

# **Improving cancer outcomes through value-based commissioning**

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and National Cancer Action Team.

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National Cancer Action Team  
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## Foreword from Professor Sir Mike Richards

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**In *Improving Outcomes: A Strategy for Cancer* (January 2011) we set the ambition that, by 2014/15, 5,000 additional lives can be saved each year. We would expect the majority of these lives to be saved through the earlier detection of cancer, but we also noted that all the outcomes articulated in the strategy needed to be realised within the context of the tighter financial environment and the need to achieve efficiency savings of up to £20 billion for reinvestment by 2014.**

Commissioning is key to delivering improvements in outcomes and commissioning for cancer is particularly complex and services for individual patients will often cross organisation boundaries. At the same time we recognised in the Strategy that commissioning for cancer has been historically variable and that the National Audit Office (NAO) report *Delivering the Cancer Reform Strategy* (18 November 2010) commented that commissioning was often inadequate around cancer services. In particular it noted that many commissioners lack understanding of what drives costs and had not focused on improving value for money, had not linked cost and activity data to incidence, prevalence and survival data and that expenditure on cancer services was structured around complex payment mechanisms that could constrain the drive to provide care in non-hospital settings wherever possible.

The National Cancer Action Team, in advance of the publication of both the NAO report and *Improving Outcomes: A Strategy for Cancer*, funded a number of 'Commissioning Exemplar Projects' aimed at strengthening commissioning for cancer. This report reviews the outcome of one of those projects and I am grateful to the ACCA for undertaking this and it is powerful to have validation of the approach from their independent perspective. I believe the report highlights that the approach responds to the concerns raised by the NAO and adds to the tools and levers we have to support the emerging Clinical Commissioning Groups and the NHS Commissioning Board.

It also highlights that understanding the health needs of a population, commissioning services to improve outcomes, measuring outcomes and understanding costs are not separable. The NHS Commissioning Board has recently published *Developing Commissioning Support: Towards Service Excellence* (Feb 2012) and part of its vision for commissioning support is that it enables 'focus on improving outcomes and increasing value (outcomes per healthcare pound) on behalf of their populations'.

For cancer, we are at the point where we are able to set out the evidence-based pathways, underpinned by NICE Improving Outcomes Guidance and the emerging Quality Standards, that will assure improved outcomes. These pathways, in effect, define the quality necessary to achieve the outcomes we require so that quality improvement and value are intrinsically linked. This report makes some useful recommendations which we now need to consider.



**Professor Sir Michael Richards**  
National Cancer Director

## Executive summary

**Commissioning breast cancer services is a complex task. A patient diagnosed with the disease may be seen by a number of health professionals in various departments, across a number of different sites and organisations. This can make it difficult for commissioners to have confidence that they are purchasing the best possible health care for their local population; care that is quality driven and clinically evidenced so delivers the best value for money.**

This report describes how, through a joint working agreement, National Cancer Action Team (NCAT), North East London Cancer Network (NELCN), North West London Cancer Network (NWLCCN) and Roche Products Ltd. have worked in partnership to develop a model to bridge this gap in knowledge.

The outcome-focused model details a clinically effective care pathway for the three key elements of breast cancer diagnosis and treatment:

- triple assessment diagnostics
- early or locally advanced disease
- advanced disease.

What makes this model innovative is that it pulls together all the elements of breast cancer care delivered within a secondary care setting into one complete, clinically evidenced, costed pathway for each of these three elements of care. It treats the condition as a whole care cycle rather than as a number of disjointed procedures and interventions.

Although the model gives the cost, defined as tariff or derived cost, for each step of the patient pathway, the aim is to encourage commissioners to move away from piecemeal, episodic methods of commissioning and towards purchasing whole pathways of care. This will help drive more innovative and integrated service provision and improve value.

The model allows commissioners to see at a glance which services are necessary to deliver the best value breast cancer care pathway and how much these should cost. 'Bundled payment' tariffs derived from the model are being trialled in shadow format during 2012/13 in London with the intention of moving towards a bundled or pathway-based commissioning system in the longer term.

### Recommendations

During development of the model the project team encountered many challenges including: variations in clinical practice, unreliable activity data and difficulty in obtaining certain costing information. As a result ACCA would like to make the following recommendations:

1. That NHS organisations are required to place greater importance on producing accurate costing information and to fully explain any large deviations from the norm.
2. That all chemotherapy providers be required to run a chemotherapy prescribing system incorporating an accurate costing module.
3. That organisations be strongly encouraged to collect and submit the nationally agreed cancer minimum dataset, which will facilitate consistent internal and external reporting.
4. That the Department of Health introduce best practice, pathway focused tariffs to support more innovative and flexible delivery of services.
5. That commissioners are encouraged to 'think outside the box' when planning services rather than do the same as before.

'The NHS is moving to a system where quality and outcomes drive everything we do. Our model of delivery needs to be overhauled and 2012/13 is the year to make that change happen.'

*The Operating Framework for the NHS in England 2012/13, page 11*

## Introduction

**Cancer is a leading cause of death in the UK. More than one in three of the population will be diagnosed with cancer during their lifetime and over a quarter will die from the disease. For the NHS, it is the third largest area of expenditure costing around £5.81 billion in 2010/11<sup>1</sup>.**

Despite significant improvements in cancer outcomes in recent years, international comparisons continue to show that the UK fails to match those achieved by the best or even average-performing countries<sup>2</sup>. Survival rates for cervical, colorectal and breast cancer, for example, are amongst the worst in the Organisation for Economic Co-operation and Development (OECD) countries. Key drivers of the UK's poor outcomes are the higher morbidity and mortality found in disadvantaged populations.

The government has put in place a series of initiatives to address the inequity of cancer services across the country; these aim to close the gap between the UK and its international counterparts. *Improving Outcomes: A Strategy for Cancer*<sup>3</sup>, for example, lays out a wealth of measures aiming to save an additional 5,000 lives every year by 2014/15. A key component in meeting this challenge will be the availability of meaningful, reliable data to underpin stronger commissioning.

There are more than 200 different types of cancer but, despite being a predominantly female disease, breast cancer is the most common, accounting for 16% of all newly diagnosed cancers in the UK and 31% of all new cancers in women. In 2010/11 it is estimated that the cost to the NHS of treating breast cancer exceeded £0.57<sup>4</sup> billion.

The overall risk of a woman in the UK developing breast cancer has been estimated as one in eight but the risk increases significantly with age; 81% of cases occur in women over the age of 50.

Between 1979 and 2008 the European age standardised<sup>5</sup> incidence rate for breast cancer in the UK increased by 65% and the number of new cases diagnosed each year nearly doubled. This growth in incidence rates is thought to be partly due to improved detection rates following the introduction of the National Breast Screening Programme and partly due to the widespread use of hormone replacement therapy (HRT) in the 1990s, when over 25% of women in the age range 45-69 are thought to have taken it.

Although breast cancer incidence rates are rising, mortality rates for the period 1979 – 2008 have fallen; the European age standardised death rate has decreased from 42 per 100,000 to 26 per 100,000. The overall five year survival rate for women in England diagnosed with breast cancer between 2001 and 2006 is now 82%.<sup>6</sup>

The clinical staging of breast cancer is based on four factors: whether the cancer is invasive, the size of the tumour, whether cancer is in the lymph nodes and whether it has spread to other parts of the body. (See box) The earlier the disease is identified then the better the survival rate; for Stage I tumours the five year survival rate is over 90% but for Stage IV tumours it drops to 13%.

