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# **Commissioning effective anticoagulation services for the future: A resource pack for commissioners**

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## 1. About this commissioning resource pack

Anticoagulants are treatments prescribed to people who are at risk of blood clots, which can potentially be fatal. Anticoagulants can be prescribed to people with a range of conditions which might cause harmful clots to form. For some people short term anticoagulation therapy will be required, for example when a patient is admitted to hospital to have an operation. For others, however, anticoagulation therapy can be used to manage a long term condition or the longer term consequences of a previous cardiac event.

Given the different management and commissioning arrangements for short and long-term anticoagulation usage, this commissioning resource pack focuses on the services for patients on long term anticoagulation therapy, considering the following groups:

- people with artificial heart valves
- people who have had a heart attack or stroke
- people suffering from atrial fibrillation
- people at risk of deep vein thrombosis
- people at risk of a pulmonary embolism

Traditional anticoagulation therapy has been focused around warfarin, which requires regular monitoring and dose adjustments. However, newer treatments are now available for some indications which do not require regular monitoring, in the form of blood tests, by healthcare professionals. This change in the treatment options for anticoagulation provides an important opportunity to consider the most appropriate service design to provide value for money to the NHS and a good experience and high quality outcomes for patients.

The purpose of this commissioning resource pack, which has been developed with the input of a wide range of experts, is to provide a resource for commissioners and thus support the development of anticoagulation services which are appropriate for each different locality, based on the needs and preferences of service users and fit for purpose in the modern NHS.

A list of experts involved in the development of this resource is included in Annex 1.

## 2. The case for change

It is estimated that in the UK, there are approximately 1.25 million people currently prescribed oral anticoagulant drugs, with warfarin being the most frequently prescribed oral anticoagulant in the UK<sup>1</sup>. For an average GP practice the number of patients expected to require anticoagulation therapy at any one time is likely to be approximately 140<sup>2</sup>, although this will vary depending on the practice list size. This patient population is expected to increase in the coming years as the UK population ages<sup>3</sup> and more people are identified as requiring anticoagulation therapy<sup>4</sup>, adding to the burden.

Effective anticoagulation services are required to deal with this increasing burden. The National Institute for Health and Clinical Excellence (NICE) has identified a series of potential benefits in robustly commissioning an effective anticoagulation therapy service<sup>5</sup>. These include:

- ensuring that appropriate patients receive anticoagulation therapy and prompt monitoring
- reducing inequalities in access to anticoagulation therapy
- improving anticoagulation control in patients, and reducing drug-associated complications
- reducing the risk of stroke in patients with AF, which may impact positively on stroke service requirement and capacity
- better value for money, through helping commissioners to manage their commissioning budgets more effectively and implementing more cost effective treatments – this may include opportunities for clinicians to undertake local service redesign to meet local requirements in novel ways

Despite these benefits, current data indicates that the management of some anticoagulation services is sub-optimal. For example, the NICE 2006 costing report on atrial fibrillation estimated that 46% of patients who should be on warfarin are not receiving it and those who are receiving anticoagulation are not in optimal therapeutic range<sup>6</sup>.

Currently anticoagulation services are designed around older established treatments that require different ways of working. Taking warfarin requires regular attendance at an anticoagulation clinic to monitor and adjust treatment dose. This can have a social burden on service users and their carers, for example:

- people in full-time employment may have to attend a clinic during working hours which can be problematic and result in lost income
- elderly patients may find it difficult to travel to a clinic regularly and may have to rely on family members or carers to take them
- the cost of travelling to a clinic regularly may be prohibitively expensive to some people
- changing the dosage of medication can be confusing and be a patient safety risk
- people who travel regularly can be put at risk by passing through different time zones which can disrupt their schedule

There are also health care costs of providing regular clinics. For example:

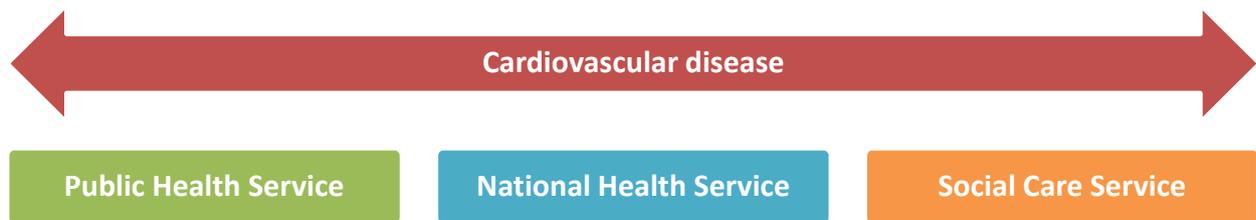
- staff time in running clinics
- costs for conducting blood tests
- capital costs for use of a clinic room/building, heating, lighting, etc

