

Evaluation of the NHS National Cancer Vanguard Year 1 report

3 October 2018

About Technopolis Group

Technopolis Group is an international policy research and consulting organisation. We work for regional, national, EU and trans-national organisations with a public purpose in mind as we deliver our services. Our goal is to provide policy advice and support decision-making for organisations and people with a mission to address environmental and societal challenges and achieve economic growth. We work across a number of policy areas, ranging from science, technology and innovation to health and life sciences, higher education and green economy. Technopolis Limited registered in England and Wales under registration number 2354937. For more information, go to: www.technopolis-group.com

Disclaimer

This document has been prepared for the National Cancer Vanguard however it reflects the views only of the authors. Technopolis and its partner Optimity Advisors have taken reasonable professional care and efforts in the preparation of this document. Nevertheless, we cannot guarantee absolute accuracy or completeness of information/data submitted, nor can we accept responsibility for the use which may be made of the information contained therein. Any enquiries about this project should be directed to info@technopolis-group.com

Acknowledgements

We would like to thank the three Vanguard partners: Greater Manchester Cancer, RM Partners and UCLH Cancer Collaborative. We are grateful for their support and for giving us access to their network. We would also like to thank all stakeholders who have given their time to speak to us and who have made this report possible.

Written by: Niamh Lennox-Chhugani, Peter Varnai, Merel Spijkerman, Anoushka Davé, Maike Rentel, Trishal Boodhna.

For questions, please contact:

niamh.lennox-chhugani@optimtyadvisors.com or peter.varnai@technopolis-group.com

Table of Contents

Abbreviations.....	6
Executive Summary.....	8
1. Introduction.....	10
1.1. Aim of the evaluation.....	10
1.2. Background.....	11
1.3. The National Cancer Vanguard.....	12
1.4. Logic model or theory of change.....	13
1.5. The structure of the National Cancer Vanguard Programme.....	15
2. Methodology.....	17
2.1. Objectives.....	17
2.2. Evaluation questions.....	18
2.3. Methods for data collection.....	19
2.4. Methods for data analysis.....	20
3. Findings.....	21
3.1. National Cancer Vanguard and Partner-level findings.....	21
3.2. Prevention.....	25
3.3. Early Diagnosis.....	27
Case study 1: Gateway C.....	29
Case study 2: Multidisciplinary Diagnostic Centres – Query Cancer and Vague Abdominal Symptoms projects.....	30
3.4. Best practice timed pathways.....	33
Case study 3: Best practice timed pathways (Joint projects).....	33
3.5. Living with and beyond cancer.....	37
Case study 4: 7-day service for palliative care and end of life care.....	39
3.6. Medicines optimisation.....	41
Case study 5: The Pharma Challenge.....	43
3.7. System architecture reform.....	45
3.8. Digital and information.....	48
3.9. Diffusion and replication.....	51
4. Conclusions.....	54
4.1. National Cancer Vanguard level.....	54
4.2. Partner level.....	55
4.3. Project level.....	58
4.4. Summary.....	60
Appendix 1 – Detailed analysis against programme objectives.....	61
Appendix 2 – Thematic framework.....	82
Appendix 3 – EMMIE framework.....	85

Appendix 4 – Economic evaluation86
Appendix 5 – References.....92

Abbreviations

ACC	Acute Care Collaborations
ACE	Accelerate, Coordinate, Evaluate
ACS	Accountable Care System
AHSN	Academic Health Science Network
CADEAS	Cancer Alliance Data, Evidence and Analysis Service
CBA	cost benefit analysis
CCG	Clinical Commissioning Group
CEG	Clinical Expert Group
CNS	clinical nurse specialist
COG	Clinical Oversight Group
CRUK	Cancer Research UK
CUA	cost-utility analysis
EMMIE	Effect, Mechanisms, Moderators, Implementation issues, Economic (framework)
FYFV	Five Year Forward View
GI	gastrointestinal
GM	Greater Manchester
GMC	Greater Manchester Cancer
ICHOM	International Consortium for Health Outcomes Measurement
IG	information governance
IWGC	'Iwantgreatcare' online platform
LPM	Lead Provider Model
MCDAs	Multi-Criteria Decision Analysis
MDC	multidisciplinary centre
MDT	multidisciplinary team
mpMRI	Multiparametric prostate MRI
NCEL	North Central and East London
NEL	North East London
NCM	New Care Models
NCPES	National Cancer Patient Experience Survey
NCT	National Cancer Team; National Cancer Transformation
NCV	National Cancer Vanguard
NHSE	National Health Service England
NICE	National Institute for Health and Care Excellence
NOLCP	National Optimal Lung Cancer Pathway
NWL	North West London
PABC	people affected by cancer
PHE	Public Health England
PID	Project Initiation Document
PMO	Project Management Office

QALY	quality adjusted life year
RMH	Royal Marsden Hospital
RMP	Royal Marsden Partners
RT	radiotherapy
STP	Sustainability and Transformation Partnership
SWL	South West London
UCL	University College London
UCLHCC	UCLH Cancer Collaborative
UI	User Involvement
VAS	vague abdominal symptoms

Executive Summary

Evaluation purpose

The purpose of this evaluation is to answer the overarching question, *'What has been the impact of the National Cancer Vanguard on cancer outcomes and patient experience; what value has been delivered across all three Vanguard Partners. Can this be replicated?'* It aims to identify the 'active ingredients' of the programme; at a national level, a Vanguard partner level and a project level that, if replicated elsewhere, can be expected to give similar results. The purpose of this evaluation is not to determine a 'one size fits all' model of care for cancer but rather to identify opportunities to learn across the Vanguard and spread the learning nationally amongst the Cancer Alliances.

Methods

A formative (focusing on process and implementation) and summative (focusing on outputs, outcomes and impact) evaluation approach has been taken using mixed methods of data collection and analysis. This report focuses on the findings of year 1 of the three-year evaluation and the primary focus on this evaluation has been on the process of the NCV programme to identify the key conditions for success that can be replicated by other Cancer Alliances.

Findings

The National Cancer Vanguard programme provided access to the following resources and inputs, tangible and intangible, that would otherwise have not been available:

- Funding over the two-year period to resource the National Cancer Vanguard Programme and the programmes being delivered locally;
- A national governance and programme management framework that enabled access to the New Care Models team as a resource to support implementation and the National Cancer Transformation Programme to influence strategy implementation;
- Permission to act that was granted by the national profile and legitimacy of the wider Vanguard brand;
- Opportunity to innovate in models of care with partners (e.g. charities, pharmaceutical and industry partners), monitor and evaluate benefits delivered systematically and then share this learning so that the models can be replicated by other Cancer Alliances;
- Development of a Pan-Vanguard Informatics Service that delivered locally bespoke solutions within a shared methodological framework that has become a blueprint for the set-up of the national Cancer Alliance Data Evidence and Analytics Service.

The following key local (partner-level) conditions for success have been identified:

- Strong local leadership for cancer transformation at programme level and across the wider local system (e.g. Sustainability and Transformation Partnerships) with a shared sense of purpose for delivering on the National Cancer Strategy;

- High-performing teams of project and change managers recruited and retained within the programme over time who take a collaborative approach to supporting clinical and other change and establish a clear framework for tracking benefits realisation;
- Openness to collaborate across organisational boundaries from all stakeholders involved in the programme;
- A climate of research collaboration and historical investment in cancer research creates the conditions for innovation and learning, and collaborations with and through Academic Health Science Networks are well established in all three partners within the National Cancer Vanguard;
- A strong network of collaboration with cancer charities was considered an essential condition for the success of specific programmes of work and in the governance of the partner-level programmes; and
- Engagement with patients and patient representatives in programme governance, project design and project delivery.

Conclusions

The early findings of this evaluation demonstrate that the NCV Programme has supported the accelerated progress of innovations and new care models in the three cancer systems by providing:

1. A shared sense of purpose among key stakeholders (including providers, commissioners, Sustainability and transformation Partnerships, charities and Academic Health Science Networks (AHSNs) on improving the local cancer system, delivering on the National Cancer Strategy and focusing on the needs of people living with the effects of cancer;
2. The opportunity and 'permission' to develop governance structures for cancer system innovation, embedded within the local cancer service delivery context that promotes openness to working across organisational boundaries;
3. Funding to resource two years of support to the transformation programme with high-performing teams or project and change managers which has enabled the Vanguard partners to 'make the case' for continued support to priority programmes within their system;
4. As part of the national Vanguard programme, supporting and encouraging culture that promotes innovation, learning from failure as well as success and collaboration through open communication channels (formal or informal) and regular discussion / information exchange;
5. An informatics service that provides pan-Vanguard as well as locally relevant information and analysis to inform real-time decision-making.
6. The opportunity to innovate in models of care with Pharma and Industry partners;

Other Cancer Alliances should consider the maturity of the own cancer system against these characteristics as they develop their local new models of cancer care.

1. Introduction

This report summarises the first year of the evaluation of the National Cancer Vanguard (NCV) programme. The purpose of this report is to summarise the key learnings from the NCV programme that can be picked up by other Cancer Alliances specifically in terms of how to create the conditions within a cancer system that enable new models to embed and scale to deliver value for patients.

1.1. Aim of the evaluation

Technopolis Group and Optimity Advisors were commissioned in April 2017 to undertake an independent evaluation of the National Cancer Vanguard. The team aims to produce findings that will be of relevance locally, as well as informing NHS England's New Care Models (NCM) team about propensity for scale, spread and replicability.

The goal of the evaluation is to understand how the national Vanguard funding has enabled the three Vanguard partners to work together to realise change they would not have otherwise realised and without which project outcomes and impacts would not have happened. It also seeks to identify to what extent the Vanguard funding enabled the Vanguard partners to do things faster and earlier and create value greater than the sum of the three parts by accelerating system change in cancer care, giving them 'permission' to act, to be the 'voice of cancer' and set the national cancer agenda.

NHS England required that the National Cancer Vanguard evaluation addresses:

1. The impact of the implementation of the priority pathways for the agreed tumour types;
2. Lessons learnt from implementation of the range of interventions on early diagnosis;
3. Lessons from innovations in new organisational and contractual models;
4. The process of developing the Pan-Vanguard Informatics Service; and
5. Lessons from the Pharma Challenge and other industry challenge projects.

1.2. Background

The **Five Year Forward View (FYFV)** was published in October 2014. It is a vision for the future of the NHS and sets out the challenges that the NHS in England faces over the subsequent five years. It identified cancer as one of the top priorities, stating that the NHS needed to reduce variation in the quality of care, improve prevention approaches and enable faster diagnosis, and deliver a more personalised and integrated service – but do so at a time when service pressures were building.

The **New Care Models (NCM) programme** was set up to deliver key elements of the FYFV. As part of the programme, 50 Vanguards were selected between January and September 2015 to take the lead in developing new care models that would act as blueprints for the future NHS. The National Cancer Vanguard was designated in September 2015 and formally initiated in April 2016. It operated within a rapidly changing national context:

- In July 2015, an Independent Cancer Taskforce published its report *Achieving world-class cancer outcomes: a strategy for England 2015–2020* (the ‘Cancer Strategy’).¹ This strategy applied a cancer lens to the themes of the FYFV and aimed to improve survival rates and save thousands of lives. The strategy made 96 recommendations, including that ‘cancer alliances’ should be created and that a new way of providing cancer care under a single lead organisation for a region should be tested. NHS England committed to delivering the Cancer Strategy by 2020 and developed a workplan, structured according to the six priorities of the strategy, namely: spearhead a radical upgrade in prevention and public health; drive a national ambition to achieve earlier diagnosis; establish patient experience on par with clinical effectiveness and safety; transform the approach to support people living with cancer and beyond cancer; make the necessary investments required to deliver a modern, high-quality service; and ensure commissioning, provision and accountability processes are fit-for-purpose.
- Following on from the Taskforce’s report, a national system of Cancer Alliances was created, within which clinical and other leaders from across different health and care settings in a local community look at whole pathway data and information to drive change in clinical quality and outcomes at appropriate population levels for cancer pathways and provide cancer-specific leadership for the new Sustainability and Transformation Plan (STP) footprints.

The report of the National Cancer Transformation Programme (2016–17) highlighted that progress had been made in delivering investments (for example, more than £200 million to accelerate rapid diagnosis and enhance quality of life), activities (for example, a ‘Be Clear on Cancer’ campaign pilot launched in February 2017, in east and west Midlands, to encourage early diagnosis of cancers), and outputs (for example, 19 Cancer Alliances were established). Nonetheless, during this period the NHS in England was unable to meet the 62-day target for cancer. This target became the focus of much attention from policy-makers, commissioners and cancer service providers during this period, including tying transformational funding for cancer systems to the achievement of the 62-day target. The introduction in January 2018 of

¹ *Achieving World-Class Cancer Outcomes: A Strategy for England 2015–2020*. Report of the Independent Cancer Taskforce, 2015.

the 28-day faster diagnosis standard is intended to shed more light on why, despite other waiting targets being achieved, the NHS in England has been unable to achieve the 62-day target.

During the period covered by the NCM programme, Sustainability and Transformation Partnerships (STPs) were established across 44 footprints in England. These partnerships aimed to deliver the goals of the FYFV for people locally but at sufficient population scale to manage population risk as well as deliver new care models at scale.

A number of forerunner STPs have entered the next phase of their development as Integrated Care Systems and Integrated Care Partnerships, and one of the ten forerunner sites is Greater Manchester.

1.3. The National Cancer Vanguard

The National Cancer Vanguard was established in September 2015 to pilot replicable models of cancer care as part of NHSE's New Care Models Programme (NCM). Led by GM Cancer (hosted by the Christie), RM Partners (hosted by the Royal Marsden) and UCLHC Cancer Collaborative (hosted by University College London Hospitals NHS Foundation Trust), the Vanguard serves a population of over 10 million people across local delivery systems in Manchester and London and seeks to accelerate delivery of the National Cancer Strategy. The overall goal of the strategy is to improve cancer care, survival rates and patient experience. Workstreams include best practice pathways and guidelines, prevention, early diagnosis, living with and beyond cancer, medicines optimisation and improving the system architecture, among others. The Vanguard partners each lead on different workstreams, delivering a range of relevant projects at a local level with a view to sharing findings across the Vanguard. There are also a number of projects being implemented by all three partners. Before being designated as the National Cancer Vanguard, a number of transformation projects were already underway at all three partner sites. These projects are subject to separate evaluation and are therefore not in scope for this report.

The Vanguard Partners

The Greater Manchester (GM) Vanguard is embedded within the Greater Manchester Cancer programme, which in turn sits within the devolved Health and Social Care Partnership for Greater Manchester. Its aim is to establish a single system of cancer providers in Greater Manchester and the partnership includes providers and commissioners. The Vanguard programme is led by a programme director and resourced by a programme team. It acts as an innovation hub for the Greater Manchester Cancer programme. It provides the resources to test ideas and gather evidence. This evidence can then be shared with commissioners to inform decisions about innovation adoption at scale. The programme closed at the end of March 2018.

RM Partners (RMP) is provider led and includes both acute and community providers working closely with its commissioners in North West and South West London (two Sustainability and Transformation Plans). The partnership has its own governance structure and leadership independent of the governance of the individual partner providers but remains accountable to the partner boards. The aim of the partnership is to promote the spread of best practice pathways from early diagnosis through to recovery, with the use of high-quality data and analytics as a key enabler of this. RMP has also been focusing on establishing a lead provider model of shared accountability. RMP has secured transformation funding for 2018/19 and 2019/20 and continues to deliver a transformation programme across North West and South West London to improve cancer outcomes for patients by delivering new models of care at scale across a population of 3.5 million.

UCLH Cancer Collaborative (UCLHCC) is a collaborative made up of 11 acute providers across North East and North Central London and West Essex (two and a half Sustainability and Transformation Plans). It evolved from *London Cancer* and has close involvement from leading cancer charities such as Cancer UK and Macmillan. The programme is clinically led by a Chief Medical Officer who is also the lead for *London Cancer*. The leadership is supported by a network of programme and project managers across the Cancer Collaborative programme. The emphasis is on collaboration rather than changes to the accountability arrangements for cancer, with a focus on early diagnosis and best practice pathways supported by clinical informatics (through the Centre for Cancer Outcomes) and patient empowerment. UCLHCC has secured funding for their continuing cancer care system transformational support for 2018/19.

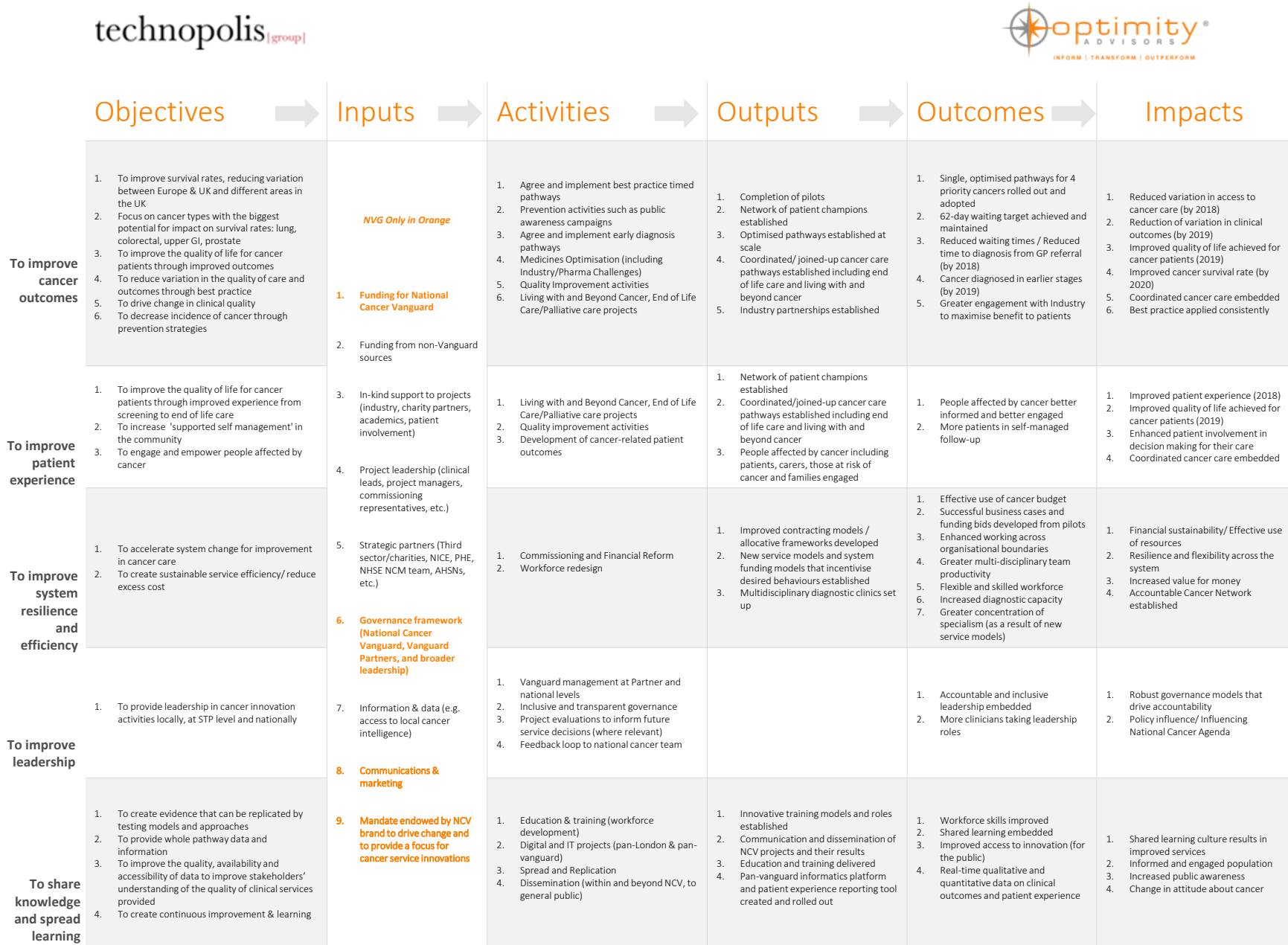
1.4. Logic model or theory of change

Based on the data gathered during the scoping phase, the evaluation team generated a single logic model for the National Cancer Vanguard Programme based on the team's understanding of the theory of change underpinning the National Cancer Vanguard (see Figure 1). This includes the objectives of the programme, the inputs and resources, processes and activities that are intended to deliver those objectives, and the impact and outcomes of implementing those processes and activities.