1. [http://www.dh.gov.uk/en/Managingyourorganisation/Financeandplanning/Programmebudgeting/DH\\_075743#\\_1](http://www.dh.gov.uk/en/Managingyourorganisation/Financeandplanning/Programmebudgeting/DH_075743#_1)
2. Coleman et al, *Cancer survival in Australia, Canada, Denmark, Norway, Sweden, and the UK, 1995–2007 (the International Cancer Benchmarking Partnership): an analysis of population-based cancer registry data*, The Lancet, Early Online Publication, 22 December 2010, doi:10.1016/S0140-6736(10)62231-3 [http://www.lancet.com/journals/lancet/article/PIIS0140-6736\(10\)62231-3/fulltext](http://www.lancet.com/journals/lancet/article/PIIS0140-6736(10)62231-3/fulltext)
3. *Improving Outcomes: A Strategy for Cancer*. Department of Health January 2011
4. [http://www.dh.gov.uk/en/Managingyourorganisation/Financeandplanning/Programmebudgeting/DH\\_075743#\\_1](http://www.dh.gov.uk/en/Managingyourorganisation/Financeandplanning/Programmebudgeting/DH_075743#_1)
5. <http://info.cancerresearchuk.org/cancerstats/types/breast/incidence/uk-breast-cancer-incidence-statistics>
6. <http://info.cancerresearchuk.org/cancerstats/types/breast/survival/>

## CLINICAL STAGES OF BREAST CANCER

**Stage 0** – Cancer that is non-invasive.

**Stage I** – Invasive cancer where the tumour is no more than 2cm in diameter and has not spread to the lymph nodes.

**Stage II** – Invasive cancer where either:

- the tumour measures less than 2cm and has spread to the lymph nodes
- the tumour measures between 2-5cm and has not spread to the lymph nodes
- the tumour measures between 2-5cm and has spread to the lymph nodes
- the tumour is larger than 5cm and has not spread to the lymph nodes.

**Stage III** – Invasive cancer where the tumour measures 5cm or bigger and has spread to surrounding tissues and the lymph nodes.

**Stage IV** – Invasive cancer that has spread beyond the breast and lymph nodes to other organs of the body such as the brain, lungs, bones or liver.

Cancer incidence, mortality and survival rates are not standard across England. Generally, those living in deprived areas are far more likely to be affected by cancer and to have poorer outcomes than those in more affluent areas. Breast cancer is unusual, however, in that it is one of the few cancers to have a higher incidence rate in more affluent areas but, as survival rates also tend to be higher in more prosperous areas, then mortality rates are lower than in more disadvantaged parts of the country such as North East London (NEL).

'Many commissioners lack understanding of what drives costs and have not focused on improving value for money.'

*Delivering the Cancer Reform Strategy, Report by the Comptroller and Auditor General, 18 November 2010, page 7*

# Meeting the QIPP challenge

## The problem

A report<sup>7</sup> published in 2007 by Thames Cancer Registry (TCR): Cancer Inequalities in London 2000-2004 found that NEL had the lowest 1-year relative survival rate for breast cancer in England and a statistically lower 5-year relative survival rate (73%) in comparison with the rest of London<sup>8</sup> (77%-79%).

A subsequent review undertaken by NELCN, Breast Cancer Inequalities Project Report of Findings – February 2010, substantiated the findings of the TCR report. It found that although rates had improved, there was still a significant gap between the one year and five year survival rates in NEL when compared with the rest of London and with South East England.

Table 1: Breast cancer one year survival rates in NEL, 2002–2006<sup>9</sup>

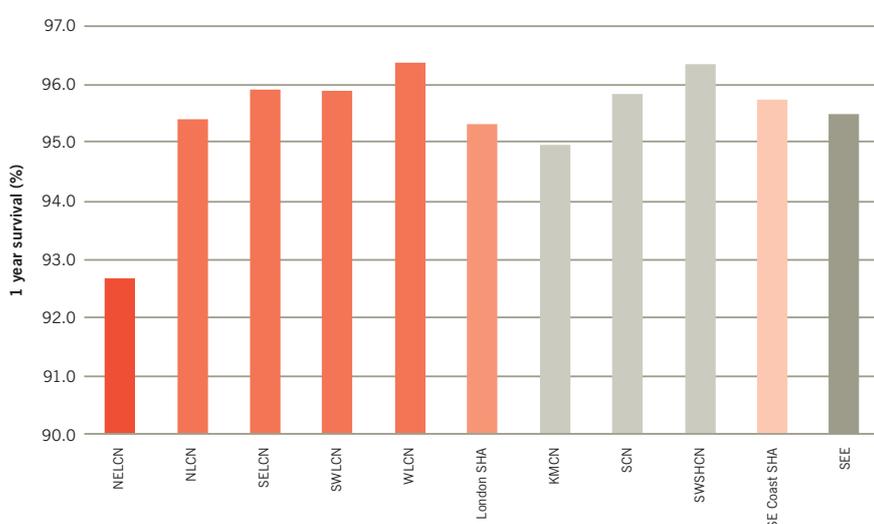
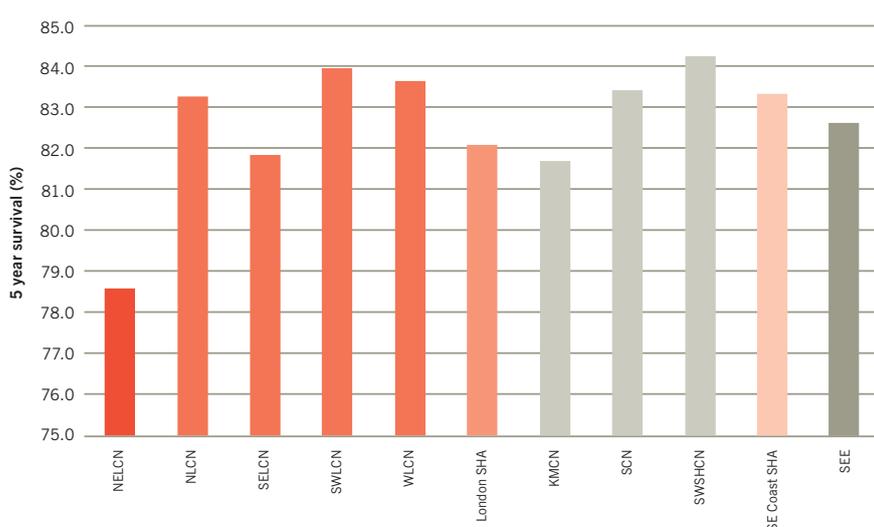


Table 2 – Breast cancer five year survival rates in NEL, 2002–2006<sup>9</sup>



In response to this report, NELCN set a target to close the gap between relative breast cancer survival rates in NEL and the London average by 2012. The Breast Inequalities Project was set up to research potential causes of the low survival rates and to identify workable solutions.

'The Quality, Innovation, Productivity and Prevention (QIPP) programme is all about ensuring that each pound spent is used to bring maximum benefit and quality of care to patients'

<http://www.dh.gov.uk/en/Healthcare/Qualityandproductivity/index.htm>

7. Thames Cancer Registry Cancer Inequalities in London 2000-2004

8. NELCB Annual Report 2010

9. North East London Cancer Network Breast Cancer Inequalities Project Report of Findings – February 2010

The study concluded that one of the main reasons for the higher mortality rates was partly indicative of late presentation; the proportion of women diagnosed with breast cancer at stage four of the disease in NEL is 11.6% which was high when compared with the London average of 7.6%. When looked at on a borough by borough basis the differences were even greater, with 19% of women in Newham, for example, first presenting at stage four.

In general, the later the disease is identified then the lower the survival rate; a review of patients who died from breast cancer within one year of diagnosis found that 56% had been diagnosed with breast cancer at stage four of the disease and that for 30% of patients, staging was recorded as unknown.

The other key factor identified as a probable cause of low survival rates in NEL was deprivation; the population in this area, particularly in the inner boroughs, is the most deprived in London.

The study also noted that there were significant unexplained variations in care of patients with breast cancer in NEL compared with the rest of London. During the first six months of treatment, for example, patients living in NEL received less radiotherapy, chemotherapy and hormone therapy than patients in other parts of London. It was also noted that, within NEL, women from the inner boroughs received a lower intensity of treatment than those in the outer boroughs.

Responsibility for supporting the commissioning of services necessary for the prevention, screening, diagnosis, treatment and care of cancer services in this area rests with the North East London Cancer Network (NELCN), a multi-disciplinary team that works with representatives from NHS organisations, voluntary bodies, local authorities and members of the public.

The problem facing NELCN was how to successfully address the inequities of service provision in a period of significant financial austerity. The government has said that it is committed to protecting health spend but the so-called 'Nicholson Challenge' has charged the NHS with achieving £20 billion efficiency savings by 2015.

