NHS Lothian

Edinburgh Breast Unit Mainstreaming Pilot

Training Document

The resources below have been developed to support implementation of BRCA1 and BRCA2 testing through routine breast unit appointments. We call this the Edinburgh Breast Unit Mainstreaming Pilot or 'EBU Pilot'

This model of gene testing has been piloted at the Royal Marsden Hospital. The resources have been adapted for use within our NHS Lothian. NHS Lothian clinicians involved in the care of people with breast or ovarian cancer can complete the training resources.

Steps for training

Step 1

Watch four training videos. The first two provide background to BRCA and the second two go through the local mainstreaming procedures for consent, testing and the provision of results. These videos are not accessible through NHS computers.

Videos:

I. MCG ELM1 at https://www.youtube.com/watch?v=P9axfx_fvEk&list=PLjBygnx6n8RHufAegwx0tX2SmrAyymS8J (a youtube video)
II. MCG ELM2 at https://www.youtube.com/watch?v=4qQ8vHRVoG8&index=2&list=PLjBygnx6n8RHufAegwx0tX2SmrAyymS8J (a youtube video)
III. EBU EML1 at https://www.scotgen.org.uk/Videos/EBU_ELM1_edited.mov
IV. EBU EML2 at https://www.scotgen.org.uk/Videos/EBU_ELM2_edited.mov

Step 2

Read the training document (this document pages3-25) including the section on frequently asked questions.

Step 3

Before delivering mainstream testing, ask yourself the following questions and be sure you would answer yes to the following.

A. Do you feel confident about discussing genetic testing with your patients?

Key areas to address are:

- The result could indicate breast /ovarian/prostate implications both for the patient AND for their relatives.
- Testing may inform decisions about treatments

- Testing is optional. If the patient is unsure, they can be referred to genetics to discuss it further
- In most people the test will be normal.
- The result will be provided by letter from the Genetic service and could take up to 10 weeks.

B. Are you clear:

- About the processes and your role in them?

- That the timing of testing can be undertaken at any time in the cancer patient pathway, but may be of particular use to inform decision making?

- Which patients you can offer genetic testing to (see EBU consent/lab request form)? That some patients that do not meet the EBU testing criteria will still be eligible for genetic testing, but will need referral to Clinical Genetics?

- That you can refer the patient to Clinical Genetics if there are issues that you are not able to address, either because of knowledge or time constraints?

- How to refer to Clinical Genetics service or to discuss potential referral when appropriate?

- About the how patient and clinician will receive the results? That result letters from NHS Lothian Clinical Genetics are in TrakCare under SCI Store Documents?

- That result typically takes about 8-10 weeks? That the result may take 4 weeks if there are immediate management decisions, but for this the clinician must sent the blood and lab request form, and email WGH.ClinicalGenetics@nhslothian.scot.nhs.uk, explaining the reason for this request?

- That if the patient's relative has already had a BRCA test, the clinician should note the relative's name and DOB on the lab request form, as this may influence the test that is conducted and the timescale for the result?

Step 4

If you have completed sections 1-3 above, please email WGH.ClinicalGenetics@nhslothian.scot.nhs.uk from your NHS Lothian or nhs.net email address. Your name will then be added to a list of Edinburgh Breast Unit clinicians who can order BRCA1 and BRCA2 testing. If you have not completed the training, samples sent to the lab will not be processed.

If there is anything that you would like further clarity about, please contact:
WGH.ClinicalGenetics@nhslothian.scot.nhs.uk

Edinburgh Breast Unit Mainstreaming Pilot

Training Document Contents

Further useful information for patients

The patient Information leaflet: 'A beginners guide to BRCA 1 and BRCA2' can be accessed at:
https://www.royalmarsden.nhs.uk/sites/default/files/files_trust/beginners-guide-to-brca1-and-brca2.PDF

1. Protocol: Mainstreaming BRCA flowchart

PILOT MAINSTREAMING BRCA1 and BRCA2 TESTING PROTOCOL

Oncology Team

ELIGIBILITY CRITERIA (new dx. of follow-up patients)

An individual who has had one or more of:

- BC < 40
- Bilateral BC, both <60 years
- Triple-negative BC, any age
- BC + OC, any age
- Male BC, any age
- non mucinous OC, any age.

Please send referral letter to genetics if:

- *patient does not* meet these criteria, they may be eligible on basis of their personal and family history (Manchester score 15 or more)

ACTIONS BY APPROVED* CANCER TEAM MEMBER

1. BRCA1 and BRCA2 Testing Patient Information sheet given to patient
2. BRCA gene testing discussed
3. Consent obtained (using EBU Pilot: consent-lab request form)
4. Blood (3 mls ETDA) & EBU Pilot consent-lab request form sent to Molecular lab
5. The lab test will take 8 weeks. If a result is required sooner, please also refer patient to clinical genetics through the genetic service providing explanation for this request.