The emergence of these newer treatment options for anticoagulation, which have the advantage of providing a stable level of anticoagulation on a regular dose which does not require regular monitoring and adjustment, and rising demand for these therapies, provides the opportunity to redesign the system. These new therapies provide the opportunity to better organise services, improve the quality of life for people by reducing the number of visits they are required to make to their healthcare provider and giving them certainty over their medication, and to make the best use of NHS resources.

Alongside the possible step-change in anticoagulation services for people with an identified need for anticoagulation, there are also a significant number of people who require anticoagulation but haven't been identified. For example, it is estimated that as many as 700,000<sup>7</sup> people in the UK may have undiagnosed atrial fibrillation. Therefore efforts to increase identification and tackle this unmet need should be considered in service redesign. If people requiring anticoagulation are identified, and by implication treated, then other health service interventions may be averted and a poorer patient experience can be avoided.

### 3. The opportunities for anticoagulation services presented by the healthcare reforms

The Government's healthcare reforms mean that the health service is changing. In July 2010 the Government published *Equity and Excellence: Liberating the NHS*, which set out proposals for the reform of healthcare services across England. One of the key elements of the reforms was making three distinct elements of the healthcare system.



Cardiovascular disease will span the three different parts of the new healthcare system, and anticoagulation services will sit within the National Health Service, but will require strong links with public health and social care.

The Health and Social Care Act 2012 contains provisions covering a number of themes, one of which is strengthening commissioning of NHS services through clinical commissioning. This shift towards more commissioning being driven by clinicians rather than NHS managers is intended to improve the health service for the benefit of all patients and the wider community, by stimulating continuous quality improvement in services, reducing inequalities, enabling choice and encouraging patient involvement in healthcare.

Underpinning these structural changes is a new focus which has been articulated through a number of national priorities for the healthcare system and how they relate to anticoagulation services, as follows:

<b>Choice</b>	<ul style="list-style-type: none"> <li>Increasing patient involvement in healthcare decisions, “no decision about me without me”</li> </ul>
<b>Information</b>	<ul style="list-style-type: none"> <li>Improving the provision of information about service quality</li> </ul>
<b>Outcomes</b>	<ul style="list-style-type: none"> <li>Managing performance according to outcomes delivered, rather than ‘process targets’</li> </ul>
<b>Accountability</b>	<ul style="list-style-type: none"> <li>Bringing commissioning decisions closer to patients. Greater local democratic involvement</li> </ul>
<b>Integration</b>	<ul style="list-style-type: none"> <li>Seeking greater coordination of NHS, public health and social care</li> </ul>
<b>Incentivisation</b>	<ul style="list-style-type: none"> <li>Introducing stronger financial incentives for quality, including local incentives</li> </ul>
<b>Localism</b>	<ul style="list-style-type: none"> <li>Local influence on health and care provision</li> </ul>

The healthcare reforms and these priorities are set in the context that £20 billion in efficiency savings need to be made by the end of 2013/14 that can be reinvested in the NHS to deliver year on year quality improvements<sup>8</sup>. Considering the best way to configure and commission anticoagulation services can help to achieve these priorities. It will also help to unlock resources which can be invested to deliver improved quality and lead to longer term cost savings and improvements in clinical outcomes and patient experience.

#### 4. Five steps to commissioning better outcomes in anticoagulation services

Given the competing priorities for commissioners and the complexity of commissioning anticoagulation services, five steps have been identified to assist commissioners in designing appropriate anticoagulation services for people who require long term treatment. These steps are as follows:

Step 1	Identifying need and understanding the patient population
Step 2	Understanding current services
Step 3	Developing the business case
Step 4	Designing the service and implementation
Step 5	Monitoring and incentivising quality

For each of these steps, the following sections of this pack set out actions commissioners should take and resources which will provide information or evidence for commissioners to achieve each step in this service redesign process.

## Step 1

## Identifying need and understanding the patient population

Only by understanding the population and the demand on services in each locality will it be possible to build effective anticoagulation services. Information about prevalence and incidence of people requiring anticoagulation, patient pathways, patient experience and downstream consequences are all important pieces of information which are required in order to fully understand the population and to identify local need.