NELCN found their answer in Quality, Innovation, Productivity and Prevention (QIPP<sup>10</sup>), a service transformational programme which aims to bring about the changes necessary to deliver savings through improving the quality and delivery of NHS care.

'Assessment of the quality of care provided across the treatment pathway demonstrates that there remains unexplained variation in patient management, both compared with best practice and across NEL cancer network.'

*NELCN Breast Inequalities Project, Report of Findings, February 2010*

10. <http://www.dh.gov.uk/en/Healthcare/Qualityandproductivity/index.htm>

## Developing a solution

Effective commissioning is dependent on commissioners:

- thoroughly understanding their local population
- having a defined evidence-based best practice care pathway
- setting quality driven outcome-based performance measures
- having clarity and understanding around costs and what drives them.

For NELCN it was this last point around costs that was proving to be the real challenge. The network already had a good understanding of the local population, clinically led tumour boards had been set up to develop best practice care pathways and quality outcome measures could be set based on national guidance and government targets. What they could not do was to pull everything together: to link service provision to performance measures to cost. They had no idea whether the services they were commissioning represented the very best value for money.

A multi-disciplinary project team was set up charged with developing a tool that would support optimal commissioning decision-making through linking treatment costs to nationally agreed best practice cancer pathways. NCAT agreed to provide funding for the work as one of its 'Commissioning Exemplar' projects and, through a joint working arrangement, Roche agreed to provide project management and analytic expertise.

The objectives of the team were to:

- understand, through patient level detail, the cost of cancer treatment thereby leading to greater transparency between actual provider costs and the national tariff
- develop a population-based predictive funding flow model at local or pan-London level that could be used to model prices of future populations based on forecast incidence and mortality rates for different tumour sites
- develop an agreed process for the commissioning of cancer services, across the entire clinically effective pathway with built-in service specifications for quality monitoring purposes.

The team decided to focus their attention initially on the commissioning of breast cancer services and then to look at lung cancer services as these accounted for the majority of deaths from cancer in NEL.

The aim was to develop a costed, evidence-based clinical pathway for cancer services that would support the commissioning process and would assure the delivery of value-based improved patient outcomes.

The pathway would stretch across the full range of secondary care services from assessment to specialist palliative care. All key elements of the pathway would be costed including: diagnostics, surgery, radiotherapy and chemotherapy.

In its simplest form, the model would list every element of the clinically recommended best practice pathway for breast cancer care alongside the associated national tariff or, where no national tariff exists, the best practice derived cost. Commissioners would then be able to use the model as a decision support tool when planning and commissioning current and future breast cancer services, confident that they were purchasing the best possible patient care.

The concept for the model was very simple; the challenge was in identifying and then sourcing all the necessary data.

The development of the model was undertaken in six key phases (see overleaf)

'As health care leaders obtain more accurate and appropriate costing numbers, they can make bold and politically difficult decisions to lower costs while sustaining or improving outcomes.'  
*Harvard Business Review, How to Solve the Cost Crisis in Health Care, Robert S Kaplan and Michael E. Porter, September 2011*



*'Challenging existing resource use can deliver savings.'*  
*Delivering the Cancer Reform Strategy, Report by the Comptroller and Auditor General, 18 November 2010, page 9*

It was an ambitious project. The team began their task by identifying a suitable platform for the model. They considered a number of possible systems including Simula8™, a tool that was being used by a number of other commissioners, but they settled on EXCEL as it was readily available, easy to use and offered a full range of modelling capabilities.

The project team then turned their attention to developing and populating the model.

#### **Phase 1 - Mapping and validating the clinical pathway**

The first task was to translate the breast cancer pathway detailed on the map of medicine into simple flowcharts highlighting the key stages of activity.

The initial mapping and modelling was undertaken with the support of the London School of Economics. The result was a multi-layer spreadsheet that systematically mapped the patient journey across three distinct pathways:

- triple assessment diagnostics
- early or locally advanced disease
- advanced disease.

The first pathway, triple assessment diagnostics, covers the aspects of care necessary to diagnose the stage of the disease and to agree a treatment plan with the patient.

The second pathway covers the care necessary to treat breast cancer that is described as 'early', where the disease appears only in the breast or in the breast and nearby lymph nodes, and breast cancer that is described as 'locally advanced', where the disease is found in a larger part of the breast or in the breast and lymph nodes but no other parts of the body.

The third pathway covers the care necessary to treat breast cancer described as 'advanced', where the disease has spread to other parts of the body and cannot be wholly removed by surgery. For this pathway careful consideration had to be taken of endpoints: on what should and should not be included.

Once the proposed pathways had been drawn up a series of workshops was organised to introduce the model and its purpose to relevant health professionals including: oncologists, breast cancer nurse specialists, surgeons, coders and finance staff. NELCN has built an excellent relationship with clinicians and this helped ensure that the most appropriate professionals attended the seminars. At each workshop, participants were asked to critically examine the suggested pathways and the inbuilt assumptions. This multi-disciplinary validation was critical to the development process as it helped ensure clinical engagement with the project and provided assurance that the pathways depicted by the model were both realistic and based on best practice medicine.

Once all the necessary adjustments proposed at the workshops had been made to the model, the final step of Phase 1 was to cross check the model against NICE guidelines.

## **Phase 2 – Review each step of the breast cancer pathway and match it to the national tariff, where a tariff exists**

Once the three pathways had been validated by clinicians the project team turned their attention to identifying the cost of each element of the pathway. The first task was to incorporate the national tariffs relating to breast cancer – outpatient clinic attendance and surgical breast procedures – into the appropriate step of the model.

The cost of outpatient attendances proved relatively straightforward to calculate. The project team worked with clinicians to estimate the percentage of patients entering each stage of the pathway and the number of clinics that each patient would be required to attend. They then used the national tariff for 1st and 2nd outpatient attendance to give total overall cost.

Mapping surgical breast procedures to the appropriate national tariff proved to be more challenging; much of this work was modelled around actual patient pathways in a single organisation. Working with clinicians, the team reviewed each procedure performed locally and then mapped it to the most relevant Healthcare Resource Group (HRG) and related national tariff. Non-complex breast procedure with lymph node surgery, for example was mapped to HRG JA09B which, in 2011/12, had a tariff of £1,166.

The model uses best practice tariffs wherever they exist. The NHS Information Centre - Casemix Services HRG4 Chapter Listing for 2011/12, for example, introduced a day case best practice tariff for simple mastectomies and this is used in the model rather than the inpatient tariff.

Detailed references are incorporated within the model explaining why a particular tariff was used and containing links back to the appropriate section of the NHS Information Centre - Casemix Services HRG4 Chapter Listing 2011/12. The model also includes a summary sheet that maps each of the breast procedures by primary code to HRG to national tariff.

### Phase 3 – Ascertain costs for areas without tariff or reference cost

The next phase of the project was to ascertain costs for the steps on the pathway that are not yet covered by tariff.

#### Triple assessment diagnostics

This step of the pathway covers attendance at outpatient clinics for clinical assessment, radiological imaging (mammography and ultrasound) and core biopsy / fine needle aspiration.

Each year around 6,000 patients in NEL enter the Triple Assessment Diagnostics pathway but, of these, only about 10% will be diagnosed with breast cancer. Each patient will take a unique route through the pathway specific to their condition and dependent on clinical practices in the organisation where they are being treated. This pathway, therefore, incorporates a number of assumptions which were made by the team in close consultation with clinicians.

The cost of outpatient attendances and surgical procedures was incorporated into the model in phase 2 so the challenge in phase 3 was to try to identify and incorporate clinical costs such as Hormone Receptor and HER2 testing, blood tests, bone scans, CT scans and chest x-rays into the model. The funding for tests such as these is bundled in the national outpatient tariff so the cost was calculated based on activity data relating to each hospital clinic.

#### Early or locally advanced disease

The majority of patients referred for Triple Assessment Diagnostics are found to have a benign breast condition, but around 10% are referred for further tests or treatment to the next clinical pathway: Early or Locally Advanced Disease. This pathway covers three key areas: surgical, clinical and medical oncology.

Surgical costs were calculated and included in the model during phase 2 of the project based on the national tariff.

