Stratified Medicine in the UK
Vision and Roadmap
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Summary
A consortium of government bodies and leading charities has joined forces to accelerate the development and uptake of stratified medicine in the UK. The Technology Strategy Board, Medical Research Council (MRC), Cancer Research UK (CRUK), Arthritis Research UK (ARUK), Department of Health (DH), Scottish Government Health Directorate (SGHD) and National Institute for Clinical Health and Excellence (NICE) have formed a partnership to take forward the Stratified Medicine Innovation Platform. Together they will invest around £200m over five years in the area of stratified medicine. Stratified medicine can be summarised as identifying the right therapy for the right patient at the right time in the right dose.

This publication sets out a shared vision for the UK to be the best place to develop, and have adopted, stratified medicine. It also outlines a technology roadmap that describes nine thematic areas which, if advanced successfully, will help accelerate the development and uptake of stratified medicine in the UK. The vision and roadmap grew out of a series of workshops attended by more than 100 people representing a broad range of stakeholders.

Background
Even the best medicines are not equally effective in all patients. Disease processes and treatment choices can vary from person to person even though they may have similar symptoms. It is estimated that only 30-70% of patients respond positively to any particular drug. Recent advances in science, particularly in molecular biology and genomics, mean that it will become increasingly possible to identify the underlying molecular mechanisms of disease. Developing diagnostic tests that indicate the molecular cause of a disease enables the development of new treatments that can more precisely target the disease, as Herceptin does for certain forms of breast cancer. Predicting in advance which groups of patients will respond to a particular therapy and providing treatment accordingly is known as stratified medicine (or personalised medicine).

Across the world, healthcare models are facing greater challenges, both physically and financially, in providing for a growing, ageing population with an increasing burden of disease. The upward trend in spending means healthcare is becoming a more and more significant part of a nation’s GDP, and the long-term sustainability of current models of provision is increasingly questioned. A stratified approach has the potential to address some of these issues and at the same time improve patient outcomes.

Costs are increasing too for the supply side. Pharmaceutical R&D productivity is decreasing, meaning higher costs for fewer new drugs. Data shows that, starting with 5,000-10,000 candidate molecules, it can take up to 15 years, and cost more than $800m, to get one new drug to market. The sustainability of this model of drug development is increasingly being questioned and many suggest that using molecular biology to select likely responders could lead to reduced development times, fewer failures, and lower costs. Diagnostics companies are an important part of the solution, but developing and commercialising robust tests can be expensive and difficult.

Stratified Medicine Innovation Platform
Global society faces many challenges. By applying technology and innovation we can help to meet these challenges and, at the same time, open up new opportunities for business. Innovation platforms focus on specific societal challenges where government is taking action through policy, regulation, procurement or fiscal measures. By improving co-ordination between the key players from industry, academia and government, innovation platforms can identify barriers to meeting the challenge, map possible routes to overcoming the barriers, and align activities to support innovative solutions. The aim is to deliver a step change in the ability of UK businesses to provide solutions for the global marketplace, boost UK economic performance, and provide higher-quality, better value healthcare services.
The Stratified Medicine Innovation Platform (SMIP) seeks to build on the UK’s strength within global healthcare industries and put it at the centre of the next generation of medicine. It is a five-year programme to accelerate the development and uptake of stratified products and services. The innovation platform is a consortium of seven partner organisations all working towards a common vision. The partners are Technology Strategy Board, Medical Research Council (MRC), Cancer Research UK (CRUK), Arthritis Research UK (ARUK), Department of Health (DH), Scottish Government Health Directorate (SGHD) and National Institute for Health and Clinical Excellence (NICE). Each of these partners in the programme management group serves a different constituency but each has agreed to align activities towards a common goal with benefits for all stakeholders. Together they will invest around £200m in stratified medicine.

Achieving the rapid development and uptake of stratified medicine in the UK will be a difficult and complex task. It needs all components of the UK infrastructure to work together around a common plan and towards a common goal. The SMIP has started the process of building a shared vision for stratified medicine in the UK and a plan to achieve it. An early statement of a UK vision was refined and validated through widespread community engagement, including through workshops where more than a hundred people from more than 70 organisations helped to shape and refine the vision and plan.

This document presents a summary of the views heard from these sessions in the form of a UK Vision for Stratified Medicine in 2025, and a roadmap to achieve it. It attempts to capture some of the excellent stratification-related activity currently going on in the UK, but cannot claim to be comprehensive or an agreed consensus from all of the represented groups. The current version of the roadmap is a starting point. It will constantly evolve as new people contribute to it, and better understanding is developed. Those interested in engaging further with the SMIP are encouraged to join the special interest group on Connect (https://ktn.innovateuk.org/web/stratified-medicines-innovation-platform).

