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Pharmacogenetics to avoid loss of hearing UK

Submission date 08/10/2024	**Recruitment status** No longer recruiting	[_] Prospectively registered [_] Protocol
Registration date 02/03/2026	**Overall study status** Completed	[_] Statistical analysis plan [_] Results
Last Edited 17/09/2026	**Condition category** Neonatal Diseases	[_] Individual participant data [X] Record updated in last year

Plain English summary of protocol

Background and study aims
Gentamicin is an antibiotic given to babies within one hour of being admitted to neonatal units to treat or protect against infections. However, about 1 in 500 babies have a genetic difference that can cause severe hearing loss or total deafness after a single dose of gentamicin. Traditional genetic testing takes time, but a new rapid genetic test developed with Genedrive can quickly identify at-risk babies. In the PALOH study (https://www.isrctn.com /ISRCTN13704894), this test was used on 750 babies in Manchester, identifying three at-risk babies within 26 minutes, allowing for immediate alternative treatment. This study aims to demonstrate the test's effectiveness across the UK.

Who can participate?
The study will involve 14 neonatal units of various sizes across England, Scotland, Wales, and Northern Ireland. These sites are of different sizes - from large Neonatal Intensive Care Units (NICUs) to Small Special Care Baby Units (SCBUs).

What does the study involve?
The study will:
- Use the new genetic test to ensure timely and safe antibiotic administration.
- Demonstrate the test's accuracy.
- Gather opinions from parents and healthcare staff.
- Assess the cost implications of introducing the test.

What are the possible benefits and risks of participating?
Benefits:
- Quick identification of babies at risk of hearing loss from gentamicin.
- Prevention of avoidable hearing loss.
- Potential cost savings for the NHS.

Risks:
- Minimal, as the test is non-invasive and quick.

Where is the study run from?
The study is coordinated by The University of Manchester, School of Biological Sciences, Division of Evolution and Genomic Sciences.

When is the study starting and how long is it expected to run for?
January 2025 to October 2026.

Who is funding the study?
The National Institute for Health Research Invention for Innovation (NIHR i4i) & Office for Life Sciences (OLS): Real World Evidence Programme.

Who is the main contact?
Professor William Newman, william.newman@manchester.ac.uk

Contact information

Type(s)
Public

Contact name
Miss Sian Hilton

Contact details
Manchester Centre for Genomic Medicine
6th Floor
St Mary’s Hospital
Oxford Road
Manchester
United Kingdom
M13 9WL
+44 (0)7977741953
Sian.Hilton@mft.nhs.uk

Type(s)
Scientific, Principal investigator

Contact name
Prof William Newman

ORCID ID
https://orcid.org/0000-0002-6382-4678

Contact details
Manchester Centre for Genomic Medicine
St Mary's Hospital
Manchester
United Kingdom
M13 9WL
+44 (0)1612766276
william.newman@manchester.ac.uk

Additional identifiers

Integrated Research Application System (IRAS)

349557

Central Portfolio Management System (CPMS)
65537

Study information

Scientific Title
Pharmacogenetics to avoid loss of hearing UK

Acronym
PALOH-UK

Study objectives
This implementation study will assess whether the Genedrive MT-RNR1 system can be integrated into routine neonatal care pathways to guide antibiotic therapy without disrupting normal clinical practice. This study leads on from the positive NICE Early Value Assessment (EVA) and seeks to fill the evidence gaps to allow wider implementation within the NHS.

Ethics approval required
Ethics approval required

Ethics approval(s)
Approved 06/12/2024, London - West London & GTAC Research Ethics Committee (2 Redman Place, Stratford, London, E20 1JQ, United Kingdom; +44 (0)207 104 8098; westlondon.rec@hra.nhs.uk), ref: 24/LO/0854

Primary study design
Observational

Study design
Multi-centre implementation study

Study type(s)
Screening

Health condition(s) or problem(s) studied
Use of a genetic test to detect the m.1555A>G variant associated with aminoglycoside-induced hearing loss in neonatal care units

Interventions
This study involves a genetic test to detect the m.1555A>G variant associated with aminoglycoside-induced hearing loss. All babies admitted to the participating neonatal care units during the study period will be tested for this variant before antibiotic treatment for personalised prescribing and to avoid permanent, irreversible hearing loss in at-risk individuals. The study will take place across 14 different hospitals within the UK, chosen to achieve a variation in geography across the UK, populations and unit sizes requested within the NICE Early Value Assessment.

The intervention is a one-off genetic test at the point of admission to the neonatal care unit. The objective is to examine the feasibility of incorporating the test into different size neonatal care units across the UK, rather than the efficacy of the intervention, which is already known. There is no follow-up period as part of the study.

