Table 22: mid point (308 + 515) divided by 2
Sub-total - remaining cost	£157,700.00	£394,250.00	£788.50			
Potential to reduce employer costs			Saving per employee on site			
			Min est	Mid est	Max est	
Absenteeism			£3.50			Table 23
				£17.90		Table 23 (min + max) /2
					£32.30	Table 23
Presenteeism			£38.67			Table 24
				£510.20		Table 24 (min + max)/2
					£981.73	Table 24
Turn over			£150.00			Table 25
				£1,575.00		Table 25 (min + max)/2
					£3,000.00	Table 25
Subtotal saving estimates			£192.67	£2,103.10	£4,014.03	
Subtotal, cost savings to employer at mid-point estimates	£420,620.00	£1,051,550				
Total cost saving (mid-point estimates)	-£262,920.00	-£657,300.00		-£1,314.60		Sub-total for burn out residual cost less* sub-total for mid-point cost savings

Potential cost saving as a result of the impact of the Framework for Integrated Care (SECURE STAIRS)

The cost of the Framework for Integrated Care (SECURE STAIRS) per child or young person across the secure estate varies considerably, and recently estimated at over £6,000 per child reached (source Financial comparison of work streams, November 2019).

Cost savings to the employer may pay for a considerable proportion of The Framework for Integrated Care (SECURE STAIRS), see Table 26 above. At the mid-point estimate of potential cost savings to the employer, around £2,100 per employee could be spent before the Framework's costs exceeded potential savings. We estimate that around £790 of the potential savings estimate is already been used to support staff. Therefore another £1,310 (£2,100- £790) per employee might be spent and might be considered a good investment.

5.4 Wider implications to Society

Results from the systematic review

The opportunity and potential for significant long-term cost savings also need to be taken into account. From the systemic review it could be argued that avoiding criminal activity is the significant driver in public cost savings. However, 7/9 studies reviewed for cost impact reported that use of interventions for children and young people resulted in additional cost compared to no interventions. Two studies (NICE Transition to Adult Services guideline, 2016; Fonagy et al, 2018) took a societal perspective for measuring cost savings, and both found that use of an intervention resulted in marginal cost savings compared to no intervention. The cost savings were mainly made through reduction in crime-related cost, followed by reduction in treatment cost of mental health disorders.

In the UK, the cost of crime reported in the studies ranged from £550 (cybercrime) to £3,217,740 per case (homicide). The annual cost of treating mental health disorders in a UK study (reported in Euros) ranged from €11,687 (anxiety disorders) to €19,238 per patient (mood disorders).

The data in our systematic review also suggest that the evidence points to being in employment as the main factor linked to avoiding crime. No link between crime reduction/avoidance and education was found.

5.5 Discussion and consideration of findings,

Panel consideration: Benefits to staff and to the employer

The panel noted the potential for significant cost savings to the employer. The panel felt that staffing levels and consistency of staff were key to successful implementation. They also considered that The Framework for Integrated Care (SECURE STAIRS) has the potential to address low morale, and to reduce high risk violent behaviour in children and young people.

What remains unknown is the impact of implementing the Framework for Integrated Care (SECURE STAIRS) on absenteeism, presenteesim and turnover. The impact on turnover may be the most uncertain factor of those we have estimated because we do not have published evidence for the impact of interventions that address staff

mental health and wellbeing. We note the Prison Service Pay Review (including adults) 2019, gives the following reasons for the high turnover rate:

- loss of staff who work long hours in excess of 37 hours pw;
- low morale;
- increase in serious assaults and violence;
- labour market (i.e. low rates of pay in the secure estate and better opportunities elsewhere)

The Framework for Integrated Care (SECURE STAIRS) is not expected to influence the factor of the labour market and this limitation will need to be taken into consideration.

The panel noted The Framework for Integrated Care (SECURE STAIRS) may not be cost-effective in terms of benefit to staff and employer cost savings alone. However, per worker the mid-point estimate of cost savings would suggest that the intervention for staff alone realise significant cost savings to the employer. In addition, the benefit to staff is an interim outcome and takes no account of the subsequent benefit to children and young people of culture change.

Consideration by the panel: Peer Power Focus Group

The panel spent significant time considering the experience and views of children and young people with lived experience concerning the Framework for Integrated Care (SECURE STAIRS).

