

## **UK Genetic Testing Network**

### **What organisations could evaluate genetic tests for common disorders that provide risk stratification for a defined population?**

UKGTN currently provides this role for germ line inherited disorders with high penetrance. Other organisations that currently have a role in horizon scanning potential new applications for the NHS include NICE, the MHRA, the NHSC, HTA, CEP and the NHS Institute for Innovation and Improvement. All these organisations (summarised below), with the exception of the UKGTN, tend to investigate technologies and methodologies rather than individual tests. Genetic testing has not been seen as a high priority for most of these organisations because the majority of pathology tends to be commissioned as part of the infrastructure costs of a hospital. However with the number of genetic tests increasing (either testing for rare inherited disorders, testing for common disorders to provide a risk estimate or tests that use genetic technologies) and associated costs increase (either due to high volume or high cost of individual tests) there is a recognised need to ensure that tests are clinically valid and have clinical utility.

#### UKGTN

The UKGTN has a process in place that could be transferrable to evaluate genetic tests for multifactorial disorders. However currently the organisation would not have the resources to evaluate these tests. The staff establishment for the UKGTN is small (3 whole time equivalent). It consists of two full time members of staff, a project director who works on the UKGTN one day a week, a scientific advisor who works for UKGTN on two days a week and a public health advisor and clinical advisor who both work one day a week. The Chair and members of the Steering and working groups are allowed time for their roles by their respective NHS hospital Trusts. The recently established Department of Health Diagnostic Programme Board could act as a co-ordinating body for specialist groups to evaluate testing. The UKGTN could evolve to be the specialist group to evaluate genetic testing beyond the inherited germ line disorders.

It needs to be recognised that the UKGTN is an advisory group only. It is able to influence NHS commissioning because the UKGTN processes are embedded in the NHS. The UKGTN collaborative is strengthened by the joint clinical and commissioning leadership.

Commissioners support the NHS Directory of Genetic Testing as commissioners are assured of the clinical and analytical validity and clinical utility of these tests. In addition they are advised of expected number of tests per year and the associated costs so that they can plan for these. This is further explained in the commissioning section in this report.

If the UKGTN was to expand its remit to include genetic testing that is not defined as “specialised” then the UKGTN would need to develop mechanisms and processes to ensure that commissioners of the services involved would engage with the UKGTN.

#### NICE

NICE tends to investigate drugs and procedures. Furthermore the procedure that NICE uses tends to be planned over a long time frame. If the volume of new tests for risk stratification, informing drug treatment and other biomarkers matches the volume of new tests being evaluated through the gene dossier process then it is felt that NICE would not be able to evaluate and make recommendations in a timely manner.

#### MHRA

Medicines and Healthcare products Regulatory Agency (MHRA) focus on medicines and medical devices.

#### NHSC

The National Horizon Scanning Centre provide information briefings on new and emerging technologies, pharmaceuticals, devices, diagnostic tests and procedures, surgical and other interventions, rehabilitation, and public health and health promotion activities. However the

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briefings are intended for information only and are not definitive statements about the efficacy, validity or utility.

### HTA

The Health Technology Assessment programme carries out primary research where there is an identified gap in knowledge in the NHS. For diagnostics the focus is on the utility of a new diagnostic procedure/test. The HTA tends not to research the analytical and clinical validity. The National Co-ordinating Centre for HTA receives numerous requests for research which it prioritises and then puts out calls for proposals and commissions research. The HTA also provide Technical Assessment Reports on behalf of NICE. There is concern that genetics would not be a high priority for the NCCHTA.

### CEP

The Centre for Evidence Based Purchasing has three centres which specialise in pathology products. 'Products' includes test kits, reagents and instrumentation. The CEP only looks at products pre CE-marked. CEP gather evidence globally to support the use of innovative technologies, assess value and cost effectiveness of products, and develop nationally agreed protocols. CEP aim to help procurement staff, clinicians, and health service managers make informed purchasing decisions. Therefore it would appear that the CEP would not look at individual genetic tests and may only look at kits for genetic testing that would require CE-marking.