The National Cancer Vanguard programme had the following five objectives:

1. To improve cancer outcomes
2. To improve patient experience
3. To improve system resilience and efficiency
4. To improve leadership
5. To share knowledge and spread learning

Figure 1: Logic model



1.5. The structure of the National Cancer Vanguard Programme

The NCV Programme supported projects in nine areas, or ‘workstreams’:

1. The *Best Practice Timed Pathways* workstream of the Cancer Vanguard aimed to produce and implement single clinical pathways for four priority pathways: lung cancer, colorectal cancer, prostate cancer and oesophageal cancer).
2. The *Prevention* workstream’s aim was to promote healthy lifestyle messages and to effect behavioural change through use of trained cancer champions working in local communities.
3. The *Early Diagnosis* workstream centred on testing out innovations in the earlier diagnosis of cancer, including identification and referral of patients as well as innovations in patient self-referral and GP education and training.
4. The aim of the *Living with and Beyond Cancer* (LWBC) workstream was to test out new ways of enhancing the care people living with and beyond their cancer treatment receive, including support for patients both on a curative and palliative pathway.
5. Under the *Medicines Optimisation* workstream, the NCV engaged and partnered with industry to ensure that medicines are delivering best value in terms of clinical and cost effectiveness (the ‘Pharma Challenge’).
6. The *Commissioning and Financial Reform* workstream aimed to test out new ways of commissioning, contracting and funding of cancer services.
7. The *Digital and Information* workstream aimed to build an effective Cancer Intelligence Service, to ensure that baseline data is available and performance can be monitored.
8. The *Enablers* workstream aimed to build the infrastructure and environment to support the NCV’s work.
9. The *Spread and Replication* workstream targeted sharing of learning at each stage of the NCV’s work with Cancer Alliances.

The final delivery plan (Q3&4, FY 17/18) indicates a total of 64 projects, 17 of which were being implemented by GM, 19 at UCLHCC, 12 at RMP, 15 by all three partners, and one by GM and RMP. Three projects have not progressed: One project, ‘Single Provider for Radiotherapy’ (UCLHCC) closed at the end of November 2017 due to uncertainty regarding how the national agenda for Radiotherapy Networks related to the proposal for North Central London.²

A simple comparison between workstreams to gauge the level of activity is not possible, as projects differed significantly in their scope, and there is some overlap between workstreams (e.g. communication in workstream 8) Enablers and 9) Spread & Replication). However, a relatively simplistic analysis of the data presented by the Vanguard partners in their final report shows that GM focused on projects relating

² Two projects under the LWBC workstream, ‘ACP (Advanced Care Planning) in Outpatient clinics’ and ‘ACP in Inpatient settings’ (both RMP) indicated that ‘No funding [is] available to progress this work’.

to workstreams 2) Prevention and 3) Early Diagnosis, UCLHCC on projects in workstream 3) Early Diagnosis, and RMP on projects in workstream 8) Enablers.

Workstream	Total	Project site			
		GM	UCLHCC	RMP	All
1) Best Practice Timed Pathways	5	0	1	0	4
2) Prevention	5	4	1	0	0
3) Early diagnosis	13	5	6	2	0
4) Living with and Beyond Cancer	7	2	1	3 (1)	1
5) Medicines Optimisation	6	2	3	1	0
6) Commissioning and Financial Reform	4	1	2 (1)	1	0
7) Digital and Information	6	1	2	0	3
8) Enablers ³	15	2.5	3	5.5	4
9) Spread & Replication	3	0	0	0	3
Total	64 (61)	17.5	19 (18)	12.5 (10.5)	15

Source: Cancer Vanguard Delivery Plan, Q3&4 FY 17/18 Progress Report. Figures in parentheses refer to the number of projects excluding those indicated as 'not progressed' or closed due to external circumstances.

³ One project was implemented at both GM and RMP, indicated as a fraction in this table.

2. Methodology

2.1. Objectives

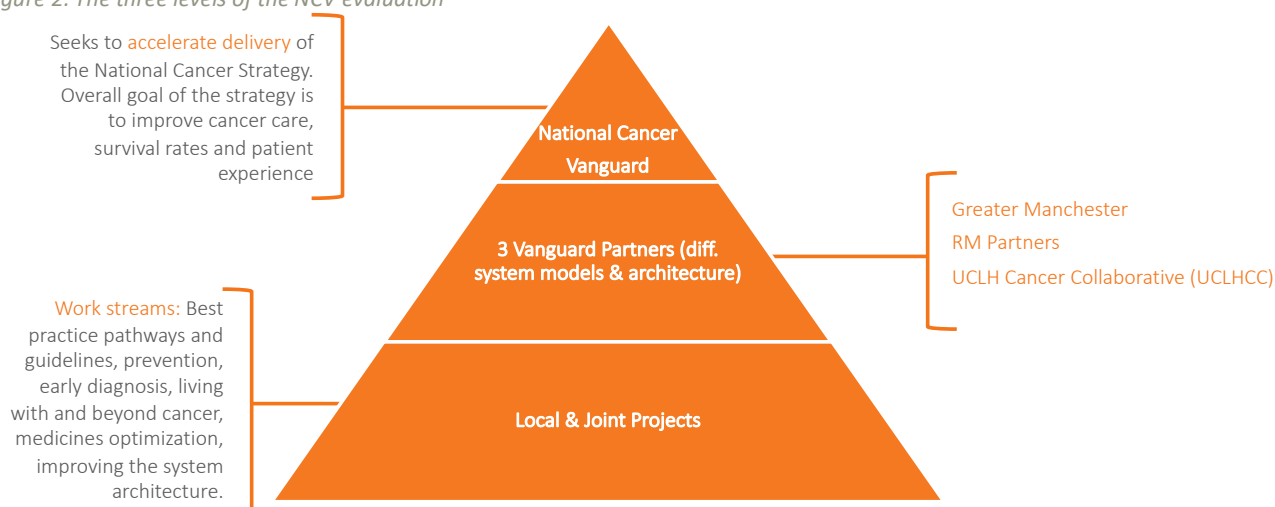
The overarching aim of the evaluation is to identify ‘What works, for whom, in what respects, to what extent, in what contexts, and how?’ A mixture of qualitative and quantitative methods were used to answer the evaluation questions.

The approach was both formative and summative. The formative element ensured that emerging learning informed the development of the Vanguard. The summative element enables the Vanguard and NHSE to reflect on what has worked well and how to support the transfer of learning nationally amongst the Cancer Alliances.

Methods used are both qualitative and quantitative. The emphasis in year 1 has been on the collection of qualitative data to understand the process of implementation and its perceived effects by stakeholders. This will shift to a greater emphasis on quantitative data collection in years 2 and 3 to quantify the size of the predicted effects (outputs, outcomes and impact). Due to time lags, it was often not possible obtaining quantitative data on patient outcomes in the first year of the evaluation, therefore some of the evaluation questions will be answered in the final report of the evaluation.

The evaluation assesses implementation (process) at National Cancer Vanguard (NCV), Partner Vanguard and project level and the resulting outcome and impact. The evaluation team have also developed a tool to assess value (economic) delivered by the three Vanguard Partners in subsequent years of the evaluation. The three levels of the evaluation are represented in Figure 2.

Figure 2: The three levels of the NCV evaluation



2.2. Evaluation questions

The overarching question that this programme evaluation seeks to answer is:

What has been the impact of the National Cancer Vanguard on cancer outcomes and patient experience; what value has been delivered across all three Vanguard Partners. Can this be replicated?

In order to better understand the contribution that the National Cancer Vanguard has made, we broke this down further into a set of sub-questions that were aimed at the different levels of the programme and would allow us to identify the ‘active ingredients’ of the programme; at a national level and at Vanguard partner level that, if replicated elsewhere, can be expected to give similar results (Table 1).

Table 1: Evaluation sub-questions

Level	Evaluation question
Level 1: National	To what extent has the National Cancer Vanguard achieved the goals it set out to achieve?
	1. What has the National Cancer Vanguard done differently from previous collaboration efforts to achieve the stated goals?
	2. What are the observable changes and to what extent can they be attributed to the National Cancer Vanguard?
Level 2: Vanguard Partner	To what extent has each Vanguard Partner achieved the goals it set out to achieve?
	1. What has each Vanguard partner done differently from previous collaboration efforts to achieve the stated goals?
	2. What are the observable changes and to what extent can they be attributed to each Vanguard partner?
	3. What ‘system’ characteristics are enabling each Vanguard partner to maximise enablers and overcome barriers?
	4. What has been the impact of the Vanguard partners on cancer outcomes and patient experiences and is this replicable?
	5. What value has been delivered by each of the Vanguard partners and is this replicable?
	6. What aspects of each Vanguard partner model, if replicated elsewhere or scaled locally, can be expected to give similar results?
7. What are the key system characteristics required to achieve replication in other Cancer Alliances and/or scaling locally?	
Level 3: Project	To what extent has each project achieved the goals it set out to achieve?
	1. What did each project do to contribute to the goals of the National Cancer Vanguard?
	2. What role did system characteristics play in maximising enablers and overcoming barriers to change projects?
	3. How do projects differ in their impact (where comparable) and what explains these differences? Is there an observable pattern of characteristics amongst projects with the greatest impact?

2.3. Methods for data collection

Our mixed methods approach uses qualitative research methods (e.g. interviews, site visits, surveys, focus groups, observations and workshops) combined with quantitative analytics (building on existing local and national data sources and those being developed by this evaluation) to understand these dimensions from a range of stakeholder perspectives. The focus in year 1 has been on qualitative data collection and analysis with some quantitative data collection related to measurable project and programme outputs. The focus in years 2 and 3 will be on measures of outcome and impact.

Qualitative data collection:

We have interviewed **106 stakeholders in total** (some more than once):

- GM: 29
- RMP: 32
- UCLHCC: 22
- External: 23

42 interviews have been with clinicians and **64 interviews** with non-clinicians. We have reviewed **17 documents** on national/partner level and **56** on project level, conducted **7 focus groups** and observed **8 meetings**.

Quantitative data collection

We reviewed the routine reporting information that was submitted by the NCV Programme to the New Care Models Team quarterly and conducted surveys of programme workforce as well as users of the Pan-Vanguard Informatics Service.

We also worked with the finance and performance leads from the three partners to design the economic component of the evaluation. More detail on this are set out in Appendix 4.

The primary economic question to study in this evaluation is what value had the NCV programme provided and what is the net benefit associated with the programme. This economic question can be broken down into five steps:

1. What is the direct cost of delivering Vanguard?
2. What is the impact of Vanguard on life expectancy?
3. What are the consequences of Vanguard for care costs, considering costs savings and the impact on volume and unit costs of care?
4. What is the net cost of achieving some gain in health outcome?
5. What is the net benefit of Vanguard relative to the costs required to implement it?

These questions will be considered at various levels in years 2 and 3 of the evaluation – at the level of workstream, Vanguard as a whole, and nationally (assuming some degree of replication of the Vanguard models by other Cancer Alliances). We propose at this stage that, initially, our primary focus should be on

evaluating Vanguard as a whole, as it will be difficult to attribute outcomes to individual workstreams. A tool has been developed for this purpose and is being tested during the next phase of the year 2 evaluation.

2.4. Methods for data analysis

In order to answer the evaluation questions, the evaluation team identified several key lines of inquiry:

1. Vanguard Governance Structures and the authorising environment within which they work.
2. System architecture, including contracting, financing and incentives
3. The approach to Population health with a focus on engagement, empowerment and activation.

These lines of inquiry essentially formed the ‘thematic’ framework for the evaluation through which the data was analysed. For example, the authorising environment acts as the context within which the three partners are operating and this will be evaluated predominantly through qualitative data methods. The other two themes are likely to draw on national and project-level quantitative data with a qualitative narrative to explain the ‘story’ behind the data. Appendix 2 provides a description of the lines of inquiry including sub-themes.

Following from the first order thematic analysis, the data was then synthesised in a second order analysis across workstreams and across the programme, using the EMMIE framework which consists of the elements Effect, Mechanisms, Moderators, Implementation issues, and Economic. A detailed visualisation of the framework can be found in Appendix 3. The key components are:

1. **Intervention Rationale:** What interventions are being delivered either jointly at or individually by each of the Vanguard partners. What problems are they designed to solve? Why have these been chosen? How are these interventions different to usual practice?
2. **Effect/impact:** What impact have these interventions delivered to what effect (e.g. size of the impact)?
3. **Mechanism:** What are the active ingredients of the intervention that are making a difference compared to what would have happened in the absence of the intervention? Are these replicable elsewhere?
4. **Moderators:** What are the local circumstances and/or other factors which alter the effect of these mechanisms locally? How does this inform potential replicability in other settings and environments?
5. **Implementation:** How well have the interventions been implemented and how have implementation issues been taken into account and problem-solved? How has this altered the effect of the intervention?

3. Findings

This section presents a summary of the findings of our evaluation in year 1 (May 2017 – April 2018) evaluating activity over two years of the Vanguard from April 2016 to March 2018. We have presented the findings here under the high-impact areas identified in the National Cancer Transformation Programme as well as additional areas that the NCV identified for innovation by the Vanguard programme. Four of these were identified as priority areas by the partners in conjunction with the New Care Models team and these are marked in **bold** below. It should be noted that, although early diagnosis was a priority for all partners and the NCM team, it is subject to other independent evaluations and hence not a focus for this evaluation.

1. National Cancer Vanguard and Partner level findings
2. Prevention
3. Early diagnosis
4. **Best practice timed pathways**
5. Living with and beyond cancer
6. **Medicines optimisation (including pharmaceutical industry engagement)**
7. **System architecture reform**
8. **Digital and information**
9. Diffusion and replication

3.1. National Cancer Vanguard and Partner-level findings

These findings relate to those initiatives which were delivered across the three partners collectively or by individual partners at cancer programme level. The themes that emerged as having the greatest impact on programme success here were shared purpose, clear partnership arrangements, funding for transformation, governance and leadership for integrated models of cancer care, implementation support and channels to share learning.

3.1.1. What happened?

The three partners originally submitted separate bids for Vanguard support to the Acute Care Collaborative Programme. The New Care Models team at NHS England, then invited the three partners to submit a joint value proposition. This was submitted in February 2016 for funding that was significantly greater than that ultimately approved. The programme was further iterated to reflect the changes in funding.

The partners have shared a common goal throughout of delivering ‘new scalable and sustainable models of integrated cancer provision from prevention through living beyond cancer’.⁴ The programme enabled the partners to accelerate the recommendations of the National Cancer Strategy (2015).

⁴ Acute Care Collaboration: National Cancer Vanguard Value Proposition. Final Submission, 8 February 2016

While less funding was received than each Vanguard Partner had requested in their original submission for Vanguard funding, the funding enabled the partners to invest in several areas.

- The three partners set up a joint programme structure that enabled them to share practice across geographies under each workstream. This was facilitated by weekly programme leadership calls, regular calls between the communications leads from each programme and project-specific collaborations. The programme reported quarterly to the New Care Models team in writing and at a quarterly review meeting. The programme set up communities of practice events to share their learning with other Cancer Alliances quarterly.
- Formal reporting requirements gave partners a clear mandate to initiate and drive discussion, implement changes, and share learning within their geographies and across partners. Informal conversations allowed partners to share insights and learning and draw on each other's experiences and expertise and led to improved relationships and deepened trust between the partners.
- An understanding of shared purpose and 'being in it together' fostered a culture of innovation within the NCV, and enhanced confidence in partners' ability to 'do things differently'.
- Within the context of the wider GM Health and Care Partnership governed by a collective governance mechanism, GM established a two-year innovation programme within the pre-existing GM Cancer Programme focusing particularly on prevention and early diagnosis to deliver outcomes.
- RMP set up sustainable transformational leadership, infrastructure and informatics across the North West London and South West London footprint, enabling the delivery of transformation now and in the future (using future Transformation Funds).
- UCLHCC founded its collaboration on a collaboration agreement between partners that built on the established work of *London Cancer* to prioritise investment in early diagnosis to accelerate improvement in survival. They also developed inter-trust HR agreements and processes. This 'hardware' (contracts and agreements) allows clinicians to work across trusts more easily, and thus enables optimising workforce use across the system. UCLHCC reported that this HR project has had a broader impact; namely, shared appointments across trusts have become more common and are embedding into regular practice, including beyond the NCV, and new positions are planned to span trusts from the outset.
- Greater engagement with commissioners at varying levels, with each Partner engaging with commissioners in slightly different ways depending on their local context. In all cases, commissioners were members of the leadership and governance of each partner's programme.
- Investment in partner-level governance structures for their individual programmes to facilitate relationship building and regular programme reporting. These governance arrangements differed considerably at a partner level, largely contingent on existing or legacy governance arrangements and local context.

3.1.2. What was the effect?

A number of observable outputs have resulted from the implementation of the National Cancer Vanguard Programme during 2016/17 and 2017/18:

- The role played by the NCV and its leadership group in influencing the national cancer transformation programme. This was partly enabled through the sharing of personnel (Programme Director, National Director for Cancer, National Clinical Director for Cancer).
- The role played by the Pan-Vanguard Informatics Service in sharing their learning with the developing Cancer Alliance Data, Evidence and Analysis Service (CADEAS) as they set up their service to all 19 Cancer Alliances in England.
- Support provided through informal and formal contacts and networks to other Cancer Alliances at different levels of maturity and their supporting ecosystem.
- Secured ongoing transformation and other funding (e.g. from charities) for projects that have demonstrated success through the NCV and are now being scaled up locally and / or nationally.
- Ongoing legacy arrangements maintained and continuing to evolve to support ongoing transformation leadership and support across cancer systems either within wider programmes of work (the GM Health and Care Partnership) or as programmes in their own right.

These effects are evidenced within each partner in context-sensitive ways:

- The governance mechanisms, leadership, shared accountability and change management infrastructure that have been put in place by RMP are sustainable beyond the life of the NCV programme and are perceived as having contributed to the successful securing of transformational funding. Specifically, attendance by the Chief Executives of the provider trusts at the monthly RMP Executive Group meetings was described as something that would not have been achieved without the Vanguard as it provided the context within which these shared accountability discussions could take place.
- UCLHCC's governance mechanisms built on *London Cancer*, with the NCV enabling a broadening of scope and stakeholder involvement. Additionally, the Cancer Vanguard Board will be sustained as the UCLH Cancer Collaborative Board.
- Within the structures of the GM Health and Social Care Partnership, the GM Cancer Vanguard Innovation programme was an integral part of the GM Cancer Programme and reinforced the sense of collective purpose across the Cancer Programme to deliver against population health outcomes. This is evidenced through the collective action of the GM Cancer Vanguard Oversight Board.

3.1.3. What were the enablers and constraints?

There were a number of moderators that either enabled or constrained (sometimes both at different times) progress in delivering the NCV programme.

- A shared purpose, 'being in it together', across the three partners was felt most strongly by those operating at NCV Programme level. There were some workstreams and projects where this shared purpose at project level was most clearly in evidence through observable collaboration such as early diagnosis projects (Gateway C), best practice pathways and the Pan-Vanguard Informatics Service.
- The National Cancer Vanguard leadership and governance provided a context in which Individual leaders in the three systems built their relationships and built up trust over time through sharing practice and lessons learnt. In addition, the formal programme reporting requirements gave the

partners a clear mandate to initiate and drive discussion, implement changes, and share learning within their geographies.

- Being part of the Vanguard programme and having support from the New Care Models Team provided the NCV with ‘permission to act’, or the freedom to try out initiatives around new models of cancer care and cancer system integration in a learning environment.
- The NCV funding enabled all three partners to resource effective programme management. This was reported by many participants in this evaluation as a key enabler for the success of the NCV.
- For all three partners, creating a local cancer system as a collaboration or more formally as a neutral third party outside of any one organisation was described as instrumental in building trust within each system. This is an important lesson for other Cancer Alliances as they consider how they set-up their operating model.
- The changing external context during the NCV Programme, and specifically the introduction of Sustainability and Transformation Partnerships (STPs), meant that there was a wider population focus on care integration and accountability. Some of the work that particularly GM and RMP had initiated prior to the STPs was paused and refocused to take into account this wider focus on system architecture reform beyond cancer.

3.2. Prevention

3.2.1. What happened?

Projects evaluated

- **Citizen-led social movement (GM)**

Objective: As taken from the PID, this project aims ‘to apply at scale a multi-faceted approach to nurture a social movement across the entire cancer prevention spectrum which is ultimately self-sustaining. The aim is to engage groups, networks and existing campaigns and support them to develop their own activity, build collective action and draw groups together to create (with support) their own social movement(s).’

- **Early Diagnosis education (UCLHCC)**

Objective: To improve public awareness of symptoms of cancer, address challenges for primary care identifying cancers early and address delays in referral to and through secondary care by working with partners that have workstreams in line with these areas and designing new activities where none exist.

- The majority of prevention projects included in the NCV were delivered in GM. UCLHCC also had a focus on public education and awareness (see Early Diagnosis workstream).
- In UCLHCC’s Highlight Cancer and Deflate Cancer, non-healthcare professionals with client-facing roles were recruited to have conversations in the community and signpost to screening services and raise awareness of lifestyle as risk factor for certain cancers. Deflate Cancer targeted populations in deprived areas to educate and engage the general public about the signs and symptoms of either breast or colon cancer.

3.2.2. What was the effect?

- Greater Manchester’s citizen-led social movement has been successful at generating a network of individuals and organisations who act as ‘cancer champions’ to work from the grassroots level to spread messages about cancer prevention. Over 2000 cancer champions and over 50 organisations engaged in the citizen-led social movement project (GM). There is sufficient existing funding to keep the cancer champion movement in place until the autumn 2018 and discussions are underway about further funding to sustain the initiative.
- Impacts of the citizen-led social movement project (GM) on prevention will only emerge in the long-term.
- Recruitment targets of non-healthcare professionals in UCLHCC’s Deflate Cancer project were exceeded. However, effect of project on participants’ knowledge of and behaviour regarding cancer cannot be judged as they were not followed up later on.
- The Citizen-led Social Movement project at GM was seen to have strengthened relationships between the NHS and the voluntary sector, with each learning about the working cultures of the other. More

collaborative working relationships were established and there was an increase in understanding about screening and prevention among voluntary sector partners.

