

# A trial comparing the effectiveness of an online sleep behavioural intervention versus standard care in children with rolandic epilepsy

<b>Submission date</b> 06/09/2021	<b>Recruitment status</b> No longer recruiting	<input checked="" type="checkbox"/> Prospectively registered <input checked="" type="checkbox"/> Protocol
<b>Registration date</b> 09/09/2021	<b>Overall study status</b> Completed	<input type="checkbox"/> Statistical analysis plan <input type="checkbox"/> Results
<b>Last Edited</b> 28/05/2026	<b>Condition category</b> Nervous System Diseases	<input type="checkbox"/> Individual participant data <input checked="" type="checkbox"/> Record updated in last year

## Plain English summary of protocol

### Background and study aims

Epilepsy is a common condition among children in the UK. Families have identified sleep problems in their children with epilepsy and also amongst parents as a major issue that doesn't get enough attention. Sleep problems can be present while they are being followed up by their paediatrician for seizures and even persist after the seizures have gone away. Sometimes their learning, behaviour, self-esteem and mood are affected too.

Sleep problems can be managed through practice. There are guidelines to help children in general with their sleep, but there is nothing available that specifically helps children with epilepsy and their parents address sleep problems and improve their sleep quality.

The CASTLE Sleep-E study aims to find out whether giving families access to an online sleep intervention (known as the CASTLE Online Sleep Intervention or "COSI" for short) will help improve their quality of sleep. We will compare the child and parent's sleep quality at the start and after three months. In order to make a fair and balanced comparison, half the families will receive COSI and the other half will receive standard care from their paediatrician. With these equally divided groups we'll be able to evaluate if COSI works or not.

### Who can participate?

Children aged 4 to 13 years who have Rolandic epilepsy and sleep problems.

### What does the study involve?

Families who are happy to participate in CASTLE Sleep-E will be followed up for 6 months after randomisation. Participants and their primary carers are asked to complete a number of questionnaires and assessments during their time on the trial. Site research teams will also collect data using electronic Case Report Forms (eCRFs) at clinic appointments planned at baseline, randomisation and 3 and 6 months post-randomisation. Data collection for CASTLE Sleep-E has been designed to be completed remotely, removing the need for participants to attend hospital visits in person.

Prior to entering the study, families will be invited to discuss the study with a member of their local research team and if happy to proceed, will be asked to provide consent and assent (if appropriate) using an e-consent system. Access to this e-consent system will be emailed to the

primary carer. The possibility of taking part in qualitative interviews will also be discussed at this visit, however if a family does not wish to consent to this activity, it will not impact their participation in the main trial.

Once valid consent is obtained, participants and one of their primary carers will be asked to wear an actigraph (sleep monitor) for 2 weeks. During this actigraphy period, families will also be asked to complete some electronic questionnaires and the participant will be asked to complete an iPad game, called SleepSuite. The actigraph and study iPad will be delivered directly to the participant's address at a time which is convenient for them.

Once the 2-week actigraphy period is over and the minimum dataset obtained, participants will be randomised to receive either the online behavioural sleep intervention or standard care. If a participant is randomised to the sleep intervention, log in details and instructions will be emailed directly to the primary carer. Those participants randomised to standard care will be followed up as per their clinician's normal practice.

After randomisation, participants will be followed up at 3 months and 6 months timepoints, regardless of allocation. At 3 months, participants and their primary carer will again be asked to wear an actigraph, complete electronic questionnaires and the SleepSuite assessment. At 6 months, only questionnaires are required to be completed by families.

If consent for the qualitative interviews was obtained during the initial consent discussion, families will be contacted by researchers at 3 and 6 months after randomisation. Interview topic guides will be sent to families to give them time to prepare. Interviews are semi-structured and can be tailored to each family, depending on themes to be discussed.

At the end of the trial, participants will be given the option to receive PDF copies of the COSI content, irrespective of their trial allocation. Further information about the trial can be found in the Parent/Guardian Patient Information Sheet.

