

27 MAY 2014

# AN OUTCOMES-BASED CONTRACT FOR DIABETES CARE IN LIVERPOOL

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RECOMMENDATION FOR LIVERPOOL CCG

# AN OUTCOMES-BASED CONTRACT FOR DIABETES CARE IN LIVERPOOL

27 MAY 2014

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## Executive summary

To improve patient outcomes and address the challenge of rising demand for healthcare services, Liverpool Clinical Commissioning Group (CCG) is keen to develop a more value-based commissioning strategy. As part of this, FTI Consulting was asked by the CCG to design an outcomes-based contract for diabetes care in Liverpool. This was intended as a ‘proof of concept’ exercise to explore how outcomes-based contracting might work in Liverpool.

This report details our proposed design for the outcomes-based contract and documents the process we followed to arrive at those proposals.

This is the first time outcomes-based contracting has been used to commission NHS services in Liverpool, and the issues involved were largely new to all contracting parties. Developing recommendations for the contract therefore required collaborative work with Liverpool CCG and providers to explore possible solutions.

We facilitated three major workshops and engaged informally with stakeholders throughout the process to discuss issues and receive feedback on our emerging recommendations. This engagement allowed us to ensure our recommendations were robust, and that the parties to the contract developed a common understanding of its principles.

The Diabetes Programme Group (DPG), which brings together primary, community and acute clinicians, patient representatives and the CCG, is leading work on improving diabetes care in Liverpool. Improved diabetes management in the earlier stages of the disease reduces the likelihood of patients developing complications which are both detrimental to a patient’s health and well-being, and expensive to treat. To help achieve this, the group are developing an innovative integrated clinical model of diabetes care, the Integrated Diabetes (ID) service. Our task was to develop an outcomes-based contract for the community and acute elements of the ID service.

In the report, we discuss several different options for how contracts can be structured, before concluding on our recommended structure for the diabetes contract, which will be a service-based contract with an outcomes-based component.

As primary care is currently commissioned separately, a full Year of Care contract was not possible at this time. However, we have attempted to recreate the positive incentive properties of a Year of Care-style contract by including in the contract a very broad set of services for diabetes patients. In particular, we recommend that the provider should be responsible under the contract for acute care costs which are related to patients' diabetes, that is, the acute provider should be paid a lump sum to provide this care, and then not paid by Payment by Results for these episodes.

This hybrid contract structure has two key characteristics which align the financial incentives of providers with improving outcomes for patients:

- Firstly, providers are paid a set sum of money to deliver services for diabetes patients along a broad pathway of care. This sum remains the same, regardless of the volume or type of services delivered. Providers therefore have a financial incentive to invest in care at an earlier stage of the patient's condition, in order to prevent or delay the development of complications and reduce the need for more costly interventions later in the pathway
- Secondly, diabetes-related patient outcomes are monitored under the contract, and providers are paid more if these outcomes improve

Providers and the CCG agreed the principle that, to deliver this first benefit in full, the scope of the contract for diabetes care in Liverpool should cover care which is directly related to diabetes and care for diabetes patients for conditions that are likely to be related to a patient's diabetes, e.g. heart disease and kidney disease. We then worked with a clinical working group to develop a detailed list of Health Resource Groups (HRGs) (for inpatient and day case care), treatment function codes (for outpatient care) and community services which should be covered by the contract.

As the contract is a service-based contract with an outcomes-based component, in addition to specifying the services included in the contract, Liverpool CCG must also specify which outcomes will influence payment under the contract. The work to identify a set of locally determined diabetes outcomes was driven by the clinically-led DPG. Distilling the complex needs of diabetes patients into a discrete set of outcomes is a challenging and, at times, necessarily subjective task. The goal was therefore to arrive at a set of outcomes which clinical experts and patient representatives considered to be a good representation of the needs and desires of diabetes patients.

With our support, the DPG identified outcomes in five main areas that the CCG wish to achieve for diabetes patients. These are:

- reduction in diabetes complication rates, e.g. circulation problems and kidney disease;
- reduction in serious episodes of hypoglycaemia and ketoacidosis;

- reduction in the rate of mortality for diabetes patients under 75;
- enhancement of quality of life for people with diabetes; and
- improvement in the above outcomes for hard to reach/vulnerable groups.

Once the outcomes had been specified, we worked with the clinical working group to identify metrics to measure each outcomes, the scale of improvement providers will be expected to deliver, and the weightings that should be assigned to each outcome in the calculation of the outcomes-based payment. These are all set out in the report, as is our recommended methodology for determining how performance in achieving the outcomes should translate into the level of payment the provider receives.

To inform Liverpool CCG's negotiations with providers on the value of the contract, we undertook a costing exercise to estimate what the providers would be likely to be paid for delivering the services included in the contract under the current payment system.

This exercise involved determining the current volumes of activity for the services which the contract will cover, and applying prices to these volumes of activity to arrive at an overall cost. We term this overall cost the 'reference value', and use it to inform our recommendations on the actual payments under the contract.

We estimated a reference value of £5.4m for the 2014/15 financial year and recommend that this reference value remain constant over the recommended three year duration of the contract. A breakdown of the total reference value is set out in Table ES-1 below.

**Table ES-1: Assessment of total costs**

	<b>Tariffs (2014/15)</b>
Acute – Royal Liverpool	£2,988,817
Acute – Aintree	£1,239,378
Community	£1,165,790
<b>Total</b>	<b>£5,393,985</b>

Sources: FTI analysis, based on HES activity data, 2014/15 national tariffs and LCH data

In the report, we discuss a number of different options for contracting with multiple providers. We recommend that a single joint contract should be agreed with multiple providers, as this appears most likely to encourage integration between providers and facilitate the shift of care and flow of funds between settings. However, whether the joint contract should be based on a lead provider model or a joint venture should be determined in discussions between Liverpool CCG and providers.

To conclude the report, we make a number of suggestions for possible next steps, including exploring a full Year of Care contract for diabetes in future years, including primary care, and developing outcomes-based contracts for other long-term conditions and for patients with multiple co-morbidities.

This type of contracting is not only new to Liverpool, it is also in its early stages across the country. Initial attempts to develop outcomes-based contracting in other parts of the country have met with varying degrees of success and there is no single, ideal approach. Getting outcomes-based contracting right will take time and the recommendations outlined in this report will not be perfect. However, Liverpool CCG and providers will learn lessons from the development and implementation of this contract that will enable them to refine the approach and deliver better value for patients in future contracts.

## 1 Introduction

The NHS faces a huge challenge in the coming decades: it must meet increasing demand for healthcare while at the same time improving quality of care for patients, and it must do both of these things in a constrained financial environment.

Increasing demand for healthcare services is being driven by two dynamics in particular: an ageing population and increasing numbers of people with multiple long-term conditions (LTCs), health problems which can't be cured but can be controlled by medication or other therapies. Nearly two-thirds of people admitted to hospital are over 65 years old, and when they are admitted to hospital, older people stay longer and are more likely to be readmitted.<sup>1</sup> Meanwhile, the 30% of people who have one or more long-term conditions account for 70% of expenditure on health and care, and patients with three or more long-term conditions currently cost on average nearly £5,000 per year more than patients with a single long-term condition.<sup>2</sup>

The UK population is projected to age significantly over the next 25 years, with the number of people aged over 80 expected to more than double by 2037.<sup>3</sup> In England, the number of people with at least one long-term condition is projected to be relatively stable over the next ten years. However, the number of people with multiple LTCs is set to rise to 2.9 million in 2018 from 1.9 million in 2008.<sup>4</sup> These two shifts will put enormous pressure on NHS resources at the same that the health service is trying to meet increasing expectations of the quality of patient care.<sup>5</sup>

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<sup>1</sup> *The NHS belongs to the people – a call to action*, NHS England, July 2013

<sup>2</sup> Ibid.

<sup>3</sup> National Population Projections, 2012-based projections, ONS.

<sup>4</sup> *Long Term Conditions Compendium (3rd edition)*, Department of Health, 2012

<sup>5</sup> Ibid.

A more integrated approach to healthcare is one possible component of a strategy to tackle these challenges, as there is evidence that integration can deliver benefits both in terms of quality of care and cost efficiency.<sup>6</sup> Integrated care takes many different forms. In some cases, it may be used to refer to more integrated working between primary and secondary care; it may also involve integration between health and social care. In many cases, the focus might be on providers collaborating, but it may also entail integration between commissioners, for example, pooling of budgets.

Where services are integrated across a number of different settings, for example, primary, community and acute care, this can encourage a focus on early prevention and better management of long-term conditions, thereby reducing the number of patients experiencing more severe (and more expensive) health problems later.

While the key to more integrated healthcare must be clinical changes to healthcare services, the structure of financial arrangements between providers and commissioners can have an important part to play, by better aligning financial incentives with the best interests of patients. One way to achieve this alignment is through outcomes-based contracting.

FTI Consulting was asked by Liverpool Clinical Commissioning Group (CCG) to help develop an outcomes-based contract for diabetes care in Liverpool. This report summarises our recommendations.

In this section, we provide an introduction to the project, in which we set out:

- an overview of diabetes in Liverpool;
- the process we employed for developing an outcomes-based contract in Liverpool; and
- the structure of the remainder of this report.

## 1.1 Diabetes in Liverpool

Diabetes is a life-long health condition and people living with diabetes may have to deal with short-term or long-term health complications as a result of their condition. Short-term complications include hypoglycaemia and diabetic ketoacidosis, while in the long term, diabetes can affect the eyes (retinopathy), heart (cardiovascular disease), kidneys (nephropathy), and nerves and feet (neuropathy).

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<sup>6</sup> *Integrated Care*, Chris Ham and Natasha Curry, King's Fund, 2011

While the true financial cost of diabetes is difficult to determine, owing to the complexity of the disease and its interaction with other health conditions, one study estimated the annual cost of diabetes in the UK at £13.8bn.<sup>7</sup>

There are currently over 23,000 people in Liverpool, or 4.8% of the population, registered with either Type 1 or Type 2 diabetes. This prevalence is slightly lower than the England average. However, by 2030, it is expected to increase to over 31,000 people, or 8.3% of the population.<sup>8</sup>

Liverpool performs well on measures relating to key care processes for diabetes, but translating good process into improved patient outcomes remains a challenge. Of the ‘core cities’, in 2011/12,<sup>9</sup> Liverpool had the highest proportion of retinal screening (93%), and the highest proportion of foot examination and risk classification (92%). However, it also had the highest diabetic ketoacidosis and coma emergency admissions rate (47 admissions per 100,000 population), and the highest diabetes-related lower limb amputation rate (18 admissions per 100,000 population).

For Liverpool CCG, focusing on improving health outcomes for diabetes patients is therefore an important aim.

## 1.2 Diabetes Programme Group and Integrated Diabetes Service

The Diabetes Programme Group, which brings together clinicians from primary, community and acute care providers, patient representatives and the CCG’s clinical and programme leads for diabetes, is leading work on improving diabetes care in Liverpool. Improved diabetes management in the earlier stages of the disease reduces the likelihood of patients developing complications which are both detrimental to a patient’s health and well-being, and expensive to treat. To help achieve this, the group are developing an innovative integrated clinical model of diabetes care, the Integrated Diabetes (ID) service.

The ID service will have a cross-setting structure with the following components:

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<sup>7</sup> *Diabetes expenditure, burden of disease and management in 5 EU countries*, Kanavos, van den Aardweg and Schurer, LSE, January 2012

<sup>8</sup> APHO Diabetes Prevalence Model.

<sup>9</sup> The core cities comprise England’s eight biggest regional cities: Birmingham, Bristol, Leeds, Liverpool, Manchester, Newcastle upon Tyne, Nottingham and Sheffield.

- Support for patient self-care and self-management, including education;
- Diabetes services in primary care;
- Community-based specialist diabetes service; and
- Hospital-based specialist care.

FTI Consulting was tasked with developing an outcomes-based contract for the community and acute elements of the ID service. Diabetes services in primary care will be provided under a separate contract arrangement with GP practices.<sup>10</sup>

### 1.3 Process for developing an outcomes-based contract for diabetes in Liverpool

This project is the first time outcomes-based contracting has been used to commission NHS services in Liverpool. There was not an established process for designing such a contract, and the issues involved were largely new to all contracting parties. Developing recommendations for the contract therefore required collaborative work with Liverpool CCG and local providers to explore possible solutions.

We facilitated three major workshops to discuss issues with representatives of the organisations involved and receive feedback on our emerging recommendations. In addition to the workshops, we engaged more informally with all key stakeholders throughout the process. This engagement allowed us to ensure our recommendations were robust, and that the parties to the contract developed a common understanding of its principles.

Attendees at the workshops included:

- Steve Warburton, Director of Finance, Aintree University Hospital Foundation Trust (“Aintree”)
- Dr Helen White, Consultant Endocrinologist, Aintree
- Dr Cheong Ooi, Consultant Physician in Diabetes and Endocrinology, Aintree
- John Graham, Director of Finance, Royal Liverpool and Broadgreen University Hospitals Trust (“Royal Liverpool”)
- Dr Tejpal Purewal, Clinical Director and Consultant Endocrinologist, Royal Liverpool

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<sup>10</sup> While Liverpool CCG does not commission primary care, the CCG is working closely with GPs to make improvements in primary care quality and address variation where it is within their remit, in tandem with the development of the ID service. This includes incentivising practices to perform against the nine diabetes care processes and to identify borderline diabetics earlier through implementation of an Impaired Glucose Regulation pathway.

- Gary Andrews, Director of Finance, Liverpool Community Health (“LCH”)
- Margaret Dowd, Nurse Manager, LCH
- Dr Janet Bliss, Executive GP sponsor for diabetes on Liverpool CCG’s governing body
- Tom Jackson, Chief Finance Officer, Liverpool CCG
- Dani Jones, Senior Programme Manager for Integrated Care, Liverpool CCG

To support work on the more detailed elements of the contract, we set up a smaller clinical working group involving clinicians, clinical coders and analysts. The working group held fortnightly conference calls, and communicated via email. The working group members were:

- Dr Tejpal Purewal, Clinical Director and Consultant Endocrinologist, Royal Liverpool
- Dr Helen White, Consultant Endocrinologist, Aintree
- Dr Cheong Ooi, Consultant Physician in Diabetes and Endocrinology, Aintree
- Michael Jones, Clinical Coding Auditor, Aintree
- Margaret Dowd, Nurse Manager, LCH
- Dr Janet Bliss, Executive GP sponsor for diabetes on Liverpool CCG’s governing body
- Dani Jones, Senior Programme Manager for Integrated Care, Liverpool CCG
- Helen McManus, Principal Analyst, Liverpool CCG
- Richard Houghton, Senior Intelligence Analyst, Liverpool CCG

Clinical engagement and joined-up working with the Diabetes Programme Group, facilitated by Dr Janet Bliss and Dani Jones, was vital to the successful development of the contract.

