



NHS Innovation Accelerator

Economic Impact Evaluation Case Study: CATCH – Common Approach to Children’s Health

Summary

The Common Approach to Children’s Health (CATCH) is a digital app service that provides clinically validated health and social care information for parents and carers of children aged 0-5 years. The app is licensed to Clinical Commissioning Groups (CCGs) for an annual fee plus initial set-up charge and can then be accessed by any resident. The app provides a range of information to parents and carers of children, in theory promoting better health behaviours such as uptake of vaccinations and avoiding the use of primary and secondary care services. Limited analysis has shown that in one CCG area, there was a reduction of 33% in unnecessary A&E attendances in 0-5 year olds since the introduction of CATCH. Applying those data to the activity data for Eastern Cheshire CCG, an estimate was made of a reduction in tariff payments of £66,500 per year. Based on a cost of £12,000 (including costs for initial set-up and engagement) for use of the app, the return on investment ratio is estimated at 4.54:1 for the CCG for 2017-18.

1. BACKGROUND

The Common Approach to Children’s Health (CATCH) is a digital app service that provides clinically validated health and social care information for parents and carers of children aged 0-5 years. The app delivers age-specific guidance and health reminders about different aspects of health, including common and seasonal conditions, safety advice and vaccination reminders. The app also links users to local information and support.

The information included in the app is from sources considered to be reliable, such as the NHS website and national charities. Information is validated by local health professionals before inclusion in the app and they also filter the information for relevance to a specific area. CATCH also provides an engagement service, whereby a health promoter can meet with health professionals and management, to explain how the app works and its potential benefits. The health promoter also acts as a point of liaison for health professionals involved with the app.



The theory of change for CATCH is that it is easy to access for a high proportion of the target population and so can help to increase health literacy and improve parents' preparedness for different stages of their child's development. Content is tailored and validated for local variations which increases trust among local parents and professionals. The ability of the app to notify parents means that there are reminders for important tasks such as vaccination dates and registering with a dentist. The app can also provide personalised advice to provide support for breastfeeding, issues around child behaviour, common conditions and mental health.

CATCH first launched in Eastern Cheshire CCG and is now delivered in seven CCGs and local authorities in the Cheshire and Merseyside area.

This economic analysis presents a return on investment analysis based on data available from Eastern Cheshire CCG. It was developed in spring 2019 and was based on the information and evidence available at the time.

The limitations of the analysis are as follows:

- The data upon which the benefits of CATCH are predicated are based on a single site only (Eastern Cheshire CCG).
- No control group data were available and the data are a simple observation of the change in A&E attendances over time, with no regression applied to control for any confounding factors. This means that there is no certainty that the observed results can be attributed to the CATCH app.
- No analysis has been made of patient outcomes if they did not present in A&E. The analysis carried out for the case study has assumed equivalence of outcome, i.e. that self-care did not result in any adverse outcomes.

2. INPUT COSTS

The developers have a pricing structure for CATCH that includes an initial set-up fee and then a recurring licence cost. The set up costs are £2,700 for initial customisation, followed by an annual core licence cost of £5,400 irrespective of the number of users. The annual cost includes license, app maintenance, content maintenance and on-going customisation, social media advertising campaign and monthly reports. Table 2.1 gives an indicative pricing structure. All costs are subject to VAT.

Table 2.1 CATCH indicative pricing structure

Set-up cost	Recurring cost	1st year cost
£2,700	£5,400	£8,100

The developers also provide engagement work at a cost of £150 per day (+VAT) or £100 per half day (+ VAT), along with travel expenses at 45p per mile or train ticket costs. These costs cover staff and public engagement which the developers see as critical to the success of the delivery of CATCH. It is assumed that this would be a higher cost in the first year of using CATCH, in addition to the set-up cost. Following completion of initial engagement, it is assumed that any further engagement activity would be carried out by providers.

The first year cost to a CCG of using CATCH would be approximately £8,100 (£5,400 + £2,700). In subsequent years this would reduce to £5,400 if it is assumed that set-up costs would not recur.

Engagement costs depend on the number of services, including GP practices, working across a CCG area, with sessions being held with each local team. In a CCG area with 26 different services, if each service required one day of engagement then the additional cost would be £3,900. It is assumed that this would be a one-off cost so that would increase the first year cost to £12,000.

3. OUTCOMES

According to data from NHS England provided by the developer, there were 2,358,015 attendances in A&E by children aged 0-5 in 2017/18 in England. 1,013,375 (43%) of those attendances were categorised as unnecessary.

The developers of CATCH carried out a survey of app users in Eastern Cheshire and found that 47% had opted for self-care over a possible A&E visit and 64% of users had opted for self-care over a possible GP visit. These findings were backed up by an observed 28% reduction in A&E attendances coded as “Guidance Verbal & Written” and “No Further Action” for under 5-year-olds in the winter of 2016/2017, compared to the same period of 2015/16. There was also an observed overall reduction of 3% in A&E attendances in this age group compared to 15% growth in the previous year.

Data provided by the developer in July 2019 summarise the cumulative reported reductions in what have been tagged as ‘unnecessary A&E attendances’ for a number of CCG areas using CATCH, between 2015 and 2018. These range from around 2% in Liverpool to 46% in South Cheshire and the data are summarised in Table 3.1.