At the Peer Power focus group children and young people said that the most important thing was a trusting relationship. When they arrived a secure setting they felt all hope was gone. The help received [from staff before implementation] was insufficient, there was no meaningful engagement and children and young people wanted someone to talk to. They also believed consistency was important.

Children and young people said they would want the framework to:

- Enable the feeling that “it was going to be okay”, being in a secure institution was not the end of the world – the child or young person would be able to get through it and move on.
- Enable them to leave a setting and not feel “like you’re going to re-offend”.
- Help understanding of their own past to inform their future – realizing not everything was their fault. E.g. they wanted to understand the role of trauma and how it can affect your life and how you respond to people.
- Prepare them for finding a job, finding a home etc. when they left a secure institution.

Children and young people had looked at the Framework for Integrated Care (SECURE STAIRS). Their feedback is summarized below:

- The children and young people thought the Framework for Integrated Care (SECURE STAIRS) model could have made a big difference to them.
- They were amazed to see that children and young people could be involved in their own formulations and felt this would allow trust to develop.
- They emphasised that there is not a “quick fix”, not one conversation, but a journey that would take time.
- They liked the “My Story” concept and saw it as a chance for their voice to be heard and a way of allowing power to be more equal “because power is a big thing” in secure institutions.

- Finding out that staff were trained to share their “stuff” as part of the Framework for Integrated Care (SECURE STAIRS) implementation and training was seen as very good.
- Knowing things are not always your fault is important and takes away the fear of stigma.

Overall, the children and young people at the Peer Power focus group expressed optimism and hope about the impact of implementation of the Framework for Integrated Care (SECURE STAIRS) on children and young people. The panel emphasised that these perspectives should be highly valued and taken into account by decision makers.

Consideration by the panel: Summary ‘If ...then ...’ statements

The ‘If...then...’ statements theorised at the beginning of the evaluation were revised by the panel at the interim stage. Illustrative quotes from the qualitative data were added from SCHs as set out in the table below

Table 27 'If...then...' statements, how change may be initiated with staff and impact on children and young people

*(SCH sites not differentiated by type or level of implementation)

Stages of change	Evidence from interviews with staff and children and young people*
<p>If sites are committed to the Framework for Integrated Care (SECURE STAIRS) at the highest level of leadership <i>and</i> a senior clinical lead/team is recruited to start to enable implementation and,</p> <ul style="list-style-type: none"> • there are sufficient and stable staffing levels • staff are consistently detailed to a particular unit/landing • leadership support staff (with prioritized and protected time) to attend meetings including formulation meetings and supervisions • health care staff adopt a stance of shared expertise and respect with secure estate staff 	<p><i>"they tried to make it a more settled group on the landing which has helped"</i> (Staff phase 2)</p> <p><i>"embedding with units so that certain staff are always, there's continuity, is that the word? Because I've got a floor now where I know that came from SECURE STAIRS, didn't it, that we were all allocated like units."</i> (Staff phase 2)</p> <p><i>"I feel like the [residential staff] are coming more as well, which is good. Which is what we want them to be at the meetings. They always come, don't they? It's got better, we never used to be able to have staff released."</i> (Staff phase 2)</p>
<p>and the Framework for Integrated Care (SECURE STAIRS) team engage in:</p> <ul style="list-style-type: none"> • Co-delivery of Framework for Integrated Care (SECURE STAIRS) with secure estate/care staff • Joint formation meetings with staff and children or young people • Reflective practice with staff • Clinical/psychological support for staff – staff able to talk honestly and "off-load" in a safe space • 'being available' on the unit for a few hours each week to give staff a type of 'secure attachment' 	<p><i>"I never worked well with psychologists in the [setting], where now it's different, we're all working together, which is quite nice, you do learn a lot of new skills."</i> (Staff phase 2)</p>
<p>Then, better relationships will develop between health care and secure estate staff</p> <ul style="list-style-type: none"> • health care and secure estate staff will develop a shared respect and trust and a common language to understand and discuss children and young people's behaviours 	<p><i>"That training that we've done together, I think some of the reason that we're quite a unified team now is because of those days away from the center where we've focused on learning about each other's roles and moving forward with that...And actually, this is the time we need for you, and to build the team. I think actually that's really important."</i> (Staff phase 2)</p> <p><i>"Sometimes it feels like they're much more productive as in we come up with really clear ideas about what the kids need and how the staff can meet those needs. And how we as a mental health team can contribute to meeting those needs. And other</i></p>

