

# Pain and hypoxia in premature neonates

<b>Submission date</b> 18/05/2015	<b>Recruitment status</b> No longer recruiting	<input type="checkbox"/> Prospectively registered <input type="checkbox"/> Protocol
<b>Registration date</b> 21/05/2015	<b>Overall study status</b> Completed	<input type="checkbox"/> Statistical analysis plan <input type="checkbox"/> Results
<b>Last Edited</b> 26/05/2015	<b>Condition category</b> Signs and Symptoms	<input type="checkbox"/> Individual participant data <input type="checkbox"/> Record updated in last year

## Plain English summary of protocol

### Background and study aims

Premature babies (those born at less than 37 weeks gestation) usually need special care in a hospital neonatal intensive-care unit (NICU). This is because they often have serious health problems as a result of being born too early, such as difficulty with breathing and low blood sugar (glucose). As a result, premature babies often need to have an endotracheal tube inserted through their mouth and down their throat to help them breath. They also need frequent blood tests to monitor their health. Therefore, two of the most common routine procedures performed on premature babies in NICUs are suctioning of the endotracheal tube to keep the baby's airway clear, and heel pricks to draw blood samples for glucose (blood sugar) monitoring. Both of these procedures are known to cause some level of discomfort and pain to babies, so on these occasions they are given an oral sugar (sucrose) solution and a dummy (non-nutritive sucking pacifier) to soothe them. Although these procedures are performed repeatedly in the majority of premature babies, their effect on the energy levels of the body's cells are not clear. It is well known that if energy in the cells is low, this can lead to a lack of oxygen in blood and tissue called hypoxia. Hypoxia is known to cause pain and is a very common complication for premature babies due to them not being able to breathe on their own. The aim of this study is to see what effect suctioning of the endotracheal tube and heel prick tests have on energy levels in the cells of premature babies, and will assess the levels of hypoxia-associated pain experienced. The results of this study will be used to inform future studies investigating ways to decrease pain and hypoxia in premature babies.

### Who can participate?

Premature babies of less than 36 weeks gestation.

### What does the study involve?

Participants are randomly allocated into one of two groups. Those in group 1 (intervention group) are given a sugar (sucrose) solution and a dummy during endotracheal tube suctioning and heel prick procedures. Those in group 2 (control group) are given a non-sugar solution and a dummy during endotracheal tube suctioning and heel prick procedures. Participants have blood tests and pain is assessed using a premature infant pain profile assessment tool.

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

Not provided at time of registration.

Where is the study run from?

1. Loma Linda University Children's Hospital (USA)
2. Riverside County Regional Medical Center (USA)

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

February 2009 to December 2014

Who is funding the study?

National Institutes of Health (USA)

Who is the main contact?

Dr D Angeles

### **Study website**

www.llu.edu

## **Contact information**

### **Type(s)**

Scientific

### **Contact name**

Dr Danilyn Angeles

### **Contact details**

Loma Linda University

Loma Linda

United States of America

92354

## **Additional identifiers**

EudraCT/CTIS number

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers

NR011209-01A1

## **Study information**

### **Scientific Title**

Pain and hypoxia in premature neonates: a randomised controlled trial

### **Study objectives**

Commonly performed tissue damaging procedures exhibit a positive correlation between biobehavioural markers of pain and biochemical markers of hypoxia, oxidative stress and cell injury.

**Ethics approval required**

Old ethics approval format

**Ethics approval(s)**

Loma Linda University Institutional Review Board, 25/02/2009, ref: 59038.

**Study design**

Randomised double-blind placebo controlled trial design

**Primary study design**

Interventional

**Secondary study design**

Randomised controlled trial

**Study setting(s)**

Hospital

**Study type(s)**

Prevention

**Participant information sheet**

Not available in web format, please use contact details to request a participant information sheet.

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

Procedural pain in premature neonates

**Interventions**

1. Intervention group: sucrose 24% and non-nutritive sucking
2. Control group: placebo and non-nutritive sucking

**Intervention Type**

Supplement

**Primary outcome measure**

1. Pain score
2. Plasma concentration of hypoxanthine, xanthine, uric acid and allantoin

**Secondary outcome measures**

Not applicable.

**Overall study start date**

25/02/2009

**Completion date**

29/12/2014

**Eligibility**

**Key inclusion criteria**

Premature infants <36 weeks gestation who:

1. Weigh >800 grams
2. Have an arterial or central line catheter in place
3. Require endotracheal suctioning or heel lance

**Participant type(s)**

Patient

**Age group**

Neonate

**Sex**

Both

**Target number of participants**

260

**Key exclusion criteria**

1. Unstable oxygenation and hemodynamic status due to persistent pulmonary hypertension (PPHN)
2. Cyanotic heart disease
3. Severe respiratory distress
4. Septic shock
5. Taking medications such as morphine, fentanyl, versed, muscle relaxants, phenobarbital, or dilantin
6. Intraventricular hemorrhage grade 3 or more
7. Seizures
8. Facial or multiple congenital anomalies that may alter pain behavior

**Date of first enrolment**

25/02/2009

**Date of final enrolment**

29/12/2014

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

United States of America

**Study participating centre**

Loma Linda University Children's Hospital

Risley Hall

Loma Linda

United States of America

92354

**Study participating centre**  
Riverside County Regional Medical Center  
NICU  
Riverside  
United States of America  
92354

## Sponsor information

### Organisation

National Institutes of Health, National Institute of Nursing Research

### Sponsor details

9000 Rockville Pike  
Bethesda, Maryland  
United States of America  
20892

### Sponsor type

Government

### Website

<http://nih.gov>

### ROR

<https://ror.org/01y3zfr79>

## Funder(s)

### Funder type

Government

### Funder Name

National Institutes of Health

### Alternative Name(s)

Institutos Nacionales de la Salud, US National Institutes of Health, NIH

### Funding Body Type

Government organisation

### Funding Body Subtype

National government

**Location**

United States of America

## **Results and Publications**

**Publication and dissemination plan**

Not available at time of registration.

**Intention to publish date**

30/06/2016

**Individual participant data (IPD) sharing plan**

**IPD sharing plan summary**

Stored in repository