If more discussion required

or

result is required within 8 weeks

→ Refer to Clinical Genetics

Genetic Team

RESULT REVIEWED & INTERPRETED BY GENETIC TEAM

Result A: No Pathogenic mutation	Result B: Mutation	Result C: Variant Requiring Evaluation (VRE)
Actions by Genetics 1. Result A- letter & combined Information sheet sent to patient cc. Cancer Team & GP, SCI store Enc. FH Questionnaire (labelled)	**Actions by Genetics** 1. Result letter-B & combined Information sheet & Encl lab report Cc Cancer Team & GP, SCI store 2. Genetics appt sent to patient	**Actions by Genetics** 1. Result letter-C & combined Information sheet Cc Cancer Team, GP, SCI store 2. Genetics appt sent to patient

Notes: BC = Breast Cancer, OC = Ovarian Cancer. Approved* = attended training by NHS Lothian Clinical Genetics team . For FAQ see 'EBU Mainstreaming Pilot training'.

2.1 Pre -test Oncologist: Patient Information Sheet

Lothian NHS Board

SOUTH EAST OF SCOTLAND GENETIC SERVICE
Western General Hospital, Crewe Road South, Edinburgh EH4 2XU
Tel: 0131 537 1116

BRCA1 AND BRCA2 GENE TESTING

Information sheet for patients with cancer

In most people cancer occurs by chance. In a **minority of people with ovarian cancer (about 15%) or breast cancer (about 3%), cancer occurs because they have a mutation in the BRCA1 or BRCA2 gene**. BRCA1 and BRCA2 mutations result in increased risks of breast and ovarian cancer. They occur more frequently in women who have both breast and ovarian cancer, those with particular types of cancer, and if there is a strong family history of breast and/or ovarian cancer. It is important to identify if a cancer is due to a BRCA1 or BRCA2 mutation because it provides you and your doctors with information that can help treat your cancer and to reduce your risk of future cancer. It can also provide information for relatives about their risks of cancer.

Why am I being offered this test?

You are being offered a test to look for mutations in BRCA1 and BRCA2 because of your cancer diagnosis.

What are the benefits to me?

Knowing whether or not you carry a mutation in BRCA1 or BRCA2 gives the cancer team more information about your cancer. This can **help decisions about the treatments** they recommend for you, for example which chemotherapy drugs or surgery would be most suitable. It will also give better information about your risk of developing cancer in the future.

Does having the test have implications for my family?

In most people the test will be normal and we will not find a gene mutation. This would be reassuring for relatives as it would indicate that your cancer was unlikely to be due to hereditary factors that would put them at very high risk of cancer. **If your test shows you have a gene mutation, it is possible that some relatives also have the mutation**. Relatives would be able to discuss this with a specialist in genetics and have a test if they chose to.

What will happen if NO mutation in BRCA1 or BRCA2 is found?

This is the most likely outcome, as most women with cancer do not have a mutation in BRCA1 or BRCA2. This would be reassuring in suggesting you are unlikely to be at high risk of developing another, new cancer in the future. The cancer team will be able to use this information in their management decisions. Very occasionally mutations in other genes can be involved in causing breast or ovarian cancer. Also new discoveries are being made all the time. If a new gene test becomes available in the future the genetics team may be able to do the test using the sample you have already provided and would send the result to you and the cancer team. If your doctors think other genetic factors might be involved in your cancer they can ask the genetics clinic to send you an appointment to evaluate this, if you have not already had an appointment with genetics.

*What will happen **if a BRCA1 or BRCA2 mutation is found**?*

Your cancer team will use the information in their management decisions. T**he genetics team will send you an appointment to discuss the results** and address any questions you have. They will also discuss what the test result means for your future risk of cancer, your options for future screening and measures to reduce these risks. They will evaluate your family history and can provide information for the appropriate family members should they wish to consider testing to see if they have inherited the mutation. Any relatives can be referred to their local Genetics Unit, to discuss this further.

What will happen if the test result is unclear?

Very occasionally (<1%) we find a gene change, known as a 'variant', that needs further assessment because it is not clear if it is linked to why you have had cancer. If this occurs, the Clinical Genetic service will send you an appointment to discuss the result.

Do I have to have the test?

No, having this test is optional.

What if I am not sure if I want to have the test?

We would recommend for you to have further discussions with a specialist member of the genetics team. You can ask your doctor to refer you to the Clinical Genetic Service.

What will happen next if I say yes?

If you decide to have the test, you will be asked to sign a consent form. A blood sample will be taken for the test.

How will I receive the results of the test?

The genetics team will send you and your cancer team the result of the test by post. **The result will usually take up to 10 weeks,** but may be sooner if for immediate clinical reasons your doctor requests this (not usually before 4 weeks).

Will my information be confidential?

All data collected about you will be held under the provisions of the 1998 Data Protection Act and stored in secure files. The only people who will know your identity are the hospital staff and a few trained staff reporting the results, who are bound by a professional duty to protect your privacy.