#### **1.4 Structure of this report**

In developing our recommendations, we first considered the structure of the contract, and then developed each component of the contract, before bringing these components together in the contract design. The structure of the report therefore follows this framework:

- in Section 2, we discuss the structure of the outcomes-based contract;
- in Section 3, we explain what services and outcomes the contract will cover;

- in Section 2, we set out our estimate of the value of the services in the contract, as currently provided;
- in Section 5, we present different models of contracting with multiple parties;
- in Section 6, we bring together the above elements in the contract design; and
- in Section 7, we conclude the report by summarising our recommendations, and giving suggestions for future developments.

## 2 Contract structure

At the highest level, contracts between providers and commissioners specify what the provider will undertake to deliver, and the remuneration it will receive from the commissioner in return. How these two components are defined in relation to each other will determine the structure of the contract.

In this section, we describe several different options for how a contract can be structured and discuss their advantages and disadvantages, before concluding on our recommended structure for an outcomes-based contract for diabetes in Liverpool. We discuss in turn:

- paying providers on the basis of the units of activity which they perform;
- paying providers for delivering certain healthcare services;
- paying providers to achieve healthcare outcomes for patients;
- paying providers to cover all the care needs of a particular set of patients in a 'Year of Care' approach; and
- our recommended structure for an outcomes-based diabetes contract in Liverpool.

### 2.1.1 Payment by activity

Under an activity-based contract, a commissioner pays a healthcare provider for each unit of healthcare it provides to patients. The contract therefore defines a specific set of currencies and tariffs, where currencies are the units of healthcare which the provider delivers, and tariffs are the prices paid for those units.

For inpatient care, the NHS in England uses currencies known as Healthcare Resource Groups (HRGs), which group together diagnoses and medical procedures which are similarly resource intensive into currencies. The tariffs for these HRGs are determined nationally under the 'Payment by Results' system.<sup>11</sup>

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<sup>11</sup> A simple guide to Payment by Results, Department of Health, November 2012

As payment by activity pays a provider a set amount for each unit of healthcare delivered, all else being equal, providers have a financial incentive to increase the volume of activity which they carry out. If patients are able to choose which providers they use, providers may compete to attract patients in order to increase their activity levels. This dynamic can result in reduced patient waiting times and may encourage providers to deliver high-quality services in order to attract patients.<sup>12</sup>

Paying a fixed amount for units of healthcare activity also gives providers a financial incentive to deliver each individual service cost effectively, as they will keep any efficiency gains they are able to make.

However, payment by activity also has some disadvantages; the incentive for providers to increase levels of activity may in some situations not be beneficial for patients. For example, if a hip replacement is unsuccessful and the patient is required to undergo another operation, say, six months later, the provider will be paid again for the second operation. Payment by activity therefore does not give providers a financial incentive to ‘get it right first time’.

As payment by activity currencies tend to be narrowly defined and setting specific, payment by activity does not encourage the shift of care between settings. Clinical changes in many healthcare services are currently focusing on providing more preventative care to patients at an earlier stage (which tends to be provided out of hospital), in order to avoid deterioration of the patient’s condition and the need for more complex interventions (which tend to be provided in hospital). If hospitals are reimbursed on an activity basis, the financial framework will not reward them for supporting this shift, as fewer patients being treated in a hospital setting will reduce their revenue.

### 2.1.2 Service-based contract

Under a service-based contract, the provider is paid by the commissioner to provide a particular service. A service specification is developed, which provides a detailed description of the service to be provided. In the pure form of a service-based contract, the price for the service is agreed in advance and is not dependent on the volume of patients. In the health service in England, contracts structured in this way are typically known as ‘block’ contracts.

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<sup>12</sup> For more information, see: *Payment by Results – How can payment systems help to deliver better care?*, King’s Fund, 2012

Service-based contracts can incentivise more cost-effective care provision at the service level; if a fixed amount is paid for a specific service, then it is in the provider's financial interest to deliver the service in a cost-effective way as it can retain any surplus. Service-based contracts also provide budgetary predictability for the commissioner, and have low administrative costs.<sup>13</sup>

However, a significant disadvantage is that service-based contracts, in their pure form, do not provide a direct incentive for providers to deliver high-quality services, nor to see patients quickly.

#### 2.1.3 Pure outcomes-based contract

In a pure outcomes-based contract, the commissioner pays a provider, or providers, to deliver a specific set of patient outcomes. For example, a provider may be paid a specified amount for delivering a target 10% improvement in cancer survival rates for a particular set of patients.

The amount paid under an outcomes-based contract should reflect the cost of the services that can affect the specified outcomes, which may include care across different settings, e.g. primary care, community care and acute care. In the purest form of an outcomes-based contract, the commissioner does not determine how the outcomes in the contract should be achieved; it is up to the provider how they design services and allocate resources to achieve the desired outcomes.

The main advantage of an outcomes-based contract is that it is paying for what patients, and commissioners, ultimately care about, that is, patient outcomes. Inputs, such as the number of nurses or diagnostic machines, or outputs, such as the number of patients seen in a particular clinic, are only important to patients in as much as they help them get better or prevent deterioration of their condition. More traditional commissioning methods can put too much emphasis on inputs and outputs, rather than focusing on what is ultimately important: patient outcomes.

However, there are potential disadvantages to outcomes-based commissioning. There can be high administrative costs, as outcomes need to be defined and monitored. As there is currently no national outcomes-based system, each commissioner must individually define outcomes and the metrics to measure them, which is likely to be more resource intensive than specifying a service or using the nationally defined PbR system.

Commissioners also need to consider carefully which outcomes should be targeted by the contract. Concentrating on a few outcomes to the exclusion of others may create undesirable incentives for providers to focus too narrowly on particular aspects.

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<sup>13</sup> *The NHS payment system: evolving policy and emerging evidence*, Nuffield Trust, February 2014

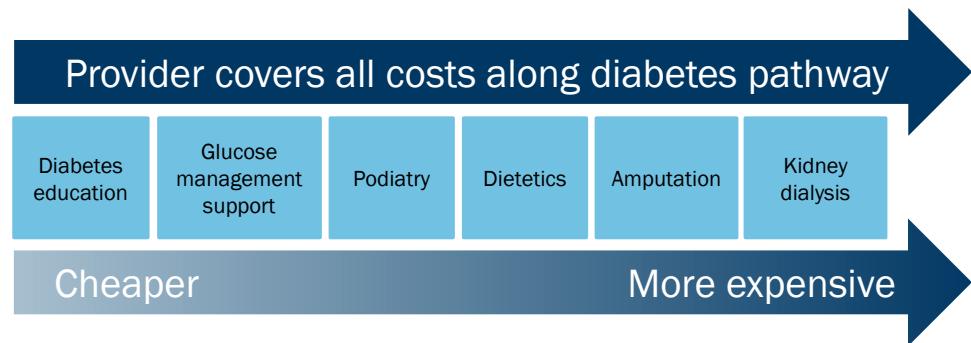
#### 2.1.4 Year of Care contract

Under a Year of Care contract, a provider, or group of providers, is commissioned to meet the care needs of a specified cohort of patients over a fixed period of time (which could be a number of years). The scope of care provided under the contract may be defined narrowly or more broadly, for example, to include only care for these patients which is related to specific conditions, or to include all care.

Under a pure Year of Care contract, the payment to the provider does not vary according to healthcare outcomes. However, the structure of a Year of Care contract may still provide indirect incentives for providers to improve healthcare outcomes for patients in the following way. As the provider is paid a fixed amount under the contract to provide for the needs of the group of patients, it has an incentive to care for each of these patients cost effectively. Typically, healthcare interventions early in a disease pathway which can prevent or delay the development of more serious complications result in better outcomes for patients, and are also cheaper for providers.<sup>14</sup>

These dynamics are illustrated in Figure 2-1 below, which presents an indicative example of a contract covering services for diabetes patients at several stages along the diabetes pathway.

**Figure 2-1: Indicative example of a Year of Care contract**



As the provider is responsible for providing care all along a broad pathway, it has a financial incentive to invest in interventions in the early stages of the pathway, such as glucose management support, which keep the patient healthier and can prevent him or her from requiring more complex and expensive procedures, such as amputation or kidney dialysis, later down the line.

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<sup>14</sup> *The Strategy That Will Fix Healthcare*, Michael Porter and Thomas Lee, Harvard Business Review, October 2013

If poor outcomes for patients were *always* more expensive for the provider, the dynamics described above would mean that outcomes for patients might not have to be specified in the contract in order for providers to have a financial incentive to improve outcomes.

However, there are cases where poor health outcomes for patients may in fact be less expensive for the provider. To choose an extreme example, the death of a patient may be significantly less costly for a provider than complex interventions which might have prevented that death. Year of Care contracts are therefore typically overlaid with some form of outcomes-related payment to ensure that the provider's financial incentives are fully aligned with the best interests of patients.

While a Year of Care contract has many attractive incentive properties, the administration costs of establishing a Year of Care contract may be high, for example, defining the target patient group, estimating the contract value and selecting the appropriate payment approach.

#### 2.1.5 Recommended contract structure

Contracts between providers and commissioners typically include a combination of elements from the different approaches outlined above, to address the particular circumstances of the contract.<sup>15</sup> Similarly, we recommend a hybrid contract structure for an outcomes-based contract for diabetes care in Liverpool.

We were tasked with designing a contract for the community and acute elements of the Integrated Diabetes service and a service-based contract was therefore our starting point. As primary care is currently commissioned under separate contracting arrangements, a full Year of Care contract was not possible at this time. However, we have attempted to recreate the positive incentive properties of a Year of Care-style contract by including in the contract a very broad set of services for diabetes patients. In particular, we recommend that the provider should be responsible under the contract for acute care costs which are related to patients' diabetes, that is, the provider should be paid a lump sum to provide this care, and then not paid by Payment by Results for these episodes. (The details of this arrangement are developed in Section 3.)

On top of these service-based and Year of Care elements, we have overlaid an outcomes-based payment component.

This hybrid contract structure has two key characteristics which align the financial incentives of providers with improving outcomes for patients:

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<sup>15</sup> *The NHS payment system: evolving policy and emergency evidence*, Nuffield Trust, February 2014

- Firstly, providers are paid a set sum of money to deliver services for diabetes patients along a broad pathway of care. This sum remains the same, regardless of the volume or type of services delivered. Providers therefore have a financial incentive to invest in care at an earlier stage of the patient's condition, in order to prevent or delay the development of complications and reduce the need for more costly interventions later in the pathway
- Secondly, diabetes-related patient outcomes are monitored under the contract, and providers are paid more if these outcomes improve (the desired outcomes are discussed in more detail in Section 3)

The service specification for the Integrated Diabetes ("ID") service describes the clinical model for integrated diabetes care which has been developed by the Diabetes Programme Group. Developing the clinical model was a collaborative exercise undertaken by both Liverpool CCG and the relevant providers.

As both providers and Liverpool CCG become more experienced with outcomes-based contracting, service specifications should ideally become less detailed, if they are used at all. Liverpool CCG should focus increasingly on selecting and defining the healthcare outcomes which providers must deliver, while providers focus on how those specified outcomes can best be achieved. Determining and prioritising the needs of patients is the responsibility of the commissioner, while designing clinical services to meet these needs is the responsibility of the provider.

In this transition period, the ID service specification will be the starting point for providers delivering the service under the contract. However, providers have responsibility for delivering the outcomes specified in the contract. Therefore, if providers feel that elements of the service need to be changed in order to better deliver those outcomes, Liverpool CCG should be open to such changes.

#### **Recommendation**

The contract for diabetes care in Liverpool should be a broad ranging service-based contract, which includes acute care related to patients' diabetes and an outcomes-based component.

## 3 Contract coverage

In Section 2, we developed our recommendation for a broad ranging, service-based contract for diabetes care in Liverpool, with an outcomes-based component. This contract structure is designed to incentivise providers to invest in care early in the diabetes pathway and to focus on improving patient outcomes.

In this section, we develop recommendations on the coverage of the contract within this structure. Specifically, we discuss:

- which services for diabetes patients are included in the contract; and
- which outcomes should be targeted under the contract.

### 3.1 Services included in the contract

As this is primarily a service-based contract, the contract must specify the services which it covers. Liverpool CCG and providers must therefore agree on the services to be included in the scope of the contract, which could be narrowly or more broadly defined.

The choice of which services are included in the contract is crucial, as it affects whether the contract will deliver the key benefit of incentivising providers to invest in care for patients early in the diabetes pathway. This incentive is created when providers bear financial responsibility both for care early in the pathway and for treating patients when they develop expensive complications later down the line. To create the strongest possible incentive on providers to invest early, the contracted provider should bear the cost of all care for complications which could have been prevented by better care earlier on.<sup>16</sup>

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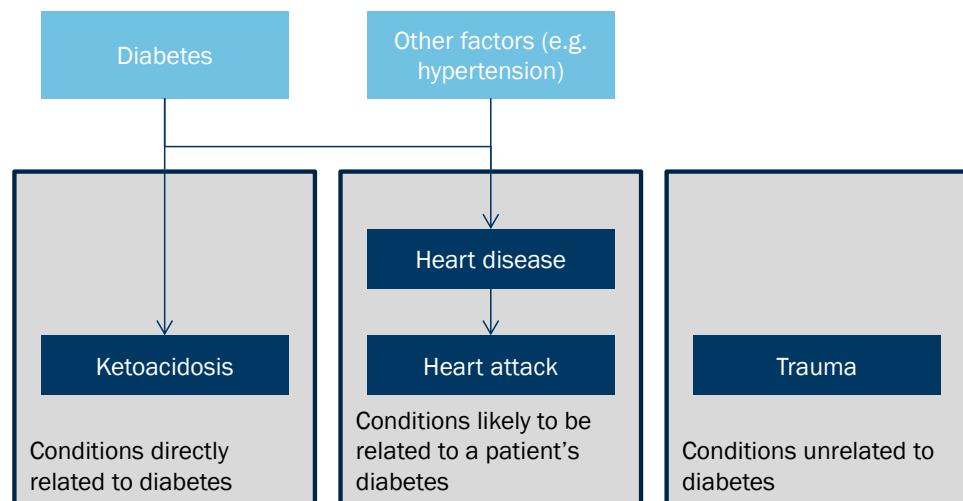
<sup>16</sup> Following this logic, ideally the contracted provider should bear financial responsibility for all diabetes-related acute care, regardless of where that care was provided. For example, if the contracted provider was an acute trust, it would also be responsible for the cost of any diabetes-related care provided to patients at other acute trusts. This could work in two ways, either the contracted provider could pay the other trusts directly or the commissioner could pay the other trusts and deduct this amount from the payment it makes to the contracted provider. Practically speaking, however, this sort of arrangement may not be realistic at this stage.