Action	Resources
<p><b>Identify the prevalence and incidence of people requiring anticoagulation services in the locality</b></p> <ul style="list-style-type: none"> <li>• NICE estimates that 1.4% of the population requires anticoagulation therapy</li> <li>• Local population demographics will affect prevalence estimates</li> <li>• NICE is in the process of updating its tool to support commissioners in identifying the number of people who will need access to anticoagulation services, which will be available in December 2012</li> <li>• Commissioners should understand the needs of their populations and managing those at risk using prediction techniques</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">PCT CVD profiles</a></li> <li>• <a href="#">NICE anticoagulation commissioning guide</a></li> <li>• <a href="#">NICE anticoagulation commissioning and benchmarking tool</a></li> <li>• <a href="#">QOF prevalence – data tables 2010/11</a></li> <li>• <a href="#">GP registered populations</a></li> <li>• <a href="#">Health needs assessment toolkit</a></li> <li>• <a href="#">Association of public health observatories</a></li> </ul>
<p><b>Patient experience</b></p> <p>There is not currently a national patient experience survey for people using anticoagulation services</p> <ul style="list-style-type: none"> <li>• The NHS Commissioning Board should consider introducing a national survey, following the model of the National Cancer Patient Experience Survey</li> <li>• Questions could include: <ul style="list-style-type: none"> <li>– How long was it from the time you first thought something might be wrong with you until you first had anticoagulation therapy?</li> <li>– Did you understand the explanation of what was wrong with you?</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">2011/12 National Cancer Patient Experience Survey</a></li> </ul>

<ul style="list-style-type: none"> <li>- Was your need for anticoagulation therapy explained to you?</li> <li>- Before your anticoagulation therapy started, were you given a choice of different types of treatment?</li> <li>- Were the possible side effects of treatment(s) explained in a way you could understand?</li> <li>- Were you involved as much as you wanted to be in decisions about which treatment(s) you would have?</li> <li>• Commissioners may wish to work with their local cardiovascular network to develop a survey that could be used to measure patient experience in their locality</li> </ul>	
<p><b>Patient engagement</b></p> <ul style="list-style-type: none"> <li>• Commissioners should engage the public and patients in the design of their service when assessing need</li> <li>• Local HealthWatch organisations could also be used to gain insight from patients and the public on service design</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">What is HealthWatch</a></li> <li>• <a href="#">Find your LINK</a></li> </ul>
<p><b>Downstream consequences</b></p> <ul style="list-style-type: none"> <li>• It is important to be able to understand the downstream consequences of different service models. Information it would be useful to review and understand before making decisions about service models includes: <ul style="list-style-type: none"> <li>- Number of strokes</li> <li>- Emergency admissions</li> <li>- Major and minor bleeds</li> <li>- Litigation costs</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Sentinel Stroke National Audit Programme (SSNAP)</a></li> <li>• <a href="#">Stroke emergency admission rates</a></li> <li>• <a href="#">CVD mortality rates</a></li> <li>• <a href="#">CHD and stroke mortality rates</a></li> <li>• <a href="#">Production losses due to stroke mortality</a></li> </ul>

## Step 2

## Understanding current services

Knowing what services are delivered where is fundamental for any commissioner. Some services and models of service delivery will be right for the local population as they are, but others may need to be redesigned to be fit for purpose. Understanding what is happening now will allow commissioners to take stock of what is working well and what is working less well in their locality and inform the shape of services in the future.

Action/information	Resources
<p><b>Mapping services</b></p> <ul style="list-style-type: none"> <li>• It is essential to know what services already exist to determine if they are appropriate and fit for purpose</li> <li>• Information should be collected about services delivered, settings for service delivery, people managed in each service and outcomes achieved</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Association of public health observatories</a></li> <li>• Local data</li> <li>• Local contracts</li> </ul>
<p><b>Service user and clinical engagement</b></p> <ul style="list-style-type: none"> <li>• Feedback should be gathered from clinicians and service users about the performance of existing services</li> <li>• Information about patient reported experience and clinical outcomes should be gathered</li> <li>• Feedback should be gathered from patient support groups and service user involvement groups</li> </ul>	<ul style="list-style-type: none"> <li>• Local survey information</li> <li>• Support group and patient involvement groups</li> </ul>
<p><b>Prescribing data</b></p> <ul style="list-style-type: none"> <li>• Information about prescribing should be interrogated so that the number of people being prescribed each different type of anticoagulant is clear</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">NHS prescribing data</a></li> </ul>
<p><b>Registries</b></p> <ul style="list-style-type: none"> <li>• Data already routinely collected in registries should be interrogated</li> <li>• Outcomes data published by public health observatories should also be utilised to build a picture of the current service and outcomes</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Association of public health observatories</a></li> <li>• <a href="#">South East Public Health Observatory – Cardiovascular Disease</a></li> </ul>