**What are the possible benefits and risks of participating?**

Participants recruited into the trial will receive standard NHS care during the conduct of the trial. The main potential benefit from COSI is in terms of improved sleep compared to standard treatment for both patient and carer. Participants may also feel the benefit from a regular and rigorous follow-up schedule. The risks of participating in the trial are no greater than those encountered in standard care.

**Where is the study run from?**

King's College, London (UK)

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

May 2018 to September 2024

**Who is funding the study?**

National Institute for Health Research (NIHR) (UK)

**Who is the main contact?**

Lucy Stibbs-Eaton, castlesleepe@liverpool.ac.uk

## Contact information

**Type(s)**

Scientific

**Contact name**

None Admin Team

## Contact details

Liverpool Clinical Trials Centre  
University of Liverpool  
Waterhouse Building  
Brownlow Street  
Liverpool  
United Kingdom  
L69 3GL  
-  
lctcadmin@liverpool.ac.uk

## Additional identifiers

**Integrated Research Application System (IRAS)**  
289580

**Central Portfolio Management System (CPMS)**  
50413

**Protocol serial number**  
Grant Codes: RP-PG-0615-20007

## Study information

### Scientific Title

Randomised controlled trial comparing online behavioural sleep intervention with standard care in children with rolandic epilepsy

### Acronym

CASTLE Sleep-E

### Study objectives

To determine if an Online Sleep Behavioural Intervention is superior to standard care with respect to 3-month sleep problem frequency measured by Children's Sleep Habits Questionnaire (CSHQ).

### Ethics approval required

Old ethics approval format

### Ethics approval(s)

Approved 28/10/2021, East Midlands - Nottingham 1 Research Ethics Committee (The Old Chapel, Royal Standard Place, Nottingham, NG1 6FS, UK; no telephone number provided; Nottingham1.rec@hra.nhs.uk), ref: 21/EM/0205

### Study design

Interventional randomized controlled trial

### Primary study design

Interventional

## **Study type(s)**

Treatment

## **Health condition(s) or problem(s) studied**

Sleep quality in children with rolandic epilepsy

## **Interventions**

CASTLE Sleep-E is a randomised controlled trial comparing an online sleep behaviour intervention against standard care in children with epilepsy.

There is a target recruitment of 110 participants in total. Participants will be children with RE in the UK. All patients aged between 5 and <13 years with diagnosis of RE will be screened at the trial centres to identify potentially eligible participants for the trial. Potentially eligible patients and those providing consent (person with parental responsibility) will be invited to participate in the trial and provided with a patient information sheet and consent form in either an electronic format. There is an option for a paper version of this document to be provided for review, however ultimately all consent/assent for the study will be obtained electronically. The patient and the person providing consent will be allowed sufficient time to discuss the trial and decide whether to consent/assent to trial entry.

The trial will be open to recruitment for 12 months. Participants will be followed up at 3 and 6 months after randomisation.

At visit 1 (T-4 weeks), a review of medical history and EEG results will be completed. An assessment of the patient against the eligibility criteria will be performed and full eligibility will be confirmed. If the patient is eligible for the study, consent and assent (if the child is 7 years or older and capable) will be sought.

Patient demographics will be collected and a COVID screener questionnaire will also be completed at this visit. Additionally, families be asked to consider taking part in the interview component of the trial, however this is optional and declining to this activity will not impact their recruitment to the main study.

Consent and assent will be completed electronically at this visit. The appropriate information sheet and consent/assent forms being available through a secure e-consent system. The primary carer and participant's contact details will be collected at this visit as part of the consent form. Once signed, a copy of the consent/assent form will be provided electronically or participant will be provided with a printed copy.

Participants will not receive their treatment allocation at Visit 1. Instead, they will be randomised to their treatment arm following the collection of baseline actigraphy and questionnaire data.

All participants and one of their primary carers will be asked to wear an actigraph (a watch that records your sleep) for 2 weeks at 2 different times during the study: after visit 1 and after visit 3 (3 months).