Stages of change	Evidence from interviews with staff and children and young people*
<ul style="list-style-type: none"> they will create an environment (culture) where both can learn and develop better understanding of the children and young people in their care where both the secure estate staff and health team will begin to be integrated and support each other 	<p><i>times it is just a case of trying to map things out and make sense of things and help staff understand the behaviours.</i>" (Staff phase 2)</p> <p><i>"I have a much better understanding of young people's background and the impact of the background on behaviours."</i> (Staff phase 2)</p>
<p>Then staff are more likely to engage in training and supervision where they are given the opportunity to:</p> <ul style="list-style-type: none"> step back and reflect on their own behaviour and how it is impacted upon by "the system" i.e. staff learn to understand their own behaviour in response to challenging/high risk behaviours of children and young people share difficult experiences they may have previously felt unable to share hear that the decisions they made in difficult circumstances were okay, they have done their best. feel validated feel more value and supported develop better knowledge/theory to understand and respond appropriately to difficult/high risk/disgust behaviours. 	<p><i>"I have a very good therapeutic relationship with the staff, which I like as well. They will come to you because I do, we can do supervision with the staff on the unit. A lot have got issues outside of [site name], in their own personal life, and they will come and have a chat with you. And I think it's just somebody they can speak to, as well."</i> (Staff phase 2)</p> <p><i>"I know that staff have really appreciated some of the supervisions that the psychology team have been offering for them."</i> (Staff phase 2)</p> <p><i>"we've got reflective practice as kind of a regular feature within the work we do, people can explore that [organisational trauma] before it has difficulties and impacts upon the young people or upon themselves as adults"</i> (Staff phase 2)</p>
<p>Then, staff more likely to:</p> <ul style="list-style-type: none"> see the value of, and engage in, joint formulation engage with children and young people as people (not 'just' criminals) hear the children and young people's stories and understand the mechanisms behind the behaviours think before they act, move away from a "reactive culture" feel less threatened by children and young people's behaviour behave towards children and young people based more upon an understanding of the child or young person's point of view and their needs 	<p><i>"Things like 'my story' document being introduced as well, that gives the young person a voice into their formulation, into their goals as well. That maybe didn't happen so much prior to a year ago or so. So, definitely seeing improvement there."</i> (staff phase 2)</p> <p><i>'Getting the boys and the staff more together and on the same page just makes everyone happier'</i> (Staff Phase 2)</p> <p><i>'Formulations have made targets more specific to that young person, whereas before they were all generic like 'I want you to go to 25 hours of education' (Staff Phase 2).</i></p>

Stages of change	Evidence from interviews with staff and children and young people*
<ul style="list-style-type: none"> • Staff start to put trauma-informed care into practice in day-to-day care • build better and more human/caring relationships with children and young people 	
<p>Then, as this learning impacts upon increasing numbers of staff in the unit:</p> <ul style="list-style-type: none"> • this leads to culture change • children and young people experience a more consistent, contained and less chaotic system 	<p><i>"I think relationships are warmer, I think staff being able to spend more time with young people getting to know them better inevitably results in them liking them more. (Staff phase 2)</i></p>
<p>Then, children and young people will routinely attend and engage in joint formulation meetings and have the opportunity to tell "My Story" and spend time with staff in face-to-face communication. They are more likely to feel heard and listened to as people (mentalized) and are more likely to:</p> <ul style="list-style-type: none"> • break down barriers of mistrust (epistemic hypervigilance) with staff • develop a more human relationship with staff experience staff as having their best intentions at heart 	<p><i>'The only good thing for me is that for the first time ever here, the children and young people are coming to their [formulation] meetings which I've insisted on [...] you get quite a lot of mileage out of those meetings' (Staff Phase 2).</i></p> <p><i>'they'll understand where I'm coming from', 'like when I'm talking to them, they understand you init and they listen and stuff.'</i> (young person)</p> <p><i>'me and my girlfriend had a row, and I was like [staff], dude I need a chat, come sit down and chat to me'</i> (young person)</p> <p><i>'we all got to sit down in a group, write down what my story is... and what's happened in my life and...all the staff members got to read that bit of paper...and it tell them a bit more about me...so, I'm not just some criminal, I'm actually a person to them now'</i> (young person)</p> <p><i>- 'I told them all about my life...they all seem to have...took it on board, instead of just letting it fly over their heads'</i> (young person)</p> <p><i>"Do they keep the best interests of the young person at the heart of all of their decision making? Absolutely"</i> (Staff phase 2)</p>
<p>Then, children and young people will be more likely to:</p> <ul style="list-style-type: none"> • be open to learning from staff – be helped to make more adaptive decisions (particularly at times where they experience high threat/ high vulnerability) • engage in less high risk/disgust behaviours 	<p><i>'If I'm making a bad decision, there's been times when I've nearly had fights and stuff. And example, [Staff] has pulled me to the side and said 'you're going to lose this' or 'you're going to lose ROTL if you do this'... And I'll be like 'ah sh... wait a minute I shouldn't have done that then, should I?' and I've thought about it then and they like, they let you know when you can lose and they let you know what could happen.'</i> (young person)</p> <p><i>'If I'm kicking off and someone comes up to me saying, like in a polite way, not shouting and screaming, but in a polite way and just goes 'yo, you might lose this, and this might happen' then I'll sort of calm down a little bit.'</i> (young person)</p>
<p>Then, staff feel:</p>	<p><i>"I think people see the child first, and probably see them as a victim as in why they're here, quite often. And working in that place where everybody wants to make</i></p>