3.2.3. What were the enablers and constraints?

- Project stakeholders interviewed highlighted that GM had a ‘very inclusive mindset, being very open to external views and partnerships’. This was observed in the citizen-led social movement project, where relationships between the NHS and voluntary sector as well as within voluntary sector were seen by participants to be strengthened.
- Project progress might have been further accelerated if charities and other non-NHS stakeholders were involved earlier in project design, set-up and implementation (e.g. Highlight Cancer and Deflate Cancer at UCLHCC and involvement from Cancer Research UK and local NHS partners).

3.3. Early Diagnosis

3.3.1. What happened?

This was perceived by all three partners in the NCV to be a key added value of the programme with a concerted focus on earlier identification which would ultimately lead to early stage diagnosis and better cancer outcomes. This is in line with the National Cancer Strategy and the National Cancer Transformation Programme. During the period of the NCV Programme, the Accelerate, Coordinate, Evaluate (ACE) Programme supported the set-up of nine multidisciplinary diagnostic centres across England, which are subject to independent evaluations and hence excluded from this report.

Projects evaluated

- **Vague Abdominal Symptoms (RMP)**
Objective: The aim of this project is to take patients with vague abdominal symptoms through a streamlined diagnostic pathway to allow early diagnosis and therefore improve patient outcomes.
- **Query Cancer (GM)**
Objective: To reduce the current waiting times and time to diagnosis for patients with suspected cancer through a one-stop secondary care assessment which decides whether the patient can be discharged back to the referrer or requires onward referral for further management.
- **Gateway C (GM)**
Objective: To create an educational platform which provides information on recognition and referral of cancer patients for GPs.
- **REACT – Patient self-referral (GM)**
Objective: To derive an effective and cost-effective way to increase the identification and referral from the community for timely investigation of people with potentially indicative cancer symptoms and thereby reduce delays in receiving a definitive diagnosis or discharge.
- **Faster diagnosis (GM)**
Objective: To speed up time to diagnosis for three cancer pathways – upper GI, lower GI and lung – with the aim of providing patients with a confirmed diagnosis or exclusion of cancer within 28 days of being referred by their GP.

- Projects have taken different approaches to shorten the time to diagnosis; best practice timed pathways aim to deliver earlier diagnosis through redesigned pathways to meet statutory wait times; other projects through education of patients (REACT) and GPs (Gateway C and Faster Diagnosis) and through changes to the delivery of the pathway itself (Query Cancer and Faster Diagnosis). About half of the projects have planned for future funding, either by engaging with commissioners (Faster Diagnosis) or through income generation from the wider adoption of the product by interested parties (Gateway C).
- A number of projects have created mechanisms through which multiple trusts and specialties can work collaboratively through multidisciplinary teams (MDTs) and multidisciplinary diagnostic centres (MDCs).

3.3.2. What was the effect?

There is positive feedback from participants such as GPs but longer-term impact on behaviour change and early diagnosis not yet been measured.

- Gateway C observed increased GP referral confidence in GM; however when rolling out in London, no significant increase was found.
- The Accelerate, Coordinate, Evaluate (ACE) Programme evaluation published in April 2017 found that early diagnosis projects included in the Vague Symptoms Cluster demonstrated:
 - Early indications of reduced time to diagnosis;
 - Limited evidence of impact on staging and increased identification of cancers at stage I and II;
 - Diagnosis of non-malignant diseases;
 - Positive feedback from patients on their experience of care (where this feedback was sought);
 - Variable conversation rates depending referral criteria;
 - Cost-effectiveness and financial drivers are the focus of the second wave of evaluation for ACE.

3.3.3. What were the enablers and constraints?

- The Vanguard has brought together multidisciplinary teams that would not have worked together otherwise, e.g. in Gateway C (GM), Query Cancer (GM), and Vague Abdominal Symptoms (RMP).
- The Vanguard has enabled roll-out of Gateway C between partners and provided resource to conduct a robust evaluation.
- It is not yet clear why the implementation of Gateway C had a different outcome in London than in GM.
- Making commissioners an integral part of the team (Faster Diagnosis) and using the NCV brand to build a sustainable business model for cost sharing with interested parties (Gateway C) were methods used to sustain projects beyond the Vanguard.

Case study 1: Gateway C

What has been done?

The objective of Gateway C is 'improving survival through earlier diagnosis and detection' by better equipping GPs with the required skills and behaviours to effectively deliver diagnostic consultations with the outcome of having greater confidence in knowing when patient symptoms warrant the two-week referral pathway and when they don't, to reduce the number of multiple appointments prior to referral and improve referral ratios in line with NICE guidance. The course was externally accredited by the Royal Society of GPs and reviewed by CRUK and Macmillan.

There is interest in Gateway C from other areas of England. Three cancer alliances have made enquiries about access, as have a number of CCGs. A licensing model is being created to allow others to buy into the training offered in Gateway C.

What was the effect?

The Gateway C evaluation shows that the pilot has demonstrated an impact on GP behaviour (short-term measurement) in GM:

- nearly 95% reported referring back to learning in subsequent consultations, with 94% saying it helped them with future referrals
- increased level of confidence in GPs' ability to manage diagnostic consultations
- a hint of a change in referral behaviour towards two-week-wait for lung; however, robust data to measure this was not available
- recording of symptoms for repeat patient visits regarding lung has improved
- a change in referral behaviour towards two-week-wait for lung could not be evidenced.

When Gateway C was rolled out by UCHLCC, pre-post test data did not show the same significant changes in confidence. However, qualitative feedback showed that GPs did find the tool useful.

What were the enablers?

Vanguard has acted as an enabler of project success and wider roll-out (other than providing the funding):

- It brought together a unique MDT under its auspices that would have not worked together otherwise.
- It kept the project team on track with all the reporting and admin required – this supported early planning and design.
- It provided a structure for the project to develop, implement and test at an accelerated pace. This was facilitated by an appointed Vanguard project manager.
- The footprint of the Vanguard has provided an opportunity to test the project in London with the UCHLCC team and assess applicability for scale-up and wider roll-out. To a certain extent lessons learnt in Manchester were taken on in London, where certain aspects of the course were adapted.
- Other enablers include having the right team with leadership which can navigate the system, accreditation by respected organisations and appropriate level of resources.

Case study 2: Multidisciplinary Diagnostic Centres – Query Cancer and Vague Abdominal Symptoms projects

What has been done?

With early diagnosis being a key focus of the NCV’s work, the Vanguard partners also piloted services and pathways that would significantly reduce the waiting time to diagnose patients. The Query Cancer one-stop clinic project led by GM and Vague Abdominal Symptoms pathway pilots led by RMP were two such projects. Both targeted patients for whom there is no clear pathway to avoid them getting ‘stuck in the system’, and hoped to improve patient experience as well as efficiency of diagnosis. However, the target population and pathways piloted differed. The differences in scope and implementation are shown in the table below.

	Query Cancer (GMC)	Vague Abdominal Symptoms (VAS) Pathway (RMP)
Target group	Patients for whom there is no clear diagnostic pathway	Patients who present with VAS but do not fit two-week wait criteria
Unique aspects of intervention	<ul style="list-style-type: none"> • Secondary triage • CNS support and pathway navigators 	<ul style="list-style-type: none"> • Three pilot sites – different diagnostic pathways in each • Physician’s assistant and pathway navigator roles tested in St Helier’s pilot • Parallel GP and in-patient referral pathways tested at St George’s
Specialities involved	Multiple tumour specialities and a geriatrician	Gastroenterology, radiology, oncology

What are the effects?

	Query Cancer (GMC)	Vague Abdominal Symptoms (VAS) Pathway (RMP)
Outcomes	<ul style="list-style-type: none"> • Cross-organisational collaboration and conversations with industry stimulated • Anecdotal evidence suggests <ul style="list-style-type: none"> – increased pick-up rates and faster rate of cancer diagnosis rule-out, and thus efficiency gains 	<ul style="list-style-type: none"> • Pathway reduces time to investigations • GPs interviewed state that it is lot easier to make referrals and they have a reduced amount of investigations to coordinate • Improved relationships with GPs, improved relationships between

	<ul style="list-style-type: none"> – patients pleased with having single location for all diagnostic tests and reduced waiting time for results – clinicians appreciate shared learning, collaboration with geriatrician, reduced waiting time for results and improved referrals – improved knowledge within the workforce 	<p>MDCs and different specialties reported by pilot sites</p>
--	--	---

What were the enablers / constraints?

Based on stakeholder interviews, the common enablers for both projects were:

- Multidisciplinary approach;
- Buy-in from trusts and different specialisms and good relationships between clinicians across trusts;
- Clear referral procedure that saves time and effort (for GPs);
- Physician’s assistants and/or pathway navigators made the process smoother and empowered patients;
- Coordination and communication within delivery team and between delivery team and primary care;
- The Vanguard provided an impetus to improve early diagnosis. It increased the team’s focus and provided staff and project management/data support, making project delivery smoother. In addition, having set deadlines speeded up progress in the case of Query Cancer.

Similarly, the common constraints were:

- Availability of resources;
- Capacity burden;
- Lack of time and resources to follow up on patient experience and GP experience.

The VAS project had the additional constraint of having different pathway designs and implementation practices at the three pilot sites, making it difficult to compare outcomes and establish the combined findings of the project.

With regard to Query Cancer, there is a perception that the Vanguard both accelerated and constrained progress. It accelerated progress in terms of giving the project team a focus and set timescales. It constrained progress as the pressure put on the project has had a ‘paralysing’ effect. The team felt there was a lack of appreciation for the time it takes to set up a new service, develop new relationships and get buy-in from clinicians.

Lessons learnt

Both projects contributed to pathway and service innovation with a view to improving early diagnosis, reducing variation in access and improved patient experience. As such, they had the potential to make contributions to reduction in patients presenting at hospital emergency departments, improved cancer outcomes and quality of life and patient involvement in decision-making as well as helping to achieve a balance between over-investigating and appropriate use of resources.

Both projects demonstrate that working collaboratively locally helps build relationships across primary and secondary care to share learning. Secondary triage in the Query Cancer project and telephone triage, as well as patient navigators in both projects, contributed to streamlining diagnostics and improved patient experience. Both projects also present templates for improved GP referral.

As of now, neither of the projects is being rolled out into the wider area. In the case of the VAS pathway, this is because the broader objectives of earlier detection of cancer and impacts wider than cancer have not been met according to initial findings. For example, the pathway has identified benign diseases as well as cancers and few cancers were diagnosed at stage I and II.⁵ In contrast, Query Cancer is being seen as a project with potential long-term benefits rather than a 'quick win' as setting up a clinic will take time and require buy-in from the different Trusts, and the different specialisms the MDC is linking with. Crucially, it is unclear whether the intervention will save costs when the wider diagnostic pathway is considered. Nonetheless, both projects can contribute a better understanding of what works and what does not, which will help in the design and implementation of future new pathways.

⁵ Feedback from RMP

3.4. Best practice timed pathways

3.4.1. What happened?

The best practice timed pathways workstream of the National Cancer Vanguard was initiated by the Medical Directors of the three vanguard sites and specified as focus area in the NCM letter of 20 February 2017. It aimed to produce single clinical pathways and guidelines for the implementation of the four priority pathways: lung, colorectal, prostate and oesophageal. Clinical leads of the respective pathway boards have agreed on joint pathways, balancing the aspirational and practical aspects of best practice to produce replicable clinical pathways.

Projects evaluated

- **Joint lung pathway**
Objective: to implement the National Optimal Lung Cancer Pathway (NOLCP), which aims to reduce the length of the symptomatic pathway to 49 days from referral to the start of treatment.
- **Joint colorectal pathway**
Objective: To confirm colorectal cancer, or diagnose other disease or no disease within 14 days through a single point of entry for colorectal referrals and a 'Straight to Test' telephone triage system by a nurse using a clinical diagnostic algorithm to determine the most appropriate test or outpatient clinic appointment and patient informed through a telephone call within 1-2 working days.
- **Joint prostate pathway**
Objective: To achieve by day 14 the first outpatient appointment, a diagnosis by day 28, and by day 62 start treatment through a pre-biopsy pathway in which patients are offered an outpatient clinic appointment with consultant, mpMRI scan with 'hot reporting' of results, and biopsy (only if needed) on the same day.

Case study 3: Best practice timed pathways (Joint projects)

What has been done?⁶

The National Cancer Vanguard has focussed on designing new standardised pathways for four priority tumour types representing the common cancers – lung, prostate, colorectal and oesophago-gastric cancers – where earlier diagnosis in the pathway has the potential to lead to better survival, and to reduce variations and emergency diagnosis. In all cases, the target is to diagnose cancer within 28 days from referral. The primary aim was to design and pilot pathways jointly across the three partners through sharing available evidence and best practices. The pathway redesign consolidates often specialist and ambitious pathways to a consensus pathway that is credible (through recognised leadership) and yet achievable for a large and diverse population so that meeting time targets are met.

⁶ Cancer Vanguard Delivery Plan Q3&4 FY 17/18 Progress Report

The Vanguard pathway then feeds into a national optimal pathway for implementation by all Cancer Alliances by 2020. The development of pathways is considered part of an iterative process where learning from pilots and implementation in local contexts can serve to adapt the local pathways. Partners exchanged pathway documents, agreed on inclusion/exclusion criteria and follow-up/responsibility in primary care.

What are the effects?

Three of the Vanguard best practice timed pathways have already been agreed for lung, prostate and colorectal cancers and these are currently being implemented in the local contexts.

What were the enablers?

- **Medical officers.** The 'joint pathways' idea was initiated by the medical directors of the three vanguard sites, with the UCLHCC Chief Medical Officer taking the lead to coordinate activities through monthly teleconference calls. Their links into the National Cancer programme team accelerated progress toward development of national best practice timed pathways to diagnosis.
- **Pathway boards.** All three Vanguard partners have established or continued to support pathway boards that are composed of key stakeholders, i.e. GPs and clinicians, commissioners and patient representatives in some cases. These pathway boards have responsibilities across the entire pathway. Pathway board directors had regular contact to develop the joint pathways.
- **Prior data and pilots.** All three Vanguard partners had local pathways. Examples of relevant prior experience (i) GM had implemented their Optimal Lung Cancer Pathway through the RAPID programme; (ii) UCL-led PROMIS trial that showed multi-parametric MRI can be used in triage before first biopsy. National audits have also provided baseline for some of the pathways (e.g. lung). The pan-Vanguard Cancer Informatics service provided consistent data for gap analysis (drivers for change), pathway design and implementation.
- **Synergistic project portfolio.** Vanguard helps to test innovative ideas before implementing them, providing a 'huge benefit' through synergising across the portfolio; e.g. Gateway C is very beneficial for the lung pathway referrals; also Straight to Test concept with direct access to CT. Non-Vanguard projects such as the Macmillan-supported Lung Health Check screening programme also helped the lung pathway, and collaboration between Prostate Cancer UK and UCLH helped develop a clinical consensus on standards for referral, performing and reporting.
- **Informal knowledge sharing and network.** Partners are connecting experts and providers across and within the patch to learn from each other and work together.
- **Clinical Expert Groups.** The availability of national CEGs help incorporate and disseminate Vanguard data and experience at a national scale. For example, the National Optimal Lung Cancer Pathway (NOLCP) and Implementation Guide was published in August 2017 by the Lung Clinical Expert Group.

- **Project management support.** All joint pathway projects are overseen by a project manager who supports clinical leads and reports monthly on progress to medical directors chaired by one of the the Vanguard site's chief medical officers.
- **Collaboration with the charity sector.** Knowledge sharing and pathway implementation (e.g. ACE2, Lung Health Check screening, GM's RAPID pathway).
- **Visibility and brand.** The Vanguard brand enabled partners to lead nationally and disseminate results widely (e.g. several BBC headline news).

What were the constraints?

Implementation barriers included system wide constraints:

- **Diagnostics capacity;** e.g. PET and histology capacity, mpMRI capacity and software.
- **Workforce issues;** e.g. lack of dedicated reporting time, job plans rearrangement, capacity sharing, staff transfers, additional skills training (e.g. MRI masterclasses for uro-radiologist).
- **Resource availability;** e.g. pathway implementation requires additional funds that Vanguard partners could access through other sources (e.g. transformational funds).

Lessons learnt

- Optimal timed pathways take non-cancer patients off the pathway early (release capacity within the existing system) to concentrate resources on cancer patients; this requires no more diagnosis but earlier tests and faster reporting. This optimises resources, prioritises cancer and increases efficiency.
- Early diagnosis of cancer is key for better outcomes and to accelerate treatment planning and discharge, and help meet waiting time targets.
- Where GPs receive early feedback of diagnostic results this allows for smooth follow-up (see electronic referral system in London that also created a central database).
- Where a patient navigator is employed, patient experience improves, and transition between secondary and primary care is smooth.
- High level of diagnostic centralisation allows accelerated diagnosis for patients, raising standards and implementing efficient capital and workforce investment for the health economy.
- Avoiding unnecessary, invasive diagnostic approaches and early cancer diagnosis (or rule out cancer) also improved patient experience.
- Early work in GM showed reorganisation of multidisciplinary teams (MDTs) into sector-based MDTs consolidated expertise (for lung cancer) in an area and changed behaviour to work across providers and provided a potentially replicable concept for RMP and UCLHCC. Implementation of a virtual hub-and-spoke model as a collaborative solution to pool resources will be piloted.

- UCLHCC example shows that protected CT/MRI slots and rearranging workforce job plans to get protected reporting time is crucial for the lung pathway. Implementation pilots of 'One Stop' pathway for the prostate pathway, with 'hot reporting' of results, shows promise.
- STP engagement is essential for roll-out across the patch.
- Knowledge sharing across national Community of Practice events benefits all Cancer Alliances.

3.5. Living with and beyond cancer

3.5.1. What happened?

Involvement of patients, carers and their representative groups was a key consideration in the design and implementation of the projects under this workstream of the NCV Programme.

Projects evaluated

- **Aftercare pathways (GM)**
Objective: to develop a new aftercare pathway for early breast, colorectal and prostate cancer patients in Greater Manchester, moving from hospital-based follow-up to a more personalised and supported self-management pathway, with the full Macmillan recovery package and information needed to access care as well as testing a new IT Safety Net or Remote Monitoring System.
- **Patient experience feedback tool (GM&RMP)**
Objective: to develop a system to collect, monitor and analyse systematic quantitative and qualitative cancer patient feedback in near real time.
- **7 day specialist palliative care (GM&RMP)**
Objective: GM's aim was to model a clear, standardised and equitable approach to 7-day access to face-to-face specialist palliative advice and in-patient provision for those with end- of life care needs requiring specialist services across Greater Manchester. RMP's aim for this project was to produce a robust business case, in collaboration with providers and commissioners, to address the gap in service provision of face-to-face specialist palliative care in hospital, hospices and community across London that can be used with commissioners in 2018/19.
- **Model for community and end of life care (RMP)**
Objective: to map the end of life care service provision and building a business case that aims to address gaps in provision of community enhanced end of life care (i.e. care not provided by specialist palliative care but goes beyond the scope and capacity of district nursing), hence decreasing probability of emergency hospital admissions towards the end of life.

Note: For this evaluation, no projects were evaluated from UCLHCC, though they do have a LWBC programme of work.

- GM and RMP have collaborated to map service provision for palliative and end of life care with, as final output, a service specification/business case for the use of providers as well as commissioners.
- New aftercare pathways have been designed and piloted in GM for breast, colorectal and prostate cancers. Inflex patient tracking software has been implemented for breast cancer in two sites and for colorectal cancer in one site.
- Separate plans have been made for future funding, including pilots funded by Macmillan (GM) and through the commissioner route (RMP).

- The online platform 'Iwantgreatcare' (IWGC) was developed to collect, monitor and analyse systematic quantitative and qualitative cancer patient feedback in near real time. The platform was procured as a partnership between RMP and GMC.

3.5.2. What was the effect?

- Feedback from patient experience focus groups on the new breast aftercare pathway reported improved self-management and patient experience.
- Anecdotal evidence from CNSs and aftercare coordinators suggests that the IT 'Safety Net', Inflex, which was tested for the breast and colorectal aftercare pathways, is quicker and more efficient for tracking patients than manual input systems based on spreadsheets or paper records.
- A new Aftercare Coordinator role has been tested. These coordinators can help to release administrative burden from CNSs as they could potentially work across tumour areas and take over scheduling appropriate tests using patient lists pulled from the new Inflex system.
- Some of the service providers participating in this evaluation stated the view that there was no additional data generated by the IWGC tool that was not already gathered through legacy tools. Others pointed out the existing data collection tools do not specifically focus on patient living with the effects of cancer or their families other than the NCPES, which is only available annually.
- The service specification for 7 day specialist palliative care and the business case for end of life care are outputs; however, outcomes cannot be observed yet as they have not yet been put into practice.