A Shared Vision

The vision is for the UK to be the best place to develop, and have adopted, stratified medicine. This will benefit patients by improving outcomes, help physicians to select the most appropriate therapies, increase the cost-effectiveness of health service provision and help business to innovate more successfully.

This vision was developed over a series of workshops which explored what the UK landscape should look like in 2025. The key aspects of the vision are given in the box below:

A UK Vision for Stratified Medicine
- The UK should be the best place to develop, and have adopted, stratified medicine. This will benefit patients, provide cost-effective solutions for the NHS and other healthcare providers and create opportunities for business
- There should be an increased collaborative culture throughout the sector based around shared resources, and systems should be in place for effective data collection, sharing, governance and use across sectors (including NHS, business, academia, regulators and NICE)
- It should be quicker and less expensive to develop new drug-diagnostic combinations and have them licensed, and success should be reflected in increased UK economic growth
- It should be possible for all NHS patients to be involved in medical research if they wish, including through use of patient information and records, in order to inform the next generation of successful therapies
- There should be a smooth reimbursement process for stratified therapies and diagnostics, and an intellectual property (IP) framework that encourages innovation
- The UK health system should have established stratified care pathways, and evidence should be available to show that patient outcomes are improved where stratified medicine is used
A Shared Roadmap

A technology roadmap identifies the long-term objectives in an area and seeks to understand the possible routes to satisfy them. It can be used to guide the development of new products, processes or services, and to help shape the future direction of an emerging technology. Developing a roadmap has three major uses. It helps reach a consensus about a set of needs and identifies a range of possible solutions to satisfy them; it provides a mechanism to help forecast the required deployment of those solutions; and it provides a framework to help plan and coordinate technology and system developments.

The stratified medicine roadmap describes thematic areas which, if advanced successfully, will help accelerate the development and uptake of stratified medicine in the UK. The themes were identified at a series of workshops attended by a broad stakeholder community that included commercial companies developing therapeutics, diagnostics and data handling solutions; medical charities; and representatives from the healthcare sector including clinicians from across a number of therapeutic areas, pathologists, commissioners, managers and representatives of public sector bodies. In addition, there were academics representing research in all of the main topics around stratification of patients. The roadmap captures the range of views expressed by this broad group of stakeholders. It calls for activity in nine thematic areas.

The UK Stratified Medicine Roadmap: The Nine Themes

1. Incentivising adoption
2. Increasing awareness
3. Patient recruitment – consents and ethics
4. Clinical trials
5. Data – collection, management and use
6. Regulation and standards
7. Intellectual property
8. Bio-banks and biomarkers
9. Increasing the impact of R&D investment

The UK Stratified Medicine Roadmap contains a panel for each of these themes. Each panel describes how things are perceived to be now and articulates a vision of how they might be in 2025. Some of the barriers to achieving this vision are presented and activities that would accelerate the development of stratification are proposed. Some of the excellent work already in train is highlighted. Many topics are closely interlinked and some occur in more than one panel: for a stratified medicine system to work effectively in the UK, many of these issues will have to be progressed at the same time. The Stratified Medicine Innovation Platform on its own will not be able to achieve everything that needs to be done, but an attempt has been made to show what our own contributions might be. In order to save space in the following panels, acronyms are used. These are detailed in a glossary at the end of the document.
1. Incentivising adoption of SM in the NHS

Current Perceptions

- Reimbursement mechanism for SM related Dx tests not always clear leading to unequal provision
- Slow test adoption - commissioning structure a barrier
- Infrastructure is not equally distributed and may be sub-scale in some locations
- Differing requirements for in-house tests compared to industry developed tests
- Current NHS genetics policy and services not designed for large-scale testing
- Pathology budgets stretched and not linked to care pathways
- Slow adoption of tests without Rx company support

Future State

- Budgets and processes in NHS not designed for diagnostic/drug combinations
- Only few clinical decisions based on genetic tests
- Uncertain markets for point of care testing vs. centralised testing
- Dx companies can struggle to provide data for independent NICE assessment
- Uncertain pathology capability in emerging techniques
- Aggressive national pathology cost savings may discourage adoption of new techniques
- No long-term strategic planning in NHS for SM services