<ul style="list-style-type: none"> <li>Data should be collected about post thrombotic syndrome</li> </ul>	<p><a href="#">Profiles</a></p> <ul style="list-style-type: none"> <li><a href="#">QOF prevalence – data tables 2010/11</a></li> <li><a href="#">Guidance on Risk Assessment and Stroke Prevention for Atrial Fibrillation (GRASP-AF)</a></li> </ul>
<p><b>Adverse incidents</b></p> <ul style="list-style-type: none"> <li>The number and severity of adverse events should be considered</li> <li>The downstream consequences of these adverse events should also be captured so that the full implications and costs of an adverse event are understood</li> </ul>	<ul style="list-style-type: none"> <li>NHS dataset</li> </ul>
<p><b>Costing</b></p> <ul style="list-style-type: none"> <li>Costs of each different element of existing services should be determined</li> <li>These costs should be, where possible, broken down to individual elements or bundles of cost</li> </ul>	

## Step 3

## Developing the business case

In order to change services it will be important to set out a clear business case for change. This should set out the narrative for the future of anticoagulation services in the locality and present the evidence to support specific recommendations about what services will be commissioned in an area.

Action/information	Resources and partners
<p><b>Service need and configuration</b></p> <ul style="list-style-type: none"> <li>• There are a number of questions about service need and configuration which should be considered in the business case, including: <ul style="list-style-type: none"> <li>– What are the needs of my local population who require anticoagulation?</li> <li>– What methods can I use to better understand those needs?</li> <li>– Are we using risk stratification techniques to understand need?</li> <li>– Is information from patients being collected on services they want, ie through personalised care planning?</li> <li>– What skill mix do we need to meet the needs of my local population?</li> <li>– What are the training needs of the workforce – are there gaps?</li> <li>– How as providers can we ensure we have staff with the skills to deliver?</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">PCT CVD profiles</a></li> <li>• <a href="#">NICE anticoagulation commissioning guide</a></li> <li>• <a href="#">NICE anticoagulation commissioning and benchmarking tool</a></li> <li>• <a href="#">QOF prevalence – data tables 2010/11</a></li> <li>• <a href="#">GP registered populations</a></li> <li>• <a href="#">Health needs assessment toolkit</a></li> <li>• <a href="#">Association of public health observatories</a></li> </ul>
<p><b>Clinical guidelines</b></p> <ul style="list-style-type: none"> <li>• Clinical guidelines should be followed, where appropriate, to support commissioners in understanding what they should be purchasing, to make the case for change</li> <li>• Up-to-date guidelines will assist commissioners in understanding how to commission against an evidence based pathway</li> <li>• A one size fits all approach to anticoagulation services is unlikely to meet the needs of all service users</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">British Society of Haematology guidelines on oral anticoagulation with warfarin</a></li> <li>• <a href="#">NICE CG36 : Atrial fibrillation</a></li> <li>• <a href="#">NICE anticoagulation commissioning guide</a></li> <li>• <a href="#">NICE CG92: Venous thromboembolism</a></li> </ul>

<p><b>Choice/alternative providers</b></p> <ul style="list-style-type: none"> <li>• The healthcare reforms allow a wider variety of providers to run NHS services</li> <li>• There are a range of provider types based in different settings (primary and secondary care and community based service)</li> <li>• The local landscape of willing providers should be mapped</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Choose and Book</a></li> </ul>
<p><b>Cost</b></p> <ul style="list-style-type: none"> <li>• Costs for different models of care should be determined</li> <li>• Downstream costs for the consequences of treatment should be estimated</li> <li>• Short term costs for disbanding existing clinics should be modelled</li> <li>• Costs for self care education, including the savings and benefits, should be identified</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Association of public health observatories</a></li> <li>• <a href="#">Making the case for self care education</a></li> </ul>
<p><b>Modelling health gain</b></p> <ul style="list-style-type: none"> <li>• Health improvement of new service provision should be modelled to determine impact on patients</li> <li>• Money saved by adjusting service models should be established</li> <li>• Number of hospital bed days which could be saved by commissioning different services should be modelled</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Commissioning Outcomes Framework</a></li> <li>• <a href="#">NHS Outcomes Framework 2012/13</a></li> <li>• <a href="#">NICE anticoagulation commissioning and benchmarking tool</a></li> <li>• <a href="#">Sentinel Stroke National Audit Programme (SSNAP)</a></li> <li>• <a href="#">Stroke emergency admission rates</a></li> <li>• <a href="#">CVD mortality rates</a></li> <li>• <a href="#">CHD and stroke mortality rates</a></li> <li>• <a href="#">Production losses due to stroke mortality</a></li> <li>• <a href="#">Quality and Outcomes Framework</a></li> </ul>