3.5.3. What were the enablers and constraints?

- NCV funding enabled technical IT expertise to be brought in for the Aftercare Pathways project. However, issues with Trust IT departments caused difficulties with the technical implementation of the Inflex system, such as lack of technical resource, resistance to implementing a system perceived as being externally imposed and data sharing and IG issues.
- The NCV status has created momentum, which will enable stakeholders to work together to bring about transformational change within the End of Life Care sector. However, external stakeholders have expressed some caution due to the 'cancer' label associated with the Vanguard, even though the field encompasses all diseases.
- For the patient experience feedback tool project, joint governance arrangements between GMC and RMP enabled them to effectively manage their relationship with the supplier team (IWantGreatCare) and to hold them to account although this was disrupted by a number of changes to the account management personnel on the supplier side. The NCV enabled economies of scale as the RMP-led project contracted with one supplier for a common tool across the Vanguard.
- Participants involved in the delivery of the patient experience feedback tool stressed the importance of understanding end-user needs and pre-existing platforms (especially for non-cancer specialist providers) and communicating goals of new platform (i.e. cancer-specific measure that could be fed back in real time as opposed to NCPES) during the early stages of project delivery which they felt had been lacking.

Case study 4: 7-day service for palliative care and end of life care

What has been done?

- The 7-day service for palliative care project is a shared priority for RMP and GM. There have been conversations to align efforts from the start. RMP have also developed a business case for end of life care.-
- GM's aim for this project is to model a clear, standardised and equitable approach to 7-day access to face-to-face specialist palliative advice and in-patient provision for those with end of life care needs requiring specialist services.
- RMP's aim for this project is to produce a robust business case in collaboration with providers and commissioners to address the gap in service provision of face-to-face specialist palliative care in hospital, hospices and community that can be used with commissioners in 2018/19.
- A service mapping exercise was undertaken by RMP and GM to gain an understanding of the current provision of 7-day specialist palliative (in GM and London), and end of life care (in South and West London only). RMP is also bringing together national and local best practice case studies for end of life care, to set a standard for service provision.
- Stakeholder events were organised by RMP to offer an opportunity for providers to gain new information and learning about innovation and best practice, as well as coordinating likeminded people with a shared purpose.

What was the effect?

No impact can be measured yet.

- After March 2018, GM will pilot a 7-day service with two providers in Greater Manchester, funded by Macmillan, with a view to getting the service commissioned if the pilot is deemed successful.
- RMP are in ongoing conversations with STP leads and CCGs to get the 7-day service commissioned and to address joint priorities.

What were the enablers/constraints?

Physical and psychological impetus

- The Vanguard has been given a clear mandate to undertake this work. The Vanguard was able to offer an opportunity to fill a gap that was otherwise not being addressed.
- There is a perception that the Vanguard has brought focus to progress the work and it has caused people to make specialist palliative and end of life care a priority.
- The Vanguard project management support has enabled the work that was initially driven by clinicians to accelerate, by creating capacity to undertake the service mapping and support event organisation. In GM, it has also provided resource to secure funding for a future pilot.

Continues on the next page

Relationships and shared learning

- The Vanguard status drew attention and gave credibility to the initiative, gaining the respect from the community.
- The joint mapping exercise has created more connections between providers, enhancing cross-provider relationships.
- The RMP project manager worked together closely with the pan-Vanguard Cancer Informatics service hosted by RMP to provide STPs, CCGs and providers with data and metrics, tailored to their needs by the project manager, in order to help them understand the local service provision and the needs of the population.
- The joint mapping exercise of 7-day specialist palliative care between London and Manchester has resulted in the sharing of learning on common challenges, common needs and common methodology. The data has identified local provider needs, thereby making the service specification adaptable to different settings.
- Having two clinical leads on the project that are both part of a national clinical network has raised the project's profile and gained buy-in from the National Association of Palliative Medicine and the Royal College of Physicians.
- While stakeholder events were already being held pre-Vanguard, since becoming a Vanguard the events have been able to attract a wider audience; they are now bringing together commissioners, third sector organisations, the wider STPs as well as primary, secondary and community care providers.
- In GM, the task and finish group brings together localities to discuss the findings. The project board meeting brings together the two Trusts that are piloting the 7-day service, GM Cancer, Macmillan, the Christie and the strategic clinical network and commissioning body. These meetings demonstrate how the Vanguard is driving stakeholders to think and work at a system level, rather than to focus on individual organisational performance.

Challenges

- There was a perception from stakeholders that RMP had been taking on a lead role in palliative and end of life care that was so much broader in scope than cancer services (despite RMP's efforts to challenge these assumptions).
- The RMP project team experienced initial caution from commissioners towards the Vanguard in the context of emerging STPs and a changing health system landscape. In this new context, the stakeholder events demonstrated RMP's intent to work collaboratively, rather than to lead.
- An initial duplication of effort by RMP and the London clinical network was identified around a similar service mapping exercise. This was overcome by exploring opportunities for joined working.

3.6. Medicines optimisation

3.6.1. What happened?

Projects evaluated

- **Sandoz: Education around Biosimilar Introduction (RMP in collaboration with GM and UCLHCC)**
Objective: to promote safe and timely adoption of biosimilars across the NHS through the education of healthcare professionals and patients and the development of frameworks for adoption and roll-out.
- **Amgen: Remodelling the pathway (UCLHCC)**
Objective: to cater for different patient preferences and improve patient experience; offer an online simulation tool for commissioners and managers, and pilot the pathway where patients self-administer denosumab in their home.

This is perceived by programme teams to be a successful workstream in terms of achieving the objective of opening up a new approach to working collaboratively with the pharmaceutical industry to accelerate innovative solutions to real cancer service challenges.

- Replicable tools and frameworks for medicine optimisation have been created and are available through the NCV website (e.g. an interactive PDF toolkit and framework to adopt biosimilars).

3.6.2. What was the effect?

- Pharmaceutical industry stakeholders have had a positive experience of being able to work at scale across the Vanguard partners and they cite the NCV programme as an important vehicle in enabling this.
- The Biosimilars Project has produced very high-quality, replicable and adaptable educational materials and frameworks that have been shown to increase healthcare workers' knowledge and confidence about using biosimilars.
- In the Sandoz biosimilars project, adoption of the biosimilar rituximab has been faster than the previous biosimilar, infliximab. Moreover, adoption in London has been greater than in many other parts of the country. The joint NCV-Sandoz Biosimilars project may have contributed to both these results.

3.6.3. What were the enablers and constraints?

- Collaboration between the NHS and industry, through the Pharma Challenge, is perceived by programme stakeholders to be among the key successes of the NCV. Due to its large scale and high visibility through the Vanguard brand, the NCV attracted pharmaceutical companies to work on and finance joint projects on medicines optimisation through the Pharma Challenge. Two interviewees described this as 'reversing the normal conversation', where the health system is in a position to ask 'how is the private sector going to help us achieve our objectives?' rather than companies asking 'how do we and our products fit in with the health system?'

- GM described the AHSNs as the 'gateway to industry', providing the necessary links for the NCV Pharma Challenge.
- Projects were financed by investment from pharmaceutical partners and can thus be sustained, if seen to be delivering benefit to patients, beyond the NCV.

Case study 5: The Pharma Challenge

What has been done?

The National Cancer Vanguard ran a Pharma Challenge under the Medicines Optimisation workstream to improve access to chemotherapy and systemic medicines for cancer as recommended by the Independent Cancer Taskforce. Additional aims were to improve patient experience, reduce medicine waste and improve the use of data for decision-making. The Challenge was overseen by a Joint Medicines Optimisation Group that included the Chief Pharmacists from each of the Vanguard partner sites.

As part of the Challenge, pharmaceutical companies were invited to submit proposals to improve the availability and delivery of cancer drugs. The proposals were judged by a panel of chief pharmacists, nurses, clinicians, health science and other professionals. The companies were required to meet the full cost of projects themselves and demonstrate wider benefit to the NHS including saving money. Around 40 proposals were received in the first instance (May 2016), of which six were selected. The partner companies were Sandoz, Amgen, Celgene, Philips, Bristol Myers Squibb and IMS Health (with Quintiles).

While project teams included representatives from the three Vanguard sites as well as the pharmaceutical company and other external organisations (as required), the project was led by one lead each from the pharma company and the nominated Lead Trust. Joint Working Agreements were established between the Lead Trust and the Pharma Company to formalise the partnership and give clarity around roles and responsibilities. A monthly highlight report reporting on progress against agreed deliverables had to be submitted to the Joint Medicines Optimisation Group per project.

What was the effect?

Pharma Challenge projects have enabled the following outcomes, according to the final report of the NCV programme (March 2018):

- Speedier uptake of biosimilars across the NHS following the Sandoz-led Biosimilars project which produced education materials and roll-out frameworks for use by NHS trusts nationally. Adoption of the biosimilar rituximab in 2017/18 is estimated to save the NHS £60 million a year.
- Amgen supported the development of an online simulation model and user guide for the most efficient out-of-hospital administration of denosumab for patients with secondary breast cancer of the bone, which is freely available for use by all NHS Trusts. An option appraisals document setting out the five different service models for community-based administration of denosumab was also produced.
- The QuintilesIMS project is identifying ways to use NHS resources more efficiently in the secondary care setting so that Trusts spend money where it matters most to deliver better patient outcomes and reduce variation in delivery of care.

What were the enablers/constraints?

Based on interviews with individuals involved in delivering the Pharma Challenge and projects within it, we identified the following enablers:

- Combining the expertise of three very large cancer hospitals, i.e. the Christie, RMH and UCLH, with that of the pharma industry allowed the NCV to have an agile, skilled and sizeable testing ground for new models of care that can be replicated across the rest of the country;
- Having engaged, committed and enthusiastic participation from stakeholders and project teams was an enabler of implementation;
- Project management and communications support from the NCV along with support from strategic leaders at each Vanguard site was crucial to drive the projects forward in a focused way;
- The NCV brand enabled interest from NHS as well as industry partners and NCV networks enabled wider dissemination and exchange of expertise, project outputs and learning.

Similarly, the following constraining factors were identified:

- Identifying individuals within the NHS capable of taking on local leadership of projects was sometimes challenging due to other commitments;
- Differences in information governance (IG) systems and processes and lack of capacity in the IG teams meant that IG matters were not addressed in a timely manner across all three Vanguard sites;
- Creating working relationships with people from different sectors with different levels of availability, values and approaches required some investment of time;
- Although a pilot was conducted for the denosumab out-of-hospital administration model, it was too small (only eight patients) to demonstrate an impact on capacity release or cost savings.

Lessons learnt

Some of the lessons from running the Pharma Challenge have already been disseminated across the Vanguard partners. Documents and learnings from the process of developing calls for proposals and proposal evaluation were shared with the Industry Challenge team.

The Pharma Challenge shows the NHS a new way of working with industry, of influencing outcomes and of learning from industry to develop new care models that are widely replicable. Ensuring that industry worked in a non-promotional way with the Vanguard partners allowed barriers to be lowered and new approaches to be trialled without the worry of failure. Stakeholders believe that the Pharma Challenge has delivered tangible impact with very little monetary investment from the NHS by demonstrating that it is possible to work across the NHS system and professions via collaborative leadership. The Biosimilars Project was viewed as an illustration of this.

Another Pharma Challenge could be developed, but it will be important to consider ways to resource people's time and provide project management support. Other points that should be incorporated in the Challenge design include engaging with IG teams as early as possible, ensuring that there is a good working relationship with clearly defined goals and timelines, and checking that the objectives can be achieved with the time and resources available.

3.7. System architecture reform

3.7.1. What happened?

- When the value proposition was submitted in February 2016, the three partners set out the following objectives for system architecture reform:
 - **Single budgets and lead provider models** – using financial incentives including pooled budgets, capitated budgets and single provider contracts where appropriate to leverage up performance across the whole system.
 - **Alliances of shared accountability** – sector-wide collaborative accountability structures with patient voice and including working towards commissioning for outcomes and alliance contracting; enabling shared aims, agreed targets and crucially shared capacity and workforce.
 - **Strengthened and streamlined commissioning** – work with commissioners across pathways of cancer care to streamline accountabilities and maintain a focus on driving improvement using system leadership as the vehicle for achieving this.
- The outputs of this work were the following:
 - funding models
 - ways of tracking cancer spend that aren't a capitated budget
 - multiple ways of demonstrating value gains and impact of changes
 - contracting models
 - performance metrics and dashboards
 - commissioning forms
 - governance structures
 - engagement plans
 - organisational forms and working towards alliance contracts that allow joint working

As highlighted in the background section, during the period of the NCV Programme, STPs were introduced across England to deliver against the triple challenge set out in the NHS Five Year Forward View across a bigger population footprint than CCGs. These virtual entities (they are collaborations or partnerships with no legal basis) started to explore new models of care and accountability for the whole population across all health and care needs (not just cancer) during this time. Any development of system architecture reform on the part of the NCV Programme took place against this background.

- Collaborations in each geography to deliver new models of commissioning and accountability have had to respond to changes in the wider health and care system such as the development of STPs and ACSs. Each partner had a different approach at the outset of the programme. The ambition was to test different models in different contexts, reflecting the diversity that exists across all Cancer Alliances:
 - Reform cancer commissioning process (GM)
 - Lead provider model (RMP)

- Collaborative network (UCLHCC)
- Progress to deliver the specific models identified at the outset of the NCV (e.g. single radiotherapy provider model for North Central London, GM Cancer Partnership and RMP Lead Provider Model) have been limited in this context.
- As a consequence, partners have focused on building local models of commissioning in the context of their local STP or Health and Care Partnership strategy that are inclusive of cancer services and creating leadership models and governance structures to enable new models of cancer care to develop and flourish based on local context and requirements.
- GM and RMP have actively shared learning throughout this process; sharing lessons as they developed and tested new models of cancer system accountability, developed system memoranda of understanding and consulted with clinical commissioners on emerging commissioning models.
- UCLHCC consistently worked to a collaboration model and did not aim to radically change this. Testing of a single provider model for radiotherapy (RT) across North Central and East London (NCEL) was foreseen, but paused due to uncertainty regarding how the national agenda for RT Networks related to the NCL proposal.
- RMP stated that this this had enabled a more strategic understanding of the challenges across the RMP geography and resulted in a shared ambition rather than 'local hospitals dealing with their local problems'.
- For UCLHCC, the Vanguard continued to support a pan-NCEL sense of cohesion, engagement and motivation to work more closely together, building on foundations laid by *London Cancer*. A collaborative agreement, signed by 11 acute and specialist hospital providers in the Vanguard, solidifies this joint working. A new workforce agreement is in place between two providers in the Collaborative, enabling rapid sharing of staff to support resilience and collaborative working.

3.7.2. What was the effect?

- Progress on specific outputs identified at the outset of the NCV (e.g. single radiotherapy provider model for NCL, GM Cancer Partnership and RMP Lead Provider Model) has been limited but in the context of the changing landscape, this ability to adapt readily to such changes and sharing lessons across geographies has been perceived as a strength of the programme.
- In all three partners, there was a concerted move away from a single powerful provider (sometimes specialist, sometimes not) of cancer services to a network collaboration, and sharing of expertise and knowledge across organisations.
- The exploration and development of a new model was a specific focus for GM and RMP within their programme of work. However, changes to system architecture have not been implemented at the pace originally planned by these partners, as the partners encountered issues related to a range of factors. These included changes in the commissioning context within which each of the partners sit, such as the establishment of STPs, whose focus on system architecture reform across the totality of health and care has added a level of complexity.

3.7.3. What were the enablers and constraints?

- The impacts of system architecture changes are different across the three partners and are different from those identified in the value proposition and the logic model. GM have had the greatest continuity as their overarching architecture – devolved health and care partnership – has remained constant. UCLHCC operates within a footprint of 2.5 STPs and RMP with two STPs, although the CCGs have remained constant throughout. This additional layer in the local system has had both benefits (shared purpose over a wider commissioning footprint than individual CCGs) and challenges (another layer of reporting and further meetings to attend for the programme leadership).
- For all three partners, creating a local cancer system as a collaboration or more formally as a neutral third party outside of any one organisation was described as instrumental in building trust within each system. However, some external stakeholders maintained that the perception of dominance of UCH within UCLHCC and RMH within RMP continued, and they felt that the inclusion of these providers’ acronyms in the Vanguard name was indicative of the relationship. This branding of the partnerships was not necessarily construed negatively by stakeholders.
- The current set-up of financial flows in health service does not allow ring-fencing of a budget for cancer without significant upheaval to the system. In addition, the partners encountered resistance by current budget holders to relinquishing control, grounded in issues of trust and concerns about conflict of interest, and reinforced through a legacy of competitive behaviour between local organisations and individual providers.
- National leadership credibility is being derived from the Vanguard brand across the other Cancer Alliances as well as other ACCs. It was perceived that without the high profile, the NCV would have found it more difficult to engage with partners, within the healthcare system and beyond, e.g. industry. RMP specifically highlighted the Vanguard’s role in establishing its local leadership position and legitimacy. It has provided a structure for cancer stakeholders to come together, enabling chief executive level buy-in and engagement with the STPs. RMP’s provision of support to a provider that was unable to meet performance targets is seen by RMP as a demonstration of their system leadership, having built relationships across the system and trust across organisations. It is now being seen as a central resource for transformational and operational support to providers across the system.
- Locally, the leadership of each partner within its geography and system is building relationships based on trust and collaboration that enable the partners to visibly demonstrate collective leadership for cancer. This is still a work in progress.
- RMP have created an infrastructure or operating model which will ‘outlive’ the Vanguard programme. The RMP operating model is described as an ‘engine for cancer services transformation’ across North West and South West London and it has already started providing cancer transformation advisory services to partners. Transformation funding for RMP has been secured beyond March 2018.
- UCLHCC has always described itself as a collaborative network of partners working together under the auspices of an MoU for a shared goal. The Vanguard has provided (through funding) additional programme management resource that is described as being instrumental in accelerating progress that was started by *London Cancer*. The Cancer Collaborative is resourced through a plurality of income streams and is designed to continue beyond the Vanguard funding cycle.

3.8. Digital and information

3.8.1. What happened?

As recommended by the Cancer Taskforce Strategy, one of the goals of the Vanguard programme was to establish a pan-Vanguard informatics service that would test integrated informatics systems and provide a model that could be replicated by other Alliances.

The value proposition set out the following actions:

- Set up aligned centres for cancer outcomes or clinical intelligence units that will publish 'outcomes booklets';
- Work with other NHS, academic and voluntary sector partners to improve the analytics ability and output;
- Define outcomes, especially those that matter to patients, as well as process measures; recording outcomes; reporting outcomes; informing commissioning and policy; supporting research; engaging in population health work;
- Invest in analytics support to generate and use replicable reports on service characteristics and cancer outcomes to drive a continuously learning culture across our health system;
- Provide consistent and efficient reporting at a pathway and provider level to drive improvements; and
- With support from the NCM team, develop information governance approaches so data sharing can be robust and maximised, and patient data safely protected.

The project has not been run as a single programme of work (as described by the NCM letter of 20 February 2017), but as a collaboration across the three partners. There is no overarching governance structure or overall planning documents. It has been led by the informatics lead from RMP working closely with representatives from GM and UCLHCC.

Informatics is described by all three partners as essential to their success and while three distinct models of informatics support have been developed for each cancer system, there has been much collaboration across partners. While the pan-Vanguard collaboration is about offering high-level strategic data sets that inform cancer performance and improvement through benchmarking, each partner describe having a specific role in meeting local information requirements as a 'deeper dive' in addition to this.

3.8.2. What was the effect?

It is too early to demonstrate project-related outcomes and impact; however, the following are considered by the project teams at RMP, GM and UCLHCC to be the key achievements in terms of outputs:

1. Partner-centred local cancer informatics centres or teams that meet the needs of the local programme for strategy, planning, reporting, monitoring and evaluation.

2. A replicable cancer dashboard that can be used by all Cancer Alliances. This work is being progressed by the newly established CADEAS (Cancer Alliance Data Evidence and Analysis Service) hosted jointly by NHS England and PHE;
3. A cloud-based dashboard delivered by the GM Cancer Intelligence Service for NHS users and people affected by cancer with real-time data to support decision-making;
4. A suite of reports available by tumour group that can be used by Alliances for performance and improvement benchmarking;
5. UCLHCC is currently in the process of developing person-centred outcome measures through the work with the International Consortium for Health Outcomes Measurement (ICHOM) and gathering information from patients on their experience of care (patient feedback tool);
6. A replicable multidisciplinary team (MDT) scorecard that has been tested by UCLHCC.

The Pan-Vanguard Informatics Service also provided each of the partner informatics teams with a mechanism through which they could engage with commissioning and provider partners in their local system and facilitate the agreements for data sharing.

There were no defined expected benefits to the project that have been agreed by all three partners beyond those set out in the Vanguard Value Proposition (February 2016); therefore it is not clear how the programme is measuring benefits. The team members have identified the following immediate benefits of the collaboration:

1. Cancer informatics is a standing item on the executive meeting agenda of each of the three partners;
2. There is greater transparency across commissioners and providers;
3. Learning has been shared across local analytics teams;
4. Shared consistent methodology;
5. Reduced duplication in analysis;
6. Better relationships with clinicians through shared engagement around data; and
7. Relationship established with PHE to enable better information flows and sharing of insights.