Once valid consent is obtained for the study, the sleep team for CASTLE Sleep-E at Oxford Brookes University will be notified via email. The team will use the contact details collected during the consent discussion to contact the primary carer to arrange delivery of the actigraphs and study iPad, the latter will be used to complete an online SleepSuite assessment throughout the study. The study iPad may also be used to complete study questionnaires. Participants and their primary carers will be provided with instructions for the actigraphs/iPad and how to return these devices.

During the actigraphy period, participants and primary carers are asked to complete a number of questionnaires electronically. Participants are also asked to complete an online SleepSuite assessment during this time. An email containing a web link to the questionnaires will be sent to participants after the dispatch of their actigraphs. Participants will also be prompted to complete the online SleepSuite assessment on the study iPad.

Once the actigraph period has ended and the minimum dataset have been completed, the participant can be randomised to the study. Randomisation will be completed as part of a telephone/video call or face-to-face visit (Visit 2 - T0).

During Visit 2, there will be a review of contact details and confirmation of continued eligibility. Baseline medical and school absence information will be collected from the participant and primary carer. Randomisation will then take place.

If the child is allocated to receive sleep intervention, the details to access the sleep training plan will be sent via email to the primary carer. To access the intervention, they will have to click on the link sent via email through their laptop, tablet or smartphone.

Visits 3 and 4 (at 3 and 6 months respectively) may be carried out face-to-face or by telephone /video call. The research team will ask questions about the participant's health and well-being. Around these timepoints, an email will be sent to primary carers and participants asking them to complete study questionnaires. The SleepSuite assessment will be completed on the study iPad at Visit 3 only.

Additionally, the sleep team at Oxford Brookes will be in contact to arrange delivery of the actigraphs which participants are asked to wear for 2 weeks at 3 months post randomisation (Visit 3).

If the family consented to taking part in the interview component of the trial during Visit 1, they may be contacted by the qualitative team at Edge Hill University in the weeks following Visits 3 and 4. These interviews will be audio-recorded (with permission) and transcribed. Interviews with minors will be supported with the use of activity booklets.

Families will be given the option to receive study postcards at three different timepoints during and shortly after the study. They will be sent to families between months 1-2 and 4-5 of trial participation and 4-8 week after the final study visit. The postcards will be sent via post (in a sealed envelope) and will be addressed to the child (courtesy of their primary carer). They will contain child-orientated activities (e.g. a wordsearch, scavenger hunt and maze). The final postcard will be accompanied by a study certificate.

An internal pilot will be carried out during the first 6 months of recruitment to review the recruitment and consent rate.

Formal interim analysis will not be performed, however the IDSMC will be asked to review and consider the information collected during the internal pilot and make recommendations to the TSC as to whether further recruitment and follow up should continue.

## **Intervention Type**

Behavioural

## **Primary outcome(s)**

1. Total child sleep problem score as measured by the Child Sleep Habit Questionnaire at baseline and 3 months.
2. Cost utility of COSI reported as incremental cost per QALY gained will be measured using the EQ-5D-Y, CHUD-9D, Resource Use Questionnaire, study visits CRFs, concomitant medications, serious adverse events and utility questionnaires at baseline, 3, and 6 months. PLICS and HES data will be used at the end of trial.