Clinical activity included: clinical procedures such as sentinel node biopsy, outpatient and A&E attendances and radiotherapy. With the exception of radiotherapy costs, these costs were all calculated during phase 2 of the project using the national tariff.

The two main cost drivers on this pathway - radiotherapy which accounts for 22% of the total cost, and chemotherapy and biologics which accounts for 38% of total cost – were considered separately in phases 4 and 5 of the project.

#### Advanced disease

As with the previous pathway this covers three key areas: surgical, clinical and chemotherapy and biologics.

The two main cost drivers were again radiotherapy, which accounts for 23% of the total costs, and chemotherapy which accounts for 63% of the total costs. These costs were considered separately in phases 4 and 5 of the project.

The costs of surgical activity and clinical activity, which all related to outpatient attendances, were calculated in phase 2 using the national tariff.

'Expenditure on cancer services is structured around complex payment mechanisms which largely fund activity in hospitals.'  
*Delivering the Cancer Reform Strategy, Report by the Comptroller and Auditor General, 18 November 2010, page 7*

**Phase 4 – Use the Chemotherapy Planning Online Resource Tool (C-PORT) costing module to estimate the costs of chemotherapy taking account of National Chemotherapy Advisory Group (NCAG) recommendations.**

Chemotherapy and biologics have been identified as the main cost driver in both the Early and Locally Advanced Pathway and the Advanced Pathway, and overall account for about 43% of the cost of breast cancer care, so it was essential that this cost be accurately reflected in the model.

The difficulty, however, was in identifying that cost. There is no national tariff for chemotherapy; the price is lost in block or cost and volume contracts and estimates of the cost fluctuate widely from hospital to hospital. Activity data is just as difficult to identify; with no standard definition of a unit of chemotherapy activity it is impossible to compare or consolidate data from different hospitals.

It was at this stage of the project that NWLCN were able to provide support. They had been using C-PORT<sup>11</sup>, an online chemotherapy modelling and planning tool, to try to gain a better understanding of the costs relating to chemotherapy. Although, the costing module of C-PORT was not sufficiently sophisticated to give the level of detail required to provide reasonably accurate costings, it did confirm that the main cost driver was drugs.

Two local NHS trusts were also asked to collect and to cost chemotherapy activity data relating to a sample of patients and this information was then used for sensitivity analysis on the data provided by NWLCN.

This phase of the project demonstrated that NEL organisations have limited understanding of chemotherapy activity or costs and it suggested cross subsidisation of costs was commonplace. This appears to be a country-wide issue. A review<sup>12</sup> of hospital trust chemotherapy data undertaken by the Audit Commission in 2008-09 found that unit costs ranged between £430 and £4,300! There also appears to be wide variation in the drugs used in England in comparison with other countries. A report to the secretary of state for health by Professor Sir Mike Richards CBE found that the UK had a low rank for the most recently licensed cancer drugs<sup>13</sup>.

These knowledge gaps need to be addressed if commissioners are to be assured that they are investing in the most appropriate services for their population.

**Recommendation:** That NHS organisations are required to place greater importance on producing accurate costing information and to fully explain any large deviations from the norm.

**Recommendation:** That all chemotherapy providers be required to run a chemotherapy prescribing system incorporating an accurate costing module.

‘Chemotherapy and radiotherapy, two of the main treatments for cancer, are excluded from the national tariff and there is poor understanding on costs and activity.’

*Delivering the Cancer Reform Strategy, Report by the Comptroller and Auditor General, 18 November 2010, page 7*

11. [www.cport.co.uk](http://www.cport.co.uk)

12. *Delivering the Cancer Reform Strategy*, Report by the Comptroller and Auditor General, 18 November 2010, page 7

13. *Extent and causes of international variations in drug usage: a report for the Secretary of State for Health* by Professor Sir Mike Richards CBE, 2010, Department of Health

### Phase 5 – Use provider data to estimate the costs of radiotherapy, taking account of National Radiotherapy Advisory Group (NRAG).

Radiotherapy is the other main cost driver in breast cancer care but, as with chemotherapy, there is no nationally agreed tariff; the cost is hidden in block contracts or incorporated into cost and volume contracts.

An organisation located in NEL had, however, calculated the actual cost of radiotherapy services for a Department of Health led project on the development of a national tariff so it was agreed to use these costs throughout the model.

The project team then asked local organisations to supply detailed radiotherapy activity data for a 12 month period covering patient throughput and number of fractions given to patients.

The activity data and costs were then input into the model to give the total cost. Radiotherapy was found to account for around 21% of the overall cost of breast cancer patient care.

### Phase 6 – Review the patient flow through the pathway – utilising local sources of data including Hospital Episode Statistics (HES) and Thames Cancer Registry (TCR) – to understand how current practice compared with clinically informed best practice.

With the unit cost of each step of the clinical pathway agreed and activity data for radiotherapy and chemotherapy incorporated into the model the project team turned their attention to sourcing the remaining activity data. They began by collecting easily accessible, centrally collated data: the number of direct referrals from the NHS Breast Screening Programme as recorded by the Quality Assurance Reference Centre (QARC), for example, and the incidence rates of breast cancer from Thames Cancer Registry.

Cross checks were undertaken on all activity data. These sometimes exposed discrepancies between data held on file centrally and data that was 'accepted' and being used at a local level by clinicians. While there was probably a simple explanation for the differences, having two sets of figures introduces elements of doubt that breeds clinical scepticism. It is an issue that must be addressed if organisations are serious about securing the active engagement of clinicians in the decision making process.

**Recommendation:** That organisations be strongly encouraged to collect and submit the nationally agreed cancer minimum dataset, which will facilitate consistent internal and external reporting.

Activity data had already been collected for radiotherapy and chemotherapy during phases 4 and 5 of the project so attention was turned next to obtaining data that is collected only at the local level. Every discipline collects data - radiology, clinical nurses, histology and theatres, for example - but it is generally gathered just for use within that section. The project team found that there was limited integration of data held at department level with that of the Patient Administration System (PAS); each organisation appeared to maintain a series of static linear pathways which worked to hide the complexity of the disease.

As the data collected for this phase of the project was collated for local use only there is slightly less confidence in its accuracy; it is dependent on clinical staff maintaining the same counting methodologies, on no omissions of data and on precise recording. Where possible, care was taken to ensure consistency of data and that it related to the same year but very often incomplete data sets and different collection time frames meant this was not possible.

Although the quality of data varied from hospital to hospital and also from department to department, data cleansing followed by reasonableness checks helped provide reassurance that it was sufficiently sound for use within the model. The final sanity check involved comparing the patient flow data to what would be expected if clinical best practice was

'High quality information provides a basis for better decision-making and more effective assessment of performance.'  
*Delivering the Cancer Reform Strategy, Report by the Comptroller and Auditor General, 18 November 2010, page 6*

being followed for all patients, this was to ensure that the default figures used in the model could be used as an 'ideal' reference point for all health economies in England and would not be biased by treatment peculiarities local to London. Modelling is an iterative process and, over time, it will become more refined.

This stage of the modelling process identified a number of variations in practice that commissioners may need to address if they are to achieve true equity of breast cancer services across NEL.

During the design of the Triple Assessment Diagnostics Pathway, for example, the project team found that some hospitals undertake all necessary clinical testing on the same day, in one-stop clinics, whereas others require patients to have all tests on one day and return a different day for results, requiring two separate attendances at hospital. Where clinically appropriate, it would seem preferable and more efficient for all patients to be seen in one-stop clinics. This would benefit patients as they would only need to make one trip to outpatients and it would reduce waiting time for results. There would also be cost benefits as hospitals would no longer be able to charge commissioners for seeing the patient on three separate occasions and more importantly it would improve patient experience.

**Recommendation:** That the Department of Health introduces best practice, pathway focused tariffs to support more innovative and flexible delivery of services.

With these differences in clinical practice now identified, commissioners and clinicians in NEL will be able to work in partnership to change or stop unnecessary procedures, ensuring all patients receive the same standards of care whatever their address.

