

NHS Innovation Accelerator

Economic Impact Evaluation Case Study: Coordinate My Care

Summary

Coordinate My Care is a service that provides a digital solution for multidisciplinary urgent care planning for end of life care and chronic illnesses. The intended model of implementation is for a CCG to commission the service and incorporate it into contracts with a full range of providers. An earlier economic evaluation of the system reported a range of economic benefits. Using levels of uptake reported, over a three year period, a simple analysis reports net economic benefits of between around £2,300,00 to £9,300,000, over the first three years of implementation in an average-sized CCG, at 2019/20 prices. This results in an estimated Return on Investment of between 2.42 and 9.65. These results depend on the levels of costs and benefits drawn from estimates made by the developer of the system (Co-ordinate My Care).

1. BACKGROUND

There is evidence that the use of electronic palliative care co-ordination systems can potentially lead to improved co-ordination of care and cost reductions.¹ Coordinate My Care (CMC) seeks to improve the integration of care by sharing appropriate clinical information in a timely manner across health and care sectors using a digital platform. The key goals of CMC are:

- Hospital avoidance for end of life care patients.
- Patients achieving their preferred place of death.
- Reducing deaths in hospital for end of life care patients.

¹ NHS Improving Quality. Economic Evaluation of the Electronic Palliative Care Coordination System (EPaCCS) Early Implementer Sites. February 2013.

CMC was initially conceived with a focus on coordinating care for patients receiving end of life care (EoLC). More recently, it has been used with a wider range of patients, including patients with cardiac, respiratory, vascular and mental health problems. CMC incorporates key urgent care information such as resuscitation status, diagnosis, prognosis and ceiling of treatment. This information is available to clinicians during standard working hours and during out of hours periods, including paramedics, out of hours GPs and NHS 111 staff.

The CMC care plan, known as the 'CMC plan', also includes patients' wishes on matters such as a preferred place of care and death, religious directives and views on organ donation, as well as practical information, such as where the patient keeps their medicines and who to contact in an emergency. The system includes a patient portal 'myCMC' (launched in May 2019) which allows patients to initiate their own care plan and to share access with care providers. After completing their part of the care plan, patients make an appointment with their GP who provides clinical information and approves the plan. Their clinician can also enrol the patient to view and request edits to their CMC care plan.

Successful implementation of CMC requires a culture change in health and care providers across a population, including a change in clinical pathways. As a result, CMC is best commissioned at a Clinical Commissioning Group (CCG) level, so that the service can be co-ordinated across the healthcare system. GPs, hospital and hospice clinicians are encouraged and trained to plan future care by initiating conversations with relevant patients about their care, and initiating the creation of CMC plans. Urgent care providers require training to deliver care determined in the CMC plan. To date the majority of CMC plans have been initiated by GPs (55%).² CMC was launched in August 2010 in one CCG in London and, over time, its use has expanded to all 32 London CCGs. CMC is available for use in other CCGs and is currently being prepared for implementation in Kernow CCG (which covers Cornwall and the Isles of Scilly).

Although CMC is available for a wide range of patients, this case study focuses on EoLC. It provides a simple cost-benefit analysis of the system and Return on Investment (ROI) analysis based on information provided by the NHS Innovation Accelerator (NIA) Fellow, data reports from the CMC reporting database, as well as implementation and utilisation data provided by CMC.

The analysis was developed in spring/summer of 2019 and was based on the information and evidence available at the time. The limitations of the analysis include:

- The economic benefits used in the ROI calculation for CMC are based on an earlier evaluation of the service, from 2013.
- The costs used in the ROI calculation are based on estimates provided by CMC. Actual costs may vary in practice.
- Implementation and uptake rates are based on estimates provided by CMC.
- The uptake of CMC plans used in the ROI estimates assumes that all of the benefits of coordination of care would be drawn from the CMC plan, without accounting for any other interventions that might affect outcomes.

² Information provided by CMC.

2. INPUT COSTS

The costs for use of the CMC system are annual costs for the implementation of the service in a CCG, serving the whole EoLC population. The costs have been provided by CMC for the first three years of use of CMC and are presented in Table 2.1, below. These are the costs payable by a CCG to CMC and they include the following elements:

- Technical and systems costs including IT supplier costs and costs of integration with third party systems.
- Operational launch costs including the CCG staff in the roles of: clinical lead; digital lead; project manager; clinical trainers; communications and engagement manager; expenses and administrative costs.
- Business retainer costs including a service manager, clinical trainers, a communications and engagement manager for the CCG as well as the fee paid to CMC.

