nipi
newborn infant pain investigations

Investigating pain in the developing human brain

Parent Information Leaflet

John Radcliffe Hospital

UNIVERSITY OF OXFORD

DEPARTMENT OF PAEDIATRICS
Medical Sciences Division

Oxford University Hospitals NHS
NHS Foundation Trust

Your child is, or may be, eligible to take part in a research study. Before you decide, it is important that you understand why the research is being done and what it involves. Please read the following information carefully and ask us if anything is unclear or if you would like more information.

1. **Study title**: Investigating pain in the developing human brain

2. What is the purpose of the study?

Infants in hospital often need to have many procedures like blood tests as part of their routine medical treatment, which may cause discomfort. As they cannot tell us how much these procedures hurt, it is difficult to know how much pain they are feeling and to make sure that they receive the right medicines. We know that infants can process discomfort and pain in their brains and we have developed a method of assessing this pain-related brain activity. We also know that infants show that they are in pain using different behaviours. These may be indicated by changes in heart rate and breathing rate in response to pain.

The aim of this research is to understand more about how infants experience pain, so that better ways of treating pain can be developed. We are also interested in how infants respond to different stimuli from their environment, such as light and sound, and how this might change across development.

3. Does my child have to take part?

No, it is your decision whether or not your child takes part. If you decide to allow your child to take part, you will be asked to sign a consent form. If you decide you do not want your child to take part, this will not affect your child's care.

If you decide you would like your child to take part, you can change your mind at any time and withdraw your child from the study by telling the research team. You do not have to give a reason. You will be asked if we can use the data/images that have already been collected for analysis (all data) and for publication of results (anonymised data only).

4. What is involved in the study?

In this study we would like to understand how infants respond to different sensory stimuli, for example:

- Light touch
- Sharp touch (this does not pierce the skin, but does stimulate the receptors that we are interested in without generally waking or upsetting the infant)
- Sound
- Light.

We will assess your child's response by measuring their brain activity. We may also video your child's face, and measure other responses such as muscle activity, heart rate and oxygen saturations.

If your child requires a clinical procedure (such as a blood test), we may ask if we can also study their response to this. Clinical procedures will be completed in the routine way. The study will not interfere with your child's clinical care, nor will there be any delay if an emergency procedure is required. We may also ask to study your child during a control procedure (this will not pierce the skin). We may also explore the impact of pain relief and comfort measures on your child and may ask you to complete a questionnaire about this.

No clinical procedures will be carried out solely for research purposes. We may monitor your child before, during and after the stimulus (and clinical procedure if your child requires one). On rare

occasions we may ask to monitor your child for up to 24 hours before and/or after the experimental stimulus/clinical procedure if your child requires one.

As we are interested in how your child's response to pain changes as they grow, we may ask if we can study your child more than once during their stay in hospital. We will also ask you if we can contact you in the future, to ask if you would be happy for your child to take part in other research studies. If you agree that we can contact you in the future about other research studies, we will also record your contact details. Your contact details will not be passed onto anyone outside of the research team. You can opt-out of this at any point by contacting Prof Rebeccah Slater (details below). Your agreement for us to contact you does not form any obligation to participate in future research.

We may use the following recording measures for your child:

Measuring brain activity

Electroencephalography (EEG)**:** EEG is a portable imaging system to measure brain activity. It involves gently placing electrodes (small metal discs) on the head using a paste that can be washed off with soap and water. EEG is routinely used on the neonatal unit, children's wards and clinics.

Near Infrared Spectroscopy (NIRS): NIRS is a non-invasive technique to measure brain activity. It involves placing lights and detectors on the head to record changes in blood and tissue oxygen levels.

Ultrasound: an ultrasound machine uses sound waves to create images of the brain. Ultrasound is routinely used to monitor babies' development during pregnancy and to assess brain development on the neonatal unit. In our research we also use a special type of ultrasound called functional ultrasound. This can measure which areas of the brain are active. An ultrasound scan involves placing an ultrasound probe on your child's head. To make contact, some gel will be applied between the head and the probe.

Measuring other responses

Electromyography (EMG): EMG is a safe non-invasive technique to record muscle activity. Small electrodes will be placed on the skin over the muscle to see if your child pulls away during the stimulation (and clinical procedure if relevant).

Vital sign monitoring: Small adhesive electrodes may be placed on your child's chest to measure changes in heart rate (this is called an ECG) and breathing rate. A small probe may also be wrapped around your child's foot to measure changes in blood oxygen levels.

Videoing your child: We may also video your child during the study. This is so that we can assess changes in facial expression and body movements, and to record the exact timing of the stimulation or clinical procedure.