Diabetes patients may have a wide range of healthcare needs, which are related to their diabetes in varying degrees. Through discussions with our working group, we grouped the healthcare needs of diabetes patients into three categories, according to the extent to which those needs are related to their diabetes:

- Care that is directly related to diabetes
- Care for conditions likely to be related to a patient's diabetes
- Care for conditions unrelated to diabetes

These categories are illustrated in Figure 3-1 below, which also includes some illustrative examples of conditions included in each category.

**Figure 3-1: Examples of three categories of care for diabetes patients**



The key consideration in deciding what services to include in the contract is the extent to which the condition is caused or exacerbated by diabetes and therefore could have been prevented or controlled by better care earlier in the pathway (such as patient education to improve glucose management or foot checks to pick up early signs of ulcers). Where a condition is unrelated to diabetes, including care for it in the scope of the contract will not increase the incentive for providers to invest in early diabetes-related interventions (while at the same time significantly increasing the contract value).<sup>17</sup>

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<sup>17</sup> One practical reason for including care unrelated to diabetes in the contract would be if, for data reasons, it was not possible to separate out which care was or was not related to diabetes. In this case however, the data does allow this distinction to be made.

We discussed these issues extensively at the workshops which we facilitated with Liverpool CCG and providers. Agreement was quickly reached that care for conditions directly related to diabetes should be included in the contract and that care for conditions unrelated to diabetes should not. Discussion then focused on whether or not care for conditions likely to be related to a patient's diabetes, such as kidney and heart disease, should be included in the contract, as these conditions are often caused by a complex combination of factors, of which diabetes is one.

After extensive discussion, the principle of including care likely to be related to a patient's diabetes was agreed, given the importance of diabetes in causing or exacerbating these conditions, and to give the strongest possible incentive to providers to invest in care earlier in the pathway.

We therefore recommend including in the contract care for conditions which relate directly to diabetes, and care for conditions which are likely to be related to a patient's diabetes.

#### **Recommendation**

The contract for diabetes care in Liverpool should cover care for conditions which relate directly to diabetes, and care for conditions which are likely to be related to a patient's diabetes.

In the rest of this subsection, we discuss in more detail the services which we recommend should be included in the contract, in both acute and community care.

##### **3.1.1 Recommended acute services to include in the contract**

Diabetes patients in Liverpool may use a wide range of acute services, and be treated as inpatients, outpatients or as day cases. Each episode of inpatient and day case care is assigned an HRG, which combines diagnosis and procedure information to categorise the care the patient received. Outpatient appointments are assigned treatment function codes (TFCs), which specify which specialised service the patient saw. Providers are currently paid on the basis of these HRGs and TFCs.

In our recommended contract structure, which is a hybrid of a service-based contract and a Year of Care approach, the provider is paid a lump sum to deliver acute care which is directly and indirectly related to diabetes and then not paid by Payment by Results for these episodes.

We have therefore developed three groups of HRGs and TFCs:

- Group A – Care directly related to diabetes, such as admissions for ketoacidosis and hypoglycaemia
- Group B – Care for diabetes-related complications, such as kidney disease or glaucoma
- Group C – Care not related to diabetes

Using the full list of 2014/15 HRGs, we worked with the clinical working group to categorise each HRG and TFC into one of these three groups. For inpatient care, the lists of HRGs that were categorised under Groups A and B by the clinical working group are shown in Table A1-1 and Table A1-2 in Appendix 1. For outpatient care, the treatment function codes categorised under Groups A and B are shown in Table A1-3 in Appendix 1.

Under the contract, the provider will not be paid by Payment by Results for HRGs in Groups A and B where the patient has a diagnosis of diabetes.

#### **Recommendation**

The contract should cover acute care for diabetes patients in Groups A and B, as defined in Tables A1-1, A1-2 and A1-3.

#### **3.1.2 Recommended community services to include in the contract**

Community care services in Liverpool are currently provided by Liverpool Community Health (LCH). There are a number of LCH services which may be used by diabetes patients. According to the principles set out above, the contract should include those services which are directly related to diabetes, and those services which are likely to be related to a patient's diabetes.

Following the workshops and other discussions with LCH, Liverpool CCG and clinicians, we agreed that community care services can be split into four groups and treated as follows:

- 1) Diabetes-specific services, e.g. diabetes education – all of these services should be included in the outcomes-based contract
- 2) General services, where a large proportion of patients are diabetic, e.g. dietetics and podiatry – the proportion of the service attributable to diabetes patients should be included
- 3) Other general services used by diabetes patients – these services should not be included
- 4) Community prescriptions – community prescriptions for diabetes patients should be included

### **Recommendation**

The contract should include diabetes-specific community services, the proportion of general community services where a large proportion of patients are diabetic, and community prescriptions for diabetes patients.

## 3.2 Diabetes outcomes targeted in the contract

As the contract is a service-based contract with an outcomes-based component, in addition to specifying the services included in the contract, Liverpool CCG must also specify which outcomes will be used to influence payment under the contract.

The specification of the outcomes in the contract determines how well the contract will deliver the second key benefit of the contract structure: that providers receive a financial reward for improving patient outcomes.

In this subsection, we discuss the approach we used to arrive at our recommendations, including:

- the recommended outcomes;
- developing metrics to measure the outcomes;
- developing outcome targets;
- setting weightings for outcomes in the contract; and
- a summary of our recommended outcomes, metrics and targets.

### 3.2.1 Recommended outcomes to include in the contract

The work to identify a set of locally determined diabetes outcomes was driven by the clinically-led Liverpool Diabetes Programme Group. Distilling the complex needs of diabetes patients into a set of outcomes to target is a challenging and, at times, necessarily subjective task. The goal was therefore to arrive at a set of outcomes which clinical experts and patient representatives considered to be a good representation of the needs and desires of diabetes patients. To support the Diabetes Programme Group, we undertook research, provided discussion materials, facilitated meetings and advised on drafting, but the outcomes were the result of a clinically driven and patient-focused process.

As a tool to facilitate this process, we drew on the logical framework approach, commonly used in the design, monitoring and evaluation of projects in international development. In this approach, components of a project are divided into inputs, outputs, outcomes and impacts, and metrics are identified to monitor each component. We used this approach to facilitate discussion around what are clinical or operational inputs or outputs that serve only as a means to an end, for example staffing levels or number of clinic appointments, and what are outcomes that patients care about in and of themselves, for example, fewer people losing their sight.

We were also conscious that too large a set of outcomes would dilute focus and be difficult to monitor and manage, while too narrow a set might create perverse incentives for providers to focus only on certain limited aspects of a patient's condition. We therefore recommend that the contract covers a range of outcomes, covering six key areas.

In specifying the outcomes relating to diabetes complications, we have used a dual outcome structure, with one outcome relating to the early stage of each condition (e.g., kidney disease), and one relating to the more severe later stage (e.g. kidney failure). Providers must therefore focus on both preventing the condition developing in the first place and managing the condition to prevent it becoming more severe.

It was very important to the Diabetes Programme Group that the outcomes genuinely reflect patients' priorities. To help ensure this was the case, the group commissioned a survey of over 1000 diabetes patients in Liverpool. Around 90% of patients who responded to the survey agreed that the five main outcomes identified (see Table 3-1 below) were the right areas to focus on. Patients were also asked to make suggestions for a sixth patient-identified outcome, which is also included in Table 3-1.

#### **Recommendation**

The contract for diabetes care in Liverpool should be based on the performance of providers in delivering the outcomes specified in Table 3-1 below.

**Table 3-1: Agreed set of diabetes outcomes for contracting**

<b>1 Reduction in complication rates</b>		
Ophthalmic	i	Reduction in the proportion of people at risk of impaired vision resulting from diabetes
	ii	Reduction in the proportion of people with impaired vision resulting from diabetes
Circulatory	iii	Reduction in the proportion of people with diabetes with circulation problems (peripheral vascular disease)
	iv	Reduction in the proportion of people with diabetes undergoing amputations
Neuropathic	v	Reduction in the proportion of people with diabetes experiencing numbness, tingling or pain (neuropathy)
Renal	vi	Reduction in the proportion of people with diabetes with kidney disease
	vii	Reduction in the proportion of people with diabetes with kidney failure
Cardiac	viii	Reduction in the proportion of people with diabetes with heart disease
	ix	Reduction in the proportion of people with diabetes having a heart attack
Cerebro-vascular	x	Reduction in the proportion of people with diabetes having a Transient Ischaemic Attack ("TIA")
	xi	Reduction in the proportion of people with diabetes having a stroke
<b>2 Reduction in serious episodes of</b>		
i Hypoglycaemia		
ii Ketoacidosis		
<b>3 Reduction in the rate of mortality for diabetes patients under 75</b>		
<b>4 Enhancement of quality of life for people with diabetes</b>		
i People feel more in control of their condition		
ii People feel more supported to manage their condition		
iii People spend less time being treated for their condition		
iv Condition management and treatment are more convenient for people with diabetes		
v People feel better, mentally, physically and emotionally		
<b>5 Improvement in the above outcomes for hard to reach / vulnerable groups</b>		
<b>6 People with diabetes have access to up-to-date and reliable information and advice about their condition</b>		

### 3.2.2 Developing metrics to measure outcomes

Once we had identified the desired set of outcomes, we moved on to consider how to measure these outcomes. These two processes were intentionally kept separate; the desired set of outcomes should reflect what is most important to patients, even if some of this is subjective or hard to measure. Identifying metrics is a less idealised exercise, assessing what information is realistically available and how it can be best put to use.

In practice, there were relatively few options for data to use to measure each diabetes outcome. Our choices of metrics were therefore necessarily pragmatic.

In the clinical working group, we considered and selected data to use as metrics from a number of sources, including:

- Hospital Episode Statistics (“HES”), for both inpatient and outpatient hospital episodes;
- data sets kept by individual providers, such as retinopathy screening results and dialysis registers;
- data kept at GP practices, and reporting mechanisms for that data, such as the Primary Care Quality Framework (“PCQF”); and
- publicly available data from national sources, such as Public Health England and the Renal Registry.

We also discussed possible data sources to use as a metric for Outcome 4, “Enhancement of quality of life for people with diabetes”. As this outcome relates to subjective patient experience, we recommend using a combination of an EQ5D survey<sup>18</sup> and the Problem Areas in Diabetes (PAID) questionnaire<sup>19</sup>, completed by patients in diabetes clinics. If Liverpool CCG considers that these validated tools do not fully capture the outcomes it is trying to measure, it might consider developing a bespoke patient survey. As no historical data is currently available for this outcome, we recommend beginning to gather data from these surveys as soon as possible, on a quarterly basis, and setting targets once the initial data is available.

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<sup>18</sup> EQ5D is a standardised instrument which can be used to measure healthcare outcomes. For more information, see <http://www.euroqol.org/>.

<sup>19</sup> PAID is a patient survey developed by Diabetes Attitudes Wishes & Needs (DAWN) which measures progress on a selection of outcomes identified as being particularly relevant to diabetes patients. For more information, see [http://www.dawnstudy.com/News\\_and\\_activities/Documents/PAID\\_problem\\_areas\\_in\\_diabetes\\_questionnaire.pdf](http://www.dawnstudy.com/News_and_activities/Documents/PAID_problem_areas_in_diabetes_questionnaire.pdf)

Full details of all our proposed metrics are given in Table 3-2 at the end of this section.<sup>20</sup>

In addition to identifying which data to use as metrics, Liverpool CCG must also specify the patient group on which the outcomes will be measured, that is, whether to measure the outcomes on all diabetes patients in Liverpool, or only on those patients who access the community and acute services which are provided under the outcomes-based diabetes contract. Measuring outcomes on all diabetes patients would mean that the performance of the contract providers, and their payment, would be influenced by the outcomes of patients who they have not treated, which intuitively feels somewhat unfair.<sup>21</sup>

However, we recommend measuring outcomes on all diabetes patients in Liverpool, as Liverpool CCG would like to see improvement in outcomes for all diabetes patients and this gives the contracted providers a greater incentive to work with primary care providers to improve diabetes services all along the care pathway.

### 3.2.3 Developing targets for outcomes

Having defined a set of outcomes (e.g. reduction in the proportion of people with diabetes with kidney failure), and identified which data to use to measure them (e.g. Renal Registry data showing number of new dialysis patients with diabetes), the next step was to specify the scale of improvement we expected providers to achieve for each outcome and over what timescale (e.g. 40% reduction over eight years).

The clinical working group discussed what the appropriate target improvement should be for each outcome, considering factors such as the current performance of healthcare services in Liverpool in relation to each outcome and the scope for clinical improvements to be made to those services. We also considered how quickly progress could be made towards the target for each outcome, in order to define an interim target for each outcome for each year over a ten-year period.

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<sup>20</sup> Work to identify suitable metrics to measure the patient-defined outcome is still ongoing.

<sup>21</sup> The outcomes of diabetes patients who do not access community and acute services will be affected only by the quality of primary care, which is not covered by the contract. However, the quality of primary care will impact on performance under the contract, even if the measurement group is limited to patients seen by the contract providers, as how healthy patients are when they arrive at the contract service will affect the extent to which the service is able to prevent or slow the development of complications.

As part of this process, we also considered the results of the Diabetes Control and Complication Trial (“DCCT”) and the UK Prospective Diabetes Study (“UKPDS”).<sup>22</sup> These were long-term trials measuring the impact of intensive diabetes control on healthcare outcomes for diabetes patients.

The magnitude of improvements seen in these trials suggests that the targets we have recommended are within reach of clinical improvements. For example, the UKPDS achieved a 25% reduction in microvascular disease, and the DCCT achieved a 76% reduction in risk of retinopathy. However, these studies involved intensive diabetes management interventions on the groups under study, and these targets will therefore be towards the upper end of the range of achievable improvements. This influenced our recommendation on what progress towards the targets is necessary to achieve certain levels of payment in the contract, which we discuss later in Section 5.

Our recommended targets for each metric are included in Table 3-2 at the end of this section.

### 3.2.4 Setting weightings for outcomes in the contract

Finally, we considered whether all the outcomes specified in the contract are of equal importance, or whether some are more important than others. The relative importance of outcomes in the contract can be reflected by applying different weightings to different outcomes in the contract, so that improvements in some outcomes result in greater financial benefit than improvements in others.

We considered several approaches to weighting each outcome, which we presented to the clinical working group:

- Weight all outcomes equally
- Assign greater weight to outcomes which are more important to patients
- Assign greater weight to outcomes where improvements will yield greater cost savings to Liverpool CCG
- Assign greater weight to outcomes which will require greater investment by providers to achieve target performance
- Assign greater weight to outcomes where improvement in performance will also result in improvement of other outcomes (for example, reduction in kidney disease is likely to lead to a reduction in kidney failure)

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<sup>22</sup> See <http://diabetes.niddk.nih.gov/dm/pubs/control/> and <http://www.dtu.ox.ac.uk/ukpds/index.php>

The clinical working group's view was that weightings should be determined on the basis of which outcomes are most important to patients and, to help incentivise progress over a relatively short contract, that outcomes which will result in improvement in other outcomes should be weighted more heavily.