### Annual estimated cost of commissioning breast cancer care in NEL

With the model fully populated with referral, activity and price data, the project team were able to calculate the estimated cost of commissioning breast cancer care in NEL. (Table 4)

**TABLE 4: Number of referrals and estimated cost of each pathway to commissioners in NEL in a financial year<sup>14</sup>**

	Total number of referrals	Estimated annual cost per patient (£)	Estimated total annual cost in NEL (£'000)
Triple Assessment Diagnostics Pathway	6,220	203	1,261
Early or Locally Advanced Disease Pathway	669	13,748	9,202
Advanced Disease Pathway	388	12,430	4,821
<b>Total</b>			<b>15,284</b>

'We believe that this approach to commissioning against pathways will enable us to be clear on 'exactly what we want' so as to comprehensively specify the quality, productivity and innovation that is required while developing providers to deliver this excellent care and monitoring outcomes against a full range of metrics.'

*North East London Cancer Network Annual Report 2010*

14. Data from NEL Population Based Predictive Funding Model

## The difference between price and cost

The model defines funding flows in terms of national tariff or proxies for tariff; it provides the price of breast cancer services but not the actual cost. This is perhaps the main weakness of the model. It does not associate the price that commissioners must pay for the best practice, clinically evidenced pathways of care with the provider's actual cost. Commissioners and providers need a deep understanding of the actual cost of service provision to inform intelligent, value - based decision making. Without this information, therefore, it is difficult to see how commissioners can be assured that the price they are paying is appropriate to provide the levels of quality that they demand.

The price paid by commissioners will not equate to the actual cost for a number of reasons:

- although tariffs are calculated based on provider reference costs returns they do not equate to them. The nationally collected reference costs are first averaged and then various adjustments made, including an inflationary uplift, to reach the final tariff
- cross-subsidisation, particularly of chemotherapy services, is commonplace in many organisations
- local agreements exist which sometimes change or cloud the payment system
- there is inconsistency of clinical coding across organisations
- there is clinical variation of practice.

Although the objective to provide transparency between provider costs and the national tariff has not been achieved, there is the potential for the model to be used in this way in future. Providers would need to calculate their actual costs for each element of care delivered, to collect local activity data and then insert both into the model to compute total costs. Income received could then be compared with actual costs. For the reasons given above, this exercise is unlikely to show that income is directly related to costs; it would, however, bring a greater depth of understanding to the cost of service provision.

The immediate plan, however, is to use the model solely as a commissioning tool to support the move towards a bundled payments system. During 2012/13 organisations in London within an integrated cancer system will be paid the standard tariff to provide breast cancer services but, at the same time, notional payments will be calculated in order to estimate the likely impact of implementing the proposed currencies and tariff. It is hoped that, explicitly commissioning integrated care rather than discrete episodes of care, will drive improved value and better outcomes. The results of this exercise will help determine the next steps.

**Recommendation:** That commissioners are encouraged to 'think outside the box' when planning services rather than do the same as before.

'Any true health care reform will require abandoning the current complex fee-for-service payment schedule altogether. Instead, payors should introduce value-based reimbursement, such as bundled payments, that covers the full care cycle and includes care for complications and common comorbidities.'

*Harvard Business Review, How to Solve the Cost Crisis in Health Care, Robert S. Kaplan and Michael E. Porter, September 2011*

## Future for commissioning cancer care

Over the next few years the commissioning landscape is expected to change significantly in line with reforms proposed in *Equity and excellence: Liberating the NHS*<sup>15</sup>; responsibility for the commissioning of cancer services will transfer to Clinical Commissioning Groups (CCGs).

In the meantime, London Health Programmes (LHP) is working actively with local commissioners to review and transform the delivery of cancer service across the capital in line with proposals outlined in *A Model of Care for Cancer Services*<sup>16</sup>.

Cancer services in London are currently purchased on an episodic basis. The aim is to change this and to introduce new currencies - such as bundled tariffs - linked to best practice that will help eliminate clinical variation. For 2012/13, this work is focused around four services: breast, lung, colorectal and brain.

Staff at LHP welcomed the model developed by NELCN, describing it as 'a solid base to build on' and will be using it to support the 2012/13 contracting rounds.

Before adopting the model, however, staff at LHP had to review the patient flows in the model to ensure that they were not NEL specific but that they accurately reflected those across London. This process highlighted a number of issues including:

- variation in practice between NEL and the rest of London
- differences in clinical coding
- questions around accounting for clinical trials
- continually evolving clinical practices
- accommodating variations in patient entry points to the pathway
- dealing with co-morbidities
- determining the span of a pathway - whether or not it should include therapy services for example.

Once these issues had been addressed, the model had to be populated with London-wide activity data. This was not straightforward; the LHP team encountered many of the same problems around the availability and usability of data as the NEL project team had faced.

The LHP team then began looking in detail at each of the three pathways depicted by the model and constructed a single best practice flowchart mapping the patient journey from point of referral to end of life care. The aim was to improve understanding of the cost of care by showing each intervention type in a single layer on the pathway. All surgical procedures, for example, are shown in layer 9 of the flow chart. A patient may have a mastectomy then at a later date a reconstruction; or a mastectomy plus reconstruction; or a mastectomy with no reconstruction. Each option is linked to a separate HRG and has a different tariff so needs to be independently considered when commissioning a pathway of care.

It is hoped that by dissecting the pathway by intervention in this way, commissioners can move away from the current episodic payment system to a more pathway focused one. It will put more responsibility on the provider network to deliver integrated, more innovative care but will also deliver the flexibility and resources needed to invest in new patterns of care.

Once the flowchart detailing interventional stages was complete, appropriate performance metrics were identified and agreed then built into the chart. In layer 9 of the flow chart covering surgery, for example, performance metrics include:

- percentage uptake of 23 hour surgery
- percentage uptake of immediate reconstruction
- survival 30 days after surgery
- percentage re-admission / re-operation rates within 30 days
- survival 90 days after surgery.

'Current NHS payment structures do not provide sufficient incentives to change the way cancer services are delivered. The Department should develop tariffs for cancer that encourage adoption of best practice and reward activities which deliver efficiencies. It should also require commissioners to reduce the use of block contracts, and put in place disincentives to providing services which evidence shows do not benefit patients.'

*Delivering the Cancer Reform Strategy, Report by the Comptroller and Auditor General, 18 November 2010, page 11*

15. <http://www.dh.gov.uk/en/Healthcare/LiberatingtheNHS/index.htm>

16. <http://www.londonhp.nhs.uk/wp-content/uploads/2011/03/Cancer-model-of-care.pdf>

Best practice pathway tariffs are now being calculated for each pathway within breast cancer services and will be used to model the impact of moving to pathway based currencies and tariffs.

The model provides a route map that will help:

- engage all stakeholders in service delivery
- encourage an interdisciplinary approach towards change
- identify gaps in existing service delivery
- focus attention on areas where performance is below standard
- manage variations in treatment and costs
- support more efficient and effective resource allocation
- encourage innovative service provision
- instigate process improvement
- hold providers to account
- provide a formal framework for review.

#### **Transferability to other disease areas**

The success of the model for commissioning breast cancer services has encouraged the project team to broaden its use to other diseases; initially the model is being developed as a tool for commissioning lung cancer services. Nationally lung cancer is the second most commonly diagnosed cancer and is the second leading cause of death from cancer. In NEL, lung cancer accounts for 29% of deaths in males and 22% in females; the development of a standardised model dictating a clinically evidenced best practice pathway will help ensure that all patients receive the most appropriate care.

The learning curve for the development of the predictive funding flow model for breast cancer was steep but, with a much better understanding of the processes involved, the project team have made rapid progress on the predictive funding flows model for lung cancer. It took the team about 14 months (on a part time basis) to develop the breast cancer model but just 10 months (on a part time basis) to complete the model for lung cancer.

#### **Sharing knowledge**

In addition to the pan-London work being undertaken with LHP, the project team are taking every opportunity to share the model and its methodology with cancer networks across England to help them avoid the huge learning curve experienced by the NEL team.

'As providers and payors better understand costs, they will be positioned to achieve a true 'bending of the cost curve' from within the system, not based on top-down mandates. The sheer size of the opportunity to reduce health care costs—with no sacrifice in outcomes—is astounding.'