### NHS Institute for Innovation & Improvement

The NHS Institute for Innovation and Improvement, established in 2005, aims to improve health outcomes and raise the quality of delivery in the NHS by accelerating the uptake of proven innovation and improvements in healthcare delivery models and processes, medical products and devices and healthcare leadership. The National Innovation Centre (NIC) is part of the Technology and Product Innovation directorate of the Institute. Its aim is to speed up the development and adoption of technological innovations that improve patient welfare.

## **Commissioning genetic testing in the NHS.**

### Process to evaluate new tests for germ line disorders for acceptance into the NHS

The UKGTN has a Directory of Genetic Tests (for inherited germ line disorders where DNA is the analyte) which lists all the diseases and associated genes where genetic testing is available from a UKGTN member laboratory and where the test has been found to have good clinical validity, analytical validity and clinical utility. Each year the Directory is updated following the gene dossier evaluations. The current version lists 370 diseases for which testing should be made available to the whole of the UK. For some diseases there is more than one gene which is tested and therefore a count of disease/gene pairs results in 494 tests available.

In the UKGTN laboratories submit tests for evaluation throughout the year, if these are received by the end of May and pass evaluation they are recommended for NHS service in the next financial year.

The recommendation to fund and provide new tests that have passed the gene dossier process is for the relevant organisations to consider. In England services accepted by the Gene Dossier process and which require additional NHS funding will be recommended by UKGTN to the Genetics Commissioning Advisory Group for consideration of funding in the commissioning plans between Specialised Commissioning Groups and Primary Care Trusts. Scotland, Northern Ireland and Wales have different commissioning arrangements and therefore the recommendation for new tests is made to the National Services Division Scotland, the Regional Medical Services Consortium and the Health Commission Wales, respectively. It is recognised by the UKGTN that as NHS commissioning remains within local arrangements that inclusion in the Directory does not guarantee funding.

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Where tests for germ line disorders are associated with mainstream services, the UKGTN will evaluate the tests and make recommendation that funding is through the relevant specialty.

It is accepted that for some very rare conditions there may not be a UKGTN member laboratory that provides testing. If a clinician feels that testing is required then the laboratory can send the sample to either a specialist laboratory in the UK which is not a UKGTN member or to a laboratory overseas. It is appreciated by the commissioners that in some circumstances this will occur and funding is normally provided for these on a case by case basis.

### Specialised Services National Definitions Set (SSNDS)

Genetic testing for inherited germ line disorders is included in the SSNDS for medical genetics and therefore in England the testing is funded through specialised commissioning groups (SCG). SCGs are permanent joint committees of all the Primary Care Trusts (PCTs) within a Strategic Health Authority (SHA) area and are responsible for collaboratively commissioning specialised services on behalf of their member PCTs. A specialised service is defined in legislation as a service covering a planning population (catchment area) of more than a million people.

In Scotland the National Services Division commissions genetic services. In Wales the Health Commission Wales commissions genetic services from NHS Trusts. In Northern Ireland genetic services are commissioned by the Health and Social Services Boards.

Genetic tests that either use genetic technologies or are testing for risk of common disorders are not included in the SSNDS for medical genetics as it is likely that the planning population will be smaller as the number of people affected will be much greater than those affected by rare germ line inherited diseases and patients will not be seen in the specialty of clinical genetics. Therefore commissioning of these tests would be outside SCG genetics commissioning.

### Variable contractual arrangements

Although genetic services are commissioned by SCGs in England, it should be recognised that the contractual arrangements for the commissioning of medical genetics testing services across England varies considerably. For example in some areas requests for a genetic test made to the regional genetics centre laboratory from any referring clinician from any specialty in the SCG area is included in the genetics contract. However in other areas the medical genetics contract may only include testing referred by clinical geneticists and other requests are paid for by the laboratory issuing invoices on a provider-to-provider basis or through internal re-charging within the hosting NHS Trust. Therefore, in some areas of the country SCG funding is provided for all genetic testing for all specialties but in other areas only the genetic tests requested by the clinical genetics specialty are funded through SCG genetics commissioning processes.

### UK wide involvement

The UKGTN makes recommendations to the relevant commissioning bodies in England, Scotland, Northern Ireland and Scotland. The UKGTN Scientific Advisor is based in Glasgow, the Chair of the Gene Dossier working group is based in Northern Ireland and there is representation from Wales on the Steering Group. Laboratories send samples for testing to each other. The English laboratories buy services from the devolved countries and vice versa.