Specific figures for each of these individual costs were not provided but salary costs were calculated by CMC using Agenda for Change mid-point scales.

Table 2.1: Costs of CMC for a single CCG over the first three years of operation

Cost element	Year 1	Year 2	Year 3	Total 3 Year Costs
Technical and systems	£44,088	£48,576	£53,064	£145,728
Operational launch	£312,370	£0	£0	£312,370
Business retainer	£42,046	£230,893	£230,893	£503,832
Totals	£398,504	£279,469	£283,957	£961,930

The 'Operational launch' costs are one-off, start-up costs for a CCG that is initiating its use of the CMC system. Both 'Technical and systems' and 'Business retainer' costs will be expected to increase at the level of NHS pay inflation in subsequent years.

CMC provides access to online training modules, downloadable user guides and webinars and ad hoc training as part of its training strategy, and all costs to support these activities are included in 'Business retainer' costs. Costs to services for clinical and managerial staff to attend training sessions have not been included. Although the training will be expected to be delivered as part of professional development or protected learning time, there is still an opportunity cost to the services involved.

The intention is that training in the use of CMC and the provision of log in credentials will begin at the start of implementation, in year one. It is expected that during the first year, the majority of eligible staff will be trained and provided with user credentials. The creation of care plans is expected to reach 25 – 50% of the relevant population, depending on the work of local enablers within each CCG. The second year is an active phase of training, provision of credentials to new staff and creation of new care plans.³ All urgent care provider staff who view CMC plans are required to have training and be given log in credentials.

³ Information provided by CMC.

These costs relate to a single CCG. There are economies of scale that could apply to the provision of CMC over a wider area, which are estimated by CMC to be about 50% of the costs in Table 2.1, for each CCG. These savings would be due to the existence of shared services. For example, in London there is a single ambulance service and, as a result, system development, training and engagement costs for the ambulance service are shared across all London CCGs. We understand that, where CCGs share fewer NHS services, this will limit the opportunity to exploit economies of scale.

3. OUTCOMES

The evidence of outcomes for CMC that has been provided, are based on its use with EoLC patients and all calculations presented here relate to that population. The number of people who are likely to be in the last year of life is around 1% of the total population, of which around 14% would die suddenly or unexpectedly and therefore would not benefit from coordinated EoLC.⁴ This implies a ceiling for the total number of CMC plans that might be created of 86% of the population in the last year of life, i.e. 8.6 people per 1,000 total population.

In its implementation across London CCGs, there is a wide variation in the number of care plans that are created each year.⁵ In future implementation of the system, it is expected that health and social care commissioners will include CMC in the GP contract and in EoLC programmes for nursing and care homes as well as carrying out a thorough implementation plan. On this basis, it is estimated by CMC that the creation of new care plans increases at a rate of around 33% per year. Analysis of the existing data indicates that, when the numbers of patients with care plans who are deceased are excluded, the growth of 'live' care plans is about 22% per year.⁶ The latter figure is used for the following analyses as these are the care plans for which benefits can be assumed to occur in any given year.

CMC indicate that the anticipated number of care plans created in year one would be between 25% and 50% of the EoLC population, where CMC is included in contracts between commissioners and providers.⁷ On the basis of this, Table 3.1 shows the numbers of CMC plans that would be anticipated in Kernow CCG (where its implementation is planned), along with the national average CCG population, using the upper and lower parameters of anticipated uptake in the first year of full implementation.

⁴ NHS Improving Quality. Economic Evaluation of the Electronic Palliative Care Coordination System (EPaCCS) Early Implementer Sites. February 2013.

⁵ CMC Data Overview Reports 2014-19.

⁶ Ibid.