3.8.3. What were the enablers and constraints?

- The wider access to clinical networks has enabled access to data that has supported the development of the informatics service. Information needs are seen to be different in each geography so local ownership of informatics has been preserved on the whole, but methodological lessons have been shared.
- The Pan-London and Greater Manchester Informatics collaboration has been enabled by the NCV through dedicated funding: the analytics team would not have been resourced to the same extent otherwise.
- The NCV brand has enabled each of the partners to engage with the commissioning and provider partners from each of the provider partners in their local systems and facilitated agreements for data sharing (GM).

- The emergence of STPs during the project delivery added a layer of complexity in terms of reporting requirements. The current developments in reporting on Alliance footprints is helping to resolve this issue.
- The large population size within the NCV is seen to be an advantage when conducting population-level analysis but it is not yet clear what the wider benefits might be or how this might be replicated by other Cancer Alliances.
- Multiple data sources and data lagging are issues that have been outside the control of the informatics collaboration to resolve, but they have been able to share lessons about how they are trying to mitigate this challenge locally and outside of the cancer programme.
- Systems are demanding informatics services to support both performance management (commissioning) and improvement (provider). There is a view that these are not always compatible and competing priorities can be difficult for analysts to manage.
- Alliances are not legal entities, which presented challenges for information sharing, but the Pan-Vanguard Informatics Service has been able to share the lessons learnt on this with CADEAS and other stakeholders and it is likely that this will accelerate progress in other areas.
- NHS reporting is very complex (e.g. frozen series versus live); this has led to methodological confusion but this collaboration is helping to resolve this aspect.
- There have been challenges recruiting analysts to the team due to delays in funding, short fixed-term employment contracts and competition from other emerging analyst services.
- There was no clear agreement on leadership or communication around project delivery for the Pan-Vanguard Informatics Service. This depended on available capacity which was viewed by the three partners as a pragmatic approach to delivery. There was no programme-level approach to the development of this service. Progress has predominantly relied on the commitment of individuals and their relationships, which while again pragmatic, is a risky and less sustainable solution.

3.9. Diffusion and replication

3.9.1. What happened?

The value proposition set out the following activities to support diffusion and replication within their own systems, across each other systems and widely with other Cancer Alliances:

- Sharing practice with other learning networks such as the ACC and other national Vanguard models;
- Sharing lessons learnt with the Radiology Network around replicable business cases for IT interventions;
- National Cancer Vanguard website; and
- Attendance at national and international conferences.

The NCV created a learning environment through the establishment of forums such as the Communities of Practice, the NCV website, the NCM NHS England Kahoots site and the Pan-Vanguard Informatics Service. For example, it organised three events with other Cancer Alliances (March and Oct 2017; Feb 2018), bringing together a 'Community of Practice' to foster communication and sharing of learning beyond the NCV Programme. The Community of Practice events have been the main mechanism to promote learning and replication of practice across Alliances, with increasing interaction with Vanguard partners outside of the formal events.

The first communities of practice event focused on five aspects: Evaluation, early diagnosis, living with and beyond cancer, patient experience and alliance governance, establishment and development of delivery plans. All of the 16 alliances attended, and the event was facilitated by the three Vanguard partners. The second communities of practice event focused on optimal pathways for lung, prostate, OG and colorectal. This event had 100 attendees with representation from every Cancer Alliance including significant clinical representation.

On project level, a number of different projects have created educational and other (online) resources for:

- GPs (Gateway C, two-week wait audit)
- Pharmacists/Oncologists/Nursing staff (Biosimilars, REACT)
- Public (Highlight Cancer, Deflate Cancer)
- Commissioners (Cancer informatics, denosumab home administration simulation tool).

3.9.2. What was the effect?

- The leadership of the NCV programme report high levels of satisfaction with the communities of practice events as enablers of diffusion and replication across Cancer Alliances. This finding has not been verified with the other Cancer Alliances.

- Some project managers have had less direct experience of the sharing events and would like to be more involved in these in future. Programme leads recognise the challenges of involving everyone in this process and have focused on engaging ‘the right people, at the right time and at the right level’.
- Some have reflected that gaps in lessons sharing have had to be filled by other forums (e.g. recent CRUK informatics event). This may be inevitable with such a large agenda to share and plurality of hosting is to be welcomed and may indeed have been promoted by the visible NCV programme priorities.
- The programme reports quarterly to NHS England NCM team and is starting to report against quantitative metrics as well as project updates. It is not clear if this reporting is shared with other Vanguard programmes under the NCM team, although other material is shared on the Kahoots intranet site hosted by the NCM team. The phased start of the projects within each programme has created some reporting challenges, particularly when measuring impact. Future reporting arrangements are currently being discussed with the National Cancer Transformation (NCT) Programme.
- The NCV actively supported the work of the NCT team, starting in autumn 2017, when UCLHCC and GM engaged in discussions on the development of best practice timed pathway guidance for lung and prostate, and provided clinical evidence to inform the NCT’s efforts. The NCT commented that the NCV had been very collaborative and helpful in supporting this work.
- All three partners were optimistic about the potential for replication (within their networks and to other Alliances) and sustainability of impactful projects over time. However, some questioned who would take responsibility to sustain the mechanisms through which the replication and scale could be achieved.
- A number of tools and frameworks have been developed. Limited information is available on the wider awareness, access and use of these tools outside of the NCV programme. A user survey completed by 79 users of the Pan-Vanguard Informatics Service, conducted as part of this evaluation, highlighted that the service was mostly used to benchmark against other systems (77%) and to inform reporting and improvement (76%). Just over half of respondents use it to inform planning/priorities (53%). For this question multiple answers were allowed. Of those who have used the reports, 79% rated their quality as ‘high’, and 21% as ‘moderate’. Those who rated the reports as ‘high quality’ mostly did so because of how clear the presentation was (22 respondents), and because of the usefulness of the data (10 respondents). Feedback from those who rated the quality ‘moderate’ was mostly about the type of data and the presentation of the data.

3.9.3. What were the enablers and constraints?

- Collectively, organising the NCV programme across the different parts of the patient pathway reflecting the recommendations of the National Cancer Strategy, has enabled the Partners to share learning more easily and identify those projects where joint programme delivery would achieve economies of scale and accelerate replication. However, this could only be observed to a limited extent. The opportunity to use the 10+ million population coverage to test projects at scale was not seen to be fully utilised. This may be inevitable given the importance of addressing local priorities for population health in the context of a system that is still regulated at local and organisational level.

Gateway C is one example of a project that was developed at GM and then rolled out by UCLHCC; however, UCLHCC did not observe similarly successful results in relation to improved GP confidence⁷ – suggesting that contextual factors are key in diffusing and replicating new models.

- The NCV workforce and NCT provided positive feedback on the sharing of learning forums and would like to see these sustained and scaled. There were some outlying views on this, however. Some team members, especially from GM and UCLHCC, felt less involved in shared learning activity and would like to be more involved in future, playing an active role in diffusing learning about new initiatives.

⁷ Dr Catherine Heaven (2018). Cancer Vanguard Evaluation Report Project 5 – Creating an online platform of cancer education and information for primary care.

4. Conclusions

4.1. National Cancer Vanguard level

4.1.1. What has the National Cancer Vanguard done differently from previous collaboration efforts to achieve the stated goals?

The National Cancer Vanguard programme provided access to the following resources and inputs, tangible and intangible, that would otherwise have not been available:

- Funding over the two-year period to resource the National Cancer Vanguard Programme and the programmes being delivered locally that focused on testing new innovative models of care;
- A national governance and programme management framework that enabled access to the New Care Models team as a resource to support implementation, and the National Cancer Transformation Programme to influence strategy implementation, that mandated a focus on priority areas of interest and provided an opportunity for regular sharing of lessons learnt as the programme was implemented in each partner's system;
- Permission to act that was granted by the national profile and legitimacy of the wider Vanguard brand. This was further reinforced by the Communities of Practice events which enabled the NCV Programme to share emerging learning with other Cancer Alliances;
- Opportunity to innovate in models of care with partners (e.g. charities, pharmaceutical and industry partners), monitor and evaluate benefits delivered systematically and then share this learning so that the models can be replicated by other Cancer Alliances;
- Development of a Pan-Vanguard Informatics Service that delivered locally bespoke solutions within a shared methodological framework that has become a blueprint for the set-up of the national Cancer Alliance Data Evidence and Analytics Service.

4.1.2. What are the observable changes and to what extent can they be attributed to the National Cancer Vanguard?

The following outputs or observable changes have been identified across the NCV Programme during this first year of the evaluation. In all cases below, programme stakeholders identified that these would either not have been delivered at all, or would have delivered more slowly if the NCV Programme had not been available.

- Joint projects have been delivered by pan-Vanguard collaboration through NCV Programme-level leadership and regular information exchange at project and partner level. Some projects made more rapid progress than others, and those with defined clinical leadership and resourced change management support demonstrated accelerated progress.
- The establishment of an informatics service that provided access to a cloud-based report repository (Pan-London and Greater Manchester Informatics) for high-level strategic reports against seven chapters that is hosted by RMP. The collaboration of the informatics leads across the three partners also enabled

- agreement on methodology and metrics;
- collaboration and sharing of local informatics tools (e.g. ICHOM implementation; cancer dashboard, MDT dashboard; pathways visualisation tool, etc.);
- engagement in the development of national tools (e.g. Cancer Stats portal; CADEAS team development, etc.); and
- shared lesson around information governance and data sharing agreements.
- The existence of clearly identified national leadership for the NCV through the oversight group and the programme leads enabled each partner to build relationships across their geographies beyond cancer, particularly with the emerging STPs. This was already established in Greater Manchester through the Cancer Programme within the Health and Care Partnership;
- The Communities of Practice events have been developed to support the adoption and /or adaption of new models of cancer care and other solutions demonstrated by the NCV Programme by other Cancer Alliances. Three such events have been held to date, with another scheduled for summer 2018. The impact of these event on adoption is not yet clear as the evaluation team have not had access to the other Cancer Alliances;
- At workstream and project level, a number of new care models and system solutions have been tested locally, and in some cases nationally, with lessons captured through project evaluations that can be shared with other Cancer Alliances. There is huge variation in the scope, design and scale of these projects, which makes quantified comparison challenging. Some of the projects covered very small numbers of patients, making generalisability difficult, but the process and implementation lessons are valuable.

4.2. Partner level

4.2.1. What has each Vanguard partner done differently from previous collaboration efforts to achieve the stated goals?

There are a number of prior cancer collaborations and networks that the partners were continuing to build on in each system. It is notable that some stakeholders pointed to the lack of continuity across time and the potential for losing institutional memory as the personnel across the partner programmes move on.

- For GM, they focused their Vanguard resource on building a programme to test 17 innovation projects through a time limited two-year programme;
- The London Vanguard partners (UCLHCC and RMP) continue to build on pre-existing programmes of work (*London Cancer* and *London Cancer Alliance* respectively);
- RMP have set up a sustainable leadership model and supporting infrastructure that they view as a collective North West London (NWL) and South West London (SWL) resource to support transformational change in cancer services across the two footprints;
- UCLHCC codified their collaboration through a collaboration agreement and resourced a programme team that enabled accelerated progress on priority programmes of work;

- All three partners set up governance structures for their individual programmes to facilitate relationship building across their wider health systems and regular programme reporting to their oversight groups and other partnership groups (e.g. STPs);
- The collaborative approach to partnership working across a cancer system, which distinguishes the Cancer Alliance model, has enabled each partner to transcend organisational boundaries through informal communication as well as formal reporting mechanisms; and
- The approach has also enabled accelerated relationship building across local health and care systems with charities, pharmaceutical, industry and Academic Health Science Network partners as well as with policy-makers from NHS England and Public Health England.

4.2.2. What are the observable changes and to what extent can they be attributed to each Vanguard partner?

- RMP continues to deliver transformational projects at pace through their sustainable leadership model and supporting infrastructure across NWL and SWL. It has secured funding for its programme of work for 2018/19 and 2019/20. This is supported by their local informatics service.
- GM is creating the case for GM cancer thematic commissioning within the GM Cancer Programme and has secured investment from industry and third sector partners, including funding to pilot specialist palliative care, testing the introduction of digital pathology across the conurbation and the development of a cancer intelligence system to inform priorities for work and investment.
- UCLHCC led the development of the Cancer Delivery Plan across both NCL and NEL STPs and continues to act as the system focal point for transforming cancer services. The programme has also secured funding for 2018/19 as well as further charitable / industry and academic funding.

4.2.3. What 'system' characteristics are enabling each Vanguard partner to maximise enablers and overcome barriers?

The following partner-level conditions or system characteristics that enable success have been identified:

- Strong local leadership for cancer transformation at programme level and across the wider local system (e.g. Sustainability and Transformation Partnerships) with a shared sense of purpose for delivering on the National Cancer Strategy. In the case of all three NCV partners, there was a history of collaboration for cancer care although the scope was not as wide. Specifically, there were gaps in prevention, early diagnosis and living with and beyond cancer that were explicitly addressed in the NCV programme.
- High-performing teams of project and change managers recruited and retained within the programme over time who take a collaborative approach to supporting clinical and other change and establish a clear framework for tracking benefits realisation.
- Openness to collaborate across organisational boundaries from all stakeholders involved in the programme, including partners outside the NHS. This was particularly observable in the Pharma and Industry Challenge projects and in those projects where there were high levels of engagement with the cancer charities. The GM Health and Care Partnership operates on these principles, providing the GM Vanguard Innovation programme with the local conditions for collaboration. The emerging STPs in London and the work of the Healthy London Partnership (Transforming Cancer Services

programme) provide a similar but probably not as well established set of conditions for collaboration for the London Vanguard partners.

- A climate of research collaboration and historical investment in cancer research creates the conditions for innovation and learning and collaborations with and through Academic Health Science Networks are well established in all three partners within the National Cancer Vanguard.
- A strong network of collaboration with cancer charities was considered an essential condition for the success of specific programmes of work and in the governance of the partner-level programmes.
- Engagement with patients and patient representatives in programme governance, project design and project delivery.

4.2.4. What has been the impact of the Vanguard partners on cancer outcomes and patient experiences and is this replicable?

This has not been the focus of the year 1 evaluation. A tool is being developed which will enable the NCV programme partners to evaluate the impact of the programme on cancer outcomes and patient experience (see Appendix 4).

4.2.5. What value has been delivered by each of the Vanguard partners and is this replicable?

This has not been the focus of the year 1 evaluation. A tool is being developed which will enable the NCV programme partners evaluate the impact of the programme on cancer outcomes and patient experience (see Appendix 4).

4.2.6. What aspects of each Vanguard partner model, if replicated elsewhere or scaled locally, can be expected to give similar results?

This is highly context-dependant. There are some projects that have demonstrated value in all three contexts and some projects which have focused on areas of priority for the National Cancer Strategy and are being implemented nationally in any case. The aspects of the partner models that should be considered for replication include:

- The context-dependant approach to cancer system leadership with a shared sense of purpose for delivering on the National Cancer Strategy priorities;
- The resourcing of a transformational support infrastructure;
- The establishment of local informatics to support real-time monitoring, evaluation, learning and decision-making;
- Involvement from people affected by cancer from the beginning at all levels of the programme from oversight, through to delivery;
- Leveraging the insight and reach of local innovation, research and education networks such as the Academic Health Science Networks and national resources such as National Cancer Registration and Analysis Service and PHE, CADEAS, Radiology Network and other regional bodies (e.g. clinical networks); and
- A programme structure that mirrors the national cancer strategy priorities with locally sensitive amendments / additions.

4.2.7. What are the key system characteristics required to achieve replication in other Cancer Alliances and/or scaling locally to happen?

In addition to the aspects of the model listed above, there are other enablers that were available to the NCV programme partners that would be required by Cancer Alliances to make progress in transforming cancer care at the same pace.

- Transformational funding to resource a programme of work over and above business as usual;
- Locally agreed priorities and observable benefits that can be tracked and reported;
- Project management capabilities that are embedded within the cancer system working alongside clinicians and people affected by cancer; and
- A forum to share lessons and expertise across a footprint wider than a single Cancer Alliance.

4.3. Project level

For the purpose of these conclusions we have selected a smaller sample of projects for which we had relatively complete information. These are summarised in the findings section as illustrative case studies. The projects are:

1. Gateway C;
2. Multidisciplinary Diagnostic Centres (two projects – Query Cancer and Vague Abdominal Symptoms)
3. Best Practice Timed Pathways for lung, colorectal, prostate and oesophago-gastric cancers;
4. Pharma Challenge; and
5. Seven-day service for Palliative and End of Life Care.

4.3.1. What did each project do to contribute to the goals of the National Cancer Vanguard?

Using the programme goals set out in the value proposition and the logic model or theory of change, the selected projects contributed to the goals of better cancer outcomes, better patient experience and greater system resilience and sustainability in the following ways:

- The Best Practice Timed Pathways projects have delivered new standardised pathways for three out of four priority tumour types representing the common cancers – lung, prostate, colorectal and oesophago-gastric cancers – with the fourth still in development. Earlier diagnosis in the pathway has the potential to lead to better survival, reduce variations and emergency diagnosis with a target to diagnose cancer within 28 days from referral. Whilst the outcome data is not yet available, these projects will contribute to the delivery of national optimal pathways by 2020.
- Projects aimed at better patient experience such as Remodelling the pathway (under the Pharma Challenge), Patient experience feedback tool and Aftercare pathways have demonstrated the importance of engaging people living with the effects of cancer in the design and delivery of new models of care. The main source of data on patient feedback will be the National Cancer Patient Experience Survey (available annually with a 6 month lag), trust-level Friends and Family test (not specific to cancer for trusts providing non-specialist services, and the patient experience feedback tool (IWantGreatCare) which is only partially rolled out across the Vanguard partners.

- Projects aimed at system resilience through education and multidisciplinary working include Gateway C, Early education, REACT, and Query Cancer and there is early qualitative evidence from the evaluation of these projects that they are having an effect on increased pick up rates and faster rate of cancer diagnosis rule-out, and thus efficiency gains as well as improved relationships between GPs, MDCs and different specialities. Wider system initiatives such as the workforce sharing agreement across UCLHCC have also contributed to system resilience.

4.3.2. What role did system characteristics play in maximising enablers and overcoming barriers to change projects?

- The programme and change management support that was enabled by the NCV funding provided clinicians with the space to take a step back from their daily commitments and think about what could be done differently.
- Within each Vanguard partner programme there was a well-developed programme structure which enabled programme managers to share their experiences across projects. There was no forum to do this across Vanguard partners at project manager level outside of explicitly joint projects and some enabling initiatives such as communications. Clinicians who were members of the local tumour boards were able to share learning in this forum, but it is not clear that all clinicians involved in the NCV programme were able to access this forum or the Communities of Practice events.
- The Vanguard brand under the New care Models programme, as a high profile NHS policy initiative, provide a contextual legitimacy for conversations with industry and connecting with external stakeholders (AHSNs, charities) which helped accelerate progress at project level.
- Official reporting mechanisms, setting a baseline and data collection were requirements set by the NCV programme. Some programmes have evidenced a robust project evaluation, however for many projects we were not able to get access to data to validate that this requirement was met.

4.3.3. How do projects differ in their impact (where comparable) and what explains these differences? Is there an observable pattern of characteristics amongst projects with the greatest impact?

This has been difficult to determine as the projects implemented have been either implemented in different ways in different contexts (e.g. Gateway C) or shared a common goal but the model and / or population focus has varied in different contexts (Query Cancer and Vague Abdominal Symptoms as two examples of multidisciplinary diagnostic centres).

4.4. Summary

The early findings of this evaluation demonstrate that the NCV Programme has supported the accelerated progress of innovations and new care models in the three cancer systems by providing:

1. A shared sense of purpose among key stakeholders (including providers, commissioners, Sustainability and transformation Partnerships, charities and AHSNs) on improving the local cancer system, delivering on the National Cancer Strategy and a focus in the needs of people living with the effects of cancer;
2. The opportunity and ‘permission’ to develop governance structures for cancer system innovation, embedded within the local cancer service delivery context that promotes openness to working across organisational boundaries;
3. Funding to resource two years of support to the transformation programme with high performing teams or project and change managers which has enabled the Vanguard partners to ‘make the case’ for continued support to priority programmes within their system;
4. As part of the national Vanguard programme, supporting and encouraging culture that promotes innovation, learning from failure as well as success and collaboration through open communication channels (formal or informal) and regular discussion / information exchange;
5. An informatics service that provides pan-Vanguard as well as locally relevant information and analysis to inform real-time decision-making.

Other Cancer Alliances should consider the maturity of their own cancer system against these characteristics as they develop their local new models of cancer care.

Appendix 1 – Detailed analysis against programme objectives

As part of our analysis of the qualitative data, we carried out a first order analysis using the thematic framework set out in the evaluation plan. We then carried out a second order analysis using the workstream structure of the programme. In addition, we also conducted an analysis of the qualitative data against the programme objectives set out in the logic model. This appendix presents this analysis as different lenses through which to view the large body of qualitative data gathered from document review, interviews, focus groups, surveys and working sessions.

NCV Programme Objective 1: To improve cancer outcomes

Programme Outputs

Completion of pilots

Some projects have been delayed but the vast majority of those planned for delivery during the programme timeframe are complete.