## **Key secondary outcome(s)**

1. Total child sleep problem score as measured by the Child Sleep Habit Questionnaire at baseline and 6 months.
2. Time to first seizure measured using study CRF data at 3 and 6 months.
3. Time to 6-month seizure remission measured using study CRF data at 3 and 6 months.
4. Parental sleep-related knowledge is measured by the score of the Knowledge about Sleep in Childhood (KASC) scale at baseline and 3 months.
5. Parental Anxiety is measured by the score of the Hospital Anxiety and Depression Scale (HADS) at baseline, 3 and 6 months.
6. Parental sleep problems are recorded by the Insomnia Severity Scale (ISI) at baseline, 3 and 6 months.
7. Children's sleep-related reaction time and executive function is measured by the score of the SleepSuite assessment (iPad game) at baseline and 3 months.
8. Health-related quality of life is measured by the CHEQOL score change in Children / WHO-5 score change in primary carers at baseline and 6 months.
9. Children's behaviour is measured by the total score of the Strength and Difficulties Questionnaires at baseline, 3 and 6 months.
10. Parenting self-efficacy is measured using score changes in the Parenting Self Agency Measure (PSAM) at baseline, 3 and 6 months.
11. Changing sleep parameters measured by the collection of actigraphy data for 2 weeks at baseline and 3 months.
12. Sickness-related school absences are recorded using study CRFs at randomisation, 3 and 6 months.
13. Child health utilities and QALYs are measured using the score changes/differences in CHU-9D and EQ-5D-Y utilities/QALYs at baseline, 3 and 6 months.
14. Parent health utilities and QALYs are measured using the score changes in EQ-5D-5L and differences in EQ-5D-DL/ISI QALYs.
15. NHS/Personal Social Service costs measured using the Resource Use Questionnaire, CRF data and PLICS/HES data at baseline, 3 and 6 months.
16. Indirect and direct non-medical costs measured by CRF data and Resource Use Questionnaire data at baseline, 3 and 6 months.
17. The cost-utility under alternative scenarios measured using the Resource Use Questionnaires and Study CRFs at baseline, 3 and 6 months and PLICS/HES at the end of the trial.

## **Qualitative outcomes**

1. The qualitative experiences of primary carers and children will be collected during interviews conducted at 3 months and 6 months.

## **Completion date**

04/09/2024

## **Eligibility**

### **Key inclusion criteria**

Current inclusion criteria as of 31/01/2023:

Main CASTLE Sleep-E study:

1. Children with clinician-confirmed diagnosis of epilepsy
2. Aged  $\geq 4$  years and  $< 13$  years at the time of randomisation
3. Parent/Carer reported child sleep problem as defined by mild, moderate or severe score on Hiscock Australian global sleep question (Poor sleeper defined by caregiver responding 'Mild', 'Moderate' or 'Severe' to "Over the last 2 weeks, how much of a problem has your child's sleep

been?”)

4. Documented informed consent received from a person with parental responsibility
5. Family have an email address and mobile phone
6. Parent and child are to have a good enough understanding of the English language to read and answer study questionnaires

In order to participate in the Qualitative Component of the study, the following criteria must be met:

1. Consent of caregiver to participate and for their child to participate (optional item on main trial consent form)
2. Children need to be  $\geq 7$  years of age

Previous inclusion criteria:

Main CASTLE Sleep-E study:

1. Children diagnosed with RE/CECTS (see International League Against Epilepsy Diagnostic Manual at <https://www.epilepsydiagnosis.org/syndrome/ects-overview.html>)
2. EEG showing focal sharp waves with normal background (see International League Against Epilepsy Diagnostic Manual at <https://www.epilepsydiagnosis.org/syndrome/ects-eeg.html>)
3. Aged  $\geq 5$  years and  $< 13$  years at the time of randomisation
4. Parent/Carer reported child sleep problem as defined by mild, moderate or severe score on Hiscock Australian global sleep question (Poor sleeper defined by caregiver responding ‘Mild’, ‘Moderate’ or ‘Severe’ to “Over the last 2 weeks, how much of a problem has your child’s sleep been?”)
5. Documented informed consent received from a person with parental responsibility
6. Family have an email address and mobile phone
7. Parent and child are to have a good enough understanding of the English language to read and answer study questionnaires

In order to participate in the Qualitative Component of the study, the following criteria must be met:

1. Consent of caregiver to participate and for their child to participate (optional item on main trial consent form)
2. Children need to be  $\geq 7$  years of age