Stages of change	Evidence from interviews with staff and children and young people*
<ul style="list-style-type: none"> • a sense of agency and usefulness in their behaviour and see a positive impact on children and young people's behaviour • more in control in their job • more able to tolerate difficult/high risk/disgust behaviours <p>And are less likely to:</p> <ul style="list-style-type: none"> • Experience workplace stress/burnout • Present with sickness, presenteeism, absenteeism • Leave the service <p>And which in turn creates:</p> <ul style="list-style-type: none"> • better consistent relationships between children and young people and staff • a culture where the positive effects of the Framework for Integrated Care (SECURE STAIRS) are amplified further 	<p><i>"things better and they believe that it can, is actually a really nice place to work"</i> (Staff phase 2)</p> <p><i>"But there's such a level of trust now amongst that team, that if that's [different strategies for supporting young people with self-harm behaviours] what's suggested and people understand fully why that's been advocated and what they need to do, people have much more confidence around that."</i> (Staff phase 2)</p> <p><i>"working in that place where everybody wants to make things better and they believe that it can, is actually a really nice place to work because it's really uplifting and positive to be in that team that all feel the same way."</i> (Staff phase 2)</p> <p><i>"people have felt I suppose more valued, more included, because there was a time when I would say the residential workers felt that they were doing the practical looking after but they didn't have a say in the actual overarching care plans of the young people, that they didn't really... they didn't contribute to kind of multiagency meetings in the way that people do now"</i> (Staff phase 2)</p>
<p>Then, Children and young people are more likely to take this new learning and trust into life post release and are more likely to:</p> <ul style="list-style-type: none"> • Sustain changes • Transition into meaningful employment • Not reoffend 	<p><i>'we are trying [...] to look at the sustainability of changes made here and how we can work with the community to help them maintain some of those and carry those goals through so it feels meaningful'</i> (Staff Phase 2).</p> <p><i>'we're looking at, in terms of transitions [...] supporting children and young people to make sure they are moving into employment or training'</i> (Staff Phase 2).</p> <p><i>"I've never seen that since I've been here, that a kid comes in and makes lots of progress and goes out really different....And you feel quite hopeful for them. They don't all deteriorate."</i> (Staff phase 2)</p> <p><i>"She had a much better understanding of drugs and what they were cut with and all that stuff. And she did say, "I will be much more careful." She didn't say, "I'm going to stop taking substances." But you know, she was actually like... so I think that was one area where I was like, "Okay, those education workbooks aren't entirely useless."</i> (Staff phase 2)</p>

5.6 Enabling deep and lived cultural change: The experiences of two SCHs

Like all data, the quantitative data gathered in this evaluation is best understood in context. Change never exists in a vacuum, it is rare that a change process starts only with the introduction of a new initiative such as The Framework for Integrated Care (SECURE STAIRS). The process of change has often begun before an initiative is announced. Throughout the process of this evaluation, it was clear that for some organisations, especially the SCHs, appeared to be in a process of change that pre-dated the formal implementation of The Framework for Integrated Care (SECURE STAIRS). We felt it important to capture and record the narrative of change that exists to give a deeper context to the qualitative and quantitative data gathered in the evaluation, and suggest that bigger changes may have taken place across the secure estate. The experiences of two SCHs were analysed using in depth qualitative interview data.