Projects undertaken in the NCV spanned from prevention and diagnosis to treatment and aftercare. Enabling early diagnosis was the focus in many projects owing to its impact on better survival and other outcomes for patients. Projects tackling patient and population health also incorporated elements of service improvement or learning for improvement.

Network of patient champions established

Each partner has focused on this differently and it was in particular a focus for GM and UCLHCC.

Projects that have developed a network of champions are listed below.

1. Citizen-led Social Movement (GM): Aim to catalyse and connect a grassroots, citizen-led social movement for cancer prevention by working through the voluntary sector. The ultimate aim is for the social movement to be self-sustaining and lead to a decrease in the prevalence of cancer, improvements in population health and well-being and to strengthen communities. The project has been successful at generating a network of individuals and organisations who act as ‘cancer champions’ to work from the grassroots level to spread messages about cancer prevention.
2. Population awareness arm of UCLHCC’s early diagnosis education project had two projects Highlight Cancer and Deflate Cancer. In Highlight Cancer, non-healthcare professionals with client-facing roles (initially barbers, hairdressers, pub landlords, etc.) were trained as cancer champions. Although recruitment was a challenge, champions have been trained. They are expected to have conversations in the community and signpost to screening services and raise awareness of lifestyle as a risk factor for certain cancers. On the other hand, Deflate Cancer targeted populations in deprived areas to educate

and engage the general public about the signs and symptoms of either breast or colon cancer. Targets were exceeded. However, effect of project on participants' knowledge of and behaviour regarding cancer cannot be judged as they were not followed up later on.

Best practice timed pathways established at scale

Service improvement projects have mainly been about best practice pathways, for example, the joint best practice timed pathways for lung, prostate and colorectal cancers and the GM Vanguard Innovation project on aftercare pathways for breast, colorectal and prostate cancer patients.

The NCV went beyond the usual mechanisms for service improvement employed within the NHS. It had the 'permission' to enter uncharted territory and function as a test bed for innovation, to provide robust data to enable evaluation of outcomes/impacts and cost-effectiveness, and develop evidence-based recommendations regarding further testing, take up, and potential large-scale roll-out across populations.

Coordinated/ joined-up cancer care pathways established including end of life care and living with and beyond cancer

Examples of projects are listed below.

1. The Aftercare Pathways project at GM aimed to develop a new aftercare pathway for early breast, colorectal and prostate cancer patients in Greater Manchester, moving from hospital-based follow-up to a more personalised and supported self-management pathway for appropriate patients, with the full Macmillan recovery package and information needed to access care as well as testing a new IT Safety Net or Remote Monitoring System, Infoflex. Infoflex was tested only for breast and colorectal aftercare pathways. It allows hospital staff to book surveillance tests and monitor patients online. Anecdotal evidence from CNSs and aftercare coordinators suggests that it is quicker and more efficient for tracking patients than manual input systems based on spreadsheets or paper records. In addition, a new Aftercare Coordinator role which can help to release administrative burden from CNSs has been tested. Unfortunately, the technical implementation of Infoflex did not keep pace with the clinical design, due to a number of issues related mainly to Trust IT departments such as lack of technical resource, resistance to implementing a system perceived as being externally imposed and data sharing and information governance (IG) issues. Funding (costed at £2.92 million for 2018–20) has been applied for to roll out the pathways across the system.
2. The vague abdominal symptoms (VAS) project (RMP) aimed to develop a streamlined diagnostic pathway for patients who present with VAS and don't fit two-week criteria. Particularly upper GI cancers are of interest because (1) early symptoms can be very vague and (2) outcomes are poor once diagnosed. The aim of this project was to have a diagnostic pathway that would allow early diagnosis and therefore improve the outcome in these patients. Different pathway designs and implementation practices were tested across three hospitals.

Partnerships established with Industry and other organisations

Several relationships have contributed to acceleration and/or diffusion and spread; e.g. with industry and pharma partners, AHSNs and charities.

Collaboration between the NHS and industry, through the Industry Challenge, is considered among the key successes of the NCV. Due to its large scale and high visibility through the ‘Vanguard’ brand, the NCV attracted pharma companies to work on and finance joint projects on medicines optimisation through the Pharma Challenge. There has been positive feedback from industry partners, who want to see this relationship continue at national level. The Early Diagnosis Industry Challenge has identified three further projects that will continue in 2018/19.

AHSNs were established to support partnership working and collaboration between the NHS, academia, the private sector and other external partners within a single AHSN context and across AHSNs. The three NCV partner geographies each encompass an AHSN (or part of an AHSN).

Relationships with charities and voluntary organisations were utilised to improve patient outcomes. All three partners had some relationships with relevant charities prior to the NCV, but to varying degrees. Strong existing collaboration was reported between GMC and UCLHCC, with Macmillan (e.g. user involvement, aftercare pathways) and CRUK (e.g. early diagnosis education). In addition, the Citizen-led Social Movement project at GMC was seen to have strengthened relationships between the NHS and the voluntary sector, with each learning about the working cultures of the other.

Outcomes

Single, optimised pathways for 4 priority cancers rolled out and adopted

The delivery of the joint pathway projects was phased over the two years of the NCV programme. Lung and colorectal joint pathway designs had early completion and are being rolled out through routine commissioning and the national clinical expert group (CEG) is engaged in amending pathways to make it achievable for Alliances for implementation by 2020. Prostate pathway has just been completed (there was no prior CEG), while OG pathway is in progress but delayed. It will not be part of NHS Planning Guidance this financial year.

62-day waiting target achieved and maintained

Some areas of improvement have been seen in the 62-day waiting target but this remains an area of challenge nationally⁸.

⁸ Note: In February 2018, the Cancer Vanguard End of Vanguard Report reported that “both RMP and UCLHCC have achieved the 62-day cancer waiting time target since the last quarter of 2017” (pg 8). This was based on data up to December 2017 and did not capture the full 2017/18 data set.

The 62-day cancer waiting time target is currently the driving force for cancer services, and is tied to the ability to access transformation funding. This is shifting the focus towards short-term performance, and away from other goals of the NCV, such as prevention or improving the patient experience. While the NCV ToR do not include responsibility for monitoring performance, the Vanguard trusts have responsibility for supporting their trusts to reach the national performance targets. One stakeholder commented that a large part of time at the Vanguard board meetings was spent either on negotiations around funding or on short-term pressures on performance, and the interrelationship between the two.

Reduced waiting times / Reduced time to diagnosis from GP referral (by 2018)

There is some early evidence of change in these times overall from the baseline; for example, shorter waiting times for patients on lung cancer pathways and sustained delivery of the 62-day target by RMP since September 2017 and by ULHCC since December 2017.

Cancer diagnosed in earlier stages (by 2019)

No evidence available yet.

Greater engagement with Industry and other organisations to maximise benefit to patients

Two interviewees described the pharma challenge as ‘reversing the normal conversation’, where the health system is in a position to ask ‘how is the private sector going to help us achieve our objectives’ rather than companies asking ‘how do we and our products fit in with the health system’. Relationships not yet systematically developed to enable greater engagement at national level.

GM was highlighted as having a ‘very inclusive mindset, being very open to external views and partnerships’ with charities. At UCLHCC, charities contributed at the proposal stage and provided formal endorsement of the UCLHCC programme. Continued joint working under the NCV umbrella maintained and strengthened these relationships. At the same time, there is a view that on some occasions, key stakeholders who might have provided accelerated project progress were not involved until later on (e.g. Highlight Cancer and Deflate Cancer at UCLHCC and involvement from CRUK and local NHS partners).

Both CRUK and Macmillan reported starting from a lower level of engagement with RMP, which was described as ‘self-contained/self-sufficient in their approach’ and ‘not seeking input from other organisations’. This has increased over the course of the NCV.

All partners reported that they had a good relationship with ‘their’ AHSN. For GM and RMP, the AHSNs hold an advisory role, providing input when requested, but are not intrinsically involved in the programme. UCLHCC has a stronger relationship with ‘its’ AHSN, UCL Partners, with active involvement through the Early Diagnosis industry challenge. GM described the AHSNs as the ‘gateway to industry’, providing the necessary links for the NCV Pharma Challenge.

Objective 2: To improve patient experience

Outputs

Network of patient champions established

Coordinated/joined-up cancer care pathways established including end of life care and living with and beyond cancer

This is still a work in progress, although specific projects have focused on joining up cancer services. This was mainly observed in projects aiming to join up primary and secondary care by focusing on making the process from referral to diagnosis smoother and quicker. Project examples of this are Faster Diagnosis (GM), Query Cancer (GM) and Vague Abdominal Symptoms (RMP).

People affected by cancer including patients, carers, those at risk of cancer and families engaged

A number of different mechanisms have been established by the three partners at programme (engagement in governance) and project levels (especially evident in the Aftercare Pathways project) to engage patients.

Patient engagement was perceived as an area where partners were testing different approaches from which learning could be shared. All partners felt that the NCV has provided them with the opportunity to explore ideas and share experiences with the other partners, with RMP and UCLHCC specifically highlighting that they were able to learn from GM's user involvement approach and processes.

In GM, a dedicated UI team had been set up as part of Manchester Cancer prior to the NCV, in collaboration with Macmillan.⁹ The aim was to ensure that people affected by cancer (PABC) were part of the existing structures relating to pathway boards. The Vanguard benefited from GM Cancer's established UI programme, with established work processes and a significant database of PABC (approx. 120) who want to be involved in helping to develop cancer services and guide the work of the programme. Vanguard funding enabled the UI team to hire a UI manager, which has in turn led to a higher level of user involvement, both at NCV governance and Vanguard project level. GM Cancer's UI approach is based on the Macmillan model of coproduction, rather than consultation; the NCV provided opportunities to further embed UI and help to change the ethos of user engagement within the system.

Unlike GM, the London partners did not have dedicated central UI teams and resources to build on for UI in Vanguard projects. *London Cancer* and UCLH had established a strategy of putting the 'patient voice' at the heart of their work, e.g. by inclusion of PABC on all tumour pathway boards and the establishment of the UCLH Cancer Patient and Public Advisory Group and was working closely with Macmillan to improve the patient experience. This was sustained through the Vanguard, aligned with the existing partnership with Macmillan.

⁹ <https://gmcancer.org.uk/our-areas-of-work/user-involvement/background/> accessed 30 April 2018

A number of workshops including PABC took place between February and July 2015, during the development of the NCV proposal, to agree on priorities and shape the proposals' content. Subsequently, the UCLHCC patient experience lead, funded by Macmillan, developed a patient engagement strategy. In the later stages of the NCV, UCLHCC set up a Patient Experience & User Involvement Steering Group¹⁰ to 'foster and promote a partnership approach between UCLH Cancer Collaborative and people affected by cancer and ensure that their views are represented at the highest level through the Cancer Vanguard Board (CVB) and relevant Sustainability and Transformation Plan (STP) Cancer Boards and workstream meetings'¹¹. In this evaluation, we have not consulted members of this group.

At RMP, Vanguard funding is building the infrastructure to enable and embed user involvement. Mechanisms to achieve this include the recently established patient advisory group and building of the patient experience feedback tool (see below). In addition, RMP planned a patient and family-centred leadership development programme, 'Developing patient leaders'. A first workshop was to take place in quarter 1 FY 2017–18.

Outcomes

People affected by cancer better informed and better engaged

This will be measured using the NCPES and the results will not be available until Summer 2018.

The patient experience feedback tool supplied by IWantGreatCare was procured by RMP working with GM¹²: It is a single tool to collect, compare and report cancer patient experience and subsequently outcomes across all participating providers, in order to identify areas of variation for improvement. For RMP, 10 NHS acute trusts and 13 community trusts and hospices from across NWL and SWL were 'signed-up' to participate in the tool after some delay. SWL partners are using the data report and NWL are starting to scope out how they can use the reports. Some provider stakeholders interviewed stated that there was no additional data generated by the IWGC tool that was not already gathered either through the Friends and Family Test or through provider trust pre-existing patient experience feedback tools. Others reflected that these tools do not capture cancer service specific feedback. Currently GM has three provider trusts and two hospices using the tool and one trust has used the data from the tool to support a business case for seven-day cancer services provision. The RMP project team have seen two trusts in South West London replace the Friends and Family Survey with this tool. Anecdotal reports of the perceived value for money delivered by the project (according to the RMP project team) are that the tool is more expensive than

¹⁰ [http://www.uclh.nhs.uk/OurServices/ServiceA-](http://www.uclh.nhs.uk/OurServices/ServiceA-Z/Cancer/NCV/Pages/UCLHCancerCollaborativePatientExperienceandUserInvolvementSteeringGroup.aspx)

[Z/Cancer/NCV/Pages/UCLHCancerCollaborativePatientExperienceandUserInvolvementSteeringGroup.aspx](http://www.uclh.nhs.uk/OurServices/ServiceA-Z/Cancer/NCV/Pages/UCLHCancerCollaborativePatientExperienceandUserInvolvementSteeringGroup.aspx) Accessed 30 April 2018

¹¹ UCLH Cancer Collaborative Patient Experience & User Involvement Steering Group – Terms of Reference

¹² Service specification for this available in 'Qualitative and Quantitative Experience Data Collection Service Specification'

existing tools but because it can be scaled across the system there are potential economies of scale. This has not been verified with cost modelling data.¹³

More patients in self-managed follow-up

This is a work in progress under the aftercare pathways projects.

Feedback from patient experience focus groups on new breast aftercare pathway is that it encourages self-management and allows patients to monitor the impact of their actions in between appointments, focuses on all aspects and not just clinical needs, and helps in the recovery of less confident patients. For the breast aftercare pathway, CNSs and aftercare coordinators have reported early indications that Infoflex enabled more efficient and quicker movement through the new pathway by facilitating better tracking of individual patients (than traditional spreadsheet or manual systems); however more information and data gathering is needed to corroborate this.

For the colorectal aftercare pathway, aftercare coordinators have observed that the Infloflex system provides greater ease and assurance in booking surveillance tests and patient monitoring compared to traditional manual input systems.

¹³ Since the end of the Vanguard, this contract has been concluded and IWGC is no longer in use across the system, apart from a low number of individual providers that are still having iWGC as a provider for another, non-Vanguard, product.

Objective 3: To improve system resilience and efficiency

Outputs

Improved contracting models / allocative frameworks developed

The programme enabled the partners to test different ways of approaching this. The final outputs are still a work in progress.

The three partners have actively shared learning throughout this process, sharing documents such as memoranda of understanding and collaboration agreements through the regular programme leadership calls, and are now working to identify opportunities for testing new accountability and contracting models for specific specialist services, as ‘proof of concept’ projects.

New service models and system funding models that incentivise desired behaviours established

These are still in the process of being designed and tested.

The three partners pursued different models of finance and contracting:

- RMP a lead provider model (LPM), taking on contracting responsibilities
- GMC a partnership model with single cancer commissioner; and
- UCLHCC an alliance contracting model/collaborative model.

The exploration and development of a new model of system accountability and integration was a specific focus for GM and RMP within their programme of work. However, changes to system architecture have not been implemented at the pace originally planned by these partners, as the partners encountered issues related to a range of factors. These included changes in the commissioning context within which each of the partners sit, such as the establishment of STPs, whose focus on system architecture reform across the totality of health and care has added a level of complexity. The current set-up of financial flows in health service does not allow ring-fencing of a budget for cancer without significant upheaval to the system. In addition, the partners encountered resistance from current budget holders to relinquishing control, grounded in issues of trust and concerns about conflict of interest, and reinforced through a legacy of competitive behaviour between local organisations and individual providers.

At GM, mapping of current GM cancer commissioning arrangements and provision of services was carried out and proposals for redesigning the commissioning of cancer services were presented to the key stakeholders in summer 2017. However, these were not signed off by the commissioners as they wanted to understand how these new arrangements would fit with the design of new commissioning model for population health across all health and care priorities (not just cancer) in GM.

Recently, a proposal has been developed regarding the responsibilities of the GM Commissioning Hub in relation to cancer services.¹⁴ The intention is to streamline cancer commissioning arrangements within GM to ensure cancer services are commissioned at an appropriate spatial level in order to reduce fragmented decision-making, strip away overlapping or duplicated investment and ensure clear lines of accountability for cancer patient experience and outcomes. To ensure the successful delivery of the GM commissioning review, a working group has been established, consisting of colleagues from CCGs, Local Authorities, the Provider Federation Board and the Partnership Team. A delivery plan is in development and the following objectives are of particular relevance to cancer services:

- Developing and implementation of governance arrangements, which are legally compliant and support the delivery of the local and GM level ambition. This strand of work, including the formal establishment of the Joint Commissioning Board as a joint committee, will represent an early priority.
- Agreement of the detailed breakdown of the services to be covered across the common standards, strategic support and GM-level commissioning categories. This includes the scoping and phasing of services to be placed within a Commissioning Hub for GM-level commissioning.

Negotiations are ongoing with regard to identifying funding for resourcing the delivery of the GM cancer plan in its entirety, and more detail on the nature of costs, annual costs and savings beyond the life of the plan has been developed.

A strategic approach to developing payment reform for GM has been described. It comprises three main tools: Design Principles, the Commissioning Framework and the Five Area Framework. Next steps for this work are to publish the GM roadmap and best practice repository and establish a central GM payment reform team. The cancer payment reform model developed as part of the Cancer Vanguard will feed into the wider GM payment reform work. The model proposed has commissioners paying a cancer system ‘Supporting Coordinator’ entity a block payment for services, and an additional gain share payment for early case finding. The Supporting Coordinator in turn pays providers with two types of bundles: 1) diagnostic stage and the treatment and 2) follow-up stage of the pathway. Providers would receive an additional gain share from the Supporting Coordinator for reducing variation and making cost savings against the baseline position.

Similarly, the lead provider model (LPM) pursued by RMP, with control of the cancer budget via a single governing structure, met with resistance and was seen as challenge to sovereignty by other organisations. In addition to sensitivities about loss of power and control, it was felt that ring-fencing a budget for cancer would cause too much ‘upheaval in the system’. As a result, RMP has moved away from the very formal structure originally intended, to a partnership of shared services, creating an environment in which people ‘want to work together’.

¹⁴ Final Programme Report – National Cancer Vanguard (2018)

The shadow running of the RMPs target operating model (2017/18) is underway.^{15, 16} This is underpinned by principles of shared accountability, working towards a common vision and collaboration. It includes a monthly review of cancer performance with the Executives and the identification of best practice pathways for priority tumour groups (lung, prostate and lower GI).

An outcomes framework has enabled the system regularly to review performance against its vision and prioritise interventions and support where most needed. Hence, gaps in performance have been identified against the RMP determined best practice and targeted support is now underway within Trusts where required.

UCLHCC has always been working to a collaboration model and did not aim to radically change this. Testing of a single provider model for radiotherapy (RT) across North Central and East London was planned, but paused due to uncertainty regarding how the national agenda for RT Networks related to the proposal. To further promote the break-down of organisational barriers, UCLHCC continued building new collaborative governance models through implementation of inter-trust Human Resources (HR) and Information Governance (IG) agreements. This 'hardware' (contracts and agreements) allows clinicians to work across trusts more easily, and thus enables optimising workforce use across the system. UCLHCC reported that this HR project has had a broader impact, namely that shared appointments across trusts have become more common and are embedding into regular practice, including beyond the NCV, and new positions are planned to span trusts from the outset.

Multidisciplinary diagnostic clinics set up

The Vague Abdominal Symptoms project (RMP) aimed to develop a streamlined diagnostic pathway for patients who present with VAS and don't fit 2-week criteria. Particularly upper GI cancers are of interest because (1) early symptoms can be very vague and (2) outcomes are poor once diagnosed. The aim of this project was to have a diagnostic pathway that would allow early diagnosis and therefore improve the outcome in these patients. Different pathway designs and implementation practices were tested across 3 hospitals. The project demonstrated positive results in identifying cancers and other serious conditions and reduced waiting times. Anecdotally patient experience was also good.

The Query Cancer project set up a multidisciplinary diagnostic clinic. The clinic brings together clinicians of multiple tumour specialties and a geriatrician. The MDC in this project is unique due to the composition of the team and it distinguishes itself from the GM ACE project which has primary triage as its focus. Data was not available yet to evidence whether the clinic has led to a reduced time to diagnosis, which will inform the decision whether to sustain the MDC or not.

¹⁵ Final Programme Report – National Cancer Vanguard (2018)

¹⁶ The Cancer Vanguard Delivery Plan – Q3&4 FY 2017/18 progress report

Outcomes

Effective use of cancer budget

As we did not have local baseline against which to measure, we cannot assess performance against this objective. Years 2 and 3 of the evaluation will focus on understanding the value delivered by the NCV Programme.

The level of funding provided to each of the Vanguard partners was substantially less than requested in their original bids and represented a small proportion of their overall cancer budgets (e.g. a £2.3m Vanguard allocation to GM compared to the £500m GM Cancer budget). The implications of the reduced budget led all 3 partners to iterate and adapt their programmes of work. While a lower level of funding could be addressed by scaling back the original plan, the short duration of the programme was highlighted as a significant issue threatening the success of the NCV, first and foremost through the short duration of work contracts and the resulting loss of experienced staff and high staff turnover towards the end of the 2-year period.

The NCV funding allowed all three partners to put in place effective programme management. This was seen as a key enabler for the success of the NCV.