### **Participant type(s)**

Patient

### **Healthy volunteers allowed**

No

### **Age group**

Child

### **Lower age limit**

4 years

### **Upper age limit**

13 years

### **Sex**

All

**Total final enrolment**

85

**Key exclusion criteria**

Children with moderate/severe learning disabilities

**Date of first enrolment**

30/08/2022

**Date of final enrolment**

31/10/2023

**Locations****Countries of recruitment**

United Kingdom

England

Northern Ireland

Scotland

Wales

**Study participating centre****King's College Hospital**

Denmark Hill

London

England

SE5 9RS

**Study participating centre****St Thomas's Hospital**

249 Westminster Bridge Road

London

England

SE1 7EH

**Study participating centre****Diana Princess of Wales Hospital**

Scartho Road

Grimsby

England

DN33 2BA

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

**Study participating centre**  
**Arrowe Park Hospital**  
Arrowe Park Road  
Wirral  
England  
CH49 5PE

**Study participating centre**  
**Craigavon Area Hospital**  
Lurgan Rd  
Craigavon  
Northern Ireland  
BT63 5QQ

**Study participating centre**  
**Luton and Dunstable University Hospital**  
Lewsey Road  
Luton  
England  
LU4 0DZ

**Study participating centre**  
**University College London Hospital**  
235 Euston Road  
London  
England  
NW1 2BU

**Study participating centre**

**Southampton General Hospital**

Tremona Road  
Southampton  
England  
SO16 6YD

**Study participating centre****Worthing Hospital**

Lyndhurst Road  
Worthing  
England  
BN11 2DH

**Study participating centre****NHS Grampian**

Summerfield House  
2 Eday Road  
Aberdeen  
Scotland  
AB15 6RE

**Study participating centre****NHS Tayside**

Kings Croos  
Cleington Road  
Dundee  
Scotland  
DD3 8EA

**Study participating centre****Airedale General Hospital**

Skipton Road  
Steeton  
Keighley  
England  
BD20 6TD

**Study participating centre****Peterborough City Hospital**

Edith Cavell Campus  
Bretton Gate

Bretton  
Peterborough  
England  
PE3 9GZ

**Study participating centre**  
**James Paget University Hospital**  
Lowestoft Road  
Gorleston  
Great Yarmouth  
England  
NR31 6LA

**Study participating centre**  
**Doncaster Royal Infirmary**  
Armthorpe Road  
Doncaster  
England  
DN2 5LT

**Study participating centre**  
**Barnsley Hospital**  
Gawber Road  
Barnsley  
England  
S75 2EP

**Study participating centre**  
**Homerton Hospital**  
Homerton Row  
London  
England  
E9 6SR

**Study participating centre**  
**Great North Children's Hospital**  
Queen Victoria Road  
Newcastle upon Tyne  
England  
NE1 4LP

**Study participating centre**  
**Scunthorpe General Hospital**  
Cliff Gardens  
Scunthorpe  
England  
DN15 7BH

**Study participating centre**  
**Hinchingbrooke Hospital**  
Hinchingbrooke Park  
Huntingdon  
England  
PE29 6NT

**Study participating centre**  
**Oxford Children's Hospital**  
John Radcliffe Hospital  
Oxford  
England  
OX3 0AG

**Study participating centre**  
**Princess of Wales Hospital**  
Coity Road  
Bridgend  
Bridgend County Borough  
Wales  
CF31 1RQ

**Study participating centre**  
**University Hospital Lewisham**  
Lewisham High Street  
London  
England  
SE13 6LH

**Study participating centre**  
**St Richard's Hospital**  
Spitalfield Lane

Chichester  
England  
PO19 6SE

## Sponsor information

### Organisation

King's College London

### ROR

<https://ror.org/0220mzb33>

## Funder(s)

### Funder type

Government

### Funder Name

NIHR Central Commissioning Facility (CCF)

### Funder Name

National Institute for Health Research (NIHR) (UK)

### 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

## IPD sharing plan summary

Data sharing statement to be made available at a later date

### Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
<a href="#">Protocol article</a>		10/03/2023	13/03/2023	Yes	No
<a href="#">HRA research summary</a>			28/06/2023	No	No
<a href="#">Protocol (preprint)</a>		31/05/2022	23/06/2022	No	No
<a href="#">Study website</a>	Study website	11/11/2025	11/11/2025	No	Yes