On this basis we developed our recommended weightings for each metric, which are presented in Table A1-4 in Appendix 1.

### 3.2.5 Recommended list of metrics for each outcome and associated targets and timelines

Our proposed metrics and targets for each outcome are described in detail in Table 3-2 below.

A full list of the weightings and interim targets for each outcome is provided in Table A1-4 in Appendix 1.

#### **Recommendation**

The contract for diabetes care in Liverpool should use the metrics, targets and weightings specified in Table 3-2 and Table A1-4 to measure performance in improving patient outcomes.

**Table 3-2: Proposed metrics and targets for each outcome**

Outcome		Metric	Target
<b>1 Reduction in complication rates</b>			
Ophthalmic	i	Reduction in the proportion of people at risk of impaired vision resulting from diabetes	Number of patients with sight threatening diabetic retinopathy, as measured in retinopathy screening data
	ii	Reduction in the proportion of people with impaired vision resulting from diabetes	Number of patients visually impaired due to diabetes, as measured in retinopathy screening data
Circulatory	iii	Reduction in the proportion of people with diabetes with circulation problems (peripheral vascular disease)	Extract from GP data
	iv	Reduction in the proportion of people with diabetes undergoing amputations	HES data – OPCS-4 X09.1-X11.9 (codes for amputation of lower limbs), excluding disarticulation. To consider including ICD10 I792 ('peripheral angioplasty in diseases classified elsewhere')
Neuropathic	v	Reduction in the proportion of people with diabetes experiencing numbness, tingling or pain (neuropathy)	Extract from GP data
Renal	vi	Reduction in the proportion of people with diabetes with kidney disease	Extract from GP data
	vii	Reduction in the proportion of people with diabetes with kidney failure	Data from Renal Registry showing number of new dialysis patients with diabetes
Cardiac	viii	Reduction in the proportion of people with diabetes with heart disease	Extract from GP data
	ix	Reduction in the proportion of people with diabetes having a heart attack	HES data – number of patients diagnosed with diabetes, and with ICD10 code I21 'Acute myocardial infarction'
Cerebro-vascular	x	Reduction in the proportion of people with diabetes having a Transient Ischaemic Attack ("TIA")	Extract from GP data
	xi	Reduction in the proportion of people with diabetes having a stroke	Extract from GP data

<b>2 Reduction in serious episodes of</b>		
i Hypoglycaemia	HES data – number of patients diagnosed with diabetes, and with ICD10 E160-E162 and E10-E14.0 Various forms of diabetes with coma	30% reduction
ii Ketoacidosis	HES data – number of patients diagnosed with diabetes, and with ICD10 E10-E14.1 Various forms of diabetes with ketoacidosis	30% reduction
<b>3 Reduction in the rate of mortality for diabetes patients under 75</b>	ONS public health mortality data, provided annually by Public Health Liverpool, showing number of deaths where diabetes is the primary or secondary cause, for under-75s	25% reduction
<b>4 Enhancement of quality of life for people with diabetes</b>		
i People feel more in control of their condition	Survey question: "On a scale of 1-10, how strongly do you agree with the statement: 'I feel in control of my condition'"	TBC
ii People feel more supported to manage their condition	Survey question: "On a scale of 1-10, how strongly do you agree with the statement: 'I feel supported to manage my condition'"	TBC
iii People spend less time being treated for their condition	HES data: Average number of days spent in hospital per year for patients with diabetes.	TBC
iv Condition management and treatment are more convenient for people with diabetes	Survey question: "On a scale of 1-10, how strongly do you agree with the statement: 'Managing my condition and receiving treatment is convenient'"	TBC
v People feel better, mentally, physically and emotionally	Survey question: "On a scale of 1-10, how strongly do you agree with these three statements: 'I feel mentally well', 'I feel physically well', 'I feel emotionally well'"	TBC
<b>5 Improvement in the above outcomes for hard to reach / vulnerable groups</b>	Measure the difference between the performance on each outcome in the most deprived and least deprived quintiles.	30% reduction
<b>6 People with diabetes have up-to-date and reliable information and advice about their condition</b>	TBC	TBC

## 4 Contract value

We recommended in Section 2 that the payment for this contract should not be based on activity; instead the provider should be paid a lump sum for delivering the specified diabetes services plus (or minus) an outcomes-based component depending on performance. The contract must specify the value of each of these components.

In order to inform Liverpool CCG's negotiations with providers on the value of these components, we have carried out a costing exercise to estimate what the provider would be likely to be paid for delivering the services included in the contract under the current payment system.<sup>23</sup>

This exercise involved determining the current volumes of activity for the services which the contract will cover, and applying prices to these volumes of activity to arrive at an overall cost. We term this overall cost the 'reference value', and use it to inform our recommendations on the actual payments under the contract in Section 5.

We estimated the reference value of this contract for the 2014/15 financial year. We also consider what the value of the contract would be in future years.

While Liverpool CCG may use the results of this exercise to inform the value of this contract, we would expect a number of factors to affect the value of future outcomes-based contracts, such as:

- if an outcomes-based contract is tendered, the bids should reveal the providers' own estimates of the costs of delivering the services and outcomes in the contract;
- the structure of the contract gives providers an incentive to deliver the services under the contract efficiently, as discussed in Section 2, so unit costs may decrease over time; and
- if providers are effective in delivering the outcomes specified in the contract, diabetes patients' demand for expensive, acute services may decline over time and the cost of providing the services in the contract may therefore decrease.

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<sup>23</sup> At the time of writing this report, Liverpool CCG has not concluded its negotiations with potential providers of the outcomes-based contract, and tendering the contract remains an option.

In the rest of this section, we describe how we have made our assessment of the reference value for the contract, including:

- our assessment of the costs of providing the acute services included in the contract, as specified in Section 3;
- our assessment of the costs of providing the community services included in the contract, as specified in Section 3;
- our assessment of the total costs; and
- our consideration of future costs.

#### 4.1 Costing of acute care

Our recommendation is that acute care under the contract covers diabetes services (described by the Group A list of HRGs in Section 3), and care for diabetes patients for conditions likely to be related to their diabetes (described by the Group B list of HRGs in Section 3).

Our costing exercise for acute care covers three broad categories of costs:

- 1) Inpatient and day case costs;
- 2) Outpatient costs; and
- 3) Other acute costs – including insulin pumps, and other high-cost drugs and devices.

The total cost for each of these items is calculated by multiplying activity data by the unit cost of each activity.

Activity for inpatients, day cases and outpatients is recorded in the Hospital Episode Statistics (“HES”) dataset. The HES data record a range of information about each individual episode of a patient’s care, including the patient’s diagnosis and the commissioner. Using a HES extract containing all episodes where diabetes was recorded as a diagnosis and Liverpool CCG (or PCT) was the commissioner, we calculated an average of the last three year’s activity for each HRG and TFC in Groups A and B.

To generate an estimate of what providers would be paid under PbR in 2014/15 in the absence of this contract, we then multiplied our estimate of activity for each HRG and TFC by the 2014/15 tariff prices. A number of minor adjustments were then made (for example, to account for excess bed days) to arrive at the final costing. These adjustments are described in Appendix 2. The final costing totals for inpatient, day case and outpatient care are presented in Table 4-1 below.

Not all acute services are reimbursed through tariff. The only non-tariff cost relevant to this contract relates to insulin pumps. Table 4-1 therefore also presents our estimate of insulin pump costs (how we arrived at this estimate is described in Appendix 2).

94% of the relevant activity commissioned by Liverpool CCG (or PCT) was provided at Royal Liverpool or Aintree and this subsection presents the costs of activity at those providers. The desirability of including care at other acute providers in the contract to give the strongest possible incentives to the contracted provider to invest early in the pathway is discussed in Section 3.1. However, this is probably not practical at this stage. Costing of activity at other providers in Liverpool is presented in Appendix 2.

**Table 4-1: Assessment of total costs for acute services**

	Royal Liverpool	Aintree	Total
Acute – inpatients	£1,349,529	£579,185	£1,928,714
Acute – outpatients	£1,376,647	£504,693	£1,881,340
Acute – other	£262,641	£155,500	£418,141
<b>Total</b>	<b>£2,988,817</b>	<b>£1,239,378</b>	<b>£4,228,195</b>

Sources: FTI analysis, based on HES data and 2014-15 National Tariff Payment System, Monitor and NHS England.

#### 4.2 Assessment of community care costs

LCH offers a range of community care services which are used by diabetes patients. As activity data collection is less developed in community care, and community care is currently reimbursed on a service-based block contract, rather than by activity, we have used a service-based costing approach to estimate the 2014/15 cost of relevant community care for diabetes patients.

As set out in Section 3, community services can be split into three groups, based on how relevant they are to diabetes. Not all of these services will be covered by the outcomes-based contract, and therefore not all of the costs of providing these services should be included in the estimate of the contract value. Our costing is based on the following:

- 1) **Diabetes-specific services** – all costs of providing these services are included
- 2) **General services, where a large share of patients using those services have diabetes** – the proportion of costs attributable to diabetes patients are included
- 3) **General services used by diabetes patients** – no costs are included

Table 4-2 below sets out the community services, and the share of costs of each (based on LCH estimates), which are included in our cost estimate.

**Table 4-2: Community services and share of costs included in cost estimate**

<b>Service related to diabetes?</b>	<b>Service</b>	<b>Share of costs included in cost estimate</b>
Diabetes-specific services	Diabetes education	100%
	Community prescriptions for diabetes	100%
General services with high % of diabetic patients	Community podiatry	25%
	Community dietetics	25%
General services used by diabetes patients	District nurses	0%
	Community matrons	0%
	Heart failure team	0%
	Palliative care	0%
	Skin team	0%
	IV therapy service	0%
	Community prescriptions	0%

Source: FTI recommendations and LCH estimates

Our costing applied these proportions to the 2012/13 contract value, which was provided to us by LCH and then adjusted for inflation.<sup>24</sup> In addition, we included the 2013/14 costs of community prescriptions related to diabetes.

Table 4-3 below summarises our total cost estimate for community care.

**Table 4-3: Estimated costs for diabetes-related community care in 2014/15**

	<b>Total cost</b>	<b>Share of costs included in cost estimate</b>	<b>Cost estimate for contract value</b>
Diabetes education	£122,622	100%	£122,622
Community podiatry	£2,239,048	25%	£559,762
Community dietetics	£1,923,454	25%	£480,864
Prescriptions	£2,543	100%	£2,543
<b>Total</b>			<b>£1,165,790</b>

Source: FTI analysis, based on contract value and activity estimates provided by Liverpool Community Health.

<sup>24</sup> 2012/13 was the most recent full year of data that was available.

### 4.3 Estimate of total costs

Our estimate of total costs is the sum of our estimates of acute costs and community costs. The results are presented in Table 4-4 below.

**Table 4-4: Estimate of total costs**

	<b>Cost estimate</b>
Acute – Royal Liverpool	£2,988,817
Acute – Aintree	£1,239,378
Community	£1,165,790
<b>Total</b>	<b>£5,393,985</b>

Sources: FTI calculations, based on HES activity data and the 2014-15 National Tariff Payment System, Monitor and NHS England.

### 4.4 Consideration of future costs

Table 4-4 summarises our estimate of what providers would otherwise have been paid for the services included in the contract in 2014/15. If the contract is to cover more than a year, Liverpool CCG and providers need to consider what the contract value should be over multiple years.

The reference value of the contract in the years beyond 2014/15 may need to be different to account for changes in the unit costs of delivering services, or for changes in the volumes of services delivered. In both of these respects, there are factors which might justify the contract value increasing in future years, and factors which might suggest the contract value should decreasing. In this subsection, we therefore:

- consider factors influencing the unit costs of services in the contract;
- consider factors influencing the volume of services in the contract; and
- provide our overall recommendation on how future costs should be estimated.

#### 4.4.1 Factors influencing the unit costs of services in the contract

The following dynamics might affect the unit costs of delivering the services included in the contract in future years:

- **Inflation** – the cost of some of the inputs required to provide services is likely to increase over time and Liverpool CCG could consider increasing the value of the contract in future years based on forecasts of some measure of healthcare inflation to reflect these changing costs.

- **Efficiency gains** – our assessment of the contract value is based on 2014/15 national tariffs. The 2015/16 and 2016/17 national tariffs are likely to include some adjustment to reflect the efficiency savings required of the NHS and Liverpool CCG could consider decreasing the value of the contract in future years to reflect this.

The following table shows the inflation and efficiency assumptions incorporated into national tariffs over the last five years.

**Table 4-5: Inflation and efficiency assumptions in the national tariffs**

	2010/11	2011/12	2012/13	2013/14	2014/15
Efficiency adjustment	3.5%	4.0%	4.0%	4.0%	4.0%
Inflation assumption	3.5%	2.5%	2.2%	2.7%	2.5%
<b>Overall adjustment</b>	<b>0%</b>	<b>-1.5%</b>	<b>-1.8%</b>	<b>-1.3%</b>	<b>-1.5%</b>

Source: Department of Health and Monitor.

In each of the last four years, the efficiency adjustment has outweighed the inflation assumption average and national tariffs have decreased as a result. Since 2011, tariffs have fallen by an average of 1.5% each year. If this contract were not in place, providers could reasonably expect tariff prices for the services covered in this contract to fall in future years.

#### 4.4.2 Factors influencing the volume of services in the contract

In addition to changes in unit costs, the volume of services which providers are required to deliver under the contract may also change. The following dynamics may affect the volume of services demanded in future years:

- **Rising diabetes prevalence** – diabetes prevalence has been increasing in Liverpool, and this is expected to continue (the APHO Diabetes Prevalence Model for England forecasts that the number of diabetes patients in Liverpool will increase by 1.2% each year until 2020).<sup>25</sup> All other things being equal, higher prevalence of diabetes will mean increased demand for diabetes care.
- **Increasing acuity of existing patients** – in addition to rising prevalence, it is possible that patients will on average develop more severe complications than in previous years, for example, potentially as a result of increases in the proportion of people with multiple long-term conditions. This would require providers to deliver a larger volume of more expensive interventions.
- **Impact of the contract and the Integrated Diabetes service** – It is possible (and indeed hoped) that the introduction of the Integrated Diabetes service and this outcomes-based contract will cause changes in the volume and mix of activity. If the targets set out in Table A1-4 are achieved, then by the end of the first year, for example, there will have been reductions in serious episodes of ketoacidosis and hypoglycaemia.