We may also approach you to ask if you are happy for us to use these images for teaching, publicity and/or scientific journals. If you agree, we will take separate consent for this as your child's face would be visible in the video footage. This is not a mandatory part of the study. If you choose not to allow us to use the images in this way, this will not affect your child's care or prevent your child from participating in this research.

5. Are there any additional risks or benefits for my child?

Obtaining video footage of your child is non-invasive and does not present any risk to your child. EEG, EMG and ECG have been used clinically for over 20 years without any adverse effects. Ultrasound is a tool that is routinely used in clinical practice. The stimuli which will be applied to your child have been used in many other patient groups. All studies have a dedicated team of healthcare professionals and researchers that will ensure the safety of your child at all times. We are not aware of any risks for your child taking part in this study.

The data collected are for research, so will not be reviewed by a doctor routinely. If any clinically significant findings are identified at the time of the study then the research team will report these to the clinical care team to handle as appropriate.

There are no direct benefits of participating in this research. This study is designed to gather information, to help guide improvements in care for infants in the future. If your child becomes distressed, the research study will be paused or stopped. Any clinically required procedures will still go ahead if the treating clinician feels that this is appropriate.

6. What information will be collected about my child?

We will collect information about your child from the medical notes, including demographic (e.g. ethnicity), clinical (e.g. number of blood tests in hospital), environmental (e.g. ward transfers) and social factors (e.g. postcode). This information helps us to determine which factors may influence the way an infant copes with pain. We will also collect information about your child's brain activity, and may collect information about your child's muscle activity, vital signs (such as heart rate and breathing rate), and recordings of their facial expressions and body movements.

All information and videos that are collected during this research study will be kept strictly confidential. Each infant will be allocated a study number which will be used to label all data. This study has been registered with the data protection registration office and forms part of an educational programme.

7. What will happen to the results?

Results will be analysed and published in a journal. All publications will be made available on our website **https://neuroimaging.paediatrics.ox.ac.uk**. The findings may also be used for teaching or academic research presentations. No identifying information will be presented about you or your child, unless you have provided specific consent for us to use videos/images of your child in this way.

8. What will happen to my child's data?

We will be using information collected from your child and their medical records in order to conduct this study. Research is a task that we perform in the public interest. The University of Oxford, as Sponsor, is the data controller. This means that we, as University of Oxford researchers, are responsible for looking after the information collected and using it properly. We will use the minimum personally-identifiable information possible. We will keep identifiable information about your child for up to 5 years after the study has finished. This excludes any research documents with personal information, such as consent forms, which will be held securely at the University of Oxford for 25 years after the end of the study.

Data protection regulation provides you with control over your personal data and how it is used. When you agree to your information being used in research, however, some of those rights may

be limited in order for the research to be reliable and accurate. Further information about your rights with respect to your personal data is available at:

http://www.admin.ox.ac.uk/councilsec/compliance/gdpr/individualrights/

You can find out more about how we use your information from the contacts in section 12.

Research data may be shared with other researchers doing similar work, both here and abroad. Responsible members of the University of Oxford or the Oxford University Hospitals NHS Trust may be given access to data for monitoring and/or audit of the study to ensure we are complying with regulations.

9. Who is organising and funding this research?

This study is sponsored by University of Oxford and has been funded by The Wellcome Trust. Your doctor will not be paid for including you in this study.

10. Who has reviewed the study?

All research that involves NHS patients has to be approved by a Research Ethics Committee. Approval means that the Committee is satisfied that yours and your child's rights will be respected, that any risks have been reduced to a minimum and balanced against possible benefits, and that you have been given sufficient information on which to make an informed decision about whether to take part. The South Central Oxford C Research Ethics Committee has reviewed and approved this study.

11. Comments or concerns during the study

The University has arrangements in place to provide for harm arising from participation in the study for which the University is the Research Sponsor. NHS indemnity operates in respect of the clinical treatment with which your child is provided. If you wish to complain about any aspect of the way in which you have been approached or treated during the course of this study, you should contact Prof Rebeccah Slater (details below) or the University of Oxford Clinical Trials and Research Governance (CTRG) office (01865 (6)16480, ctrg@admin.ox.ac.uk).

12. Contact for further information

Prof Rebeccah Slater (Study Lead) *Professor of Paediatric Neuroscience* *University of Oxford*	01865 234537 rebeccah.slater@paediatrics.ox.ac.uk
Dr Eleri Adams (Clinical Lead) *Consultant Neonatologist* *Oxford University Hospitals NHS Trust*	01865 221356 eleri.adams@ouh.nhs.uk

Picture shows example of an EEG study.

Thank you for reading this information leaflet.