*Harvard Business Review, How to Solve the Cost Crisis in Health Care, Robert S. Kaplan and Michael E. Porter, September 2011*

## Conclusion

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This project was designed with the objectives of:

- understanding, through patient level detail, the cost of cancer treatment, thereby leading to greater transparency between actual provider costs and the national tariff
- developing an agreed process for the commissioning of cancer services, across the entire clinically effective pathway with built-in service specifications for quality monitoring purposes
- developing a population-based predictive funding flow model at local or pan-London level that could be used to model prices of future populations based on forecast incidence and mortality rates for different tumour sites.

At the time of writing this report the first objective was still a work in progress but we are confident that, with a little more work and time, it will be achieved.

The second and third objectives have both been successfully achieved. The project team have produced a model that explicitly details the clinically evidenced pathway for the treatment of breast cancer and the associated commissioning costs of care – both current and future. Key to the development of the model was the excellent rapport that NELCN has with local organisations and clinicians; it was relationships, not contractual arrangements, that were the crucial success factor.

The model is currently being trialled with the Reference Costs of organisations in North East London; it will then be used to support the introduction of bundled payments across London to encourage the more integrated provision of care for breast cancer services.

The project team have been successful in their aim to support the more intelligent commissioning of breast cancer services.

### Recommendations

During development of the model the project team encountered many challenges including: variations in clinical practice, unreliable activity data and difficulty in obtaining certain costing information. As a result ACCA would like to make the following recommendations:

1. That NHS organisations are required to place greater importance on producing accurate costing information and to fully explain any large deviations from the norm.
2. That all chemotherapy providers be required to run a chemotherapy prescribing system incorporating an accurate costing module.
3. That organisations be strongly encouraged to collect and submit the nationally agreed cancer minimum dataset, which will facilitate consistent internal and external reporting.
4. That the Department of Health introduce best practice, pathway focused tariffs to support more innovative and flexible delivery of services.
5. That commissioners are encouraged to ‘think outside the box’ when planning services rather than do the same as before.

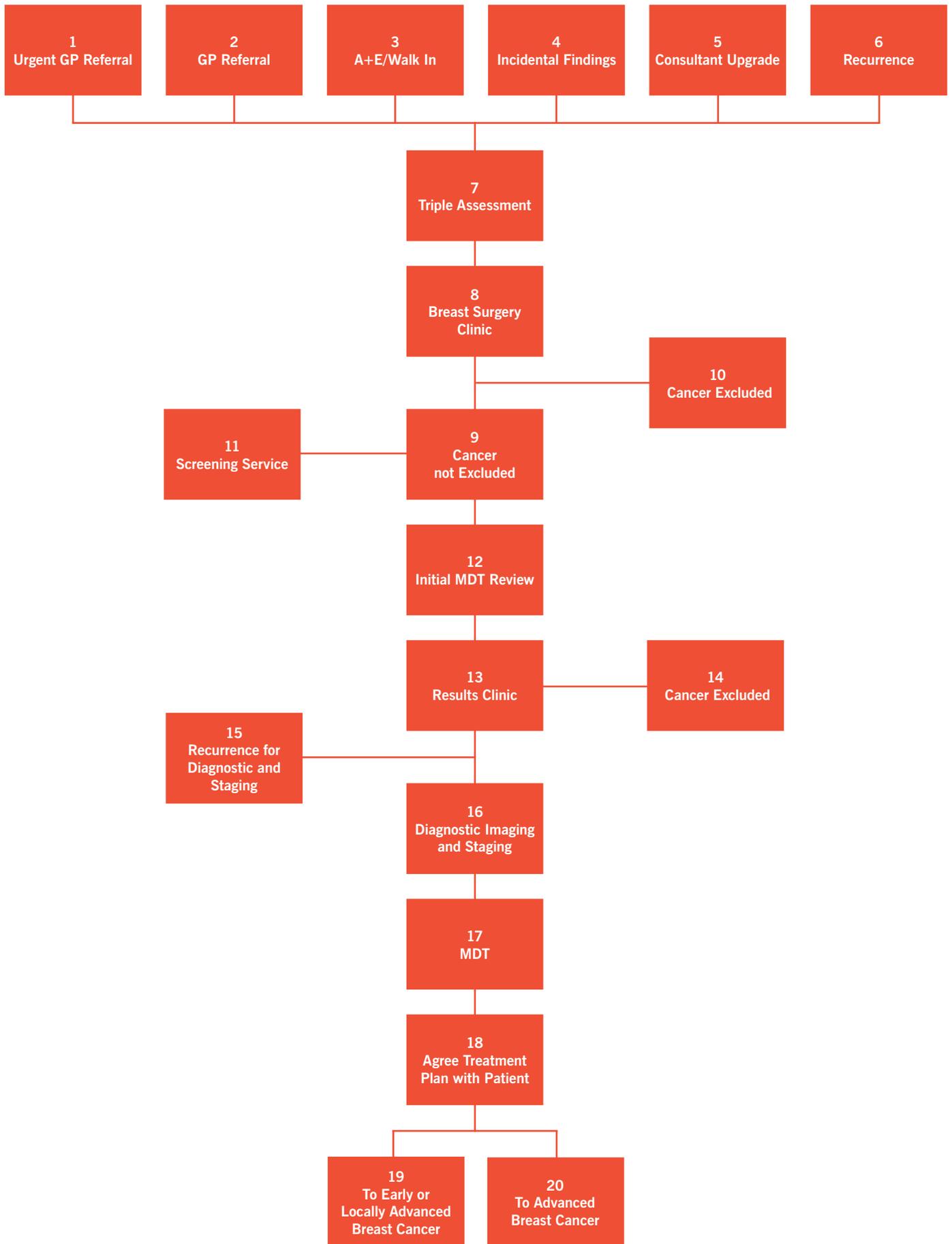
‘The NHS budget will have to stretch further than ever before in these difficult times – and so reform isn’t an option, it’s a necessity in order to sustain and improve our NHS.’