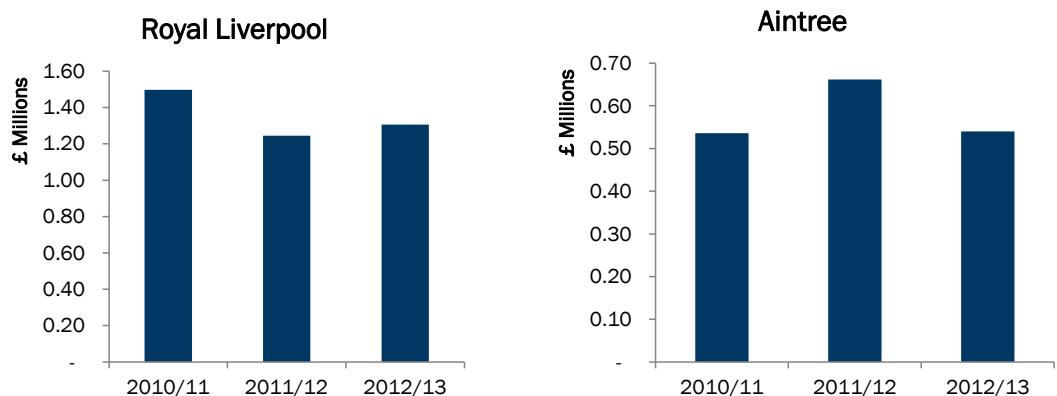
While prevalence of diabetes has been increasing, the historical data for Royal Liverpool and Aintree do not suggest that the increase in diabetes prevalence, or any increase in acuity of patients, has caused an increase in the cost of diabetes care over recent years. The figure below shows that the total cost of inpatient activity covered by the contract between 2010/11 and 2012/13 has been falling for Royal Liverpool, and has been roughly stable for Aintree.<sup>26</sup>

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<sup>25</sup> <http://www.ypho.org.uk/default.aspx?RID=81090>. The model forecasts there will be 27,214 diabetic patients in Liverpool in 2014, 27,541 in 2015, and 29,233 in 2020. Assuming a linear annual change, patient numbers grow at 1.20% a year. This forecast takes into consideration expected population changes. It should be noted that this model was constructed in 2009 onwards and has not been updated.

<sup>26</sup> The figure presents total costs, but the costs for each year are calculated using 2014/15 tariffs, meaning that the figures reflect the pattern in underlying activity.

**Figure 4-1: Cost of inpatient activity over time at Royal Liverpool and Aintree for Group A and B HRGs**



Sources: FTI analysis, based on HES data extract and 2014/15 national tariffs.<sup>27</sup>

#### 4.4.3 Recommendation on future costs

On balance of the factors considered above, both the unit price for acute activity and the volume of acute activity is likely to decrease over the life of the contract.

We therefore recommend that the value of the contract should at least not increase over time. However, in order to create a strong incentive for providers to deliver services more efficiently, we recommend that the value of the contract should also not decrease over the lifetime of the contract.

##### Recommendation

The value of the contract in each year should remain constant over the life of the contract.

<sup>27</sup> Costing is based on 2014/15 tariffs applied to spells with HRGs in Group A and B. A small proportion of episodes/spells have not been included, because of changes to HRGs between 2010/11 and 2014/15.

## 5 Contract design

In previous sections, we have discussed the services the outcomes-based contract for diabetes is purchasing, the outcomes to be specified in the contract and the reference value of the contract. In this section, we set out recommendations on how to design a contract to bring these elements together.

This section therefore discusses:

- the duration of the contract;
- how to link payment under the contract to performance against target outcomes; and
- other contractual terms, including the possibility of sharing volume risk and step-in rights.

### 5.1 Contract Duration

When deciding on the optimal length of the contract, there are a number of factors to consider, some of which would justify a longer contract period and some a shorter period.

The following factors would suggest that a **longer** contract period would be beneficial:

- **Investment and efficiency incentives** – if providers are only contracted for one year, they have a weaker financial incentive to make investments that would deliver benefits over the longer run, as there is no guarantee they will reap the benefits of those investments when the next contract is signed. If instead the terms of the outcomes-based contract are agreed over a number of years, there is a greater financial incentive for providers to make investments that will improve outcomes over a longer time period. In addition, if the contract is structured so that providers keep at least some percentage of any cost savings made, providers have an incentive to make changes that will improve efficiency in the longer run;

- **Integration** – Integrating services is a complex process which is likely to take time and effort. As such, integration is a specific and important type of investment and the dynamics described above also apply here. Providers will have more of an incentive to integrate services, if they have the certainty of a longer contract and will be in a position to reap benefits which may only come to fruition in the longer term;
- **Time period over which improvement in outcomes can be achieved** – an outcomes-based contract must be set as least as long as the minimum amount of time in which it is reasonable to expect improvements in the outcomes to be achieved. For example, if the contract is one year long, then it would be unreasonable to base payment on any outcomes which cannot clinically be improved within that one year period. Table A1-4 sets out our recommendations on targets for each outcome in each year of the contract. For many of the diabetes outcomes, improvements are only expected to start being seen in three years' time.
- **Administrative costs** – setting a contract over a longer period, all else being equal, is likely to have lower administrative costs for all parties than setting shorter contracts which have to be negotiated each time.

However, shorter contracts also have some advantages:

- **Contract value** – estimates of the value of a shorter contract are likely to be more accurate, as dynamics become more uncertain further into the future.
- **Flexibility** – with a shorter contract, commissioners have greater flexibility to change contracts if the existing one is not working as well as hoped.

On the basis of the factors discussed above, we presented an initial recommendation that the contract should last a minimum of two years, in order to deliver at least some of the benefits of a longer contract, and a maximum of five years, recognising the need for flexibility for both the provider and commissioner.

The exact duration chosen for the contract within this range depends on the relative importance placed by the contracting parties on each of the factors described above. In workshop discussions of these factors, participants favoured a longer contract period.

However, it was also noted that this contract is effectively a ‘proof of concept’ exercise for outcomes-based commissioning in Liverpool, and will be a learning experience for all participants. Our recommendation is therefore that the contract should be set for three years. As participants in Liverpool develop expertise in managing and delivering outcomes-based contracts, outcomes-based contracts in the future may be set for longer periods.

### **Recommendation**

The duration of the diabetes contract should be three years.

## 5.2 Linking payment to outcomes

Our recommendation, as discussed in Section 2, is that the contract for diabetes care should be a service-based contract with an outcomes-based component. It is therefore necessary to determine how payment under the contract will be linked to performance against outcome targets.

Our recommendation is that the contract payment structure should have the following three elements, the size of which may be set relative to the reference value estimated in Section 2:

- A “baseline element”, which is paid for delivering current outcomes performance, i.e. with no improvement or decline in outcomes
- A “performance-linked element”, which is paid in addition to the baseline element, as outcomes performance improves towards target performance
- Extra rewards or penalties, which may be paid or withheld for performance which exceeds targets or is below baseline performance

We discuss, and make a recommendation on, each of these elements below. We also discuss, and make a recommendation on, the mechanics of how actual performance against targets should be used to determine payment under the contract in each year.

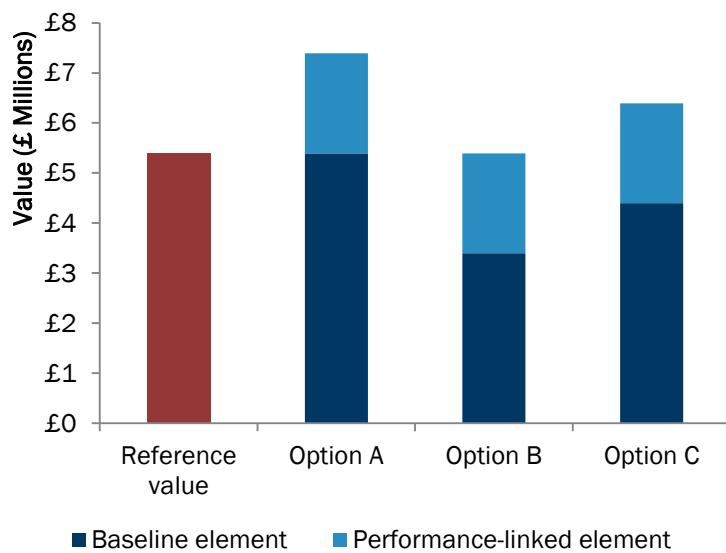
### 5.2.1 Baseline payment made for baseline performance

In Section 2 we estimated the reference contract value through the costing exercise. There are a number of options for how the reference contract value should be used to determine the baseline payment, including:

- A. **Set baseline payment equal to the reference value** - By setting the baseline payment in the contract equal to the reference contract value, providers would expect to be able to cover the cost of diabetes care (assuming this stays constant) without improving outcomes. Any performance-linked payment for improved outcomes would be over and above the reference value. As such, the performance-linked payment would be an additional bonus payment to providers.
- B. **Set baseline element plus performance-linked payment equal to the reference value** - In this option, providers must achieve target performance for all outcomes in each year in order to maintain the value of the contract at the reference value level.
- C. **Reference value achieved at 50% of target performance** - This option lies between the previous two, as providers need only achieve 50% improvement towards targets to receive the reference contract value. Any improvement above 50% towards target improvement gives the provider a bonus in excess of the reference contract value.

Figure 5-1 below illustrates these options.

**Figure 5-1: Options for setting the value of the baseline element in the contract**



Following workshop discussions of the above options, our recommendation is that the baseline element of the contract be set so that providers receive the reference contract value when they achieve 50% of target performance. This shares the financial risk related to the performance-linked element evenly between the provider and the commissioner, and recognises that, in some cases, the targets set for particular outcomes may be towards the upper end of the range what is achievable.<sup>28</sup>

**Recommendation**

Set baseline element of the contract so that reference contract value is achieved at 50% of target performance.

#### 5.2.2 Design of the performance-linked element

As we are recommending that the contract should last for three years (see Section 5.1), we have considered whether the size of the performance-linked element of the contract should remain constant in each year or vary over the duration of the contract.

We have considered two main options:

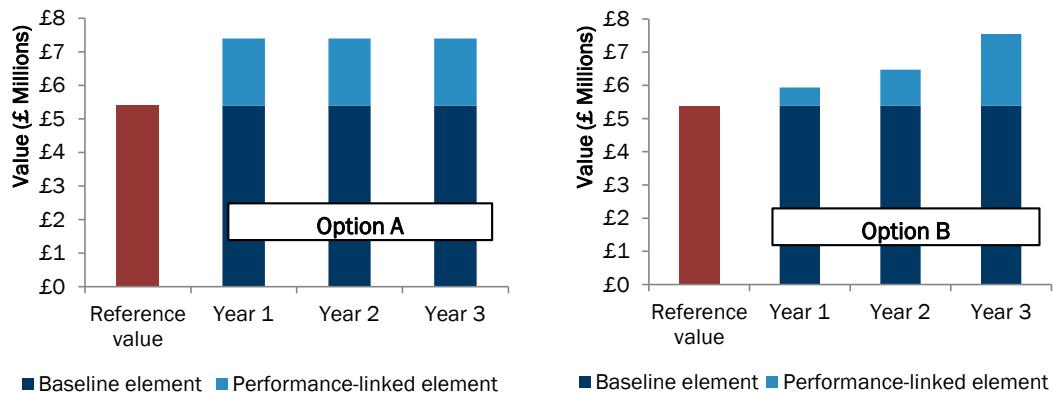
- A. **Performance-linked element remains constant in each year** - The performance-linked element stays constant, either in absolute terms or relative to the size of the baseline element.
- B. **Performance-linked element increases with the number of outcomes that have ‘come into play’** - It may not be possible to improve some outcomes in the first years of the contract, and we recommend using 0% improvement targets for these outcomes in these years, as shown in Table A1-4. The performance-linked element will therefore be based on more outcomes in later years of the contract than in earlier ones, and the size of the performance-linked element could be set to increase as more outcomes are expected to show improvements. An ‘end-state’ value of the performance element would have to be specified, to be reached when all outcomes affect the contract value.

Figure 5-2 below illustrates these two options.

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<sup>28</sup> See Subsection 3.2.3

**Figure 5-2: Options for varying the size of the performance-linked element over the life of the contract**



Our recommendation, following workshop discussions, is that the size of the performance-linked element should increase over the life of the contract in line with the weightings of the outcomes which come ‘into play’ in each year of the contract (Option B above).

To determine the size of the performance-linked element, we must first determine how to define this size. Two options for defining the size of the performance-linked element of the contract are:

- A. Set the size of the performance-linked element as a proportion of the baseline element** - Using a proportion of the baseline element makes it clear how financial risk in the contract is related to performance, and this relationship will remain the same, even if the size of the baseline element changes.
- B. Set the size of the performance-linked element as an absolute value** - Using an absolute value may be more tangible in some circumstances, as it makes clear the exact amount of money that providers will be paid for achieving their target outcomes.

Our recommendation is to set the size of the performance-linked element as a proportion of the baseline element of the contract. During discussions at the workshop, this seemed the most intuitive way of thinking about risk in the contract.

When considering the appropriate size of the performance-linked element in the contract, a larger performance-linked element relative to the fixed baseline element of the contract will increase the financial incentive on providers to improve outcomes, but will also mean that providers face greater financial risk if they fail to achieve target improvements.

We discussed the size of the performance-linked element of the contract with participants in a workshop at Liverpool CCG, where we presented options for this up to 40% of the value of the baseline element. It was apparent that participants were comfortable with making the size of this performance-linked element relatively large. However, there were also concerns about the risk of basing payment on metrics which have not previously been used for this purpose.

Our recommendation is therefore to set the performance-linked element of the contract at 20% of the baseline payment, as we believe that this represents a reasonable balance of risk and reward, based on discussions with providers and commissioners.

#### **Recommendation**

Set the performance-linked element of the contract at 20% of the value of the baseline element. The size of the performance-linked element should increase towards this 20% figure over the life of the contract, relative to the number of outcomes which have ‘come into play’ in each year. This results in the performance-linked element being 8% of the baseline value in the first two years of the contract.

#### **5.2.3 Further rewards or penalties for performance above target or below baseline performance**

The value of the performance-linked element of the contract discussed above determines how payments under the contract vary between the provider achieving baseline performance and target performance. It is also possible that the targets for some outcomes might be exceeded or that performance might slip below baseline performance. The contract should therefore specify how payment should vary if actual performance is outside of the range between baseline and target performance.

Firstly, we considered two options for paying for performance above target:

- A. **Do not pay for performance in excess of targets** - This option caps the amount that the CCG would have to pay providers. However, providers are not financially incentivised to make any improvements in performance beyond the targets.

- B. Pay for performance in excess of targets but cap payment at a percentage above target and reward at a lower marginal rate** - This option increases the CCG's financial exposure, as they may have to pay more to providers. However, it gives providers a continued incentive to improve health outcomes. The CCG's financial exposure is limited by setting a lower marginal rate of payment<sup>29</sup>, and potentially specifying a cap above which performance is not further rewarded.

Secondly, we considered two options for penalising providers for performance below baseline performance:

- A. Do not financially penalise providers for performance below baseline** - This gives providers protection from financial pressure. However, it provides no financial incentive for providers to maintain their baseline performance.
- B. Penalise performance below baseline, but cap this penalty and set the penalty at a lower marginal rate** - Penalising performance below baseline creates a stronger financial incentive for the provider to prevent outcomes from deteriorating. However, penalising at a lower marginal rate<sup>30</sup>, and only up to a cap, may prevent providers from coming under excessive financial pressure.