Intervention Type
Genetic

Primary outcome(s)
The number of neonates who are successfully tested for the m. 1555A>G genetic variant out of all babies given antibiotics measured using genetic testing data on admission or assessment at the participating sites

Key secondary outcome(s)
1. The total number of neonates identified with the m. 1555A>G genetic variant, measured using retrospective data collection from the device at the end of the study period
2. The frequency of different antibiotic regimens used, measured using data recorded during the collection periods, will be summarised by descriptive statistics, across the whole study and by site at the end of the study period. The antibiotic used for any baby positive for the m.1555A>G variant will also be reported.
3. Average time from admission to antibiotic administration for all participants tested throughout the study period, across all sites, measured using aggregate data collection at the end of the study period
4. Total number of incidences where time to antibiotic administration exceeds the 60-minute target and the reasons for these, measured using patient medical notes and real-time data collection at the end of the study period
5. Total number of assay failures within the testing period and whether this varies based on geography and/or site size, and the reasons for these, measured using retrospective data collection from the device at the end of the study period
6. Total number of babies where testing was not undertaken during the 6-month testing period and the reasons for these, measured using patient medical notes and real-time data collection at the end of the study period
7. Diagnostic accuracy measured using Sanger sequencing to assess sensitivity, specificity, accuracy, positive predictive value, and negative predictive values at the end of the study
8. Ethnicity measured using self-reported ethnicity data at the end of the study

Completion date
31/10/2026

Eligibility

Key inclusion criteria
All babies admitted to a study site for the defined trial period commencing from the trial start date

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Mixed

Lower age limit
0 Days

Upper age limit
5 Years

Sex
All

Total final enrolment
0

Key exclusion criteria
Babies requiring antibiotics immediately on admission with already established IV access, where the clinical risk of waiting for the m.1555A>G result is considered, by the attending clinician, to be too great

Date of first enrolment
13/01/2025

Date of final enrolment
30/06/2026

Locations

Countries of recruitment
United Kingdom

England

Northern Ireland

Scotland

Wales

Study participating centre
Manchester University NHS Foundation Trust
Cobbett House
Oxford Road
Manchester
England
M13 9WL

Study participating centre
Belfast Health and Social Care Trust
Trust Headquarters
A Floor - Belfast City Hospital
Lisburn Road
Belfast
Northern Ireland
BT9 7AB

Study participating centre
University Hospitals Sussex NHS Foundation Trust
Worthing Hospital
Lyndhurst Road
Worthing
England
BN11 2DH

Study participating centre
NHS Greater Glasgow and Clyde
1055 Great Western Road
Glasgow
Scotland
G12 0XH

Study participating centre
Royal Bolton Hospital
Royal Bolton Hospital, Minerva Rd
Farnworth
Bolton
England
BL4 0JR

Study participating centre
Tameside and Glossop Integrated Care NHS Foundation Trust
Tameside General Hospital
Fountain Street
Ashton-under-lyne
England
OL6 9RW

Study participating centre
Norfolk and Norwich University Hospital
Colney Lane
Colney
Norwich
England
NR4 7UY

Study participating centre
Betsi Cadwaladr University Lhb
Ysbyty Gwynedd
Penrhosgarnedd
Bangor
Wales
LL57 2PW

Study participating centre
Cardiff & Vale University Lhb
Woodland House
Maes-y-coed Road
Cardiff
Wales
CF14 4HH

Study participating centre
Stockport NHS Foundation Trust
Stepping Hill Hospital
Poplar Grove
Stockport
England
SK2 7JE

Study participating centre
Wrightington, Wigan and Leigh NHS Foundation Trust
Royal Albert Edward Infirmary
Wigan Lane
Wigan
England
WN1 2NN

Study participating centre

Royal Oldham Hospital
Rochdale Road
Oldham
England
OL1 2JH

Sponsor information

Organisation
University of Manchester

ROR
https://ror.org/027m9bs27

Funder(s)

Funder type
Government

Funder Name
National Institute for Health and Care Research

Alternative Name(s)
National Institute for Health Research, NIHR Research, NIHRresearch, NIHR - National Institute for Health Research, NIHR (The National Institute for Health and Care Research), NIHR

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location
United Kingdom

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated and/or analysed during the current study will be published as a supplement to the results publication.

All data will be anonymised and collected by the research team in an aggregated format. Data pertaining to clinical timings associated with testing (e.g. time of NICU admission, time of swab, time of antibiotic administration etc) can be provided to researchers upon request to CI Prof Newman, , william.newman@manchester.ac.uk. Consent for this data collection is presumed under an “opt-out” consent model.

IPD sharing plan summary

Published as a supplement to the results publication