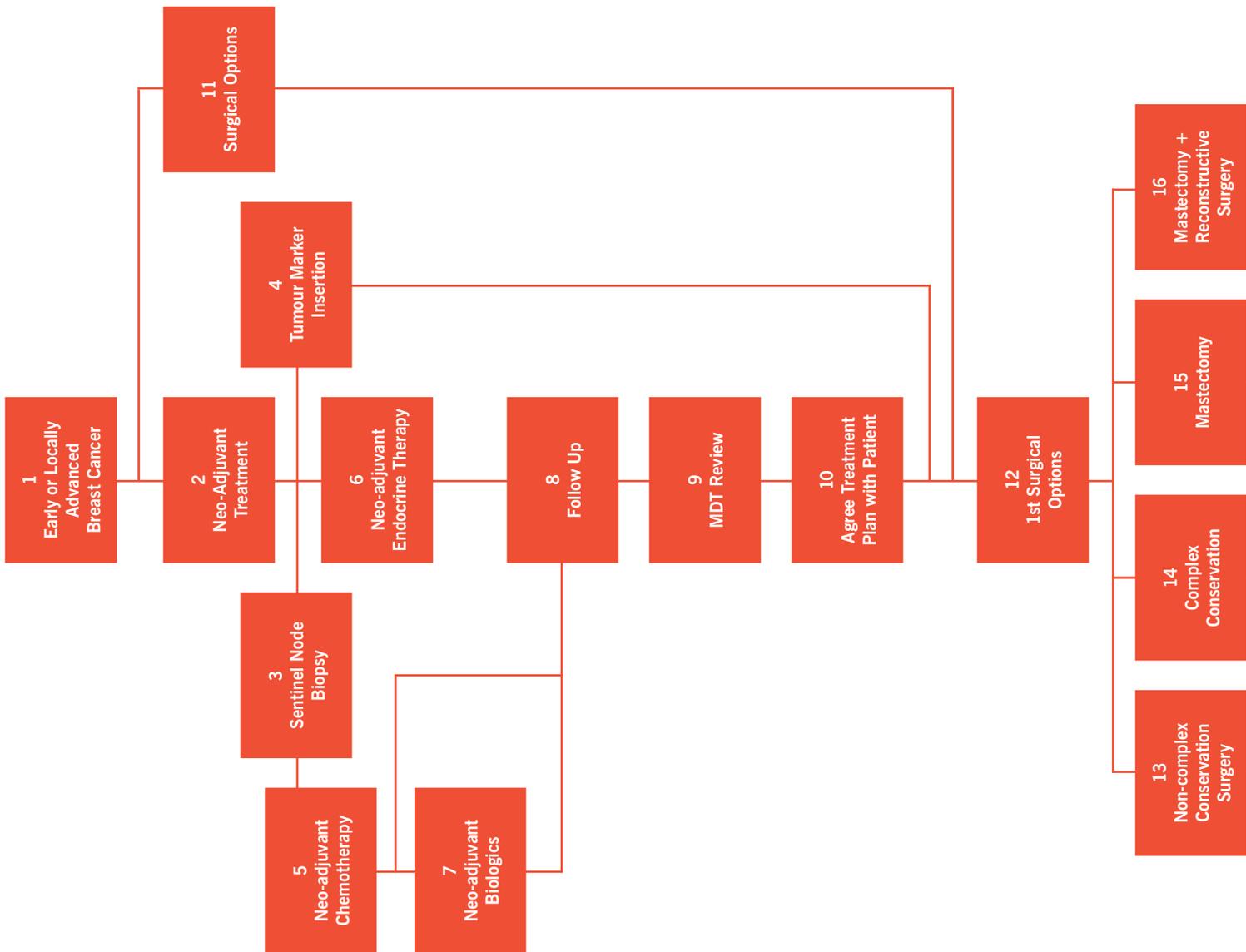
*Andrew Lansley*

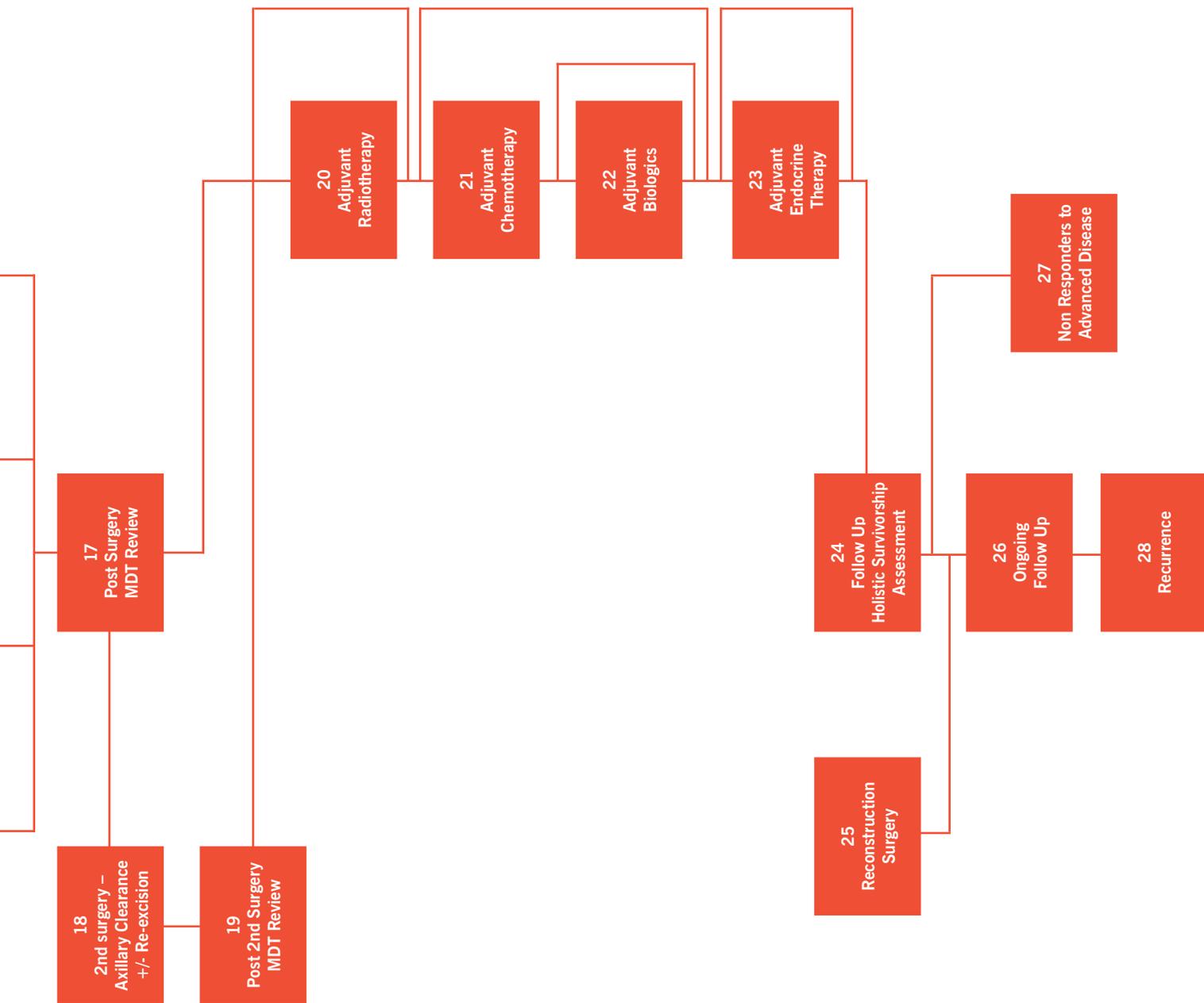
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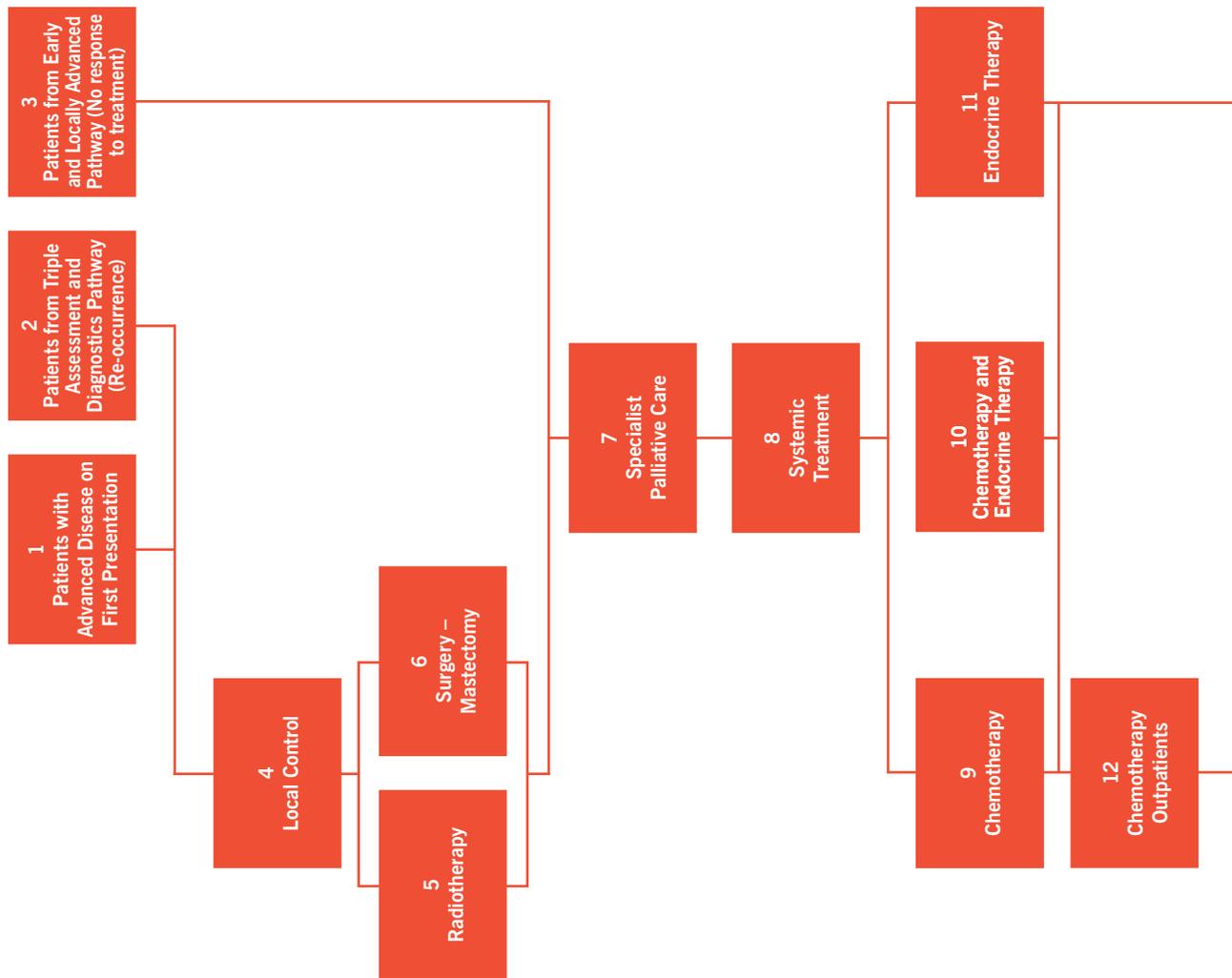
# Appendix