### **Policy tensions**

The UKGTN operates on the basis of voluntary collaboration between different organisations across the whole of the UK and between healthcare professionals including clinicians, scientists, healthcare commissioners and managers and patient organisations. Collaboration can only exist if the organisations where the genetics centres are based are committed to a national network approach.

### NHS Foundation Trusts

Policy tensions can arise where genetic centres are within Foundation Trusts which may not have an incentive to work on a national basis. Furthermore the Foundation Trust may not feel that the genetic service is a priority for development.

### Centralised pathology laboratories

The re-organisation of pathology services may lead to large scale laboratories with molecular pathology laboratory, cytology, haematology and pathology all on one site. The costs and timescales are currently unknown. However it is important that clinical scientists are situated with the clinical geneticists for the interpretation of genetic tests for complex rare genetic disorders. The nature of a large scale facility lends itself to high volume throughput and there is concern that genetic testing for rare disorders which are not high volume may not be continually developed as they may not be considered economical.

If NHS Trusts wish to move towards a centralised laboratory for all pathology including genetic testing, the links between research and the NHS maybe lost which would impact on the introduction of new tests and technologies to NHS service. Currently the professionals work with new technologies and over time the technology gets introduced into NHS laboratories and the service providers then request NHS funding. There is no consistent approach to the introduction of these new technologies into service laboratories that could be used for new types of genetic testing. There is no recognised funding mechanism for the development of new tests into clinical service following research. This development is commonly referred to as translation.

The UKGTN is promoting equity of access to a service which should be available nationally but which is delivered by local providers.

### Regulation of genetic testing

It is the view of the UKGTN that genetic tests should not be seen as different from other biomarkers. There should not be specific legislation on “genetic” or “DNA” testing but there should be regulation on how “risk” is communicated. This should be no different to regulation for any other test for a biomarker. Regulation is already in place to ensure that any claims that are made about the resulting information following a test are accurate and true. Caution would need to be exercised to ensure that the risks communicated are not exaggerated and clearly define the population base upon which the risk is made.

### **Information Technology requirements**

There are a number of features that would need to be built into the NHS IT systems to make full use of the information available from genetic testing. There are four key areas:

- 1) currencies, coding and classification of genetics
- 2) Up graded Laboratory Information Management systems (LIMS) that have the ability to record data systematically and which can be extracted for various clinical audits.
- 3) NHS patient records need to account for families in order to make linkages.
- 4) Informatics required to collect in one place the evidence base to inform clinical validity and clinical utility

### Currencies, coding and classification

Currently there are no standardised currencies, coding or categorisation of clinical and laboratory genetics. The NHS is unable to collect annual reference returns for genetics because activity is not counted consistently across NHS Trusts. The UKGTN is working with the professional organisations to propose standardised laboratory genetics currencies. The Genetics Commissioning Advisory Group and the NSCG are working with clinical geneticists on

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standardised clinical genetics currencies. It is important that in both instances the currencies are recordable in PAS. Furthermore the UKGTN has representatives on the European Rare Disorders Task Force working group which has been established to look at the coding of genetic and rare diseases. Across Europe it is recognised that the ICD-10 coding system is not adequate for all genetic diseases. In addition SNOMED-CT is not sufficient for clinical genetics and the NGRL in Manchester is trying to address this issue.

### Upgraded LIMS

There is a wide range of laboratory information systems currently in use in the NHS diagnostic genetic laboratories across the UK. The UKGTN has asked laboratories to supply patient postcodes for all reports issued in 2007/08 in order to provide a crude measure of equity of access across the UK. For some laboratories this has been an easy task to extract the data but for some other laboratories it is impossible and would require manually extracting over 6000 postcodes. Laboratories need to be provided with LIMS with similar functionality and with a ability for the data recorded to feed into the PAS system (although this requires development of coding as mentioned above).

### Recording family data

The unit of responsibility in clinical genetics is the family. However NHS systems only record individual data without linking to other family members. Other specialties already order genetic tests and there needs to be an electronic patient records systems in place in order to record data for families and not just the individual.

### Informatics for collection of evidence base

Recommend development of similar publication to the BMA "Clinical Evidence". It would summarise the scientific literature for disease/gene associations all in one place and could inform the evaluation of clinical validity and utility.