Future State

- A smooth integrated system: fair & beneficial to all stakeholders
- Equitable access to the right tests for the right patients at the right time
- Infrastructure available to all with equal access to treatments
- Tests reimbursed at a level that is cost effective and incentivises new development
- Patient/public engagement and acceptance
- Informed commissioning (quality, cost, turnaround etc)

Enablers

- Overall framework development by Human Genomics Strategy Group
- Enhancing NHS informatics capability
- Increasing evidence base leading to more widespread clinical acceptance of the value of genetic tests
- Minimally-invasive biomarker tests

Potential Role of SMIP

- Help provide evidence to support policy development for commissioning and procurement
- Help supply chain to develop new business models
- Support health economic assessment of diagnostic testing to inform NHS pricing
- Support CRUK SMP and other demonstrators by funding associated technology development
- Interim support for innovative molecular diagnostics in adoption phase
- Help represent businesses in NHS policy/commissioning development

Examples of current UK activity

- NHS/DH initiative to improve cancer gene testing
- HGSG review of commissioning, innovation and service delivery in all genetic medicine
- Ability to use Cancer Drug Fund to buy associated complex diagnostics
- Value-based pricing review of drug procurement in NHS
- SMIP/CRUK SMP large-scale demonstrator programme in cancer
- Pathology modernisation
- Nicholson Review of Innovation in the NHS
- OLS Senior Industry Group addressing business-NHS engagement
- NIHR/NOCR work to improve access for clinical trials
- Trade Associations (ABPI, BIVDA, ABHI, etc.) work with NHS on new commissioning structures
2. Increasing stakeholder awareness

**Current Perceptions**
- Evidence base not conclusive in all therapeutic areas
- Some patients may see stratification as a method of rationing
- Variable knowledge of how to apply a test in clinical practice
- Emerging models for clinical decision support do not always convince clinicians
- Test usage inconsistent across providers

**Future State**
- Patients understand stratification and accept that treatment access may depend on a complex test
- Stratification tests included in education materials around patient care pathway
- Appropriate testing for multiple biomarkers incorporated in clinical care pathway

**Enablers**
- More awareness among front line staff of clinical utility and benefits
- Agreement and sharing of genetic medicine health economic analyses
- Tools for physicians to provide clear interpretation of complex test results
- Physician-driven development of education materials for healthcare professionals involved in genetic medicine

**Barriers**
- Lack of public awareness of the complexity of gene-medicine interactions
- Lack of high-quality, clinically approved, education material for patients and practitioners
- Pace of change of evidence base
- The difficulty of integrating clinical imaging and laboratory data

**Examples of current UK activity**
- Education working group of the HGSG
- Various bodies already developing guidance materials
- Appointment of NHS Chair in Pharmacogenetics
- CRUK large-scale demonstrator in cancer

**Potential Role of SMIP**
- Develop decision-making tools for physicians
- Develop communication resource for education of health professionals
- Involve patient support groups and Royal Colleges in SMIP programme development
- Accelerate and communicate programmes that demonstrate validity of approach
- Help extend approach into other therapeutic areas
### Current Perceptions

- Identifying and recruiting appropriate patient cohorts can be time-consuming
- R&D approval process can be complex and time-consuming
- When patient consents are study or site-specific, data cannot be used for other purposes
- Sometimes local ethics and R&D approval process can inhibit larger national studies
- Problems with national programme for IT has held back novel data solutions

### Barriers

- A streamlined process for trials consent and patient recruitment, and trials are safe
- Consent for broad and unspecified future use, supported by appropriate regulation of personal data
- Single, and internationally valid, consent and ethics approval
- Primary care has important role in patient recruitment
- Use of data and samples for research based on ‘opt-out’ rather than ‘opt-in’

### Enablers

- Implementation of Academy of Medical Sciences recommendations on streamlining research regulation
- Connection of ethics committee with patient groups, starting with current disease areas of focus like cancer
- Policy communication, IT enablement & governance.
- Education and public awareness campaign demonstrating wider benefits to the community of participation in research
- Collaboration in clinical trials recognised in clinician performance assessment

### Examples of current UK activity

- Academy of Medical Science report and recommendations
- Leading hospitals already running generic consent for all patient samples
- HGS working on this area
- Plan for Growth actions on research approvals and recruitment to studies
- NIHR Translational Research Partnerships process for research consent in inflammatory disease
- Various data access and sharing initiatives (Generation Scotland, Cancer Registries, General Practice Research Database)
- Improved national and international data standards are enabling data sharing