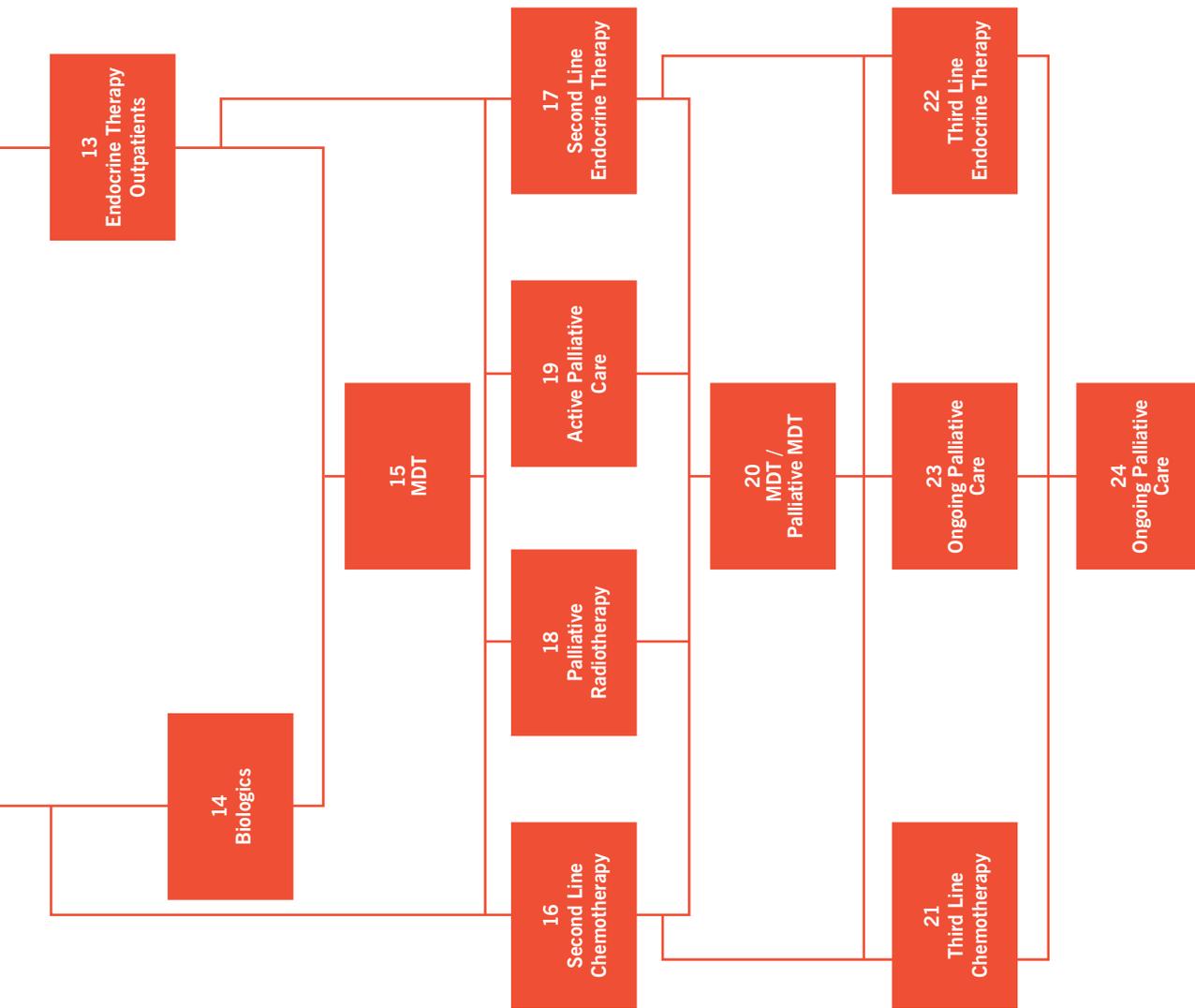
## Breast Cancer Costed Pathway – Referral & Triple Assessment Diagnostics Updated 29 April 2011 (A)











## About the organisations

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### ACCA

ACCA (the Association of Chartered Certified Accountants) is the global body for professional accountants. We aim to offer business-relevant, first-choice qualifications to people of application, ability and ambition around the world who seek a rewarding career in accountancy, finance and management.

We support our 147,000 members and 424,000 students throughout their careers, providing services through a network of 83 offices and centres. Our global infrastructure means that exams and support are delivered – and reputation and influence developed – at a local level, directly benefiting stakeholders wherever they are based, or plan to move to, in pursuit of new career opportunities

[www.accaglobal.com](http://www.accaglobal.com)

### NCAT

The National Cancer Action Team is led by Professor Sir Mike Richards, and is responsible for delivering the National Strategy (Improving Outcomes: A Strategy for Cancer). It does this working with all relevant stakeholders including cancer networks to support the NHS in translating the vision of improved cancer outcomes and world class cancer services into reality. Their work spans a range of programmes from the development of early diagnosis initiatives through to developing better information for cancer patients; NCAT works across the whole cancer patient pathway.

[www.ncat.nhs.uk/](http://www.ncat.nhs.uk/)

### ROCHE IN THE UK

Roche Products Ltd aims to improve people's health and quality of life with innovative products and services for the early detection, prevention, diagnosis and treatment of disease. Part of one of the world's leading healthcare groups, Roche in the UK employs nearly 2,000 people in pharmaceuticals and diagnostics.

Globally Roche is the leader in diagnostics, and a major supplier of medicines for the treatment of cancer, transplantation, virology, bone and rheumatology, obesity and renal anaemia.

[www.rocheuk.com](http://www.rocheuk.com)

### NORTH EAST LONDON CANCER NETWORK

The North East London Cancer Network is one of the 28 cancer networks in England and serves a culturally diverse population of around 1.8 million that is coterminous with the current two North East London Sectors and North East London Cancer Research network. It is hosted by NHS East London and City and has reporting and planning arrangements with DH/NCAT and NHS London SHA in addition to working partnerships with independent voluntary and charity organisations such as Macmillan Cancer Support, Cancer Research UK etc and developing key working partnerships with local authorities.

Currently it covers the population of City of London and the London Boroughs of Hackney, Tower Hamlets, Newham, Waltham Forest, Redbridge, Barking and Dagenham and Havering and serves some of the most deprived areas in the country. This poses particular challenges in ensuring that cancer services are equally accessible to all groups of people who need them in order to achieve the best outcomes and patient experience.

The goal of the network is to reduce the burden of cancer on our population by promoting health so as to prevent cancers, improving the survival of people with cancer and improving the quality of life and experience of all of those affected by cancer. The North East London network's main priorities in order to achieve this are: improving survival through the earlier diagnosis and screening, improving survival by addressing inequalities, improving survival through the implementation of the model of care for London, improving survival through commissioning improved outcomes for cancer and improving survival through implementing best practice models through QIPP.

[www.nelcn.nhs.uk](http://www.nelcn.nhs.uk)

# Acknowledgements

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