

Rapid genomic sequencing for the diagnosis of critically ill children in the NHS Genomic Medicine Service: Ensuring an equitable and effective parent and patient-centred service

Submission date 15/09/2021	Recruitment status No longer recruiting	<input checked="" type="checkbox"/> Prospectively registered <input type="checkbox"/> Protocol
Registration date 20/09/2021	Overall study status Completed	<input type="checkbox"/> Statistical analysis plan <input type="checkbox"/> Results
Last Edited 20/09/2021	Condition category Other	<input type="checkbox"/> Individual participant data <input type="checkbox"/> Record updated in last year

Plain English summary of protocol

Background and study aims

Rapid genomic sequencing is a relatively new technology that allows scientists to look in much greater detail at a person's genes than ever before. Rapid genomic sequencing can be used to look for changes in genes that may cause a genetic disorder. The NHS has recently started offering rapid genomic sequencing to babies and children who are critically ill to try and rapidly find the underlying genetic cause of their condition. The child and the parents are offered the test as it is useful to compare a child's DNA with DNA from both parents and identify the harmless gene changes which can run in families.

This is the first time that rapid genomic sequencing for critically ill children has been offered nationally in a public health service. This research will make sure that this new service is useful for patients, parents and the NHS. The aim of this study is to examine the delivery of rapid genomic sequencing in the NHS from the perspective of parents and professionals and consider and the impact of the test on patient care.

Who can participate?

1. Parents and carers of a child with a rare or undiagnosed condition
2. Parents who have been offered rapid genomic sequencing in the NHS
3. Professionals involved in delivering the rapid genomic sequencing service
4. Over 18 years of age

What does the study involve?

The researchers will;

1. Conduct a survey with parents and carers of children with rare and undiagnosed conditions that will help them focus their research on the issues that are most important for parents and carers.
2. Interview parents whose children had rapid genomic sequencing when they were seriously ill to ask what they think of the test and how support and information could be improved.
3. Interview and survey professionals to look at how rapid genomic sequencing is delivered

across England and ask what training and education they need.

4. Look at all of the tests done in a 12-month period (about 700) to see if families from all over England have access to the test and whether the test changed the care children received.
5. Gather all their findings together and make recommendations for best practice.

What are the possible benefits and risks of participating?

There is no immediate and direct benefit to taking part in the study. However, participants will be helping to improve the information and support given to families when they are offered rapid genomic sequencing.

Where is the study run from?

Great Ormond Street Hospital for Children NHS Foundation Trust (UK)

When is the study starting and how long is it expected to run for?

September 2021 to October 2023

Who is funding the study?

The National Institute for Health Research (NIHR) (UK)

Who is the main contact?

Dr Melissa Hill, melissa.hill@ucl.ac.uk

Contact information

Type(s)

Public

Contact name

Dr Melissa Hill

ORCID ID

<https://orcid.org/0000-0003-3900-1425>

Contact details

NHS North Thames Genomic Laboratory Hub
Great Ormond Street Hospital for Children NHS Foundation Trust
Level 5, Barclay House
37 Queen Square
London
United Kingdom
WC1N 3BH
+44 (0)20 7405 9200/8225
melissa.hill@ucl.ac.uk

Type(s)

Scientific

Contact name

Dr Melissa Hill

Contact details

NHS North Thames Genomic Laboratory Hub
Great Ormond Street Hospital for Children NHS Foundation Trust
Level 5, Barclay House
37 Queen Square
London
United Kingdom
WC1N 3BH
+44 (0) 207405 9200/8225
melissa.hill@ucl.ac.uk

Additional identifiers

Clinical Trials Information System (CTIS)

Nil known

Integrated Research Application System (IRAS)

304769

Protocol serial number

IRAS 304769, NIHR202725

Study information

Scientific Title

Rapid genomic sequencing for the diagnosis of critically ill children in the NHS Genomic Medicine Service: A mixed-methods evaluation to ensure an equitable and effective parent and patient-centred service

Study objectives

Rapid genomic sequencing approaches, including whole and targeted genome and exome sequencing, are increasingly being used for the diagnosis of critically ill babies and children. These tests can be invaluable for directing patient management, identifying treatment options, or guiding decisions around palliative care, whilst avoiding invasive or painful diagnostic interventions. Rapid genomic sequencing for the diagnosis of critically ill children is now being offered routinely in the NHS Genomic Medicine Service. This is the first time that rapid genomic sequencing has been offered nationally in a public health service in mainstream clinical care. This mixed-methods evaluation will examine the delivery of this service from the perspective of parents, patients and professionals.