### Future State

- Structure of NHS gives unique opportunity to deliver standardised research consent
- Novel IT solutions for capturing, communicating, storing and analysing data
- Public engagement about use of samples and genetic data for research
- Development of an overarching ethical framework
- Cost of storing massive data sets decreasing
- Patient groups support non-restrictive consents and effective R&D approvals
- Development and widespread use of generic consent forms

### Potential Role of SMIP

- Engage with patient groups on programme development and benefits of consent
- Support Government implementation of AMS recommendations
- Consulting with stakeholders on routine/generic consent
Current Perceptions

- Localisation of commissioning and independence of providers leads to varied and complex implementation of national clinical trials
- NIHR involve patients group
- Networks such as NCRI encourage and enable national trials
- Delays before patient recruitment starts is often the time-limiting step in studies
- AMS report describes the situation well

Future State

- Reduced time and cost to conduct clinical trials
- Reduced time to start complex genetic research projects
- Reduced cost to recruit the appropriate subjects to enable stratified medicine
- All patients are able to participate in clinical trials/population-based genomic research
- Centralised solutions to access rare genetic types (e.g. web-based platform)
- Exclusion of inappropriate patient populations on grounds of safety genotypes
- Selection of appropriate patients for efficacy testing

Examples of current UK activity

- NIHR Clinical Research Networks, including cancer, could help in stratified medicine
- NOCRI helping industry engagement with NIHR trials infrastructure
- NIHR common frameworks and guidelines to reduce patient recruitment times

Potential Role of SMIP

- Similar to role in patient recruitment
- Help create critical mass to accelerate trials process
- Communicate unmet needs (prioritisation)
- Demonstration of a consistent database of patient accessible records
- Develop web-based recruitment tools
5. Data

Current Perceptions
- Routine data collection and quality variable across the UK, better in Scotland
- NHS Information Centre as central repository and access point for data but currently not meeting researcher requirements
- Government data transparency drive (opengov)
- No national programme for IT
- Range of IT systems in use

Future State
- Population-wide consented patient data available for analysis by researchers
- Routine use of anonymised patient data sets by NHS & industry to improve patient outcomes
- Increased use of routine data in post-marketing surveillance
- Routine collection of health economic data around SM

Barriers
- Morale issues following NPfIT failure
- Most data has not been consented for access
- Default position is to not make anonymised data available for research
- Bespoke systems do not or cannot communicate without significant investment
- Data protection issues seen as a barrier within trusts

Enablers
- Implement IT practices and routine generic consent for use of appropriately anonymised clinical data for research between institutions
- Large-scale demonstrator programmes (regional or therapeutic-area focused)
- Simplification of data protection rules around patient data
- Build in and embed quality systems into NHS data handling

Examples of current UK activity
- Generation Scotland
- Individual routine consents
- CRUK/Eastern Cancer Registry partnership & SMIP investment in data handling
- Ongoing improvements to cancer registries
- Establishment of Patient Reported Outcome Measures (PROMS) by Dept Health in England

Potential Role of SMIP
- Develop tools to allow secure data mining of patient data across distributed data sources
- Demonstrate that access to data repository by NHS & industry will improve patient outcomes and/or make UK a much better place to do research
6. Regulatory Framework and Development Pathway

Current Perceptions

- It can cost over $800m to take a safe and effective drug to market, and take 7-9 years from first in-man trials.
- New drugs sometimes only marginally better than standard care but more expensive.
- Different degrees of regulation for pharmaceuticals, diagnostic tests and laboratories/hospitals.

Future State

- Novel design of clinical trials makes smaller cohorts of patients possible.
- Coordinated regulation of pharmaceuticals industry (Rx) and diagnostic industry (Dx).
- Companies make more progress within existing regulatory framework.

Barriers

- Lack of smart and adaptive study designs.
- Lack of a single body controlling quality of diagnostic labs.
- Need for regulatory guidance development for drug-diagnostic combinations.

Enablers

- DH and BIS encouraging EU Commission to improve regulatory framework.
- Facilitate co-development of drugs and diagnostics by alignment of the regulatory processes.
- Setting up of an expert committee (akin to the Committee for Advanced Therapies set up by the ATMP Regulation).

Examples of current UK activity

- EU Commission on the revision of the IVD directive.
- NHS QIPP agenda includes work on quality and standards.