SCH Context: restorative approach

Both SCHs reported significant and lived cultural change (**Mechanism**) that was enabling a therapeutic approach towards children and young people (**Mechanism**). Both sites recognised the restorative approach (**Context**) that acted as an important precursor for change. Both sites had been able to advance and deepen change significantly as a result of new resources from The Framework for Integrated care (SECURE STAIRS) that continues to move culture away from what they called “a punitive approach” enabled by a welcoming leadership approach (**Mechanism**), willingness to work with health, and a significant change of practice towards a trauma informed, formulation driven, therapeutic approach. Both sites reported that as a result of cultural change a significant reduction in restraints (**Interim Outcome**) was achieved over a period of two years.

Sustaining significantly reduced restraints, might hallmark the first early and major change interim outcome, as a result of successful implementation, in any site across the secure estate. Encouragingly it was echoed in some YOI units, at the Professional Collaboration Network meetings, the end of phase 3.

If...then... statements 2 SCH sites: achieving a low level of restraints

If a site has leadership capability that leads by example, is committed (**Mechanisms**) to and models a restorative approach alongside, or even before, a therapeutic approach was introduced (**Context**).

“We did a lot of role modelling ... with incident management and leading by example”

Restorative approach 2010: “The boss was a big fan and that’s where it started”

Then Staff hear a consistent and coherent message from leadership about the purpose, direction and mechanisms for change (**Mechanisms**).

“Willingness to accept it from the management team you know - we are going to work out how to work together rather than be confrontational”

Then some staff (e.g. 50%) will move to a restorative/therapeutic approach (**Mechanisms**), there will be resistance.

"Lots of staff resistance. It was an awful time and an awful experience but we really persisted with that restorative approach"

"A simple example was we had a restraint that really didn't need to happen - I'm going back 2 years from now - in that a staff member twisted and broke his ankle in 5 places. How long do you think it took him to get over that and come back to work?"

"And if you are doing that every day it has a cumulative effect on you, and you go off sick. Whereas if you are not doing it every day, the atmosphere is different and you feel better to come into work and then you are not going to be off sick are you."

And then the experience of staff changes and is driven by an underlying understanding of the young person (**Mechanisms**).

"2 years ago, I remember having a conversation through a door with a girl, with nothing in the room. So, there has been a shift as I've not seen this more recently."

Then restraints can be dramatically reduced in 2-year time frame (**Interim Outcome**).

"We do not have a high level of restraints [now, since STAIRS] and that has come down."

Over 1,000 restraints pa in a 12-bed home reduce to 150 pa in two years 2010-12.

"Our restraints are down something like 70% or so now"

"Took 2 years to achieve this change."

SCH Primary mechanism: Persistence and capability of leadership

While the depth of cultural change was significant in both SCH sites, one site stood apart as having extremely deep and lived, cultural change that was pervasive, embedded and sustained (**Interim outcome**) through more complex layers of further organisational and cultural change. The sites described how they were already on a trajectory of change, and how The Framework for Integrated Care (SECURE STAIRS), gave them a set of values, objectives and resources that helped them coalesce around the changes that were already in progress. The Framework for Integrated Care (SECURE STAIRS), effectively legitimised the direction of travel and it was this legitimatisation, alongside an enhanced team (**Mechanism**), facilitated the pace of change.

This has been achieved by exceptional leadership capability that relentlessly retains and prioritises a focus on the needs of the child/young person (**Mechanism**), working to transform organisational and professional boundaries (**Mechanism**), and thereby transformation in behaviours of the children and young people in their care (**Outcome**).