Based on discussions with Liverpool CCG and providers, our recommendation is that providers be rewarded for improvements in excess of the targets for each outcome at a 50% marginal rate, with no cap on payment. This will maintain a continuous incentive for providers to deliver improvements in outcomes, but provide some financial protection to the commissioner.

Similarly, we recommend that providers be penalised at a 50% marginal rate, when outcomes fall below baseline performance. However, this penalty should only be applied for performance up to 20% below baseline performance to prevent excessive financial pressures being placed on providers.

#### Recommendation

Reward providers for performance above target at a 50% marginal rate, with no cap on payment. Penalise providers for performance below baseline at a 50% marginal rate, but only up to 20% below baseline performance.

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<sup>29</sup> For example, with a 50% marginal rate for over-performance, a 1% improvement in outcomes towards the target level might be worth £5,000, but a 1% increase in outcomes above target would increase payment by only £2,500.

<sup>30</sup> For example, with a 50% marginal rate for under-performance, a 1% improvement in outcomes above the baseline might be worth £5,000, but a 1% decline in outcomes below the baseline would reduce payment by £2,500.

#### 5.2.4 Mechanics of calculating payment based on outcomes performance

The options chosen for the issues outlined above will define the value of the guaranteed element of the contract, the value of the performance-linked element of the contract, and any maximum or minimum payment. In order to calculate the payment under the contract on the basis of the performance in each year, two further issues must be addressed:

- Firstly, should performance against outcomes be combined into a single performance index, which can be used to calculate a single payment, or should individual payments be calculated for each outcome?
- Secondly, should payments be calculated on a continuous scale, or should discrete bands of performance be defined, such as grades 1-5 for performance on each outcome?

Combining outcomes into a performance index and computing one payment for performance would provide a single number which may be easier to present and track in some circumstances. However, calculating an individual payment for each outcome would more directly link performance against each outcome with the financial value of the contract.

Similarly, defining discrete bands of performance may be easier for presentational purposes in some circumstances. However, calculating payment on a continuous scale based on performance removes a step of calculation and doesn't create artificial steps in payment which could create unhelpful incentives at the margin.

On balance, we therefore recommend calculating individual payments under the contract for each outcome, on a continuous scale based directly on the improvement made against each outcome. For example, a 10% improvement for an outcome in a year with a 20% target will be scored as 50% achievement of target, and be paid half of the performance-linked element assigned to that outcome according to the weightings specified in the contract.

##### **Recommendation**

Calculate an individual payment in the contract for each outcome, on a continuous scale based directly on the improvement made in that outcome.

#### 5.3 Other contract terms

As this outcomes-based contract is a pioneer project for Liverpool CCG, it is possible that clinical and financial performance under the contract may deviate significantly from what is expected.

In order to reduce the risk of these deviations to providers and commissioners, it may be desirable to either:

- specify variations in payment under the contract based on certain triggers, such as volume of activity delivered; or
- include terms in the contract which allow either the provider or the commissioner to renegotiate aspects of the contract in certain circumstances, or even terminate the contract.

However, both of these approaches would undermine the stability and predictability of the contract, which is key to the creation of incentives for providers to improve outcomes and choose the most cost-effective mix of services (as described in Section 2).

This trade-off between flexibility and stability is addressed to some extent in the choice of the length of contract, discussed in Section 5.1. However, to what extent there will be opportunities for renegotiation within that contract duration will be part of the contract negotiations between the parties.

#### 5.3.1 Volume risk sharing

When commissioners and providers agree a pure service-based block contract, they may sometimes also include an element of activity-based payment, in the form of a volume risk sharing agreement between providers and commissioners. This risk sharing might involve paying the provider more or less than the specified lump sum for services, if the actual volume of activity delivered under the contract is more or less than expected.

Volume risk sharing may be set up to operate symmetrically, sharing both upside and downside volume risks, or asymmetrically, only sharing risk in one direction. The risk may also be allocated in different proportions between provider and commissioner, typically by an agreed percentage of the price of the services delivered which the commissioner will fund or recoup for variations in activity.<sup>31</sup>

The contract structure for the outcomes-based contract which we recommend has two key characteristics, as discussed in Section 2:

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<sup>31</sup> *Payment by Results – How can payment systems help to deliver better care?*, King's Fund, 2012

- Providers are paid a set sum of money to deliver services for diabetes patients along a broad pathway of care. This sum remains the same, regardless of the volume or type of services delivered. Providers therefore have a financial incentive to invest in care at an earlier stage of the patient's condition, in order to prevent or delay the development of complications and reduce the need for more costly interventions later in the pathway
- Diabetes-related outcomes of patients are monitored under the contract, and providers are paid more if these outcomes improve

The first of these two key benefits relies on the fact that the sum of money acute providers are paid does not vary according to the volume or type of services delivered. A volume risk sharing agreement would undermine this benefit; if commissioners were to fund providers for delivering volumes of acute activity which were greater than anticipated, this would dampen the financial incentive for providers to invest in care early in the diabetes pathway in order to avoid more complex and expensive interventions later in the pathway (as these more expensive interventions would be to some extent funded by the commissioner).

Similarly, paying providers less under the contract if they deliver a lower volume of services than expected, or deliver services at a lower cost, reduces their reward for having successfully reduced acute activity and therefore also dampens their incentives.

We therefore recommend that the value of the contract should not vary according to the volume of activity delivered under the contract. However, we recognise that this is a contentious issue, and the conclusion on volume risk sharing will depend on the outcome of final contract negotiations.

#### **Recommendation**

The value of the contract should not be adjusted according to the actual volume of activity delivered under the contract.

#### 5.3.2 Step-in rights

Rather than give a specific recommendation on what step-in rights should be included in the contract, we describe what form these might take, and how the CCG might choose to set them.

Both clinical and financial performance may deviate significantly over the life of the contract from what is expected when the contract is agreed. The contract may include step-in rights which are triggered by such deviations in clinical or financial performance. The CCG must decide:

- how any step-in rights might be triggered; and
- what powers such step-in rights would give each of the parties in the event that they are triggered.

Deterioration in clinical performance, or a failure to improve clinical performance, may be measured by actual performance against the outcomes specified in the contract.

The CCG may wish to set a level of performance at which it has the right to step in.

Step-in rights could give either providers or commissioners the right to change the contractual relationship in several ways, such as:

- terminating the contract;
- changing the payment terms of the contract;
- changing the services covered by the contract; or
- changing the outcomes or targets which the contract specifies.

We recommend that, if the parties decide that step-in rights in the contract would be beneficial, these should be well-defined and fully take into consideration the impact on the incentive properties of the contract.

## 6 Contracting parties

The delivery of diabetes care in Liverpool involves a number of different services across different settings of care, and is therefore likely to require the involvement of multiple providers. There are several options for contractual arrangements with multiple providers, which we discuss in this section.

There is currently limited integration of care across different settings, and separate payment systems and contracting arrangements for different settings of care have not helped this situation. Similarly, as discussed in Section 2, current contract structures, in particular Payment by Results for acute care, does not incentivise the shift of care away from acute settings into the community.

There are two main options for how a commissioner might establish a cross-setting contract with multiple providers:

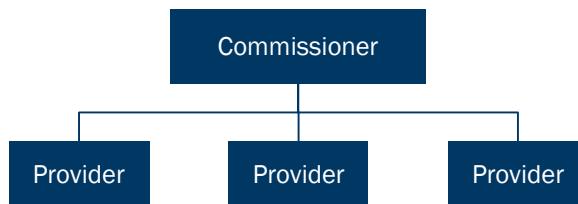
- Multiple contracts, one with each individual provider; or
- A single contract with multiple providers, which could be structured in a number of different ways.

We discuss each of these options below, before concluding on our recommendations for contracting with multiple parties. For each option, we consider the varying degrees to which they encourage providers to work together and facilitate the shift of care and flow of funds between settings, as well as the ease and expense of establishing the contract.

### 6.1 Multiple contracts with individual providers

The CCG could commission a cross-setting service with separate contracts with each provider, as shown in Figure 6-1 below. Of all the contracting options, this is the closest to the current commissioning model.

**Figure 6-1: Multiple contracts with individual providers**



Under this option, the CCG has the flexibility to tailor each contract to each individual provider. For example, one provider might have a larger performance-linked element in its contract, or a greater weighting placed on a particular outcome.

As this structure is closest to the current commissioning model, it could be easier and quicker to set up and negotiate.

Under a service-based contracting model, the commissioner would be required to specify in advance the services which each individual provider is responsible for delivering. In addition, in order to estimate the appropriate value of each contract, the commissioner would need to forecast in advance how activity would shift between different settings of care.

With a block contract for acute care, and if the same broad outcome measures were specified in each contract, the contract would still provide incentives for providers to integrate and coordinate care. Theoretically, providers could arrange to transfer services and payment between each other through some form of subcontracting in order to meet the outcome targets.

However, if the outcome measures were more specific to the activities of each individual provider, the providers would have less incentive to cooperate with each other. Further, providers may be less likely to transfer services and payment between each other, given the absence of the formal structures that exist within a joint venture or alliance contract.

## 6.2 Single contract with multiple providers

Agreeing a single contract with multiple providers may better allow the contract to deliver the key benefit of the recommended contract structure: that the contract covers a broad spectrum of activity, for which providers are paid a lump sum, and providers are therefore incentivised to invest in care early in the diabetes pathway.

There are several alternative models by which a single contract with multiple providers could be agreed, including:

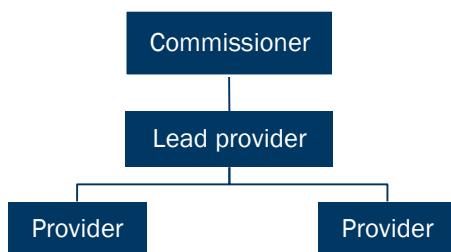
- Lead provider model;
- Joint venture model; and
- Alliance contracting.

We discuss each of these in turn.

#### 6.2.1 Lead provider contract

The CCG could establish a single contract with a lead provider, who then subcontracts components of diabetes care from other providers, as shown in Figure 6-2 below.

**Figure 6-2: Lead provider contracting model**



In this model, it is the lead provider, not the commissioner, who has responsibility for co-ordinating and integrating the care provided by different providers. There is clear clinical responsibility: a single provider is ultimately responsible to the commissioner for delivering the target outcomes. Also, the CCG has one contact point on issues relating to the contract and to diabetes care, potentially lowering administrative costs for the CCG.

The lead provider in the contract has the flexibility to subcontract other providers of healthcare services, as it sees fit to help it discharge its obligations under the contract and deliver the target outcomes more effectively and efficiently.

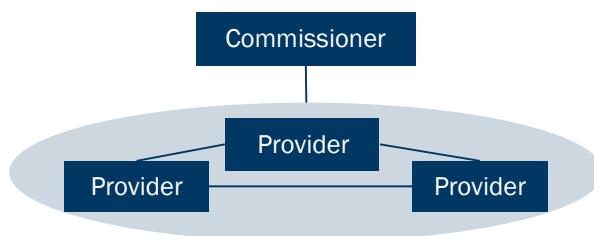
However, the lead provider places a great deal of responsibility, as well as the administrative cost of subcontracting services from other providers, on the lead provider. Associated with this is the risk to the CCG that the lead provider fails. In the separate contract model, these costs and risks lie with the commissioner. Which of these is preferable will depend on whether the lead provider or the commissioner is best placed to make decisions about which services are required to deliver the obligations under the contract and to coordinate the different providers.

An example of the lead provider model in the NHS is the Imperial College Healthcare Trust (ICTH) contract, where the trust is the lead provider for medical education for Core Medicine, Surgery and Psychiatry Training in North West Thames. ICTH works with 13 local providers to deliver this service.<sup>32</sup>

#### 6.2.2 Joint venture

In a joint venture, providers enter into legal agreements with each other, specifying responsibilities, shares in the total contract value and performance fees, and the implications of not fulfilling responsibilities (e.g. not delivering agreed outcomes or services). A new legal entity is created and the joint venture is run by a Joint Management Board. The CCG has a single outcomes-based contract with this entity, as shown in Figure 6-3 below.

**Figure 6-3: Joint venture contracting model**



As with the lead provider model, the CCG has the advantage of a single point of contact in the Joint Management Board, and does not require separate contracts with different providers.

Providers within a joint venture are able to determine between them the most efficient and effective way of sharing the delivery of services and payment. The system of legal agreements between the providers gives clarity and limits the risk to each provider. This protection may give the parties more confidence to move ahead with integrating services.

The primary disadvantage in establishing a joint venture is that it is potentially a time-consuming process. With the need to put in place legal agreements and establish a new legal entity, there are likely to be higher administrative costs to the providers than would be the case in some of the alternative models.

Recent examples of joint ventures within the NHS include:

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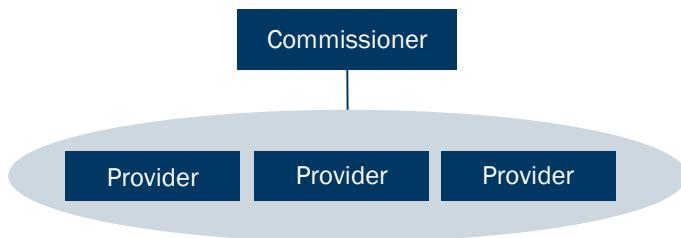
<sup>32</sup> <http://www.imperial.nhs.uk/education/postgraduates/lead-provider/>

- Greater Manchester West Mental Health Foundation Trust, which has formed a joint venture with the Priory Group to develop a new state-of-the-art facility for patients with serious mental health problems.<sup>33</sup>
- Surrey Pathology Services, which is a joint venture between a number of NHS Foundation Trusts, offering pathology services to a variety of different healthcare providers.<sup>34</sup>

#### 6.2.3 Alliance contracting

An alliance contract is similar to a joint venture, but no legal entity is created, as shown in Figure 6-4 below. There are therefore lower administrative costs but also less formal infrastructure and protection for each party.

**Figure 6-4: Alliance contracting model**



Under an alliance contracting model, the CCG has a single outcomes-based contract with a group of providers who determine between each other how to divide responsibilities and payment. There are fewer contractual agreements between providers than in a joint venture, or in some cases none. This gives providers more flexibility to vary the services provided, and alliance agreements are particularly suited to tackling problems that are likely to change rapidly over time and require fast and innovative solutions.

In addition to flexibility, the main advantage of this model over a joint venture is a lower administrative burden for providers. Under both models, the CCG has a single contract and is likely to face lower administrative costs than when establishing separate contracts.