Successful business cases and funding bids developed from pilots

Additional transformation funding has been secured from various sources by all 3 partners. All partners recognised that the resources provided by the NCV programme had enabled them to be successful in winning additional funding including local or national transformation funds and industry resources. However, unlike RMP and UCLHCC, GM with its devolved budget is not eligible for national transformation funds; this presents an imminent risk to the sustainability of its pilot projects, as they need to compete with other parts of the health and care system to access the GM transformation funds.

Within GM, research funding has been secured from the Urology Foundation for further research into the prostate aftercare pathway and its implementation.

The 7 day service for specialist palliative care project in GM was able to secure funding from Macmillan, who will run a pilot after the Vanguard ends.

Enhanced working across organisational boundaries

All three partners report this has been improved within each cancer system.

A key theme for the NCV was how to take governance and assurance of the cancer system beyond single organisations. This involves collaboration between providers within a partnership area (e.g. collaboration between acute care providers), as well as between different players within the system (e.g. primary care, secondary/tertiary care, commissioners, public health/prevention, community care etc). The approach supported a move to place-based commissioning and a local focus.

UCLHCC continued work started by *London Cancer*, including inter-trust HR agreements and processes. This ‘hardware’ (contracts and agreements) allows clinicians to work across trusts more easily, and thus enables optimising workforce use across the system. UCLHCC reported that this HR project has had a broader impact: Shared appointment across trusts have become more common and are embedding into regular practice, including beyond the NCV, and new positions are planned to span trusts from the outset.

Within the local context, in all three partners there was a concerted move away from a single powerful provider of cancer services to a network collaboration and sharing of expertise and knowledge across organisations. The NCV was described as having led to the development of a deeper understanding of shared purpose.

RMP reported that this had enabled a more strategic understanding of the challenges across the RMP geography and resulted in a shared ambition rather than ‘local hospitals dealing with their local problems’.

For UCLHCC, the Vanguard continued to support a pan-North Central and East London sense of cohesion, engagement and motivation to work more closely together, building on foundations laid by *London Cancer*. A collaborative agreement, signed by 11 acute and specialist hospital providers in the Vanguard, solidifies this joint working. A new workforce agreement is in place between two providers in the Collaborative, enabling rapid sharing of staff to support resilience and collaborative working.¹⁷

Within the structures of the GM Health and Social Care Partnership, GMC had established a strong sense of collective purpose across the Cancer Programme and the Vanguard Programme. This is evidenced through the collective action of the GM Cancer Vanguard Oversight Board.

On project level, MDC project Query Cancer (GM) was highlighted as a project where getting to a shared purpose was a challenge to start with, as it involved project members from different trusts designing and implementing the clinic. However, eventually this was seen to be very beneficial in building trust and cross-hospital collaboration.

Greater multidisciplinary team productivity

Measures not yet available.

Flexible and skilled workforce

Qualitative reports of changing workforce practice related to specific projects.

The NCV did not focus specifically on workforce redesign and workforce planning. This area was described as extremely complex, as there is no defined cancer workforce (e.g. a bowel surgeon carries out a range of work, not limited to cancer). The NCV had intended to define the characteristics of the cancer workforce

¹⁷ Final Programme Report – National Cancer Vanguard (2018)

10 years from now, but ultimately did not address this question. The earlier work done by UCLHCC to establish implementation of inter-trust Human Resources agreements contributes to increased flexibility of the cancer workforce. We do not have any data on the implementation and effects of the agreement however.

At a more targeted level, NCV projects have defined the required workforce elements related to changes in service delivery. For example, when designing pathways, the partners set out the skills and training necessary for the individual responsible. In this way, one of the MDC projects has applied the same model in three different hospitals, with three different members of the workforce responsible at each location (consultant, MDT coordinator, nurse). Rather than defining the position of the individual, the project looked at skills needed.

Best practice timed pathways, multidisciplinary diagnostic clinics, early diagnosis education and prevention work have all challenge clinicians in all parts of the cancer system to adapt and improve professional practice based on evidence.

- The informatics service has provided pathway boards with data to track this evidence.
- GP education programmes such as Gateway C have contributed to a change in clinical practice, as it helps GPs to better recognise symptoms and it intends to change their referring behaviour. The latter has not yet been evidenced.
- Adoption of biosimilar rituximab has been faster than the previous biosimilar, infliximab. Moreover, adoption in London has been greater than in many other parts of the country. The joint NCV-Sandoz Biosimilars project may have contributed to both these results.
- The Faster Diagnosis (GM) project has required upskilling of nurses and GPs to accelerate the referrals and shorten the time to diagnosis.

Increased diagnostic capacity

The baseline has not been established but there have been anecdotal reports of improved capacity in pathology, via MDCs and a baseline for palliative care.

Greater concentration of specialism (as a result of new service models)

Not in evidence at this time.

Objective 4: To improve leadership

Outputs

No specific outputs were identified in the theory of change as leadership was conceptualised as an activity – something people did, rather than a tangible output.

Outcomes

Accountable and inclusive leadership embedded

All three partners took an active leadership role in reporting collectively to the New Care Models team quarterly. Within each system, partners contributed to the delivery of improvements in cancer services, sometimes taking the lead, and at other times supporting others.

National leadership legitimacy is being derived from the Vanguard brand across the other Cancer Alliances as well as other ACCs, although this has not been validated from the point of view of other Cancer Alliances. It was perceived that without the high profile, the NCV would not have been able to engage with partners within the healthcare system and beyond, e.g. industry.

Locally, the leadership of each partner within its geography and system is built on relationships based on trust and collaboration that enable the partners to visibly demonstrate collective leadership for cancer. RMP specifically highlighted the Vanguard's role in supporting them to establish system leadership for cancer. It has provided a structure for stakeholders in the cancer system to come together, enabling chief executive level buy-in and engagement with the STPs. RMP's provision of support to a provider which was unable to meet performance targets is seen by RMP as a demonstration of their system leadership, having built relationships across the system and trust across organisations. It is now being seen as a central resource for transformational and operational support.

GM have taken a structured programme management approach to the delivery of the Cancer Vanguard programme with detailed PIDs, programme documentation, project management support and embedded project evaluation in evidence for all projects. This is seen as central to the success of the programme, providing a clear structure against which to report to the governing group. As an external stakeholder commented: 'Funding for the NCV PMO was significant, but in hindsight well-spent. They did a great job; it would have been easy to lose control over such a complex programme of work.'

RMP viewed the governance structures and processes, with every group in the structure assigned a clear purpose, ToR and remit, a key achievement of the Vanguard. The core group of RMP's governance is the Executive Group. It consists of the Chief Executives of all provider organisations and trusts, STP representation (one or two individuals representing GPs and commissioners) each from NW and SW London STPs, and the chair of the Clinical Oversight Group (COG). The Executive Group is supported by the COG, the Patient Advisory Group (set up in late 2017) and the delivery group (made up of Chief Operating Officers from each provider trust).

Attendance by the Chief Executives of the provider trusts at the monthly RMP Executive Group meetings was described as ‘fantastic’. It was felt that this strong engagement would not have been achieved without the Vanguard, as it provided the context within which these discussions could take place. This discussion forum, and availability of data through the informatics service, has meant that local providers are now learning from each other and working together in a way they had not done previously. The assistance provided by RMP at St George’s Hospital in response to issues with performance targets was seen as an example of the enhanced collaborative environment and trust developed through the NCV governance structures and processes. However, it was also reported that the large number of acute trust CEs in meetings meant that there had been less attention on primary care and non-acute care provision. A number of stakeholders described RMP as having a ‘self-sufficient’ attitude (‘we have the answer’), and a perception of RMP not valuing others’ views.

The governance mechanisms that have been put in place by RMP are sustainable beyond the life of the NCV programme and are perceived as having contributed to the successful securing of transformational funding.

UCLHCC has always described itself as a collaborative network of partners working together under the auspices of a collaboration agreement for a shared goal. It started under the auspices of UCL Partners (AHSN), and specifically with its subdivision *London Cancer*. The NCV provided (through funding) additional programme management resource that was described as instrumental in continuing and expanding *London Cancer’s* work and accelerating progress. The Cancer Collaborative is resourced through a plurality of income streams and is designed to continue beyond the Vanguard funding cycle.

The UCLHCC Cancer Vanguard Board includes clinical, patient, project management and STP representation, meets monthly, and makes decisions about projects. In parallel, the NCL and NEL commissioners meet regularly to discuss commissioning strategy in relation to cancer services.

For all three partners, creating a local cancer system as a collaboration or more formally as a neutral third party outside of any one organisation was described as instrumental in building trust within each system. However, some external stakeholders maintained that the perception of dominance of UCH within UCLHCC and RMH within RMP continued, and they felt the inclusion of these providers’ acronyms in the Vanguard name was indicative of the relationship.

System relationships

Sustainability and Transformation Plans and Commissioners

The Vanguard partners engaged with the STPs and commissioners through their representation on the Vanguard oversight boards, and the Vanguard’s representation on cancer boards and STP groups.

The STPs were introduced after the NCV was agreed. Their focus on system architecture reform across the totality of health and care has meant that the three partners have had to refocus how they achieve

their ambition for their cancer systems. In addition, while the overall aims of STPs and the NCV regarding a whole system approach are aligned, the STPs were described as ‘primarily focussed on short-term financial issues and local operational targets’, whereas the NCV’s aim of service transformation has a medium- to long-term horizon. One NCV stakeholder considered this a barrier to engagement.

Overall, NCV stakeholders described their relationship with the STPs as very positive and mutually supportive.

At RMP, the Executive Group included STP representation (1–2 individuals representing GPs and commissioners each from North West and South West London STPs). In turn, RMP contributed to the STP cancer delivery groups. STPs were described as ‘involved and aligned with the work that is being done’, with the Vanguard acting as a delivery vehicle for cancer transformation.

At UCLHCC, the view was that there was a strong relationship with the STPs (North Central London and North East London). Many of the individuals who came to be involved in STP governance had been consulted during the proposal stage of the Vanguard, and had hence signed up to its mandate from the beginning. Information exchange was ongoing, as the STPs were represented on the Vanguard oversight board, and UCLHCC on the NCL and NEL cancer boards. The Vanguard hence strengthened relationships across organisations. UCLHCC explained that they had supported the system to adopt a common approach and planning. However, some challenges were experienced, e.g. where expectations on the role of the NCV differed. For example, there was interest from the STP for UCLHCC to work on understanding data on excess bed days, which falls outside the Vanguard’s remit.

GM on the other hand evolved in the context of the GM Health and Social Care Partnership from the outset. The Vanguard Innovation Programme was an integral part of the GM Cancer Plan, taking on the role of testing and identifying ‘which innovations to take forward next year’. GM Cancer was also described as having contributed to the STP in other ways: The debate stimulated by the focus of the Vanguard on system architecture reform about developing an accountable cancer system influenced the STPs’ thinking about the wider system, and Vanguard was a stimulus for increased focus on ‘the patient voice over high tech innovations’.

A difference in approach to commissioner involvement was highlighted, between GMC on the one hand, and RMP and UCLHCC on the other:

- GM have included commissioning as a central component of the Vanguard, and are the only partner with a commissioner representative on the oversight board. This approach is underpinned by the establishment of the integrated GM Cancer Board in 2016, combining commissioners and providers (as well as patient representatives). The Director of Cancer Commissioning for GM was involved in the Vanguard proposal from its earliest stages (Expression of Interest). Each of the NCV-funded projects within the GM is linked to a commissioner, in order to facilitate the transition of successful pilots to commissioning specifications, thereby enabling roll-out at scale. The GM team considered

this 'embedding' of commissioners across the programme a success [we did not interview any of commissioners 'external' to the Vanguard].

- RMP and UCLHCC engaged through representation on the oversight board. While NCV programme stakeholders from both partners explained that 'commissioners are firmly engaged every step of the way', this was not reflected in comments from the commissioners' side, who felt 'out of the loop' or 'not fully listened to' and advised better engagement with commissioners. Two issues highlighted were that Vanguard partners did not sufficiently address the unintended consequences of wider roll-out of the piloted projects and placed insufficient focus on engagement with and the impact of new models on primary care.

New Models of Care team

NCV stakeholders commented that the lines of accountability and reporting to the NHS England's New Models of Care Team had been beneficial and appropriate. The NCV formally reported to the NCM team on a quarterly basis, which focused the three partners and drove progress and joint working. Reporting to the NHS at this high level also raised the status and visibility of the NCV across partnership organisations and sent a clear signal of the leadership role of the Vanguards. Beyond the reporting requirement and the associated meetings, the NCV has needed relatively little support from the national NCM programme.

National Cancer Team

The NCV actively supported the work of the National Cancer Team (NCT), starting in autumn 2017, when UCLHCC and GMC engaged in discussions on the development of best practice timed pathway guidance for lung and prostate, and provided clinical evidence to inform the NCT's efforts. The NCT commented that the NCV had been very collaborative and helpful in supporting this work.

In addition, the NCT is currently establishing a new service for all data and analytics service (CADEAS) to support Cancer Alliances. This draws actively on the cancer informatics work done by NCV.

More clinicians taking leadership roles

No evidence that this has changed over the course of the NCV but there is qualitative reporting that the provision of project management support and funding clinical and research PAs have enabled clinical leadership in all three partners at project level.

Objective 5: To share knowledge and learning

Outputs

Innovative training models and roles established

See 'Education and training delivered'.

Communication and dissemination of NCV projects and their results

Evaluation reports were shared for:

- Citizen-led social movement (interim evaluation report)
- Gateway C
- Aftercare pathways
- Biosimilars.

The notification letter from the NCM team to the Accountable Cancer Network Vanguard¹⁸ states the expectation that the NCV will have 'made a visible positive contribution to wider national learning, through a variety of means including published evaluation material, case studies, operational methods, speaking at regional and national seminars and events, etc. Effective local evaluation and real-time intelligence against key metrics remains critical.'

Addressing this objective, the NCV created a learning environment through the establishment of forums such as the Communities of Practice, the NCV website, the Kahoots site and the Pan-Vanguard Informatics Service. For example, it organised three events with other Cancer Alliances (March and Oct 2017; Feb 2018), bringing together a 'Community of Practice' to foster communication and sharing of learning beyond the NCV. These events will continue to be organised (two events currently planned for July and Oct 2018). In addition, presentations were held at conferences and meetings organised by others (e.g. King's Fund, CRUK).

The first communities of practice event took place on 11 October in London.¹⁹ All of the 16 alliances attended and it was facilitated by the three Vanguard partners. The event focused on five aspects: evaluation, early diagnosis, living with and beyond cancer, patient experience and alliance governance, establishment and development of delivery plans. The evaluation partner for the National Cancer Vanguard was in attendance. The second communities of practice event took place on 8 February 2018, focussing on optimal pathways for lung, prostate, OG and colorectal.²⁰ This event had 100 attendees with representation from every Cancer Alliance including significant clinical representation. There was no

¹⁸ Notification letter: Accountable Cancer Network vanguard 2017-18. NCM Team, 20 April 2017

¹⁹ The Cancer Vanguard Delivery Plan – Q3&4 FY 2017/18 progress report

²⁰ The Cancer Vanguard Delivery Plan – Q3&4 FY 2017/18 progress report

lasting output of the day that could be shared with a wider network of Cancer Alliance stakeholders that the evaluation team could see evidence of.

From April 2018 onwards, the Community of Practice will continue on a quarterly basis with support from NHSE National Cancer Team, evaluation reports will be shared with the other Cancer Alliances, the Cancer Vanguard website will remain active and support will be provided where individual requests are made.²¹

Education and training delivered

Specific projects focused on delivering these aspects are either complete or in progress. Gateway C is a high-impact example that is now being rolled out.

The Biosimilars Project has produced replicable and adaptable educational materials and frameworks that have been shown to increase healthcare workers' knowledge and confidence about using biosimilars.²² Between January and April 2017, 12 introductory training sessions trained 130 healthcare professionals of which 46% worked in pharmacy, 48% were in nursing and 6% were doctors. Training led to a highly significant and uniformly positive impact on participants' understanding of biosimilars. Moreover, participants' confidence in using a biosimilar in their patients also improved significantly.

Gateway C supports early diagnosis through building a 'go-to place' for GPs incorporating an online education platform which provides knowledge, challenge behaviour and support for GPs clinical decision-making around referral. The project was piloted by 38 GPs in eight practices, and evaluation showed that nearly 95% reported referring back to learning in subsequent consultations, with 94% saying it helped them with future referrals. The second pilot by UCLHCC showed that while GPs' comments and responses mirrored those of their Greater Manchester colleagues, objective pre-post test data did not show the same significant changes in confidence.

Pan-Vanguard informatics platform and patient experience reporting tool created and rolled out

Both were created using different approaches for rolling out across the three partners.

The NCV cancer informatics has enabled access to benchmarking data at a detailed level for individual pathways and trusts. The data is being analysed to understand different needs in different locations, and identify causes of variation in outcomes across organisations. It also helps to see if people are working to different guidelines. The ability to explore the underlying causes is improved by working across the three NCV geographies; e.g. if one site is not meeting the national average on patient experience, the data allows benchmarking with comparable areas elsewhere.

Outcomes

²¹ Final Programme Report – National Cancer Vanguard (2018)

²² Tim McCarthy & Jat Harchowal (2017) Project Evaluation Report – Biosimilars 'getting it right 1st time'.

Workforce skills improved

Not specifically measured at programme or project level.

Shared learning embedded

Each of the partners has described instances of learning from one another at programme level. Projects vary in their experience of embedding shared learning.

A shared purpose across the three partners was felt most strongly by those operating at a national level, who saw the NCV as ‘a friendly collaboration, where it makes sense’ to enable local delivery. There was agreement that the three partners had continued to operate autonomously and were perhaps not as integrated as originally envisaged by the NCM team. However, the overall view of the relationship between partners was positive, and where joint working and pooling of expertise occurred, it was considered beneficial. As one stakeholder explained: ‘The NCV has been a big change for the three partners. Historically, we have not spoken about shared purpose and worked in isolation – there was no natural way to collaborate. The NCV led to the identification of, and agreement on, the major problem areas, and the development of a joint vision about how best the collaborative can address these.’

In addition, some of the projects were designed to be delivered jointly to benefit from the population size that can be accessed, to test out replicability, adoption and scalability. For example, the Gateway C project, initially developed by GM was rolled out in North and East London as part of the NCV.

The three partners collaborate on different areas of activity, drawing on each other’s strengths, e.g. RMP and GM collaborate on commissioning, UCLHCC and GM collaborate on lung cancer (started prior to NCV), RMP and UCLHCC collaborate on a range of clinical work (a legacy of prior pan-London efforts), RMP and UCLHCC are learning from GMC on user involvement, and UCLHCC’s work on early diagnosis has informed the other partners.

One project manager described the NCV as ‘giving us permission to ask the other partners for information, such as on methods and guidelines used, or for data to benchmark our outcomes’. However, a clinician from the same partner indicated that the NCV had not led to a structured (or increased) exchange with the other partners, stating that: ‘Apart from the odd meeting of people at high level, we have no knowledge of what is happening at the other sites. [...] There may have been some learnings across but this was not how it was operationally happening. I am not aware of discussions that pathway board directors exchanged with their counterparts at [the other partners] and had impact on what we do.’

The NCV workforce and National Cancer Team provided positive feedback on the sharing mechanisms and would like to see these sustained and scaled. There were some outlying views on this, however. Some team members, especially from GM and UCLHCC, felt less involved in shared learning activity and would like to be more involved in future, playing an active role in diffusing learning about new initiatives.

Also, several external stakeholders considered the NCV not sufficiently ‘outward-looking’, and identified a clear need for stronger communication with organisations outside the Vanguards.

The Vanguard provided information about its work and engaged with a range of delegates at a number of national events and conferences, including NHS Confed, Health and Care Expo, RCGP annual conference, and Britain against Cancer.²³ In addition, the Vanguard’s work has been presented at conferences including the PHE cancer conference, NCRI, British Oncology Pharmacy Association Conference, and the World Biosimilars Conference.²⁴

All three partners have set out governance structures for their individual programmes to facilitate relationship building and regular programme reporting. Each reported that this was an enabler of collaboration and dialogue, and gave partners a clear mandate to initiate and drive discussion, implement changes, and share learning within their geographies.

In addition to local governance arrangements, the NCV is governed by an overarching NCV oversight board. The NCV programme teams meet regularly to share learning, which was seen to have enabled valuable sharing of information and learning. As one stakeholder explained: ‘The meetings are really important for informal catch up as well as supporting each other in the more difficult times when things are not going so well.’ There are plans to continue this dialogue beyond the NCV period. Quarterly formal reporting obligations to the New Care Models team were considered helpful to maintain focus and a clear view of progress of the NCV.

Improved access to innovation (for the public)

The Pharma Challenge has enabled a modest number of cancer patients to have accelerated access to innovative treatment delivery methods (Remodelling the pathway).

Real-time qualitative and quantitative data on clinical outcomes and patient experience

Local dashboards and other tools have been created by the three partners to support their own programme, shared with each other and with other Cancer Alliances as well as the emerging national service, CADEAS. The Pan-Vanguard Informatics Service hosted by RMP has provides CADEAS with a blueprint to support the development of its offer to Cancer Alliances and operating model.