If you have any questions please contact the Edinburgh Clinical Genetics Service on 0131 537 1116 and ask to speak to the Duty Genetic Counsellor.

Result interpretation

Your results will be reported to you according to the current state of genetic medical knowledge. Very occasionally understanding of a genetic variant changes. We reserve the right to get back to you in the future, if information about a genetic variant changes in the future, if this is relevant to you.

NHS Lothian Genetic Services. V1 Aug 2017 Planned review: Aug 2018

2.2 EBU Pilot Patient Consent/Lab request form

Please complete using BLACK ink- form will be scanned in lab

NHS Lothian
Lothian University Hospitals Division

EBU Pilot

BRCA1 & BRCA2-Breast Oncology Team Pilot: Gene test request form (Affected patients)

South East Scotland Genetic Service
Western General Hospital, Edinburgh, EH4 2XU
Clinical Genetics (*clinical enquiries only*) Email: WGH.ClinicalGenetics@nhslothian.scot.nhs.uk Tel: 0131 537 1116
Molecular Genetics (DNA) Lab Email: edinburgh.dna@nhslothian.scot.nhs.uk Tel: 0131 537 1116/1270

PATIENT DETAILS (printed label) Sex M /F	**CLINICAL DETAILS**
Required: Name, date of birth, CHI or 1st line of home address and postcode	REASON FOR TEST Cancer Type: Breast Cancer (BC) Ovarian cancer (OC) Age at diagnosis:..... **Please tick all that apply** • BC <40 years • Bilateral BC, both <60 years • Triple-negative BC, any age • BC + OC, any age • Male BC, any age • Non-mucinous OC, any age **Please circle** Q. Is the patient Ashkenazi Jewish? **Y / N**

Please note:
Patients can be referred to Clinical Genetics for assessment e.g. if an individual does not fit the criteria for mainstream testing, but has a family history or has questions.

BRCA 1 and BRCA2 tests take ~8-10 weeks to process. If results are required urgently (~4 weeks), please contact: WGH.ClinicalGenetics@nhslothian.scot.nhs.uk , explaining the reasoning for the request.

Genetic testing of unaffected individuals will not be undertaken without prior attendance for genetic counselling by the Genetic Clinic.

Please send results to Clinical Genetics, Edinburgh via: Lothian.edinburghclinicalgenetics@nhs.net

ONCOLOGY CONSULTANT DETAILS
Name:

Contact details:

PATIENT CONSENT

1. The results of a genetic test may have implications both for the person being tested and for other members of that person's family, and I acknowledge that my results may sometimes be used to inform the appropriate healthcare of members of my family.
2. Normal laboratory practice is to store the DNA extracted from a blood sample even after the current testing is complete. This is because in the future (months or years) further/new tests may become available. I understand that additional tests may be undertaken on the stored sample if indicated, and I will be informed of any relevant results.
3. I understand that my sample might be used as a 'quality control' for other testing, for example, that of family members or in checking laboratory techniques, and/or in the development of new or improved tests.
4. I understand that the results will be put on my NHS electronic patient records.

I consent to my sample being tested

Patient Signature: ..... **Date:** .....

Comments: .....

COMMUNICATION: The patient will be informed of the result by letter from the Clinical Genetics Service. Please note here if the patient has special requirements (e.g. language/other communication method)

.....

SAMPLE DETAILS
Required: Blood in Potassium EDTA (KE) tube (1x 3ml)

Taken by: Name (print) Signature:

Date taken: Time taken: High risk (*see over*) Y / N

- URGENT (*phone Clinical Genetics on 0131 537 1116 to discuss if the result would alter the course of action in the next 4-8 weeks*)

Please complete using BLACK ink- form will be scanned in lab

Sample should be sent to:
Genetics Laboratory
South East Scotland Genetic Service
Molecular Medicine Centre
Western General Hospital
Crewe Road
Edinburgh
EH4 2XU

Arrange for immediate transport to the laboratory (van service or first class post).
If this is not available, blood specimens should be refrigerated. **(DO NOT FREEZE)**

It is your responsibility to ensure that samples are packaged to comply with the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR 2017) at
https://www.unece.org/trans/danger/publi/adr/adr2017/17contentse0.html
ADR 2017 requires that this sample (unless subject to exceptions outlined in "infection control" below) is labelled:

EXEMPT HUMAN SPECIMEN

----------*Fold along this line and place into specimen bag sleeve with delivery address showing*----------

Infection Control
The laboratory handle samples in accordance with NHS Lothian specimen policy which is contained in the NHS Lothian Infection Control Manual, available on the intranet at:
http://intranet.lothian.scot.nhs.uk/NHSLothian/Healthcare/A-Z/InfectionControl/icm/Pages/default.aspx

The DNA laboratory is able to extract DNA from patient who have or are suspected of having Group 3 or 4 pathogens. Samples which must be labelled with a 'Danger of Infection' sticker.
Samples from individuals with a confirmed or suspected diagnosis of CJD are not extracted by the Molecular Genetics laboratory. DNA from such samples will be tested after extraction by the CJD Unit. Samples should be sent to Molecular Genetics, labelled with a 'Danger of Infection' sticker, with the CJD status clearly indicated on the form.