## Step 4

## Designing the service and implementation

Once the broad concepts presented in the business case are agreed, it will be important that commissioners work closely with providers to design and implement a service which is fit for purpose and responsive to service users' needs. This will need to take a number of things into account, including service specifications, workforce issues, educational needs for both service users and healthcare professionals, clinical outcomes and patient experience.

Action	Resources
<p><b>Service specification and identifying providers</b></p> <ul style="list-style-type: none"> <li>Detailed service specifications should be developed to determine the shape of services going forward</li> <li>Service specifications should be based on the latest clinical and professional guidelines</li> <li>A range of providers who may wish to bid for services should be identified</li> </ul>	<ul style="list-style-type: none"> <li><a href="#">British Society of Haematology guidelines on oral anticoagulation with warfarin</a></li> <li><a href="#">NICE CG36 : Atrial fibrillation</a></li> <li><a href="#">NICE anticoagulation commissioning guide</a></li> <li><a href="#">Long term conditions compendium</a></li> </ul>
<p><b>Education standards</b></p> <ul style="list-style-type: none"> <li>Professional education should be provided and included in service design to ensure that professionals are able to provide high quality services</li> <li>Where patients will be engaged in supported self-management of their condition appropriate information must be provided and patient education made available to effectively support these patients</li> <li>Workforce development will be needed to deliver new models of care</li> <li>Consider investment in self-care training, including e-learning</li> </ul>	<ul style="list-style-type: none"> <li><a href="#">Connected - Advanced communications</a></li> <li><a href="#">Expert Patients Programme</a></li> <li><a href="#">Information prescription service</a></li> <li><a href="#">Supporting self care e-learning</a></li> </ul>
<p><b>Clinical outcome indicators</b></p> <ul style="list-style-type: none"> <li>Indicators should be developed to measure clinical outcomes, for example:</li> </ul>	<ul style="list-style-type: none"> <li><a href="#">Commissioning Outcomes Framework</a></li> </ul>

<ul style="list-style-type: none"> <li>- Minimum time in therapeutic range</li> <li>- Year on year improvement in % of people in range</li> <li>- % of unscheduled admissions</li> <li>- Number of adverse events which did not result in an unplanned admission</li> <li>• Indicators should be developed by clinicians in consultation with service users</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">NHS Outcomes Framework 2012/13</a></li> <li>• <a href="#">Quality and Outcomes Framework</a></li> <li>• <a href="#">Association of public health observatories</a></li> <li>• <a href="#">South East Public Health Observatory – Cardiovascular Disease Profiles</a></li> </ul>
<p><b>Patient experience measures</b></p> <ul style="list-style-type: none"> <li>• The NHS Commissioning Board should consider introducing a national survey, following the model of the National Cancer Patient Experience Survey</li> <li>• Questions could include: <ul style="list-style-type: none"> <li>- How long was it from the time you first thought something might be wrong with you until you first had anticoagulation therapy?</li> <li>- Did you understand the explanation of what was wrong with you?</li> <li>- Was your need for anticoagulation therapy explained to you?</li> <li>- Before your anticoagulation therapy started, were you given a choice of different types of treatment?</li> <li>- Were the possible side effects of treatment(s) explained in a way you could understand?</li> <li>- Were you involved as much as you wanted to be in decisions about which treatment(s) you would have?</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">2011/12 National Cancer Patient Experience Survey</a></li> </ul>

Step 5

Monitoring and incentivising quality

Monitoring and incentivising quality is essential to commissioning an effective anticoagulation service. There are a number of mechanisms that commissioners can use to hold their local providers to account for their services. Set out below are some of the levers that commissioners may wish to consider putting in place with providers.

