AWMGS
All Wales Medical Genomics Service

Rapid Whole Genome Clinical Referral Pack

When printing this pack please select print "**all pages**" and print **double sided**, flipping along the **long edge**.

This PDF contains:

- Request Form
- Referral Criteria
- Clinical Pathway Checklist
- 3 x Whole Genome Sequencing Consent Form
    - One each for mother, father, and child
    - Singed and kept in patient's notes
- Patient Information Leaflet

All Wales Medical Genomics Service

Rapid Whole Genome Sequencing Request Form

Attach Patient Addressograph Here	Sample requirements: **CHILD** (EDTA, 1ml) **BOTH PARENTS** (EDTA, 3-4ml) Please send samples with this form to AWMGS, University Hospital Wales. All referrals must be discussed with the on-call genetics consultant/SpR, who can be contacted Monday-Friday 9-5pm (029218) 42577.

Requesting Consultant (Full Name)		**Requesting Clinician -** if not Consultant (Full Name)	
Consultant email address		**Requesting Clinician email address -** if not Consultant	
Referring Unit		**Telephone Number**	
Discussed with Genetics	**YES:** ☐	**Possibility of incidental findings discussed**	**YES:** ☐

Description of Clinical Features Please list the patients clinical features using HPO terms where possible (see https://hpo.jax.org/).	**Family History / Pedigree** Please include information about health problems in relatives and relationships to other people, including disease status and age of onset. Include details about miscarriages and stillbirths.

Previous Genetic Testing – Please include previous tests ordered and results. Where possible, reports should also be provided.

Consanguinity? If yes, please provide details.	

Samples **CHILD**, **MATERNAL**, and **PATERNAL** details are required. Please ensure names are included on pedigree.

SURNAME	FORENAME	DoB	NHS NUMBER	RELATION TO PATIENT	SEX	SAMPLE DATE	SAMPLE TIME
				PATIENT			
				MOTHER			
				FATHER			

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Eligibility and Referral criteria for:
Whole Genome Sequencing Service for Acutely Unwell Children

Rapid diagnostic (10 working days) whole genome sequencing (WGS) testing is available for acutely unwell children with a likely underlying genetic cause. These tests are only available on a ***trio basis*, e.g. the child and BOTH their parents**. Alternative rapid genetic testing may be available if only one parent is present.

Please contact Medical Genetics ((029218) 42577) to discuss any sick children with suspected underlying genetic cause to identify the most appropriate testing strategy.

Essential Criteria

1. Suspected underlying monogenic cause.
2. DNA sample is available from **both** parents and they are willing to consent to testing.
3. A timely genetic diagnosis (within 2-3 weeks) may significantly alter the clinical management of the patient.
4. The imminent demise of the patient is unlikely – if the clinical condition is worsening and death is likely, other testing strategies may be more appropriate. Please bank DNA (*ideally* before any blood transfusions) and contact Clinical Genetics to discuss.

High Priority Criteria

5. There is no obvious single genetic test to do from the presenting phenotype.
6. The patient presents with a likely genetic disorder, but specific diagnostic tests available for that phenotype have failed to arrive at a diagnosis or are not accessible within a reasonable timeframe.

Following the referral

- The child will be reviewed by the Clinical Genetics team as early as possible. Testing may be initiated following case discussion between a Consultant Paediatrician and the on-call Clinical Genetics team (Monday-Friday, 9-5).
- If the Clinical Genetics team and the referral team feel that TRIO WGS is the appropriate strategy, then testing is initiated after consent has been obtained from the family.
- Following testing, the patient's results may require additional clinical or family information, or discussion at MDT to enable full interpretation. Results will require discussion between the referring clinician and Clinical Genetics team.
- The family will be offered a follow-up appointment with Clinical Genetics.
- The patient results will be considered as part of this new service's annual review.

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Rapid Whole Genome Sequencing Pathway Checklist

Affix **PATIENT STICKER** and then **INITIAL AND DATE** each step after completion.

Essential Criteria

- ☐ Suspected underlying monogenic cause
- ☐ Blood samples available from BOTH biological parents
- ☐ A timely genetic diagnosis (2-3 weeks) may significantly alter the clinical management of the patient
- ☐ The imminent demise of the patient is unlikely*

High Priority Criteria

- ☐ There is no obvious single genetic test to do from the presenting phenotype
- ☐ The patient presents with a likely genetic disorder, but specific diagnostic tests available for that phenotype have failed to arrive at a diagnosis or are not accessible within a reasonable timeframe

Clinical Genetics

- ☐ The Consultant or SpR should **call (029218) 42577**, Monday – Friday 9-5pm, and ask to speak to the on-call member of Clinical Genetics
- ☐ **AGREEMENT** from a Clinical Genetics Consultant or SpR that rapid WGS is appropriate

Consent (once agreement received from clinical genetics that rapid WGS is appropriate)

- ☐ Complete the trio WGS **CONSENT FORM** with parents.

Samples

- ☐ Send **CHILD's** sample (EDTA, 1ml) with **Rapid Whole Genome Sequencing Request Form**
- ☐ Send **MATERNAL** sample (EDTA, 3-4ml) with **Purple Genetics Request Form** (if sent separately to proband form). State **WGS TRIO** & child's name on the front of the form.
- ☐ Send **PATERNAL** sample (EDTA, 3-4ml) with **Purple Genetics Request Form** (if sent separately to proband form). State **WGS TRIO** & child's name on the front of the form.