Information for users of genetic tests
The South East Scotland Genetic Service Cytogenetics and Molecular Genetics (DNA) Laboratories website should be consulted for full details of tests available and sample requirements. This can be found at:

http://www.nhslothian.scot.nhs.uk/Services/A-Z/ClinicalGeneticsService/GeneticLaboratoryServices/Pages/default.aspx

Requests for other types of genetic tests should **not** be made using this form.

Incomplete or illegible forms, or use of incorrect blood tubes, will cause delay or rejection of samples

Results - Clinical Genetics. Patient letter & attached information sheets:

3.1 No mutation identified

«PatTitle» «PatFirstName» «PatSurname» / «PatID», **«PatPedigreeNum»**, «PatMPed»
«PatAddress1» CHI: «PatCHINumber»
«PatAddress2» Dictated:
«PatTownCity» Typed:
«PatCounty»
«PatPostCode»

***Electronic copy can be found in SCI store/click patient's name to view records**

Dear «PatTitle» «PatFirstName»

You had a test to look for changes in the BRCA1 and BRCA2 genes. This letter is to inform you of the result of this test.

No disease causing genetic changes were identified in either the BRCA1 or BRCA2 genes. An information sheet is enclosed, providing further details about your results. A copy of this letter has been sent to your Breast/Oncology team and GP so as they are aware of this result.

If you have had other types of cancer in the past, or if you have a family history of cancers that you would like to ask us about, you can complete the enclosed family history questionnaire and post it back to the genetic service. It is rare that cancer is hereditary.

Yours sincerely

Genetic Counsellor
GCRB Registered

c.c. Dr «PatGPFirstName» «PatGPName», «PatGPAddress1», «PatGPAddress2», «PatGPAddress3», «PatGPAddress4», «PatGPAddress5»

cc. Oncologist

RECEIVING A NORMAL BRCA1 AND BRCA2 TEST RESULT

You had a BRCA1 and BRCA2 gene test because you have had cancer.

The test result is normal.

No BRCA1 or BRCA2 mutation (gene change) was identified in your blood sample.

What does this result mean for me?

This means we have not found a BRCA1 or BRCA2 mutation which would put you at high risk of developing another cancer. The cancer team will discuss if this normal result has any implications for your cancer management.

A normal result is common. In most women with breast and/or ovarian cancer no mutation in BRCA1 or BRCA2 is found. If you have a strong family history of breast and/or ovarian cancer, or a strong family history of other cancers, or if you developed cancer at an unusually young age, it may be helpful to look into things further. You can ask for a referral to the Clinical Genetics Service if you have questions or concerns about this.

Very occasionally mutations in other genes can be involved in causing breast or ovarian cancer. Also new discoveries are being made all the time. In the future, if a new gene test becomes available the genetic team may be able to do the test using the sample you have already provided and they will send the result to you and your cancer team.

What does this result mean for my relatives?

This result is good news for your relatives, as it means they are unlikely to be at high increased risk of developing breast and/or ovarian cancer themselves. You may wish to share this result with them.

All women are eligible to have mammograms from 50 years in the National Breast Screening Program. Depending on the family history, some women may be eligible for mammograms from 35 or 40 years, even if there has been a normal BRCA1 or BRCA2 gene test in the family. There is currently no known effective form of ovarian screening. If a woman has multiple relatives with ovarian cancer, removal of the ovaries is sometimes considered.

If you have had a different cancer previously, or if you have a family history of cancer, it is still possible that your relatives may have an increased risk of developing cancer. If you think that this applies to you, you can talk to your GP or hospital clinician or complete the family history questionnaire enclosed and post it back to the Clinical Genetics Service.

If any of your relatives wish to discuss their own risks of cancer further they should speak with their GP who can refer them for further discussions at a Genetics clinic.

If you have any further questions, please contact the Edinburgh Clinical Genetics Service on 0131 537 1116.

3.2 Mutation identified

«PatTitle» «PatFirstName» «PatSurname» / «PatID», **«PatPedigreeNum»**, «PatMPed»
«PatAddress1» CHI: «PatCHINumber»
«PatAddress2» Dictated:
«PatTownCity» Typed:
«PatCounty»
«PatPostCode»

***Electronic copy can be found in SCI store/click patient's name to view records**

Dear «PatTitle» «PatFirstName»

You had a test to look for changes in the BRCA1 and BRCA2 gene. This letter is to inform you of the result of this test.

The test has identified a mutation (change) in the BRCA1/BRCA2 gene. This result may have implications for your cancer treatment and/or follow-up. It also has implications for your future health and may have implications for your relatives.

We have enclosed an information sheet which provides some basic information.

You may also like to read the information booklet, "A Beginner's Guide to BRCA1 and BRCA2" which can be downloaded from www.royalmarsden.nhs.uk/brca.