Table 3.1: Percentage reductions in ‘unnecessary A&E attendances’ between 2015 and 2018

CCG area	Cumulative reduction in ‘unnecessary A&E attendances’
Eastern Cheshire	33.3%
South Cheshire	45.6%
St Helens	29.6%
Halton	17.2%
Knowsley	18.3%
Vale Royal	43.5%
Liverpool	1.9%

In 2017/18 East Cheshire NHS Trust had 5,660 A&E attendances for 0-9 year olds.¹ If it is assumed that 75% of these attendances were for children aged 0-5, that would equate to 4,245 attendances. As previously stated 43% of total attendances were considered unnecessary among this age group in 2017/18, so applied to East Cheshire that would equate to unnecessary activity of 1,825 for 0 to 5 year olds. If it is assumed that this would have been 33.3% higher without the use of CATCH, then the total number of A&E attendances would have been 2,736 $((1,825 / 66.7) \times 100)$, and the number of avoided A&E attendances would have been 911 $(2,736 - 1,825)$.

To provide a cost estimate for the observed effects described, data from the 2019-2020 National Tariff Payment System were used.² It was assumed that the reduced number of children presenting in A&E would all have been categorised as patients seeking guidance and advice only. In those circumstances the tariff payable would relate to HRG code VB11Z Emergency Medicine, no investigation with no significant treatment. The relevant tariff value for this HRG code is currently £73.

These benefits only relate to the potential effect of the app on attendance at A&E. The developers claim that the app could also reduce primary care activity in the same way. It is important to note that additional value from the app may be found through improved awareness of important aspects of child health and development such as:

- Vaccination uptake.
- Breastfeeding initiation and prevalence.
- Dental health.
- Diet and physical activity to avoid childhood obesity.
- Smoking cessation in pregnant mothers.

It is not, however, possible to quantify these benefits for the purposes of this economic analysis.

4. ECONOMIC ANALYSIS

A cost-consequences analysis was carried out based on the evidence provided by the app developer. To develop a case study, the costs and activity data for East Cheshire NHS Trust were used to develop a scenario.

The results of the analysis carried out by the developer show that there has been a 33.3% reduction between 2015 and 2018 in 'unnecessary A&E attendances' at the Trust after CATCH was introduced in 2016, resulting in an overall fall in A&E attendances in the 0-5 age group of 3%. This is attributed by the developer to parents using the app for advice and guidance rather than attending A&E. Applying the 33.3% activity reduction to 2017/18, this would result in 911 fewer attendances than if CATCH had not been used by the CCG. Applying the tariff relating to HRG code VB11Z, then the CCG will have avoided £66,503 $(911 \times £73)$ in tariff payments during 2017-18.

¹ NHS Digital. Provider level analysis for HES Accident and Emergency Attendances 2016/17. <https://digital.nhs.uk/data-and-information/publications/statistical/hospital-accident--emergency-activity/2017-18>

² <https://improvement.nhs.uk/resources/national-tariff/>

If reliance can be placed on the self-reported data from the developer, then this can be seen as a relatively conservative estimate of the potential benefit of CATCH because it only relates to changes in attendances at A&E. The developers also claim that the use of the app reduces attendance in primary care, plus there is the potential for better health outcomes if CATCH has a positive impact in improving key performance measures such as increasing rates of breastfeeding.

On the basis of this case study, using the estimate based on the reduction in A&E attendances and the estimated cost to the CCG of the first year of use of CATCH, a return on investment (ROI) has been calculated using the formula:

$$\frac{\sum \text{Total discounted benefits} - \sum \text{discounted costs}}{\sum \text{Total discounted costs}}$$

This gives a result of: $\frac{\pounds 66,503 - \pounds 12,000}{\pounds 12,000}$ ROI: 4.54

This is equivalent to £4.54 for every £1 spent on CATCH by the CCG. This includes the initial one-off costs and the costs of engagement (£6,600), so in subsequent years, if the same benefits continued to be observed, then the ROI could rise to 11.32.

5. CONCLUSION

The CATCH app has the potential to improve the uptake of good health behaviours in children and parents at key stages in children’s development. It is understood that the app will be subject to a randomised controlled trial (RCT) shortly and it would be very helpful if the efficacy of the app could be demonstrated in terms of improving some of these measures, such as increasing vaccination rates or breastfeeding initiation and prevalence. These potential benefits of the app have not been included in the analysis for this case study, but if they can be demonstrated through the RCT, they can be the focus of future health economic analysis.

Observational data by the developer suggests that the app may have the effect of reducing A&E attendances for children aged 0-5 years, through the provision of guidance and advice, meaning that parents may self-care for their children rather than seeking help from services. If these effects can be robustly evidenced then it can be argued that the effect will help to address unmet need, by freeing up capacity in urgent and emergency care and has the potential, therefore, to address health inequalities.

The calculations made in this case study indicate that CATCH is potentially cost-effective in terms of reducing A&E activity, with a potential return on investment of £4.54 for every £1 spent on CATCH by the CCG. As previously mentioned, there are some limitations within the analysis, relating to the fact that the data upon which the analysis is based only relate to one site, no control group was used to verify the observed effects, and there has been no analysis of outcomes for patients. Any assumptions made in this case study have been clearly stated.