⁷ CMC Service Manager. Personal communication. March 2019

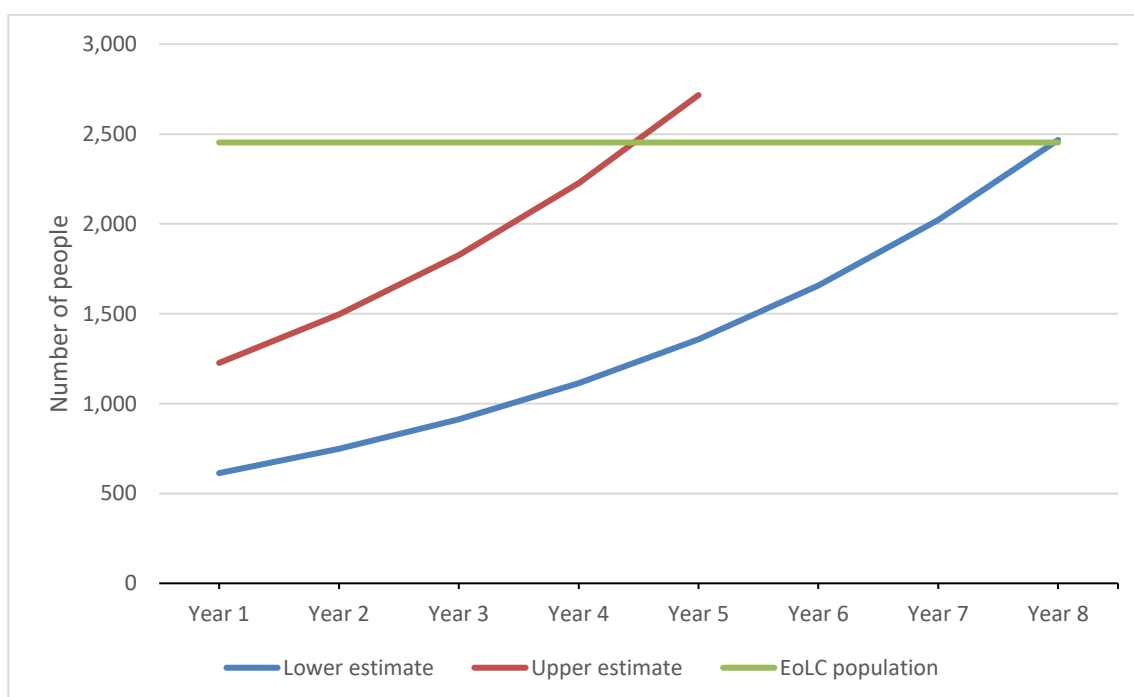
Table 3.1: Anticipated uptake of CMC plans in year one of implementation for Kernow CCG and the national average CCG populations, with CMC included in provider contracts

CCG	Total population	EoLC population ^a	CMC plan uptake at 25%	CMC plan uptake at 50%
Kernow	534,000 ⁸	4,592	1,148	2,296
National average CCG	285,228 ⁹	2,453	613	1,226

^a 86% of the total population in last year of life.

Figure 3.1 shows the anticipated growth of CMC plans, based on 25% and 50% anticipated uptake in year one, followed by an estimated 22% annual increase thereafter. This is based on a CCG with the average population in last year of life for England (2,453 patients). This figure indicates that the maximum potential for use of CMC plans among the EoLC population would be reached by the end of year five, if initial uptake was 50% of patients, and year eight, if initial uptake was 25%.

Figure 3.1: Anticipated growth of CMC plans for a CCG with CMC included in provider contracts



⁸ Kernow CCG Annual Report and Accounts 2017-2018

⁹ <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/bulletins/annual-smallareapopulationestimates/mid2017#clinical-commissioning-group-population-estimates-national-statistics>
 Accessed 11/04/19

The benefits of adopting CMC were calculated in an economic evaluation published in 2013.¹⁰ This study provided a calculation of the costs of hospital and community resources used by patients at the end of life, comparing patients with CMC plans to patients without the plans. This evaluation reported a net saving per patient with a CMC plan of between £1,351 and £2,102 at 2011/12 prices. The difference in net savings was based on results for two different comparison groups. One comparison group was patients who died during the same period as the study patients, but who did not have a CMC plan. The second comparison group was patients who died in the year prior to the study (and did not have CMC plans).