Action/information	Resources and partners
<p><b>Commissioning for Quality and Innovation</b></p> <ul style="list-style-type: none"> <li>• The Commissioning for Quality and Innovation (CQUIN) programme offers an opportunity to incentivise providers to make improvements in a particular area of care</li> <li>• Local CQUINs could be developed by commissioners and agreed with providers of anticoagulation services</li> <li>• CQUINs consider include: <ul style="list-style-type: none"> <li>– The percentage of patients provided with written information about managing their International Normalised Ratio (INR) level</li> <li>– The percentage of patients offered ongoing education and support</li> <li>– The percentage of patients who recall being involved in discussions about their anticoagulation treatment</li> <li>– The percentage of patients with a record that they are taking their anticoagulation treatment as prescribed</li> <li>– The percentage of patients who understand the information given to them and who can participate in decision-making about their treatment</li> <li>– The percentage of patients offered a choice of anticoagulation treatment</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">CQUIN payment framework</a></li> </ul>
<p><b>Quality accounts</b></p> <ul style="list-style-type: none"> <li>• Suggest that examples of good practice in provision of anticoagulation services is included in a provider’s Quality Account</li> <li>• The number of national clinical audits a provider has participated in is already included in the quality account, but specific audits could be mentioned</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Quality accounts</a></li> </ul>

<p><b>Audit standards</b></p> <ul style="list-style-type: none"> <li>• National clinical audits should be used as a service improvement tool</li> <li>• Data from different national clinical audits and other NHS data sources (including Hospital Episode Statistics) should be linked and analysed to build a holistic picture of what is happening to patients receiving anticoagulation</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Stroke Improvement National Audit Programme</a></li> <li>• <a href="#">Myocardial Ischaemia National Audit Project</a></li> <li>• <a href="#">Association of public health observatories</a></li> <li>• <a href="#">South East Public Health Observatory – Cardiovascular Disease Profiles</a></li> </ul>
<p><b>QIPP plans</b></p> <ul style="list-style-type: none"> <li>• Long-term condition management is one of the priorities in QIPP</li> <li>• Changing anticoagulation services so that clinics and monitoring are reduced is aligned with the QIPP agenda</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">QIPP</a></li> <li>• <a href="#">Long-term conditions compendium</a></li> <li>• <a href="#">QIPP Long-Term Conditions Year of Care Funding</a></li> </ul>

## **Annex 1 – Experts involved in the development of this resource**

- Diane Eaton, Project Manager, Anticoagulation Europe
- Dr Matthew Fay, GP, Westcliffe Medical Centre, Bradford
- Lucy Grothier, Network Director, South London Cardiac and Stroke Network
- Jo Jerrome, Assistant Director, Atrial Fibrillation Association
- Eve Knight, Chief Executive, AntiCoagulation Europe
- Michaela Nuttall, CVD Nurse Specialist, Bromley PCT
- Wendy O'Connor, Lead for network anticoagulation working group and British Heart Foundation Cardiac Physiology Trainer, Merseyside and Cheshire Clinical Network
- Catherine Shannon, Arrhythmia Nurse Specialist, The Royal Sussex County Hospital

## Annex 2 - References

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<sup>1</sup> Department of Health, Innovation, health and wealth: accelerating adoption and diffusion in the NHS, December 2011

<sup>2</sup> National Institute for Health and Clinical Excellence, Determining local service levels for anticoagulation services, March 2010

<sup>3</sup> Stewart S, et al. *Heart*, 2001; 86(5):516-21

<sup>4</sup> Atrial Fibrillation Association and Anticoagulation Europe, *The AF Report, Atrial Fibrillation: Preventing a stroke crisis*, 2011

<sup>5</sup> National Institute for Health and Clinical Excellence, Anticoagulation therapy service, commissioning guide, December 2007

<sup>6</sup> NHS Improvement, Anticoagulation services. Accessed 23.08.12 via:  
<http://www.improvement.nhs.uk/heart/HeartImprovementHome/AtrialFibrillation/AtrialFibrillationAnticoagulation/tabid/129/Default.aspx>

<sup>7</sup> Atrial Fibrillation Association and Anticoagulation Europe, *The AF Report, Atrial Fibrillation: Preventing a stroke crisis*, 2011

<sup>8</sup> Department of Health, *The NHS Quality, Innovation, Productivity and Prevention Challenge: An introduction for clinicians*, 11 March 2010