This leadership is hallmarked by both persistence and capability and the primary factor in enabling successful cultural change. The capacity of this leadership encompasses an analytical approach to challenges and problem solving, an unacceptance of 'silos' in all its forms, and ability to continually reactivate and recover a lived therapeutic culture that is 'alive', open to testing ideas and continuously enabling learning at all levels of the organisation. The leadership in

this SCH understood that to sustain culture (**Interim Outcome**) ways of working need to continue to move, renew and grow. For example, having deeply embed a therapeutic approach to the child/young person they are now implementing the 'PACE' approach 'for each other' as staff, 'hold' emotion for other colleagues on the unit. ('PACE' seeks to build up a connection and a safe place for open communication to develop). The exceptional depth of lived cultural change took ten years, accelerated at pace through The Framework for Integrated Care (SECURE STAIRS). Sustained, deeply lived, pervasive and 'alive' cultural change, may be the hallmark of mature implementation over time.

If...then... statements 1 SCH site: Sustained, deeply lived, pervasive and 'alive' cultural change

If there is a commitment to change and a set of values that resourced leadership can coalesce around, giving legitimacy to the change

(Context + Mechanism)

If leadership persists in its commitment to a therapeutic approach **(Mechanism)**

And Proactively takes steps to get all the remaining staff on board

e.g. valuing contribution of all staff

e.g. staff who do not agree with the changes leave **(Mechanisms)**

Then leadership can enable culture change, through an analytical approach to working through 'barriers'

e.g. integration of teams that work together **(Mechanism)**

Then all staff work together to support the child (rather than undermining each other) **(Mechanism)**

And If leadership capability persists in its commitment proactively creates alignment in the senior team

"Before STAIRS I started to think about children much more therapeutically - what is the common denominator for all of these children? All the children have had some sort of trauma and it's usually abuse ... At that point I realised that trauma was what we needed to think about as a Home".

"Funding for extra psychologist and CAHMS and other health roles trajected change far quicker than I had ever anticipated (we had been on a slow burn) and we now take an extremely therapeutic approach"

"50% of staff into it and the rest said it was a copout for the kids and it wasn't really dealing with behaviour, and that is the issue!"

"A key issue is valuing staff and support them more effective because they get the short end of it often. ... Care staff ... are here all weekend end ... health not even there and that was understandably a problem (to solve)."

"Looking back, it took a lot - in that first 4 years we lost 18 staff who just didn't believe in working with kids differently and thought it was a load of rubbish and they needed to leave"

"Took 3 years to address integrated rotas, staffing, and teams across health, education and care"

"...start to pull us together and integrate us in a way we had not been before"

"We had a lovely example recently we had a new member of staff in the education team and she came to a formulation meeting. She sent an email thanking the CAMHS worker because what she had taken from it had helped and she immediately had a better outcome with the young person. ... that's what we are looking for. Increased empathy and attunement and that helps with the therapeutic parenting."

"Some people were not in the right post e.g. head of education was not the right person, ditto health and I had to make some key decisions about those leadership posts which I did over 12 months."

"What sustains us? The Manager has ...been open minded to therapeutic and trauma informed approaches and he does not

Then, change can be sustained and permeate all levels (**Mechanism**)

Then deeper cultural change (slowly) happens and a more focused shared vision can emerge with all staff (**Mechanism**)

Then integration of teams can deepen (**Mechanism**)

And If Leadership has the capability to continually reactivate and recover a lived therapeutic culture that is 'alive', open to testing ideas and continuously enabling learning at all levels of the organisation.

e.g. all staff implement the PACE model

e.g. resourced staff supervision and therapeutic support

Then staff can recover (**Interim Outcome**)

Then cultural change can be sustained, renew and grow (**Interim outcome**)

e.g. next step 'PACE' for staff group

e.g. new recruitment process

have that normal general defensiveness against health. He has invited me [health] in and that is incredibly helpful. We have a great relationship and that has enabled change at all levels, right thorough the home. It took a long time Our offices are next door to each other! A few steps way and I'm in the Home. I'm physically present I think makes a difference. It's a fantastic place to work, lovely to see the progress. I really enjoy working here".

"Social care approach is based on interventions that have been used for a very long time and related to behaviour.

"Psychological model will focus on the causes of the behaviour and the story of that child and then what interventions to do we have to put in place to resolve some of the causes of the behaviour."

"That focus [child trauma] has been our strength."

"It's taken 7 years to change the culture in a 10 bedded home".

"Years ago, hands on a child would have happened if a child swore at a member of staff. But now, the PACE and de-escalation stuff staff do is so good- they spend hours with them. They are accepting curiosity and accepting of emotion (not behaviour) and reasons why - staff do it extremely well."