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<sup>33</sup> <http://www.priorygroup.com/latest-from-the-priory-group/item/news/2013/07/15/innovative-mental-health-joint-venture-to-launch-in-widnes>

<sup>34</sup> <http://www.frimleypark.nhs.uk/gps/nhs-pathology-plus>

However, this flexibility comes at a cost: an alliance contract provides weaker protection for individual parties if other parties fail to fulfil their obligations. With fewer legal agreements, there is likely to be less clarity over responsibilities and financial arrangements. In the absence of formal structures, the success of an alliance contract, more than other contracting models, relies on providers working together in a collaborative way.

If no new legal entity is established, as it would be for a joint venture, it is not exactly clear who the commissioner would contract with. This may make an alliance contract more difficult to establish.

As alliance contracts are uncommon, there is little precedent of how they work both legally and in practice.

### 6.3 Recommendations for contracting with multiple parties

Choosing a single contract, rather than multiple contracts with individual providers, appears most likely to encourage integration between providers and facilitate the shift of care and flow of funds between settings. As such, a single contract is most likely to create a situation where providers invest in interventions early in the diabetes pathway to improve outcomes and prevent the need for more expensive interventions later on.

For this reason, we recommend that the outcomes-based contract for diabetes services should be a single joint contract with multiple providers. However, whether the joint contract should be a lead provider model or a joint venture depends largely on the legal structure which the participants in the contract wish to adopt. At the time of writing, discussions between providers to determine this structure are still ongoing.

We do not recommend an alliance contracting model, owing to the potential lack of clarity around the responsibilities and financial arrangements between providers.

#### **Recommendation**

A single joint contract should be agreed with multiple providers. The exact form of this should be determined through discussions between Liverpool CCG and providers.

## 7 Conclusion

In this report we have provided our recommendations to Liverpool CCG on the establishment of an outcomes-based contract for diabetes in Liverpool. We have also described the processes and approaches which we have used to develop these recommendations.

The contract is intended by Liverpool CCG to be a ‘proof of concept’ for outcomes-based commissioning in Liverpool. The development of our recommendations has therefore involved discussion of all the key issues with representatives from multiple organisations, and has been a learning experience for all participants.

In this section, we conclude by:

- summarising our recommendations for the outcomes-based contract for diabetes care in Liverpool;
- suggesting future developments for outcomes-based contracting in Liverpool; and
- describing some lessons we have learned through developing our recommendations for this contract.

### 7.1 Summary of recommendations for the outcomes-based contract for diabetes care in Liverpool

Sections 2 to 6 of this report have set out our recommendations on the key components of the outcomes-based contract for diabetes care. These recommendations are summarised below for the following components:

- Contract structure
- Contract coverage
- Contract value
- Contract design
- Contracting parties

### 7.1.1 Contract structure

The contract for the community and acute components of the Integrated Diabetes service in Liverpool will be a service-based contract with an outcomes-based component. The contract should include the cost of all acute and community healthcare for diabetes patients that is directly and indirectly related to their diabetes. In this way, the contract also combines elements of a Year of Care approach.

This hybrid contract structure has two key properties which may align the financial incentives of providers with improving outcomes for patients:

- Providers are paid a set sum of money to deliver services for diabetes patients along a broad pathway of care. This sum remains the same, regardless of the volume or type of services delivered. Providers therefore have a financial incentive to invest in care at an earlier stage of the patient's condition, in order to prevent or delay the development of complications and reduce the need for more costly interventions later in the pathway
- Diabetes-related patient outcomes are monitored under the contract, and providers are paid more if these outcomes improve

### 7.1.2 Contract coverage

Our recommendations on contract coverage specify what services the contract should cover, and which outcomes should be delivered.

We recommend that the scope of the contract for diabetes care in Liverpool should cover care which is directly related to diabetes and care for diabetes patients for conditions that are likely to be related to a patient's diabetes. Including in the contract all care for conditions which could have been prevented by better diabetes care earlier on in the pathway creates the strongest possible incentive on providers to invest early to prevent complications.

Applying these principles to the components of the ID service, the contract should therefore include:

- Groups A and B of acute services, as specified by the HRGs in Table A1-1 and Table A1-2, and the treatment function codes in Table A1-3; and
- diabetes-specific community services, general community services where a large proportion of patients are diabetic (the proportion attributable to diabetes patients), and community prescriptions for diabetes patients.

The diabetes contract should target the outcomes specified in Table 3-1, and use the outcome metrics, targets and weightings specified in Table 3-2 and Table A1-4.

#### 7.1.3 Contract value

Payments made under the contract should be determined by reference to the costing exercise described in Section 3 of this report. This reference value consists of the costs of acute and community care which have been determined as follows:

- acute costs have been estimated by applying 2014/15 tariffs to the average of the last three complete years of activity data; and
- community costs have been estimated using a service-based costing approach, on the basis of data provided by LCH.

The total reference value of the contract is set out in Table 7-1 below.

**Table 7-1: Assessment of total costs**

	<b>Tariffs (2014/15)</b>
Acute – Royal Liverpool	£2,988,817
Acute – Aintree	£1,239,378
Community	£1,165,790
<b>Total</b>	<b>£5,393,985</b>

Sources: FTI calculations, based on HES activity data, 2014-15 national tariffs and LCH data.

This reference value should remain constant over the life of the contract.

#### 7.1.4 Contract design

Our recommendations on the design of the diabetes contract provide more detail on exactly how the contract should work in practice, including:

- the duration of the contract;
- how to link payment to outcomes; and
- other contract terms, including volume risk sharing and step-in rights.

The contract should last for three years. As providers and commissioners in Liverpool gain more experience in managing and delivering outcomes-based contracts, in the future, it may be beneficial for outcomes-based contracts to be set for longer periods.

Payment should be linked to outcomes by determining payment under the contract across the following three components:

- A baseline element, which should be set so that the reference value of the contract is achieved at 50% of target performance;
- A performance-linked element paid in addition to the baseline element, which should increase in value over the life of the contract, relative to the number of outcomes which have ‘come into play’ each year, until it reaches 20% of the baseline value in the final year of the contract. This performance-linked element rewards any improvement in performance towards the target outcomes;
- Providers should be rewarded for performance above target at a 50% marginal rate, with no cap on payment. Providers should be penalised for performance below baseline at a 50% marginal rate, but only up to 20% below baseline performance.

Performance should be used to determine payment by calculating an individual payment for each outcome, on a continuous scale based directly on the improvement made in each outcome.

#### 7.1.5 Contracting parties

A single contract should be agreed with multiple providers. The exact form of this should be determined through discussions between Liverpool CCG and providers, although we do not recommend an alliance contracting model.

Choosing a single contract, rather than multiple contracts with individual providers, appears most likely to encourage integration between providers and facilitate the shift of care and flow of funds between settings. As such, a single contract is most likely to create a situation where providers invest in interventions early in the diabetes pathway to improve outcomes and prevent the need for more expensive interventions later on.

## 7.2 Suggestions for future developments

This contract is intended by Liverpool CCG to be a ‘proof of concept’ for outcome-based commissioning in Liverpool. The structure of the contract we have recommended reflects some compromises made to facilitate the process of establishing an outcomes-based contract for the first time. Liverpool CCG should therefore look to refine the outcomes-based structure suggested here in future contracts, to continue to improve the incentives on providers to deliver the best care for patients at the lowest cost.

For example, this contract is a service-based contract for the community and acute components of the Integrated Diabetes service, with an outcomes-based component and some elements of a Year of Care approach. Primary care services are not included in the contract as they are commissioned separately. To create the maximum incentives on providers to invest early in the diabetes pathway, Liverpool CCG should seek to develop a full Year of Care contract for diabetes which includes primary care.

This diabetes contract is a first step towards a more value-based commissioning approach and the CCG should undertake further work to explore the relationship between outcomes and value. Liverpool CCG should also look to apply the lessons learned from the diabetes contract to develop outcomes-based contracting approaches for other long-term conditions. In addition, many patients, particularly those with diabetes, have multiple long-term conditions, which are often interrelated. One option would be to explore a year-of-care contract which covered all of the care needs of a particular cohort of patients with multiple long-term conditions.

As providers and commissioners in Liverpool become more comfortable with outcomes-based commissioning, commissioners should look to step back further from specifying in detail the clinical services which providers should deliver under contracts. Providers may in many situations be better placed to determine what services are required to deliver particular outcomes for patients. This will allow commissioners to focus on specifying outcomes and structuring contracts to best deliver value for patients.

In general, the CCG should consider the issues and techniques discussed in this report as they work with the Healthy Liverpool Programme to redesign the healthcare system over the next couple of years. More broadly, the CCG should seek to apply value-based commissioning principles to all aspects of its commissioning, and to work with its commissioning partners to broaden this approach into specialist commissioning and primary care.

### 7.3 Lessons learned from this project

Developing these recommendations for an outcomes-based contract for diabetes care in Liverpool was a collaborative exercise with representatives from multiple organisations. The development process has been a learning opportunity for all parties involved, most of whom did not have previous experience in establishing and managing outcomes-based contracts.

At the time of writing this report, discussions between providers, and between the providers and Liverpool CCG, are still ongoing. Detailed discussions with providers about the contracting model and the logistics of delivering the services under the contract should start as early as possible in any future process.

This project has been clinically led and early, full and meaningful engagement of clinicians has been key to developing this outcomes-based contract. Developing the outcomes to include in the contract, and selecting the metrics, targets and weightings used to assess performance and determine payment under the contract, would not have been possible without clinicians who were engaged and bought in to the project's objectives. Consistent agreement on the clinical model for delivery of the service has also facilitated progress on the financial arrangements.

In an ideal world, the outcomes included in the contract would have been comparable to other cities and regions. Given our metrics, this would have required a significant data exercise, which was not possible within the time constraints of this project. However, comparability of metrics would have allowed us to benchmark performance against different areas of the country and, when developing our targets, to have a better understanding of what was achievable by providers under the contract. This would therefore be a key area for future refinement.

This type of contracting is not only new to Liverpool, it has yet to be widely used across the country. Initial attempts to develop outcomes-based contracting in other parts of the country have met with varying degrees of success and there is no single ideal approach. Getting outcomes-based contracting right will take time and the recommendations outlined in this report will not be perfect. However, Liverpool CCG and providers will learn lessons from the development and implementation of this contract that will enable them to refine the approach and deliver better value for patients in future contracts.

## Appendix 1: HRGs and TFCs included in the contract

**Table A1-1: List of HRGs categorised under Group A (diabetes services) for inpatients and day cases**

<b>HRG code</b>	<b>HRG description</b>
KB01A	Diabetes with Hypoglycaemic Disorders 70 years and over
KB01B	Diabetes with Hypoglycaemic Disorders 69 years and under
KB02A	Diabetes with Hyperglycaemic Disorders 70 years and over with Major CC
KB02B	Diabetes with Hyperglycaemic Disorders 70 years and over with Intermediate CC
KB02C	Diabetes with Hyperglycaemic Disorders 70 years and over without CC
KB02D	Diabetes with Hyperglycaemic Disorders 69 years and under with Major CC
KB02E	Diabetes with Hyperglycaemic Disorders 69 years and under with Intermediate CC
KB02F	Diabetes with Hyperglycaemic Disorders 69 years and under without CC
KB03A	Diabetes with Lower Limb Complications with Major CC
KB03B	Diabetes with Lower Limb Complications without Major CC
PA67Z	Diabetes Mellitus, with Ketoacidosis or Coma
PA68Z	Diabetes Mellitus, without Ketoacidosis or Coma

*Source: Discussions with coders and clinicians; 2014-15 National Tariff Payment System, Monitor and NHS England*

**Table A1-2: List of HRGs categorised under Group B (care for diabetes related complications) for inpatients and day cases**

<b>HRG code</b>	<b>HRG description</b>
BZ20Z	Vitreous Retinal Procedures - category 4
BZ21Z	Vitreous Retinal Procedures - category 3
BZ22Z	Vitreous Retinal Procedures - category 2
BZ23Z	Vitreous Retinal Procedures - category 1
EA36A	Catheter 19 years and over
LA08A	Chronic Kidney Disease with length of stay 2 days or more with Major CC
LA08B	Chronic Kidney Disease with length of stay 2 days or more with Intermediate CC
LA08C	Chronic Kidney Disease with length of stay 2 days or more without CC
QZ02A	Lower Limb Arterial Surgery with CC
QZ02B	Lower Limb Arterial Surgery without CC
QZ03Z	Bypasses to Tibial Arteries
QZ05A	Miscellaneous Vascular Procedures with CC
QZ05B	Miscellaneous Vascular Procedures without CC
QZ11A	Amputations with Major CC
QZ11B	Amputations without Major CC
QZ12Z	Foot Procedures for Diabetes or Arterial Disease, or Procedures to Amputation Stumps
QZ17A	Non-Surgical Peripheral Vascular Disease with Major CC
QZ17B	Non-Surgical Peripheral Vascular Disease with Intermediate CC
QZ17C	Non-Surgical Peripheral Vascular Disease without CC

Source: *Discussions with coders and clinicians; 2014-15 National Tariff*

*Payment System, Monitor and NHS England*

**Table A1-3: List of treatment function codes categorised under Groups A and B for outpatients**

<b>Treatment function code</b>	<b>Treatment function code description</b>
<b>Group A</b>	
263	Paediatric diabetic medicine
307	Diabetic medicine
920	Diabetic education service
<b>Group B</b>	
110	Trauma & orthopaedics

*Source: Discussions with coders and clinicians; 2014-15 National Tariff Payment System, Monitor and NHS England*

**Table A1-4: Weightings and interim targets for each outcome over ten years**

Outcome			Weighting	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b>1 Reduction in complication rates</b>													
Ophthalmic	i	Reduction in the proportion of people at risk of impaired vision resulting from diabetes	8%	0%	0%	5%	10%	15%	20%	25%	30%	30%	30%
	ii	Reduction in the proportion of people with impaired vision resulting from diabetes	4%	0%	0%	5%	10%	15%	20%	25%	30%	30%	30%
Circulatory	iii	Reduction in the proportion of people with diabetes with circulation problems (peripheral vascular disease)	4%	0%	0%	2%	4%	8%	10%	10%	10%	10%	10%
	iv	Reduction in the proportion of people with diabetes undergoing amputations	8%	5%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Neuropathic	v	Reduction in the proportion of people with diabetes experiencing numbness, tingling or pain (neuropathy)	4%	0%	0%	2%	4%	6%	8%	10%	15%	20%	20%
Renal	vi	Reduction in the proportion of people with diabetes with kidney disease	8%	0%	0%	2%	4%	6%	8%	10%	10%	10%	10%
	vii	Reduction in the proportion of people with diabetes with kidney failure	4%	0%	0%	2%	4%	8%	16%	20%	25%	25%	25%
Cardiac	viii	Reduction in the proportion of people with diabetes with heart disease	8%	0%	0%	2%	4%	8%	16%	20%	20%	20%	20%
	ix	Reduction in the proportion of people with diabetes having a heart attack	4%	0%	0%	2%	4%	8%	16%	20%	20%	20%	20%
Cerebro-vascular	x	Reduction in the proportion of people with diabetes having a Transient Ischaemic Attack ("TIA")	8%	0%	0%	2%	4%	8%	16%	20%	20%	20%	20%
	xi	Reduction in the proportion of people with diabetes having a stroke	4%	0%	0%	2%	4%	8%	16%	20%	20%	20%	20%

<b>2</b>	<b>Reduction in serious episodes of</b>											
	I Hypoglycaemia	8%	10%	15%	20%	25%	30%	30%	30%	30%	30%	30%
	ii Ketoacidosis	8%	10%	15%	20%	25%	30%	30%	30%	30%	30%	30%
<b>3</b>	<b>Reduction in the rate of mortality for diabetes patients under 75</b>	3%	0%	0%	2%	4%	8%	10%	15%	20%	25%	25%
<b>4</b>	<b>Enhancement of quality of life for people with diabetes</b>											
	i People feel more in control of their condition	3%	To be set once initial data has been collected.									
	ii People feel more supported to manage their condition	3%	To be set once initial data has been collected.									
	iii People spend less time being treated for their condition	3%	To be set once initial data has been collected.									
	iv Condition management and treatment are more convenient for people with diabetes	3%	To be set once initial data has been collected.									
	v People feel better, mentally, physically and emotionally	3%	To be set once initial data has been collected.									
<b>5</b>	<b>Improvement in the above outcomes for hard to reach / vulnerable groups</b>	2%	0%	0%	5%	10%	15%	20%	25%	30%	30%	30%
<b>6</b>	<b>People with diabetes have access to up-to-date and reliable information and advice about their condition</b>	0%	To be set once initial data has been collected.									