Research questions:

1. What are parent's experiences of rapid genomic sequencing when it is offered routinely in the NHS and how are information and support best delivered to them?
2. What are the barriers to informed decision-making and how can these be minimised?
3. What factors act as facilitators or barriers to diversity and inclusivity in the service?
4. Are there any unexpected negative psychosocial impacts on parents?
5. What are the experiences of professionals (clinical scientists, genetics and non-genetics clinicians) of coordinating the clinical service and returning results in a rapid timeframe?
6. What are the outcomes (diagnostic yield, referral rates) of the service?
7. Is there regional variation in service delivery, what factors contribute to this, and how can they be addressed?

8. Is the service helping the overall management of patients?
9. Is collaborative working across multidisciplinary teams effectively supported?
10. Are the education and training needs of mainstream clinicians being met?

Ethics approval required

Old ethics approval format

Ethics approval(s)

Not provided at time of registration

Study design

Multi-centre mixed-methods design using qualitative and quantitative approaches

Primary study design

Observational

Study type(s)

Diagnostic

Health condition(s) or problem(s) studied

Evaluation of a clinical service offering rapid genomic sequencing for the diagnosis of critically ill babies and children

Interventions

This study is a mixed-methods evaluation of the rapid genomic sequencing service that is offered by the NHS Genomic Medicine Service. The evaluation consists of four sub-studies:

1. Survey with parents and carers of children affected with genetic, rare or undiagnosed conditions: Parents and carers will be recruited through patient organisations and asked to complete a brief online survey (15-20 minutes) that will gather their thoughts on the service and our research plan.
2. Qualitative interviews with parents and professionals: Parents who have been offered rapid genomic sequencing for their critically ill child will be recruited through clinical genetic services. Professionals involved in delivering the service will be recruited from clinical genetic services and specialist paediatric services. Potential participants will be invited to take part in a qualitative interview that will take 45-60 minutes and use a semi-structured interview guide. The interviews will explore clinical and personal utility, the information and support needs of parents and challenges for service delivery.
3. Cross-sectional descriptive survey with professionals: Professionals involved in delivering the rapid genomic sequencing services will be invited to complete a brief online survey (20 minutes) that will consider challenges for service delivery and training needs.
4. Clinical audit to assess outcomes, clinical utility and equity of access: The researchers will examine patient management and clinical outcomes following rapid exome sequencing for all patients referred through the rapid genomic sequencing service in England over a 12-month period (~700 cases) to determine test outcomes, clinical impact and equity of access. They will integrate the findings from the four sub-studies using a triangulation protocol and develop parent and patient-centred recommendations for the service.

Intervention Type

Other

Primary outcome(s)

Parent attitudes towards rapid genomic sequencing, measured using qualitative interviews and thematic analysis at least 3 months after being offered testing

Key secondary outcome(s)

1. Challenges for delivering rapid genomic sequencing in the NHS, measured using qualitative interviews and surveys with professionals conducted within a 12-month period, which will be analysed with thematic analysis and descriptive statistics, respectively
2. Change in clinical management following rapid genomic sequencing, measured using a clinical audit for all patients tested in a 12-month period

Completion date

31/10/2023

Eligibility

Key inclusion criteria

1. Parents/carers of children with rare or undiagnosed conditions
2. Parents who have been offered rapid genomic sequencing because their baby or child was critically ill
3. Parents who have been offered rapid genomic sequencing to inform management of a current pregnancy because they had a previously affected undiagnosed fetus/child
4. Professionals from clinical genetics and paediatrics specialties
5. Over 18 years of age
6. Able to give consent for participation

Healthy volunteers allowed

No

Age group

Adult

Lower age limit

18 years

Sex

All

Key exclusion criteria

Under 18 years of age

Date of first enrolment

01/11/2021

Date of final enrolment

30/06/2023

Locations

Countries of recruitment

United Kingdom

England

Study participating centre

Great Ormond Street Hospital for Children

Great Ormond Street

London

United Kingdom

WC1N 3JH

Study participating centre

Royal Devon and Exeter Hospital

Barrack Road

Exeter

United Kingdom

EX2 5DW

Study participating centre

Birmingham Children's Hospital

Steelhouse Lane

Birmingham

United Kingdom

B4 6NH

Study participating centre

The Royal London Hospital

80 Newark Street

London

United Kingdom

E1 1BB

Study participating centre

St Mary's Hospital

Oxford Road

Manchester

United Kingdom

M13 9WL

Sponsor information

Organisation

Great Ormond Street Hospital for Children NHS Foundation Trust

ROR

<https://ror.org/03zydm450>

Funder(s)**Funder type**

Government

Funder Name

Research for Patient Benefit Programme

Alternative Name(s)

NIHR Research for Patient Benefit Programme, Research for Patient Benefit (RfPB), The NIHR Research for Patient Benefit (RfPB), RfPB

Funding Body Type

Government organisation

Funding Body Subtype

National government

Location

United Kingdom

Results and Publications**Individual participant data (IPD) sharing plan**

All data generated or analysed during this study will be included in the subsequent results publication.

IPD sharing plan summary

Other