²³ Final Programme Report – National Cancer Vanguard (2018)

²⁴ Final Programme Report – National Cancer Vanguard (2018)

Appendix 2 – Thematic framework

This is the framework that was used by the evaluation team to develop the key lines of enquiry for the qualitative data collection and conduct the first order thematic analysis of the collected data.

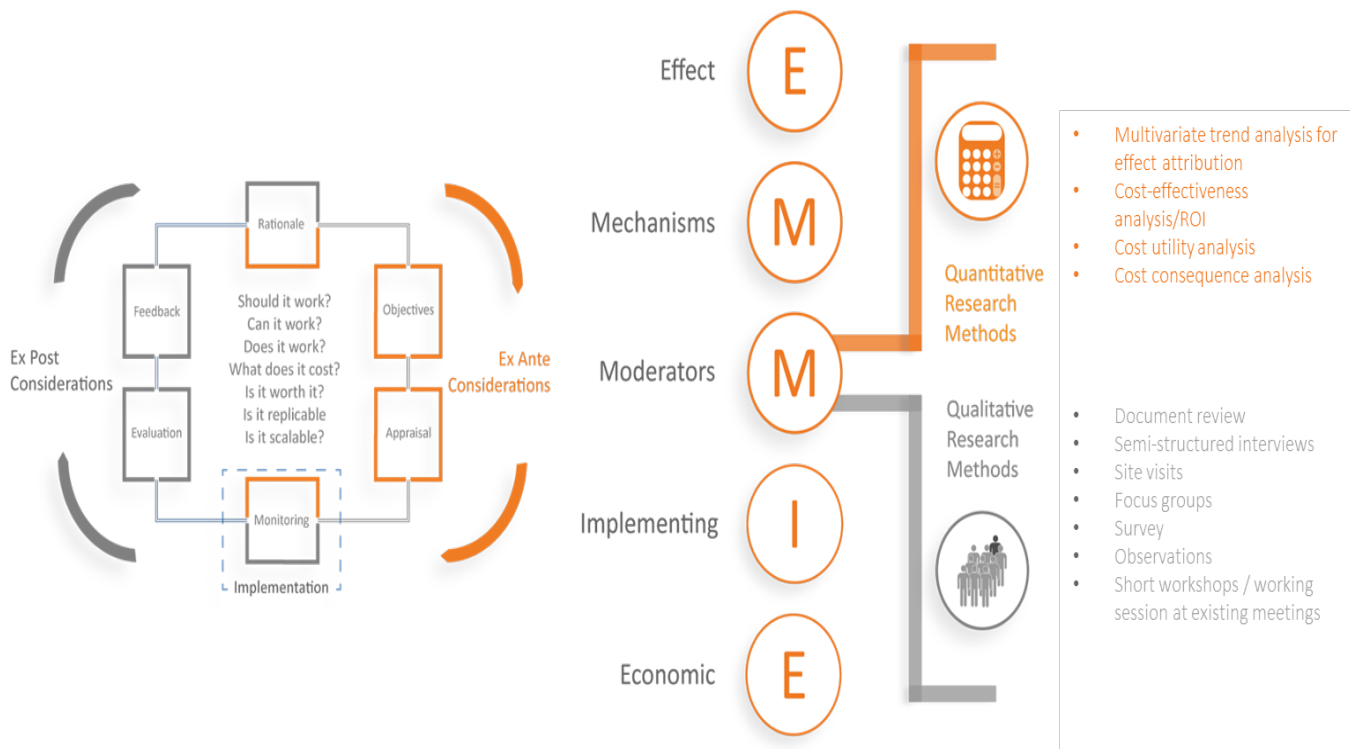
Line of enquiry	Domain	Theme
Patient and population health This allows us to explore the hypothesis that the programme will improve the health of the population in the area of cancer.	Service improvement The ways in which best practice pathways and other interventions are being delivered and to what effect.	Clinical interventions Best practice pathways and other clinical intervention projects.
		Professional practice Explore how the projects are directly or indirectly changing professional and clinical practice.
		Patient activation and empowerment Explore how the projects are directly or indirectly changing the way in which patients are involved in their treatment and decision-making.
	Learning for improvement The ways in which learning is shared within each Vanguard partnership, across the three Vanguard Partnerships and more widely.	Research and evaluation Explore the role of research and evaluation in learning and sharing best practice.
		Relationships Explore the relationships with AHSNs, Industry and Pharma partners (through the Challenges), other Cancer Alliances, NCM team and other Acute Care Collaborations, and others as enablers of diffusion and spread.
		Education Explore the role of workforce and patient education in changing how people interact with cancer services to deliver better outcomes.
		Cancer Informatics Explore the role of real-time informatics in supporting the delivery of best practice pathways.
		Sustainability and replication Explore how successful initiatives are sustained and replicated
	New cancer system model	Leadership

<p>Cancer system architecture, contracting, financing and incentives</p> <p>This allows us to explore the way in which the programme is changing the way cancer services are commissioned and incentivised and providers are organised to deliver integrated best practice pathways.</p>	<p>Explore the evolving models of cancer systems that each Vanguard partner is pursuing and the mechanisms that they are putting in place to develop it.</p>	<p>Explore the role of system leadership in delivering the change to cancer services.</p> <p>Accountability Explore the varying models of cancer system accountability across the National Cancer Vanguard, the context in which they are developing and how this acts as an enabler or constraint of change.</p> <p>Finance and incentives Explore how finance mechanisms are developing to incentivise the cancer system to deliver the desired cancer outcomes and the leading indicators of change (process indicators).</p> <p>Contracting Explore how new models of contracting are being developed in the context of cancer in each context.</p> <p>Scope Understand the scope of each programme and project and how this is influencing the approach to cancer system redesign.</p> <p>Cancer Informatics Explore the role of real-time informatics in supporting performance reporting and decision-making for the network of cancer services.</p>
<p>Vanguard governance structures and the authorising environment</p> <p>This allows us to explore how the Vanguard programme, the way it is set up and resources and the wider decision-making context in which it sits is enabling spread of best practice.</p>	<p>Internal</p> <p>Explore the form and function of the Vanguard Partnership programmes to understand how this is affecting change.</p>	<p>Partnership governance Explore how the programme is governed and how this enables or constrains delivery</p> <p>Partnership funding Explore how the Vanguard programme is funded and the perception of the contribution this is making to the change.</p> <p>Shared purpose Explore the extent of shared purpose across the partners and how this enables or constrains delivery.</p>

	<p>External</p> <p>Explore the wider decision-making or authorising environment in which the National Cancer Vanguard and each Vanguard Partnership sits and how this impacts on the change.</p>	<p>System relationships</p> <p>Explore the form and function of the relationships with NHS England, NHS Improvement (and other regulatory bodies if relevant), local Sustainability and Transformation Plans and local devolution arrangements.</p>
--	---	--

Appendix 3 – EMMIE framework

This is the analytical framework the underpinned our rapid cycle analysis of the emerging findings in rapid cycles one, two and three during year 1. We have also used this framework to present the findings under the workstreams using different terminology (what happened = mechanisms; what were the effects = effects; what were the enablers and / or constraints = moderators and implementation issues).



Appendix 4 – Economic evaluation

4.1. Theory of change

The first stage of an economic evaluation of Cancer Vanguard is to set out, at workstream level, the causal chain through which Vanguard activities are expected to impact on outcomes. In this context, outcomes should be understood as consequences of fundamental value to society and can be distinguished from outputs. For example, an output of a ‘health prevention’ programme is a number of marketing materials distributed or number of people made aware of a health risk. An outcome is reduced incidence of sickness and years of life saved as a result.

In terms of casual chains, Cancer Vanguard can be defined in terms of nine workstreams with the following potential health, patient experience and cost outcomes:

Workstream	Outputs	Intermediate outcomes	Potential Outcomes		
			Health outcomes	Patient experience	Healthcare costs
1. Best practice timed pathways	E.g., Training programme provided	E.g., Reduced waiting time	↑	↑	↑/↓
2. Prevention	E.g., Deliver health awareness programme	E.g., Change in number of individuals aware of risks	↑	-	↓
3. Early diagnosis and reducing diagnosis variation	E.g., Incentives to access screening programme	E.g., Change in number of individuals being screened	↑	↑	↓
4. Living with and beyond cancer	E.g., Provision of palliative care at home	E.g., Change in number of patients being treated at home	↑	↑	-
5. Medicines optimisation	E.g., Procurement of generic drugs	E.g., Change in proportion of generic to other drugs	-	-	↓
6. Commissioning and financial reform	E.g., Collaborative work leading to pilot funding	E.g. Change in costs of running pilots	-	-	↓
7. Digital and information	E.g., Development of cancer metrics	E.g., Change in costs due to less duplication	↑	-	↓
8. Enablers (e.g., developing patient leaders)	E.g., Development of a common contract	E.g., Change in number of consultants with common contract	↑	↑	↓
9. Spread and replication	E.g., Promotion of Vanguard	E.g., Number of adopters of Vanguard	↑	↑	↓

4.2. The Economic Question

The aim of an economic evaluation is to help decision-makers improve the allocation of scarce resource, by shedding light on the relative costs and benefits of the choices they face. Overall, the logic of Cancer Vanguard interventions is that the programme will improve health outcomes and patient experience of care (though the scale of impact and value is not immediately known). The impact on healthcare costs is, however, less clear, and may either be positive or negative. In particular, the impact on care costs of increasing the speed with which cancer patients access the pathway is not immediately clear (and is likely to vary from cancer to cancer). Early diagnosis may result in a higher volume of treatment over the life of the patient, and this could potentially lead to higher total costs in the treatment of some tumour types.

This suggests that the primary economic question to study in this evaluation is whether Cancer Vanguard provided any value and if there was net benefit associated with the programme. This economic question can be broken down into five steps:

1. What is the direct cost of delivering Vanguard?
2. What is the impact of Vanguard on life expectancy?
3. What are the consequences of Vanguard for care costs, considering costs savings and the impact on volume and unit costs of care?
4. What is the net cost of achieving some gain in health outcome?
5. What is the net benefit of Vanguard relative to the costs required to implement it?

These questions can be considered at various levels – at the level of workstream, Vanguard as a whole, and the nation (assuming some degree of replication of Vanguard). We suspect that, initially, our primary focus should be on evaluating Vanguard as a whole, as it will be difficult to attribute outcomes to individual workstreams. It will also be important to ensure that time lags in the modelled response are accounted for to ensure that the outcomes of Vanguard activity are appropriately evaluated, implying that a more longer-term evaluation will provide greater value than a shorter-term equivalent. We expect that the economic evaluation will use either a cost-utility, cost-benefit or multi-criteria decision analysis approach depending on the strengths, weaknesses and relative suitability of each approach to Cancer Vanguard evaluation. The evaluation of these strengths of weaknesses will have to account for, amongst other factors, the potential impact of time lags and the sensitivity of the economic evaluation technique to the costs and benefits of the activity undertaken.

4.3. Cost Utility Analysis

Economic evaluation techniques such as cost-utility analysis (CUA) have historically been the preferred method of economic evaluation in health technology assessment. These techniques traditionally focus on the monetary implications of strategy adoption relative to the extra quality adjusted life years (QALYs) produced. These techniques model predicted future cash flows over a specified time horizon against future changes to patient outcomes to calculate an incremental cost per QALY ratio for competing

strategies. These techniques therefore provide quantitative evidence to identify options representing optimal strategies to implement and potentially provide further supporting evidence to the qualitative research undertaken.

It was identified however that, while being a gold standard from the perspective of NICE, CUA focuses primarily on the evaluated strategy's financial implications and direct patient quality of life implications. The technique aggregates any changes in the modelled patient's quality of life in the form of QALYs and assesses those relative to the change in future cash flow required to implement the strategy. This form of economic evaluation prioritises those strategies that produce direct increments in quality of life. The CUA technique therefore doesn't directly account for improvements in quality of life that are not captured within the QALY metric. Factors such as incremental improvements in patient waiting times may not always have a material impact upon the QALY metric but do potentially have a considerable impact upon the patient experience of the clinical pathway. Furthermore, incremental improvements in the patient and carer experience scores themselves are potentially excluded from the QALY metric and therefore the value of strategies seeking to improve these factors of the clinical pathway, such as Cancer Vanguard, are potentially systematically underestimated using the cost-utility approach.

4.4. Cost Benefit Analysis

Cost benefit analysis (CBA) is an alternative technique available that avoids the issues of focus on financial and patient quality of life outcomes by converting all measured impacts, however diverse, into a singular common monetary currency. Monetary valuations of benefits are commonly obtained through willingness to pay (WTP) surveys or discrete choice experiments (DCEs) which examine how much money participants would be willing to trade off in exchange for improvements in improved health outcomes (e.g. overall survival). This allows us to compare whether the positive impacts of Vanguard such as the increased life expectancy justifies the negative impacts, such as the direct costs of delivering the programme, and any indirect impacts on treatment costs.

This CBA approach would require each individual partner to provide estimates of the resource cost of delivering Vanguard by partners and workstreams in addition to estimates of life years saved across Cancer Vanguard and by partner as a result of reduced incidence and improved survival. They would also be required to provide estimates of the cost savings from initiatives aimed at eliminating inefficiencies (e.g. in procurement, administration and reduced duplication of activity) whilst also providing estimates on the consequences of Vanguard on costs of cancer care as a result of accelerating pathways. These estimates would then be combined into the CBA to establish an estimate of the net cost of achieving some increase in years of life, accounting for all cost consequences resulting from Vanguard and ultimately the economic worth of Vanguard, in terms of net benefits and benefit-cost ratio.

It was again identified, however, that the CBA approach would also not be immediately suitable for Cancer Vanguard evaluation due to the existence of data time lags. The length of time that is required to

undertake a robust CBA from start to finish is a critical factor in the adoption of CBA (and CUA) techniques as they can take approximately 12 months to complete, potentially longer in the complex area of cancer data analytics. This time is made up of model specification and design, data collection, survival data interpolation and extrapolation, model construction, result generation and validation and finally sensitivity analysis of the generated results. By the time that all of these stages would have been completed, the Cancer Vanguard partnership between the participating trusts (UCLH, Royal Marsden and Greater Manchester) would have already been officially dissolved. Furthermore, the presence of lagged effects means that the impact of Cancer Vanguard may not be immediate and may instead only be observable in the future. This could result in the Cancer Vanguard programme potentially being systematically undervalued within this form of economic evaluation. There were therefore concerns that a CBA (or a CUA) would need to be repeated again in the future once lagged effects were observable to ensure Cancer Vanguard was economically evaluated without systematic underestimation of programme value.

4.5. Multi-Criteria Decision Analysis

MCDA was developed to facilitate incorporation of non-cost and non-utility parameters into modelling of decision making in a time efficient manner. It is part of the value-based assessment (VBA) evolution taking place within the NHS and health economics which seeks to incorporate factors beyond monetary benefit and direct clinical benefit to the patient in value assessment, giving a more holistic assessment of value. Rather than focusing on direct financial and quality of life impacts, the technique identifies the most important assessment criteria and scores the strategy in terms of importance against the criteria. As a consequence, an ordinal assessment of optimal strategy adoption is developed highlighting those most preferable.

MCDA represents a more simplistic yet validated alternative form of economic evaluation compared to CUA and CBA, while also being more transparent. It is more computationally simple given that CUAs and CBAs can take between 6 and 12 months to complete, and relies less upon complex black box mathematical algorithms to produce results. It is an evaluation technique increasingly promoted by the Office of Health Economics and Public Health England²⁵ as an alternative method of value evaluation to CUA, and can be split into five key stages:

Stage 1. Criteria establishment stage

Either a workshop is convened including both internal and external stakeholders and clinical experts or internal stakeholder interviews take place. The purpose of this exercise is to identify the criteria against which Cancer Vanguard will be assessed against. Around 20 potential criteria would be suggested and

²⁵ <https://www.ohe.org/publications/multi-criteria-decision-analysis-value-orphan-medicines>

<https://www.ohe.org/publications/applying-multi-criteria-decision-analysis-mcda-approach-elicited-stakeholders%E2%80%99>

<https://publichealthmatters.blog.gov.uk/2018/03/22/building-consensus-for-local-public-health-investment-decisions/>

narrowed down to between eight and 10 following MCDA best practice recommendations. While it is important that all significant criteria are included within the MCDA, the ability of interview and workshop participants to cross-examine and quantitatively compare criteria has been argued to diminish the more criteria are included. A diminishing marginal return of criteria inclusion is therefore assumed with an optimal inclusion number of between eight and 10 identified.

Stage 2. Comparator identification stage

Following identification of the criteria against which Cancer Vanguard will be assessed, the comparator strategy would then need to be identified. This could take the form of a business as usual (BAU) comparator where the trust looks internally and compares itself pre- and post-implementation of Cancer Vanguard in order to achieve a case and control comparison. This potentially controls for confounders entering the analysis. If the performance of an alternative trust or alliance was to be used as a compactor in the MCDA there may be exogenous factors in play impacting on their measured scores. For example, a comparator trust may be located in a region with considerably poorer performance indicators than the partner trust. The comparator could therefore potentially indicate better current performance (larger improvements) due to poorer historical benchmark performance.

Stage 3. Criteria scoring stage

Once a comparator strategy to Cancer Vanguard has been established, scores for each strategy in terms of criteria will be sourced. These would be sourced either from the trusts themselves if they are comparing internally pre- and post-Cancer Vanguard or, if an appropriate comparator trust is being selected, publicly available databases would be interrogated for their relevant criteria scores.

Stage 4. Criteria swing weight quantification stage

A workshop would then be convened to establish the relative importance of each individual performance criterion and the difference in scores that each produces (so-called swing weighting). This form of weighting is necessary as it incorporates the criteria not just in theoretical form but also in applied form. For example, an increase in biosimilar uptake may be viewed as a very important indicator of performance and therefore potentially heavily weighted. If, however, the difference in performance scores between the partner trust and the comparator are observed to be negligible, then this criterion weight needs to be reduced as it would be undesirable for negligible differences in criteria scores to significantly impact the final overall scores and therefore the final ranking of the optimal strategy.

Stage 5. Scoring aggregation stage

A partial selection score is given to the strategy that provides the optimal score within each individual criterion. For example, a partial score of 1 is given to the strategy that resulted in the highest biosimilar uptake and a partial score of 0 to the strategy with the lowest biosimilar uptake. The partial score is then multiplied by the established swing weight for the criteria to establish a final score for each strategy for each criterion. These are then aggregated across all criteria; with the strategy with the highest value of aggregated scores ranked first as providing the most value and the strategy with the lowest value ranked last.

While appearing to represent a more suitable alternative to either a CUA or a CBA, the MCDA approach also has its own weaknesses. The technique is more prone to bias if those participating in the criteria

selection stage have reason to focus on criteria that promotes a higher ranking of one comparator over another. Similarly, further bias could enter the evaluation if participants in the criteria swing weighting quantification stage also display impartiality and favour one comparator over another in terms of how they weight criteria which may appear to favour one comparator over another. The strengths of the technique are specifically applicable to Cancer Vanguard, however, in that the speed with which the evaluation can be completed is faster than that if a CUA or CBA was implemented. The potential evaluation is also more easily replicable, meaning that the partners can continue the evaluation themselves over time if they so wish. Finally, given the requirement of engagement with clinicians and decision-makers in the process of ascertaining criteria and swing weights, MCDA is a more inclusive technique compared to CUA and CBA and therefore has a higher degree of transparency associated with it.

4.6. The Final Economic Evaluation Tool

Following critical appraisal of CUA, CBA and MCDA techniques for use in Cancer Vanguard evaluation, it was clear that the MCDA approach would be the most suitable technique in terms of simplicity and transparency. The technique is also simpler to repeat year on year as MCDAs only require workshops or interviews to be repeated and new criteria scores to be sourced. This was an important factor of consideration given the potential presence of lagged effects making lagged evaluation valuable.

It was therefore agreed with the partners that an MCDA tool would be developed that would allow each partner to collect and input criteria performance data themselves while also allowing them to select the most appropriate choice of comparator. The tool would therefore be dynamic and interactive in order to facilitate repetition of the assessment of value in the future once lagged effects were observable. Primarily it was agreed the tool will be used to assess the Cancer Vanguard programme as a whole; however, the tool could also potentially be used to assess individual workstreams too. Assessment of individual workstreams will only be possible, however, if the benefits and costs of implementing them can be separated from other workstream activity as there would be a risk of benefits (and costs) being double counted during individual workstream MCDA evaluation.

Appendix 5 – References

Other internal and external evaluation reports were shared with the evaluation team and were used as a source of evidence. Below is a list of the evaluation reports received and cross-referenced in the report:

Dr Catherine Heaven (2018). Cancer Vanguard Evaluation Report Project 5 – Creating an online platform of cancer education and information for primary care.

Dr Wendy Makin & Liz Islam (2018). Cancer Vanguard Evaluation Report Project 9 – New Models for Aftercare.

New Economics Foundation (2017). Health as a social movement in Manchester – Interim evaluation report.

Tim McCarthy & Jat Harchowal (2017). Project Evaluation Report – Biosimilars ‘getting it right 1st time’.

Technopolis Group
www.technopolis-group.com/uk

Optimicity Advisors, Ltd
www.optimicityadvisors.com
www.twitter.com/optimityeurope
www.linkedin.com/company/optimityeurope