An appointment is being made for you with the Clinical Genetics service to discuss the issues in more detail. We are sending out an appointment letter separately. We enclose a Family History Questionnaire for you to complete and bring with you to the appointment. This will help the Clinical Genetics team draw a family tree and evaluate which relatives could benefit from gene testing.

After your appointment with Clinical Genetics they will provide you with a letter to give to other family members so they can arrange an appointment to discuss testing, should they wish to.

Yours sincerely,

Genetic Counsellor
GCRB Registered

Enclosed: Family History Questionnaire

c.c. Dr «PatGPFirstName» «PatGPName», «PatGPAddress1», «PatGPAddress2», «PatGPAddress3», «PatGPAddress4», «PatGPAddress5»

cc. Oncologist

Note to secretary packaging letter: Request Appointment for Fast track clinic-2 weeks ahead.

RECEIVING A BRCA1 AND BRCA2 TEST RESULT that identifies a mutation

You had a BRCA1 and BRCA2 gene test because you have had cancer.

The test result has shown that you have a mutation (gene change) in either the BRCA1 or BRCA2 gene.

BRCA1 or BRCA2 mutations result in increased risks of breast and ovarian cancer, and occasionally other cancers. Therefore this result provides an explanation for why you developed cancer.

Your cancer team will discuss with you if this result has implications for your cancer treatment and/or follow-up.

This result has implications for your future health and potentially for your relatives. An appointment is being made for you in the Genetics clinic to discuss these issues further. You will receive a separate appointment letter about this. At the appointment you will be able discuss your future risks of cancer, your options for cancer screening and measures to reduce the risk of cancer. The potential implications for relatives will also be discussed. The processes by which your relatives can have discussions themselves to decide if they wish to have testing will be explained.

You may find it helpful to read the information booklet “A Beginner’s Guide to BRCA1 and BRCA2” which gives more detailed information. This can be downloaded by searching the internet for A Beginner’s Guide to BRCA1 and BRCA2.

If you need to discuss anything urgently prior to your appointment, or wish to alter the date of your appointment, please contact the Edinburgh Clinical Cancer Genetics Service on 0131 537 1116.

3.3 Variant Requiring Evaluation identified

«PatTitle» «PatFirstName» «PatSurname» / «PatID», **«PatPedigreeNum»**, «PatMPed»
«PatAddress1» CHI: «PatCHINumber»
«PatAddress2» Dictated:
«PatTownCity» Typed:
«PatCounty»
«PatPostCode»

***Electronic copy can be found in SCI store/click patient's name to view records**

Dear «PatTitle» «PatFirstName»

You had a test to look for changes in the BRCA1 and BRCA2 gene. This letter is to inform you of the result of this test.

No disease-causing changes were identified in either the BRCA1 or BRCA2 genes.

The test has identified a **variant (change) in the BRCA1/BRCA2 gene**. We also enclose an information sheet which provides further details about this.

An appointment is being made for you with the Clinical Genetics service to discuss the result in more detail. We are sending out an appointment letter separately.

We enclose a Family History Questionnaire for you to complete and bring with you to the appointment.

Yours sincerely,

Genetic Counsellor
GCRB Registered

Enclosed: Family history questionnaire

c.c. Dr «PatGPFirstName» «PatGPName», «PatGPAddress1», «PatGPAddress2», «PatGPAddress3», «PatGPAddress4», «PatGPAddress5»

cc. Oncologist

Note to secretary packaging letter: Request Appointment for Fast track clinic-2 weeks ahead.

RECEIVING A BRCA1 AND BRCA2 TEST RESULT that identifes a Variant Requiring Further Evaluation

You had a BRCA1 and BRCA2 gene test because you have had cancer.

The test result has shown that you have a gene change (variant) in either the BRCA1 or BRCA2 gene that requires further evaluation.

At the moment, we do not have enough information to decide if this variant is linked to why you have had cancer.

Variants in the BRCA1 and BRCA2 genes are common, and most do not cause cancer. Very occasionally, we find a variant that requires further assessment.

An appointment is being made for you in the Genetics clinic to discuss these issues further. You will receive a separate appointment letter about this. At the appointment we will explain the result in more detail.

It is important for us to have as much information as possible when we see you. We have enclosed a family history questionnaire with your letter, and would be very grateful if you would fill this in and return it to us before we see you in clinic.

If you need to discuss anything urgently prior to your appointment, or wish to alter the date of your appointment, please contact the Edinburgh Clinical Genetics Service on 0131 537 1116 and ask to speak to the Duty Genetic Counsellor.

4. Frequently asked questions

BRCA1 AND BRCA2 GENE TESTING
EDINBURGH BREAST UNIT MAINSTREAMING PILOT

Frequently asked questions for breast unit

Please note, when undertaking the training (youtube videos), the NHS Lothian Pilot differs from the Royal Marsden Mainstreaming Programme. The NHS Lothian consent form and test request form are combined for ease of use. As a result, for these sections, please pay particular attention to the NHS Lothian pilot mainstreaming training and written materials provided.