"Just in terms of transparency of conversation. I never thought I'd be in a room where staff say 'this kid is really affecting me' because 10 years ago that would not have happened and been seen as a sign of weakness but I see it as a sign of strength."

"We have staff wellbeing meetings here every week where we get to talk about how the kids are impacting us individually and as a group and they have been really successful"

"We are always talking about compassion with each other especially when you get things like splitting the staff group. Used to be a huge problem but now it isn't"

"...next step is to do PACE for each other, staff, which is more of a challenge. Patience thresholds for children is one thing but with other staff is another issue."

"And that (trauma) ethos and narrative is now in recruitment"

"All our questions are psychologically driven because lots of staff are attracted to care with their own issues, unresolved issues and the home was triggering them, and we wanted to explore that a lot more in our interview process.

6. Conclusion

The cost analysis for staff shows potential for the Framework for Integrated Care (SECURE STAIRS) to make significant cost savings to the employer as a result of culture change. Based on the experience and discussion in the panel and professional network meetings there is a strong argument to support implementation of the Framework for Integrated Care (SECURE STAIRS). Implementation may not only realise a saving worth a significant proportion of the cost of the framework, but will bring improved capability in the system (wellbeing to staff).

This is further supported by the qualitative interviews with SCH staff who report significant reduction in incidents and that a change in staff morale is possible within a two-year time frame in these small institutions. Sustaining significantly reduced restraints, might hallmark the first early and major change (interim outcome), as a result of successful implementation, in any site across the secure estate. Encouragingly it was echoed in some YOI units, at the Professional Collaboration Network meetings, the end of phase 3.

Deeply lived, mature, and sustained cultural change has also been demonstrated in the SCH analysis. This is a journey SCHs seem especially advantaged in because of the restorative approach that predates the Framework for Integrated Care (SECURE STAIRS). Change has been accelerated by the Framework for Integrated Care (SECURE STAIRS) and the primary mechanism identified to enable and sustain this change is resourced leadership. This leadership is characterised by its persistence, leading by example and finding ways to ensure all staff to 'come on board', its analytical approach, an intelligent management of 'active' culture that continues to strive for excellence, and a relentless focus on trauma informed approach to the child and staff.

The SCH sites described how they were already on a trajectory of change, and how the Framework for Integrated Care (SECURE STAIRS), gave them a set of values, objectives and resources that helped them coalesce around the changes that were already in progress. The Framework for Integrated Care (SECURE STAIRS), effectively legitimised the direction of travel and it was this legitimisation, alongside an enhanced team that facilitated the pace of change. Sustained, deeply lived, pervasive and 'alive' cultural change, may be the hallmark of mature implementation over a longer time frame.

At this stage of implementation there is insufficient evidence to show that improvements in wellbeing to children and young people *alone* would enable the Framework of Integrated Care (SECURE STAIRS) to be considered cost-effective. Statistically significant change is evidenced for high risk behaviours in SCHs and further demonstrated and explained in the qualitative analysis. However, there is an absence of quantitative data for YOIs, which as larger organisations with more complex leadership and staffing structures appear to be more challenged. This appears to impact their ability to sustain cultural changes that have a lasting and positive impact on all the children and young people in their care.

To be conclusive long term follow up data is required to evidence the value of change in the life chances of children and young people. The need for a trusting relationship, consistency, and the hope about implementation expressed by young people was highly valued by the panel who felt this effect should be given significant weight. Not only is there cause for optimism that sustained

implementation will achieve deeply lived cultural change in the sector it is already demonstrated in the SCH analysis.

Abbreviations used:

ADHD Attention Deficit Hyperactivity Disorder

CAMHS Child and Adolescent Mental Health Services

CBT Cognitive Behavioural Therapy

CDRS-R Children's Depression Rating Scale – Revised

CT-PTSD Cognitive Therapy for Post-Traumatic Stress Disorder

DFD Depression Free Day

DW Disability Weight

HrQoL Health Related Quality of Life

ICER Incremental Cost-Effectiveness Ratio

MMD Major Depressive Disorder

MST Multi-Systemic Therapy

NICE National Institute for Care Excellence (UK)

PSA Probabilistic Sensitivity Analysis

QALY Quality Adjusted Life Year

QoL Quality of Life

RR Risk Ratio

WTP Willingness to Pay

YOI Young Offenders' Institution

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