Testing initiated when **ALL THREE** request forms and samples are received at AWMGS, UHW

Results and Reporting

A result should be provided to the referring clinician within **14 calendar days**.
Result reporting may require discussion between the referring clinician and Clinical Genetics team

Following testing, the patient's results may require additional clinical or family information, or discussion at MDT to enable full interpretation

Follow up

Patient and family will be offered a local follow up appointment with the Clinical Genetics team

**If the clinical condition is worsening and death is likely, other testing strategies may be more appropriate. Please bank DNA (ideally before any blood transfusions) and contact Clinical Genetics to discuss.*

Record of Discussion and Consent for TRIO Whole Genome Sequencing

Patient Name			
Date of Birth		**Hospital Number**	
Mothers Name		**Mother Date of Birth**	
Fathers Name		**Father Date of Birth**	

1. Test: I consent to analysis of my / my child's (delete as applicable) **sample to investigate causes for**

.....

.....

2. Distribution of the results: I understand that:

- Test results will form part of my NHS Wales medical record, may be accessed by staff in the NHS and will be shared with healthcare professionals involved in my / my child's care
- Test results may have implications for myself, my child and their relatives. The test results and genetic records can be used to provide genetic advice and/or testing for my relatives
- Results (but not my identity) can be shared with labs and databases outside of Wales or UK. This is to improve our interpretation of results
- Further information about NHS Wales data use is available in *'Your Information, Your Rights'*

3. About the sample:

- A repeat sample may be needed if there is a problem with the sample or test
- Leftover samples will be stored. There is no guarantee it will be available forever
- Samples may be used for quality control, to improve the test, or in testing my relatives

4. Interpretation of the findings:

This test is being undertaken to try and find a cause for the problems your child is experiencing with their health and/or development. It is not a test to look at parental risk of genetic disease.

Genetic changes of uncertain significance may be found.

Sometimes, information can be obtained which is unrelated to the condition being tested, such as:

- unexpected information about family relationships (e.g. biological parents)
- predisposition to other diseases (e.g. cancer, heart disease or brain conditions)
- being a carrier for a genetic disease which could affect future children (e.g. cystic fibrosis)

You will be informed about unexpected findings that we think may have serious health implications. These types of results will be issued in a secondary report, which will be discussed at a follow-up appointment in the Clinical Genetics service. There may be no treatment for an unexpected finding. *If you do **not** want to receive specific types of unexpected or additional findings, please discuss this with your clinical team.*

Are you aware of other specific conditions for which you / your child may be at risk? If yes, please say.

6. Future findings

Genetic knowledge is continually being updated. There is no guarantee that my child's results will automatically be reviewed when new knowledge becomes available.

7. Research

You may be contacted about research in the future. Tell us if you would not want this.

8. Additional notes about the discussion:

9. I have read and accept the above information.

Signature	**Name of person giving consent**	**Date**
If giving consent on behalf of a child, please indicate your relationship to the child		

Medical Professional Details

Signature	**Name of person taking consent**	**Date**

Record of Discussion and Consent for TRIO Whole Genome Sequencing

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Medical Professional Details

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AWMGS
All Wales Medical Genomics Service

Rapid Whole Genome Sequencing

Whole genome sequencing is a genetic test. We use it when we are caring for babies or children in neonatal or paediatric intensive care. It is to see if we can **find a genetic cause** for their problems.

Genome sequencing reads the order of the letters (A, T, G, and C) or looks at the "spelling" that make up a person's DNA sequence. Sometimes **changes in spelling** can cause a genetic condition that effect health or development. By doing this test we are trying to find these important changes.

What Does the Test Involve?

The test involves a detailed **physical examination of your child** to describe the health problems and important differences they may have. Photographs may also be taken to help the doctors describe characteristics. This is important to be able to make sense of changes in the DNA.

A doctor or genetic counsellor will also take a detailed **'history'**. This will involve thinking about health and development in parents, siblings and other members of your family. Sometimes you may not know this information – it is still possible to perform the test even when family history information is limited or not available.

Blood samples will be taken from child and both parents. The intensive care team will continue to look after your infant or child whilst testing is carried out.

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What Will Happen?

Suspected Genetic Cause

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Discussion

The intensive care doctor will talk to you about this genome sequencing test.

↓

Give Blood Samples

Blood samples are needed from child and from both parents.

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Labratory Test Blood Sample

This testing can take about 2-3 weeks.
During this time, a genetics specilaist may come and visit the ward.

↓

Test Results

The intesive care doctor will tell you if a genetic cause for the health or development problems has been found and what this means for your child.

↓

Follow up Appointment with Medical Genetics

What Answers Might Come Back?

Explains Features

- Genetic cause found.
- This is when an important change is found in a person's DNA that is linked to the health or development problems being tested for.

No Anomaly Detected

- Genetic cause not found.
- This is when no important changes are found in a person's DNA that is linked to the health or development problems being tested for.

Variants of Unknown Significance

- Based on what we currently know, it may be difficult to understand if or how a genetic change effects the health or development of a person.
- Other tests may be necessary, either for the child or involving other family members.

Incidental Findings

- A result that is not related to the current health problem a person has, but that may be associated with other important health problems in the future.
- These are rare but would given separately during your follow up appointment with a genetics specialist if found.

Genetic knowledge is continually being updated so, if appropriate, results may be reviewed in the future when new knowledge becomes available.

It is important to remember that **genetic causes of health problems not related to your child's current health problem are not actively looked for**. If you are concerned about a family history of other health problems, please talk to your GP or the genetic specialist during your follow up appointment.

Do I Have to Have This Test?

There may be **alternative genetic and biochemical tests** which could help to make a diagnosis. These can be considered with the doctor providing care for your child.

It is also **okay to change your mind** about having this test at any time (even after your blood has been taken). This can be done by speaking with a member of the clinical team looking after your child.

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