Which patients can have BRCA testing through breast/gynaecology oncology?

Non-geneticists can only undertake BRCA testing (i.e. to look in blood for mutations in the BRCA1 and BRCA2 genes) in breast cancer (BC) or ovarian cancer (OC) patients that fulfil one or more of the following criteria.

NHS Lothian patient with:

- BC <40 years
- Bilateral BC, both <60 years
- Triple-negative BC, any age
- BC + OC, any age
- Male BC, any age
- Non-mucinous OC, diagnosed at any age

Other patients, such as those with a family history who do not fulfil any of the above criteria may be eligible for testing, either through NHS or through research, but will need to be referred to Clinical Genetics. Referrals and queries about whether or not patients are eligible should be directed to WGH.ClinicalGenetics@nhslothian.scot.nhs.uk

Which non-geneticists can perform BRCA testing in eligible patients?

Only non-geneticists that have completed the NHS Lothian mainstreaming training can perform BRCA testing. Instructions for completing the training process can be requested from WGH.ClinicalGenetics@nhslothian.scot.nhs.uk and are available on www.scotgen.org.uk

How were the eligibility criteria for ovarian cancer patients decided?

For ovarian cancer the eligibility criteria are in line with the NICE recommendations www.nice.org.uk/guidance/cg164 which state that any patient with ≥10% chance of having a BRCA mutation should be tested. Several studies have shown that any non-mucinous ovarian cancer patient meets this threshold.

How were the eligibility criteria for breast cancer patients decided?

The current testing eligibility criteria are being evaluated as part of a two year study funded by the NIHR Royal Marsden/Institute of Cancer Research Specialist BRC.

Who is leading the Mainstreaming Cancer Genetics BRCA initiative?

The Edinburgh Clinical Genetics and Edinburgh Breast Unit Oncologists are piloting BRCA1 and BRCA2 testing in affected women meeting the criteria. The Royal Marsden have a Mainstreaming Cancer Genetics (MCG) Programme, upon which the Edinburgh initiative in based. Professor Mary Porteous, Consultant Geneticist and Diane Stirling, Principal Genetic Counsellor are leading the Edinburgh pilot. You can read more about the Royal Marsden initiative at www.mcgprogramme.com

What will the Mainstreaming initiative investigate?

Traditionally eligibility for BRCA testing was decided by estimating the chance that a mutation would be detected. In recent years it has become apparent that BRCA testing can impact on treatment options. Through the pilot, we wish to evaluate the mutation detection rates in groups tested for treatment decisions and we may investigate the impact of mainstreaming BRCA testing from the perspective of patients and staff.

What is the testing eligibility for private patients?

Any private patient with breast or ovarian cancer who meets the criteria and fulfils the eligibility for NHS Lothian care can be referred to have BRCA testing. If they do not meet the criteria for NHS Lothian care, they can investigate testing through a private company (e.g. www.genehealthuk.com).

How strict are the age cut-offs for testing?

These are strictly applied. For example, a woman with bilateral breast cancer diagnosed at 58 years and 60 years (and no family history) would not be eligible for testing, but if she were diagnosed at 58 years and 59 years she would be eligible. It is recognised, and inevitable, that individuals close to a threshold may have similar likelihoods of carrying a mutation but different eligibility. It is important for clinicians and patients to have confidence that criteria are being consistently applied.

If you think a patient is not eligible, but might be eligible on the grounds of family history, the patient can be referred to the Clinical Genetics Service for assessment.

How is triple-negative breast cancer defined?

For the purpose of eligibility for genetic testing a triple-negative breast cancer is defined as a tumour with an Allred score of 0, 1 or 2 for ER and PR receptors and HER2 negativity by IHC or FISH.

Should in situ breast cancer be included?

In situ cancer, such as DCIS (ductal carcinoma in situ) and LCIS (lobular carcinoma in situ), should be included in the same way as invasive breast cancer in assessing eligibility for BRCA testing.

How should multiple metachronous ipsilateral breast cancers be assessed?

Two (or more) separate, ipsilateral breast cancers which have occurred 5 or more years apart should be considered as separate cancers (i.e. counted as a bilateral breast cancer) when assessing eligibility for BRCA testing, unless it is clear that the second cancer is a recurrence. This is a pragmatic approach as it is not possible to robustly identify which are separate cancers and which recurrence.

How should multiple synchronous ipsilateral breast cancers be assessed?

Simultaneous ipsilateral breast cancers, whether termed synchronous, multicentric or multifocal, should be counted as a single breast cancer for assessing eligibility for BRCA testing.

What is the BRCA testing eligibility for Ashkenazi Jewish patients?

When taking consent, please ask the patient if they have Ashkenazi Jewish ancestry and circle Y/N on the lab request form. Exactly the same eligibility criteria will apply for Ashkenazi Jewish patients, who will have

full gene testing, not just testing for the three Ashkenazi founder mutations. This data is requested to help with the evaluation of the mutation detection rates in groups tested

When should discussion of BRCA testing be undertaken?