Potential Role of SMIP

- Help in novel clinical study design.
- Encourage discussion with regulatory agencies.
7. Intellectual Property

Current Perceptions
- Laboratory-developed tests using unlicensed IP in NHS discourages development of new diagnostic tests by industry
- Laboratory-developed tests can sometimes save the NHS money
- Some NHS laboratory-developed tests are being technically and clinically validated and externally quality assured
- Current IP for gene sequences (BRCA/Myriad etc) subject to legal challenge

Future State
- IP with enhanced licensing for NHS use acts as a driver of ‘step change’ innovation
- Publicly funded labs are free to develop safe and effective tests that do not infringe on other IP rights-holders
- Competition between commercial and laboratory-developed tests benefits patients

Barriers
- Questions around effective regulation of laboratory-developed tests
- No single approach to NHS licensing of test technology
- Patent thickets – multiple IP on sequence reduces economic attractiveness of panel testing

Enablers
- Patent box tax incentive
- Excellent technology platform & biomarker science base
- Business models for developing & exploiting new & existing IP that provides fair return on investment whilst maintaining reasonable end user cost
- Develop IP protection on the test, not the underlying gene sequence
- Provide a strong home market (NHS) with value based pricing (product & service) and willingness to adopt new tests
- A stronger domestic industry with global outlook, able to capitalise on excellent science base

Examples of current UK activity
- EU In-Vitro Diagnostic consultation in process
- OECD guidelines for licensing genetic inventions
- HGC recommendations on IP and DNA diagnostics

Potential Role of SMIP
- Provide support for diagnostic companies and co-development
- Support SMEs in early IP filing
- Commission health economics studies
- Support development of new business models and pricing mechanisms
8. Bio-Banks and Early Biomarker Detection

Current Perceptions

- No central overarching database of biomarkers or biosignatures
- Many biosamples not clinically annotated
- Limited standardisation of tissue collection or consent
- Not everyone sees the value of centralised biobanks
- Stand-alone, incompatible tissue and data infrastructures
- UK Biobank has recruited 0.5m people

Future State

- UK-wide database of biobanks is used for stratification studies
- All tissue collected with consent for broad clinical research and data capture
- Routine, effective collaboration on biomarker ID
- A range of early biomarkers identified for future validation
- Coordination for Biomarker research via mandated central database
- In silico trials to ID biomarker

Barriers

- Localised clinical and research databases are hard to use for national level research
- Lack of technology platforms for use in clinical biomarker research
- Require policy framework for biomarker validation
- Many biomarkers do not have associated therapies

Enablers

- Accreditation system for biobanks
- Improve coordination of funding for biobanks
- Standardisation of procedures, including sample handling storage and consent process
- Ensuring biobanks store comprehensive clinical data
- Broad & enduring consent or implement opt-out rather than opt-in for data analysis in research

Examples of current UK activity

- UK Biobank programme standardising access procedures
- Generation Scotland
- Routine generic consent at sample-acquisition in major teaching hospitals
- NIHR/NOCRI Translational Research Partnerships

Potential Role of SMIP

- Help develop standards for biobanks
- Map existing UK databases and biobanks
- Support development of sample handling & preservation technologies
- Support development of biosignature analysis and data storage techniques
- Encourage widespread adoption of best practice
- Help connect existing infrastructure to create critical mass
- Enable access to infrastructure to accelerate development of new tests and therapies
9. Increasing and Leveraging UK R&D investment

Current Perceptions
- Developing new drugs has become increasingly expensive
- Pharmaceutical businesses are re-evaluating their R&D investments
- Turbulence in financial markets has impacted availability of equity and debt finance
- Public sector funders have not always aligned their activities
- University funding is changing
- NHS needs to save money

Potential Role of SMIP
- Commission health economic studies
- Help develop new business models for stratified medicine
- Ensure coordination of partner activities
- Help create critical mass through a UK-wide programme
- Engage in international programmes

Future State
- Taking drugs from discovery phase to commercialisation is faster and cheaper, enhancing business performance and encouraging investment
- Stratified medicine offers improved value for money for customers including NHS
- Improved co-ordination of public and private funding

Examples of current UK activity
- ABPI work in this area
- OSCHR work in this area
- Nicholson Review of innovation in the NHS
- NorthWest exemplar
- Stratified Medicine Innovation Platform investments to date

Barriers
- Different parts of the system have different objectives
- Bridging the gap between research and commercial exploitation
- The RAE/REF do not incentivise academics to help commercialisation
- The sector is extremely large and complex, so major change is non-trivial