The net savings were based on reduced hospital, emergency and unplanned care. The costs of use of these services per person with a CMC plan were lower than for the comparison patients, with a difference of £2,467 (compared to the contemporaneous group) and £2,324 (compared to the one year earlier group). These cost savings were partially offset by higher use of community-based services for patients with CMC plans. Costs of community-based service use were higher per person with a CMC plan, compared to a person without a CMC plan, at a level of £365 higher for the contemporaneous group and £974 higher per person for the one year earlier group. All costs and savings in this study are from a health care perspective and no estimate has been made of any impact on social care services. These net savings (£1,351 and £2,102 at 2011/12 prices) translate to £1,448 and £2,253 per person at 2019/20 prices¹¹ and these figures are used in the economic analysis, below.

The assumption is that the mechanism by which savings are achieved is that coordination of care between practitioners enables care to be provided outside of hospital settings. In addition, knowledge of the wishes of a patient may result in a decision not to hospitalise.

4. ECONOMIC ANALYSIS

The values for savings per person (using 2019/20 prices) are used as the basis for calculating the savings at the CCG level, reported in Table 4.1 under four scenarios: the lower estimate of uptake in year one with the lower and upper estimates of savings per person; the upper estimate of uptake in year one with the lower and upper estimate of savings per person.

The number of patients with CMC plans over three years is based on the estimates of 25% or 50% of patients with care plans in year one, with a 22% increase in total 'live' care plans for each of the two subsequent years. This gives totals of 2,274 and 4,548 patients over three years, respectively.

¹⁰ Frontier Economics, End-of-life care – CMC pilot cost analysis Final Report. June 2013

¹¹ Calculations from: PSSRU. Unit Costs of Health & Social Care. 2018. Inflation indices. New Health Services Index using CPI (Health) with the final two years estimated for this report.

Table 4.1: Estimated savings for an average CCG, over three years' implementation of CMC, in four scenarios

		Lower estimate of savings per person	Upper estimate of savings per person
Lower estimate of uptake in Year 1 (25%)	Saving per person	£1,448	£2,253
	No of patients	2,274	2,274
	Total saving	£3,292,752	£5,123,322
Upper estimate of uptake in Year 1 (50%)	Saving per person	£1,448	£2,253
	No of patients	4,548	4,548
	Total saving	£6,585,504	£10,246,644

Table 4.2, below, combines the estimated costs (Table 2.1) and the calculated savings (Table 4.1) under the same four scenarios as above. The net costs/savings over the first three years are calculated for each scenario for a CCG with the average population, i.e. 2,453 people receiving EoLC.

Table 4.2: Estimated net costs/saving over three years in four scenarios for an average CCG

		Lower estimate of savings per person	Upper estimate of savings per person
Lower estimate of uptake in Year 1 (25%)	Costs	£961,930	£961,930
	Savings	£3,293,295	£5,123,987
	Net cost/saving	£2,331,365	£4,162,057
Upper estimate of uptake in Year 1 (50%)	Costs	£961,930	£961,930
	Savings	£6,586,590	£10,247,973
	Net cost/saving	£5,624,660	£9,286,043

This table indicates that there is a net saving in each of these four scenarios with values ranging from £2,331,365 to £9,286,043, over the first three years from operational launch.

On the basis of the data provided, ROIs have been calculated using the formula:

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

Using the cost and savings data from Table 4.1, this gives the following values for each of the scenarios at 2019/20 prices:

- Lower estimate of uptake in year 1 and lower estimate of savings per person: ROI = 2.42
- Lower estimate of uptake in year 1 and upper estimate of savings per person: ROI = 4.33
- Upper estimate of uptake in year 1 and lower estimate of savings per person: ROI = 5.85
- Upper estimate of uptake in year 1 and upper estimate of savings per person: ROI = 9.65

This ROI analysis presents the estimated costs and benefits associated with using CMC in comparison with usual care, in an average CCG based on potential cost savings through reduced use of healthcare resources. There may be other benefits associated with CMC that have not been considered in this analysis. These may include:

- The potential for people to have better health-related quality of life if their care is better coordinated.
- More patients die in their preferred place of death (PPD).¹²
- There is some evidence that the costs of dying in hospital are higher than dying at home, in hospice care or in nursing homes.¹³
- It has been suggested that the use of CMC could reduce the need for some deaths to be reported to the coroner because the end of life pathway is clearer. However, if these benefits were realised, they would be accrued by the justice system rather than the healthcare system.