This should be at the discretion of the clinician. BRCA testing can be discussed and undertaken at the time of diagnosis, during active cancer management or during follow up. However, please be aware that the lab result usually takes 8-10 weeks from receipt of sample, so if the result is required for management decisions, timing of testing must be planned accordingly.

However, NHS Scotland genetic testing resources are limited (e.g. lab staff and equipment) and shared across the needs of all genetic conditions and health specialties. Accessing genetic analysis in a timely manner is important to all. As a result, we request that you ONLY request the 4 week turn around where there is need for immediate management decision making.

It is possible to request a 4 week turnaround time for testing, by sending an email to WGH.ClinicalGenetics@nhslothian.scot.nhs.uk if the result is required for immediate management decisions. Please explain the reasoning for this request in your email.

What information should I give to the patient prior to obtaining consent?

The information sheet 'BRCA1 and BRCA2 gene testing - Information sheet for patients with cancer' should be given to the patient. Patients should be informed that BRCA mutations are a cause of cancer and knowing whether or not a BRCA mutation is involved in causing their cancer can be helpful for their current and future management. The clinician may like to describe the specific relevance of the test for the specific patient.

The patient should also be aware that the result can provide information of relevance to the wider family. However, it is important to remember that most tests are normal and therefore detailed discussions regarding risk management for patient and relatives, prior to testing, are not required.

If a patient has questions that require either more time or more expertise than you are able to provide, the patient should be referred to Clinical Genetics. Youtube modules 1 (MCG ELM1) and 2 (MCG ELM2) provide further information about BRCA testing and can be found at https://www.youtube.com/watch?v=P9axfx_fvEk&list=PLjBygnx6n8RHufAegwx0tX2SmrAyymS8J and https://www.youtube.com/watch?v=4qQ8vHRVoG8&index=2&list=PLjBygnx6n8RHufAegwx0tX2SmrAyymS8J

What are the insurance implications for cancer patients?

If a cancer patient applies for life cover, critical illness or income protection cover after the gene test is performed, then it will need to be disclosed, along with the other information about their cancer diagnosis. This is unlikely to have impact on the cover/terms they are offered over and above the impact of their cancer diagnosis.

If the gene test was performed after an insurance policy was set-up the result does NOT need to be disclosed.

Are there insurance implications for the cancer patients relatives?

Relatives would need to tell the insurance company about the cancer diagnosis and if a gene mutation has been found when asked about their family history (if they are aware of it). If the test is normal some insurance companies may take this into consideration to mitigate the unfavourable impact of the family history on the policy.

Unaffected individuals do not have to disclose their personal results of predictive gene testing to insurance companies but may choose to do so, particularly if the test is negative.

Which consent and lab form should I use?

The Edinburgh pilot will use the combined NHS Lothian Consent and lab request form, 'BRCA1 and BRCA2-Breast Oncology Team Pilot: Gene Test request form (Affected patients)'. Once completed, copy of the request can be scanned to the TrakCare records or a note put in the patient electronic records that the genetic test has been requested. The request sheet should be sent with the patient's labelled (1 x 3ml EDTA) to the Molecular Genetics Lab, South East Scotland Genetic Service, Western General Hospital, Crewe Road, Edinburgh, EH4 2XU.

How long does it take to get a BRCA result?

The results of full analysis of the BRCA1 and BRCA2 genes typically take about 8-10 weeks. However, it may take 4 weeks if 'urgent' testing is requested due to immediate management decisions. For more information see FAQ section 'When should discussion of BRCA testing be undertaken?'

If there is a known mutation in the family the result takes 2-4 weeks and would require that you had referred the patient to the Clinical Genetics Service.

Q: What genes will be analysed / tested?

At the current time only the BRCA1 and BRCA2 genes will be tested.

In the future, testing for additional genes related to breast and/or ovarian cancer *may* become available in some cases. However, this is not likely within the next 5 years.

As part of the pilot of mainstreaming the BRCA test, the Clinical Genetics Service is not taking detailed family history assessment prior to BRCA testing. When the lab receives the 'BRCA1 and BRCA2-Breast Oncology Team Pilot: Gene test request form (affected)', only BRCA1 and BRCA2 will be tested.

If the patient has had multiple other cancers or if there is family history that you are concerned about, the patient can be referred to the Clinical Genetic Service.

Q: What if a patient meets the criteria but chooses not to have a test?

The test is optional. A patient may decline to be tested, ask to have longer to think about testing or be referred to Clinical Genetics if they want, or need, more detailed discussions. If the patient does not wish testing, but would like to put a DNA sample into storage in case this is useful for their relatives in the future, please refer the patient to Clinical Genetics.

Q: What if a patient does not meet the testing criteria but wants a test?