Enablers
- Creating a coordinated UK programme
- Incentivise stakeholders to share pre-competitive data
- Stakeholder support for SM
- Full audit of UK capabilities / IT, biomarkers, Dx, Rx, clinical etc
- Better coordinated UK and EU funding streams
- Understand the value of cooperative investment
- Taking an international perspective
Stratified Medicine Innovation Platform Partners

The innovation platform seeks to make the UK the best place to develop, and have adopted, stratified medicine products and services. This is an extremely ambitious vision that will require activities across multiple technology areas, policy streams and government departments. Each of the Stratified Medicine Innovation Platform partners has a specific remit and can contribute significant resources and expertise from their core areas of capability. Together, the group covers a broad spectrum of interests. By aligning activities, many of the issues described above can be progressed.

The Technology Strategy Board aims to help businesses to develop innovative new products and services, while the Medical Research Council funds outstanding research in the science base and has a major initiative in stratified medicine. Cancer Research UK is the world’s leading cancer charity dedicated to saving lives through research, and Arthritis Research UK has an interest in achieving better outcomes for patients in its disease area: both have stratified medicine at the centre of their strategies. The Department for Health and Scottish Government Health Directorate are government departments whose main role is to improve health and achieve better health, better care, and better value for all. The National Institute for Health and Clinical Excellence is tasked with assessing medical interventions, both therapies and diagnostics, and recommending their use based on value calculations.

The SMIP programme management group would greatly welcome input from other players. The Medicines and Healthcare products Regulatory Agency (MHRA) and the National Institute for Health Research (NIHR)/NIHR Office for Clinical Research Infrastructure (NOCRI) have already started working closely with the innovation platform, and it is hoped that others would also like to participate. There will be areas where others are better placed to lead, and we can support their programmes.

How to engage with us

For the UK to achieve the vision set out in this document, significant advancements in technology and changes to systems and processes will be required. This cannot be achieved by any single organisation and will entail coordinated activity across the entire healthcare sector. This UK Stratified Medicine Vision and Roadmap can form the focal point for companies, public sector bodies and government to coordinate their efforts. The innovation platform partners have begun this coordinated activity and would welcome help and advice from others whose actions could help accelerate the journey towards the ultimate goal.

A web-based community has been created to encourage engagement (https://ktn.innovateuk.org/web/stratified-medicines-innovation-platform). This will be supported by the innovation platform and will highlight future workshops, funding calls and ongoing discussions on specific stratified-medicine-related topics. We would also encourage others to use this forum to share information, raise awareness, identify partners and generate yet more momentum.
**Glossary**

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<tr>
<th>Abbreviation</th>
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<tr>
<td>ABHI</td>
<td>Association of British Healthcare Industries</td>
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<td>ABPI</td>
<td>Association of British Pharmaceutical Industry</td>
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<td>AMS</td>
<td>Academy of Medical Sciences</td>
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<td>ATMP</td>
<td>Advanced Therapy Medicinal Products</td>
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<td>BIS</td>
<td>UK Department for Business, Innovation &amp; Skills</td>
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<td>BIVDA</td>
<td>British In-vitro Diagnostic Association</td>
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<td>BRIC</td>
<td>Brazil, Russia, India and China</td>
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<td>CRUK</td>
<td>Cancer Research UK</td>
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<td>CRUK SMP</td>
<td>Cancer Research UK Stratified Medicine Programme</td>
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<td>DH</td>
<td>Department of Health</td>
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<td>Dx</td>
<td>diagnostic</td>
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<td>HGSG</td>
<td>Human Genome Strategy Group</td>
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<td>IP</td>
<td>intellectual property</td>
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<td>IT</td>
<td>information technology</td>
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<td>IVD</td>
<td>in-vitro diagnostic</td>
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<td>NCRI</td>
<td>National Cancer Research Institute</td>
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<td>NHS</td>
<td>National Health Service</td>
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<td>NICE</td>
<td>National Institute for Health and Clinical Excellence</td>
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<td>NIHR</td>
<td>National Institute for Health Research</td>
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<td>NOCRI</td>
<td>NIHR Office for Clinical Research Infrastructure</td>
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<td>NPIT</td>
<td>National Programme for IT</td>
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<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
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<td>OLS</td>
<td>Office of Life Sciences</td>
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<td>OSCHR</td>
<td>Office for Strategic Co-ordination of Health Research</td>
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<td>PROMs</td>
<td>patient reported outcome measures</td>
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<td>QIPP</td>
<td>quality, innovation, productivity and prevention</td>
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<td>R&amp;D</td>
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