5. CONCLUSIONS

Based on the information provided, the analysis presented here indicates positive returns on investment under four scenarios, using upper and lower parameters for two important metrics: the level of take up in the first year of full implementation and the savings per person with a CMC plan, based on an earlier economic evaluation. The estimation of benefits is based on data showing the number of new CMC plans created annually in London, minus the number of patients with plans who have died. In any given year, some patients will have plans created in the current year, with benefits accruing the following year; some will have had plans created in the previous year with benefits accruing in the current year; and some will have plans created in the current year with benefits accruing and death occurring in the current year. The latter case would result in the figures used here being an underestimate of the number of patients creating benefits.

At the same time, as the benefits are principally based on avoided use of secondary care services, these would not be produced immediately upon creation of a CMC plan. They would be realised when, for example, a hospital admission is 'avoided'. As a result, the estimates of benefits in the first three years of implementation may be overestimates. If a more in-depth economic evaluation were undertaken, sensitivity analyses could helpfully explore the impact of these uncertainties.

The case study assumes that the implementation of CMC care planning will generate 100% of the benefits of joint care planning between care providers. In practice, many areas have some form of care planning already in place, so the benefits from implementing CMC will be less than 100% (i.e. less than the estimated £1,448 and £2,253 per person). This could have an impact on these analyses, reducing the benefits and the ROI. There is also the possibility that introducing a new care coordination system may disrupt existing processes and relationships in the early implementation phase.¹⁴

¹² The developers report that 67% of patients with CMC plans expressed their PPD between 2014 and 2019, of which 78% died in their PPD, with 19% dying in hospital.

¹³ <https://www.nuffieldtrust.org.uk/research/exploring-the-cost-of-care-at-the-end-of-life>

¹⁴ NHS Improving Quality. Economic Evaluation of the Electronic Palliative Care Coordination System (EPaCCS) Early Implementer Sites. February 2013.

The early phase of development of CMC, including the period covered by the earlier economic evaluation, was focussed on patients having end of life care. This case study has used data on those patients for all calculations. However, as the service develops, its use is promoted for other types of patients, such as people with mental health problems. Further economic analysis could be carried out to consider any benefits arising from the use of the intervention for different patient populations.

As previously mentioned, there are some limitations within the analysis, relating to that fact that some key metrics on costs and uptake are based on estimates for future implementation, provided by CMC. Variations to these metrics in practice would produce important changes to the results presented here. The assumptions used in the ROI analysis around uptake assume that all benefits in relation to improved co-ordination of care would be derived from the use of CMC plans with no other interventions accounted for. Any assumptions have been clearly stated.

Glossary

Term	Description
Return on investment	Return on investment (ROI) measures the amount of return on a project relative to its cost. An ROI is calculated by subtracting the incremental costs from the value of the incremental benefits, and dividing the result by the incremental costs. The result is expressed as a percentage. For example, if the ROI is 100%, there will be a return of £1 for every £1 spent on the intervention.
Incremental	The incremental costs and benefits of an intervention are those that would not otherwise have occurred in the absence of the intervention.
Cost-benefit analysis	Cost-benefit analysis is a comparison of interventions and their consequences in which both costs and resulting benefits (health outcomes and others) are expressed in monetary terms. This enables two or more treatment alternatives to be compared using the summary metric of net monetary benefit, which is the difference between the benefit of each treatment (expressed in monetary units) less the cost of each.
Cost-effectiveness analysis	Cost-effectiveness analysis evaluates the effectiveness of two or more treatments relative to their cost. Interventions that are both more effective at producing health benefits than other interventions, and are associated with net cost savings (i.e. the additional cost of the intervention is outweighed by the cost savings elsewhere) are said to be a “dominant” strategy.
Cost-consequence analysis	Cost-consequence analysis compares the costs (such as treatment and hospital care) and the consequences (such as health outcomes) of a test or treatment with a suitable alternative. Unlike cost-benefit analysis or cost-effectiveness analysis, it does not attempt to summarise outcomes in a single measure (such as the quality-adjusted life year) or in financial terms. Instead, outcomes are shown in their natural units (some of which may be monetary) and it is left to decision-makers to determine whether, the treatment is worth carrying out”.
Cost-minimisation analysis	Cost minimisation analysis is a method of comparing the costs of alternative interventions which are known to have an equivalent effect. This type of analysis can be used to determine which of the alternatives provides the least expensive way of achieving a specific health outcome for a population.