Patients who do not meet the mainstreaming testing criteria may be eligible for a test on account of their family history. If this seems possible they should be referred to Genetics. Please note, acceptance of the referral by Genetics does not indicate that testing will definitely be performed.

Queries about whether or not patients are eligible should be directed to WGH.ClinicalGenetics@nhslothian.scot.nhs.uk. Alternatively they could choose to have the test privately by a private company.

What already had BRCA testing?

If a member of the family has already had a BRCA test, please contact the Genetics unit on WGH.ClinicalGenetics@nhslothian.scot.nhs.uk and note this (preferably including the relative's name and

date of birth) on the lab form. It may influence the testing that is performed. Please refer the patient to the Clinical Genetic Service, who will get in touch to verify the specifics in the relative.

Who will give the patient the result of the BRCA test?

The Clinical Genetic Service will write to the patient with the result and will send an information sheet with additional information. The referring clinician and GP will also be notified. The result correspondence will be uploaded to the SCI Store section of NHS Lothian TrakCare, where NHS Lothian Clinical Genetics Service routinely upload their correspondence. The details will also be stored in the separate NHS Lothian Clinical Genetics Service records.

What happens if no mutation is identified?

The Clinical Genetics Service will inform the patient of the result in writing by letter, including an information sheet 'Receiving a normal BRCA1 and BRCA2 test result'. A copy result letter will be sent to their referrer (Oncologist) and the GP and it will be uploaded to SCI Store if the patient is registered for NHS Lothian TrakCare.

You should use the result as appropriate for their cancer management, but usually no further input is required from Genetics. If the patient has additional questions about the result, they can be referred to the Clinical Genetics team. Alternatively the patient will also be sent a family history questionnaire with their 'normal' result letter, which they can complete and return to the Genetic Clinic directly, if they have concerns about their personal or family history of cancer.

Please note, patients and their relatives may still be eligible for enhanced mammographic surveillance on account of their family history. Relatives can seek advice about enhanced screening via their GP.

What happens if a mutation is identified?

The Clinical Genetics Service will inform the patient in writing by letter, including an information sheet 'Receiving a BRCA1 and BRCA2 test result that identifies a mutation.' A copy result letter will be sent to their referrer (Oncologist) and the GP and it will be uploaded to SCI Store if the patient is registered for NHS Lothian Trakcare. An appointment for the Genetics clinic will also be sent for the near future.

The Cancer team should use the information as appropriate for their cancer management. The Genetics team will discuss with the patient the implications for their future cancer risk and will also evaluate which relatives may be impacted. The processes for cascading the information to relatives will be explained.

What if there is a variant of requiring evaluation (VRE) identified?

Very occasionally (<1%), we identify a variant that does not fulfil the criteria for pathogenic mutations, where further evaluation might be possible. In such cases, the Clinical Genetics Service will be informed in writing by letter, including an information sheet 'Receiving a BRCA1 and BRCA2 result that identifies a Variant Requiring Further Evaluation.' A copy result letter will be sent to their referrer (Oncologist) and the GP and it will be uploaded to SCI Store if the patient is registered for NHS Lothian TrakCare. An appointment for the Genetics clinic will also be sent for the near future where he result will be discussed with the patient.

Q: What if there is an equivocal result?

No equivocal reports are issued. Genetics review all the BRCA results, determine the pathogenicity of any identified sequence variants, and interpret their clinical relevance. We have a sophisticated clinical and bioinformatic interpretative system that allows us to do this. The reports thus include clear information about whether or not a pathogenic mutation was identified. Very occasionally (<1%), there are sequence variants that do not fulfil the criteria for pathogenic mutations, but merit further evaluation.

What if new evidence in the future shows a variant is pathogenic?

We keep all variants identified under review and if any are reclassified Genetics will automatically re-issue reports and clear, revised recommendations. It is important to remember that rare sequence variants in these genes are collectively common in the general population (present in about 10%), and the great majority are not pathogenic.

If a mutation is identified who will follow-up the patient's relatives?

The Clinical Genetic Service will give the patient a "To whom it may concern letter" to give to relatives. The letter will explain that a cancer predisposition gene mutation has been identified in the family and that relatives can ask their GP to refer them to their local genetics service to discuss the implications. This is standard practice in Clinical Genetics.

If the patient does not have a BRCA mutation, are there additional genetic tests that should be performed?

Some patients may be eligible for further tests, particularly if they were diagnosed at a particularly young age (e.g. breast cancer under 30 years of age), if they have multiple primary cancers or if there is an extensive family history of cancer. We recommend that such patients are referred to Clinical Genetics.

Who should I contact if I have any questions or suggestions?

These should be addressed to WGH.ClinicalGenetics@nhslothian.scot.nhs.uk. We get many referrals and enquiries to the service about hereditary cancer. It would be helpful to identify when emailing if your question or comment relates to the Edinburgh Breast Unit Mainstreaming Pilot.

If there is anything that you would like further clarity about, please contact:
WGH.ClinicalGenetics@nhslothian.scot.nhs.uk