Source: FTI recommendations.

## Appendix 2: Acute costing methodology

In Section 4, we summarised the costing approach we used to generate the contract reference value. In this appendix, we describe our costing methodology for acute services in more detail, covering:

- an overview of our approach;
- our assessment of inpatient and day case costs;
- our assessment of outpatient costs;
- our assessment of insulin pump and other non-tariff costs;
- our assessment of total acute costs; and
- our assessment of acute costs at Liverpool Heart and Chest Hospital and Liverpool Women's Hospital.

### Overview of costing methodology for acute care

Acute care under the contract is expected to cover diabetes services (described by the Group A list of HRGs in Section 3), and services for diabetes-related complications (described by the Group B list in Section 3) for diabetes patients.

At a high level, our costing approach for acute care used the current volumes of activity for the services which the contract will cover, and applied 2014/15 prices to these volumes to arrive at an overall cost. This exercise covered three broad categories of costs:

- 1) Inpatient and day case costs;
- 2) Outpatient costs; and
- 3) Other acute costs – including insulin pumps, and other high-cost drugs and devices.

Subsections 8.2, 8.3 and 8.4 below describe our costing methodology for each category in more detail, while the rest of this subsection covers some cross-cutting issues relating to how we estimated current levels of relevant activity.

## Activity data

Activity data for inpatients, day cases and outpatients were all drawn from the same dataset, Hospital Episode Statistics (“HES”).<sup>35</sup> The HES data have the following characteristics:

- HES information is stored as a large collection of separate records, with an individual record for each episode of care
- Each record contains a number of information fields, including which hospital the patient was admitted to, the date of admission and discharge, and the patient’s diagnosis
- A ‘spell’ relates to the total continuous stay of a patient, which can comprise one or more episodes. Each spell is assigned an HRG which combines diagnosis and procedure information to describe the care the patient received

## Estimating current activity

We considered two options for estimating ‘current’ activity: i) the most recent year’s activity, or ii) an average of the last three year’s activity.

If the time period is too short (i.e. a single year of activity data), the time period might be exceptional, and not reflective of typical activity levels. However, if the time period is too long (e.g. an average of the last five years) and there are significant trends in the data, there is a risk that an average will either under- or overestimate the expected volume of activity in the future. For example, if there had been a steady decrease in activity over time and this trend was likely to continue, then using average activity over a long period would overestimate the likely volume of activity in upcoming years.

## Relevant activity

Our core dataset included all episodes for Group A and B activity where Liverpool CCG (or PCT) was the commissioner. 86% of this activity was provided at Royal Liverpool or Aintree, and Liverpool CCG is currently in discussions with these two providers for this outcomes-based contract for diabetes care. The following sections therefore focus on the cost of acute care at Royal Liverpool and Aintree.

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<sup>35</sup> <http://www.hscic.gov.uk/hes>

However, for the reasons outlined in Section 3, it would in theory be desirable to include the total cost of all relevant care for diabetes patients in Liverpool in the contract, regardless of which provider provides the care. We therefore also present an assessment of the costs of acute care at Liverpool Chest and Heart Hospital and Liverpool Women's Hospital (the two other significant providers of relevant acute care for diabetes patients in Liverpool), even though these costs have not been included in the contract reference value.

### Inpatients and day cases

Our assessment of inpatient and day case costs, on the basis of activity and volume data, is as follows.

#### Inpatient and day case activity data

We filtered the HES extract in the following ways to create our dataset:

- Year – we consider activity for 2010/11, 2011/12, and 2012/13
- Commissioner – we consider only spells commissioned by either Liverpool CCG, or Liverpool PCT
- Provider – we consider Royal Liverpool and Aintree, although we discuss other providers in Subsection 8.5
- Diagnosis code – we consider all spells where a diabetes diagnosis was recorded in any diagnosis field in the record<sup>36</sup>
- Method of admission – we split spells into elective and emergency.<sup>37</sup> Within elective spells, we also identify if spells are day cases or not<sup>38</sup>
- HRG code – we consider a specific set of HRGs, based on the healthcare services the contract is expected to cover, as set out in Section 3
- Spells – to consider only spells and not all episodes we filtered out all episodes where the “IsSpellEpisode” entry was “No”

Applying these filters gives us the number of applicable spells, which is our inpatient and day case activity dataset.

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<sup>36</sup> Spell will be included in our data if any ICD-10 diagnosis code is E10-E14, or O24.

<sup>37</sup> Values 11, 12 and 13 for elective; 21, 22, 23, 24 and 28 for emergency. From ‘Method of admission’ HES field name – see ‘HES Inpatient Data Dictionary’ at <http://www.hscic.gov.uk/hesdatadictionary>.

<sup>38</sup> If the spell start date is the same as the spell end date, then the spell is a day case.

### Inpatient and day case costs

As we are estimating what the commissioner would pay in 2014/15 under the current system, we multiply this activity data by the relevant tariffs<sup>39</sup> that the commissioner would otherwise pay under PbR.<sup>40</sup> The relevant tariff is selected by considering:

- HRG code – different tariffs apply to different HRGs
- Year – we use the 2014/15 tariffs
- Provider – for each organisation, the national tariff is adjusted by the ‘market forces factor’ (MFF). This is unique to each provider and is designed to reflect the fact that it is more expensive to provide services in some parts of the country than others.<sup>41</sup> We apply the MFF for Royal Liverpool and Aintree to the national tariffs for the relevant spells
- Admission method – different tariffs apply to the same HRG depending on whether the spell is elective, non-elective, day case, or outpatient

Once we have linked the relevant tariff to each HRG, we then multiply these together to generate the cost of activity. The tariffs for HRGs are based on patients staying in hospital for up to a certain number of days, known as the trimpoint. If the length of a patient’s stay exceeds this trimpoint (which varies by HRG and whether the admission is elective or non-elective), there is an additional daily charge for these so-called ‘excess bed days’.

Table below summarises our total cost estimate for inpatients and day cases, including excess bed days.

**Table A2-1: Acute costs: inpatients and day cases**

Cost basis	2010/11	2011/12	2012/13	Average
Royal Liverpool	£1,497,819	£1,244,382	£1,306,387	£1,349,529
Aintree	£535,668	£661,640	£540,248	£579,185
<b>Total</b>	<b>£2,033,487</b>	<b>£1,906,022</b>	<b>£1,846,635</b>	<b>£1,928,714</b>

Source: FTI calculations, based on HES data extract and 2014-15 National Tariff Payment System, Monitor and NHS England.

<sup>39</sup> We also assessed the contract value using reference costs instead of tariffs. However, we have presented our tariff-based costing estimates, as our key concern is to understand how much providers would have been paid in the absence of the outcomes-based contract.

<sup>40</sup> <https://www.gov.uk/government/collections/payment-by-results-pbr-in-the-nhs>.

<sup>41</sup> <http://www.hscic.gov.uk/PbR>.

## Outpatients

Our assessment of outpatient costs, on the basis of activity and volume data, is as follows.

### Outpatient activity data

Outpatient activity data is also recorded in the HES database, and is made up of individual records for all outpatient attendances.

The HES data was filtered in the following ways to create our dataset:

- Commissioner – we use attendances commissioned by Liverpool CCG (or PCT)
- Provider – we consider activity at Royal Liverpool and Aintree
- Diabetes patients – we use outpatient attendances for patients with diabetes<sup>42</sup>
- Year – we consider activity for 2010/11, 2011/12 and 2012/13 (the three most recent complete financial years)
- Treatment function code – we include attendances where the treatment function code is considered applicable to diabetes (Groups A and B), as determined in discussion with clinicians and coders (see Section 3)
- Attended or did not attend – we include records where the patient was on time, or was late but was seen<sup>43</sup>
- HRG – we consider all HRGs that are covered by a relevant treatment function code

Applying these filters gives us the number of applicable outpatient records, which is our outpatient activity dataset.

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<sup>42</sup> As outpatient attendance records do not have diagnosis codes attached, the NHS numbers of patients registered with their GP as having diabetes were matched to the HES outpatient data to generate a HES extract containing only attendances for diabetes patients. This matching process was undertaken by Cheshire and Merseyside CSU and neither FTI nor Liverpool CCG had access to patient identifiable data.

<sup>43</sup> Values 5 and 6, HES field name ‘Attended or did not attend’ – see ‘HES Outpatient Data Dictionary’ at <http://www.hscic.gov.uk/hesdatadictionary>. These were the records where the tariff was paid.

## Outpatient costs

As with inpatient care, we multiply the outpatient activity data by the 2014/15 tariffs in order to calculate total cost. The relevant tariff is selected by considering HRG code, year, provider, and treatment function code.<sup>44</sup>

Table below summarises our total cost estimate for outpatients.

**Table A2-2: Acute costs: outpatient cases**

Cost basis	2010/11	2011/12	2012/13	Average
Royal Liverpool	£1,242,001	£1,345,740	£1,542,199	£1,376,647
Aintree	£444,941	£535,813	£533,325	£504,693
<b>Total</b>	<b>£1,686,942</b>	<b>£1,881,554</b>	<b>£2,075,524</b>	<b>£1,881,340</b>

Source: FTI calculations, based on HES data extract and 2014-15 National Tariff Payment System, Monitor and NHS England.

## Other acute services

Not all services are reimbursed through tariff. Other costs for diabetes could include:

- 1) Insulin pumps
- 2) Other high cost drugs and devices

We were provided with cost data for insulin pumps for Royal Liverpool. These were based on the actual value of the insulin pump contract for April 2013 – November 2013, with a forecast outturn for the remainder of the 2013/14 financial year. We have made a cost estimate for 2014/15 based on the 2013/14 numbers, increased by inflation as a proxy for the actual change in cost.

In the case of Aintree we did not have actual contract value data, so we used the unit cost data for insulin pumps forecast for 2014/15 in Liverpool PCT's forecasting model (October 2011) provided to us by Liverpool CCG. We applied this cost data to Aintree's own activity estimate that over the past 12 months they had had 60 patients with insulin pumps.

To both providers, we applied an annual forecast of growth in the number of diabetes patients in Liverpool requiring insulin pumps (16%), produced by Liverpool CCG. This gave us an estimate of the total cost of insulin pumps to each provider in 2014/15.

<sup>44</sup> There are a small number of HRGs which do not match with 2014/15 tariffs (due to changes between years in the way in which HRGs are grouped). On average over the three years, we were able to match 83.1% of tariffs to HRGs. We perform a simple pro rata calculation to adjust our cost estimate to reflect these missing tariffs.

**Table A2-3: 2014/15 insulin pump cost estimate**

	<b>Apr-Nov 2013 (actual)</b>	<b>Dec 2013 – Mar 2014 (forecast)</b>	<b>Total 2013/14</b>	<b>2014/15 cost estimate</b>
<b>Royal Liverpool</b>				
Diabetic pumps	£60,540	£30,270	£90,810	£104,621
Diabetic pump consumables	£91,440	£45,720	£137,160	£158,020
Sub-total				£262,641
<b>Aintree</b>				
Diabetic pumps				£55,000
Diabetic pump consumables				£100,500
Sub-total				£155,500
<b>Total</b>				<b>£418,141</b>

Source: FTI calculations, based on 'Diabetes QIPP Pathway: Assumptions explained', October 2011, Liverpool PCT; estimate of insulin pump activity received from Aintree; 'Royal Diabetic pumps and consumables Month 8 (April to November 2013) – LCCG only', received from Royal Liverpool.

Following discussions with clinicians, coders and Liverpool CCG, we understand that there are no other diabetes-specific high cost drugs or devices excluded from the tariffs.

#### Assessment of total acute costs

The table below summarises our cost estimates from the above sub-sections. Costs are based on the average of 2010/11 to 2012/13 activity levels (unless otherwise stated) and Group A and Group B HRGs and treatment function codes.

**Table A2-4: Assessment of total costs for acute services**

	<b>Royal Liverpool</b>	<b>Aintree</b>	<b>Total</b>
Acute – inpatients	£1,349,529	£579,185	£1,928,714
Acute – outpatients	£1,376,647	£504,693	£1,881,340
Acute – other	£262,641	£155,500	£418,141
<b>Total</b>			<b>£4,228,195</b>

Sources: FTI calculations, based on HES activity data and 2014-15 National Tariff Payment System, Monitor and NHS England.

### Assessment of costs at other acute providers

Our assessment above of the total costs of acute care includes only the costs of acute care at Royal Liverpool and Aintree. The table below shows the cost estimate for services provided by Liverpool Heart and Chest Hospital and Liverpool Women's Hospital. Relevant costs at other acute providers in Liverpool are not significant.

Costs are estimated by the same methodology used for Royal Liverpool and Aintree, using 2014/15 tariffs, and based on the average of 2010/11 to 2012/13 activity.

**Table A2-5: Cost estimate for acute services for Liverpool Heart and Chest Hospital and Liverpool Women's Hospital**

Cost basis	Inpatients	Outpatients	Total
Liverpool Heart and Chest	£77,399	£0	£77,399
Liverpool Women's	£15,973	£0	£15,973
<b>Total</b>	<b>£93,372</b>	<b>£0</b>	<b>£93,372</b>

*Source: FTI calculations, based on HES data extract and 2014-15 National Tariff Payment System, Monitor and NHS England.*



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