

# Advanced CT examination of collapsed lungs: looking for the leak point

<b>Submission date</b> 13/11/2024	<b>Recruitment status</b> No longer recruiting	<input type="checkbox"/> Prospectively registered <input type="checkbox"/> Protocol
<b>Registration date</b> 30/12/2024	<b>Overall study status</b> Completed	<input type="checkbox"/> Statistical analysis plan <input type="checkbox"/> Results
<b>Last Edited</b> 30/12/2024	<b>Condition category</b> Respiratory	<input type="checkbox"/> Individual participant data <input type="checkbox"/> Record updated in last year

## Plain English summary of protocol

### Background and study aims

This study is designed to assess whether we can use a CT scan to identify the site of an air leak in patients with a collapsed lung (pneumothorax) and whether having a tube in to remove the air (an intercostal chest drain) makes the leak of air from the lung worse.

Information from this study may serve as a basis for larger research studies in the future, which could change the way that we manage patients with a collapsed lung; being able to identify where the air is leaking from opens the door for future research into providing targeted treatments to seal the leak, and knowing whether tube drainage is worsening or prolonging the leak of air may reassure us that we can take patients' tubes out earlier without risking the lung collapsing again.

### Who can participate?

Potential participants will be identified from patients presenting with a traumatic, iatrogenic or spontaneous pneumothorax to North Bristol NHS Trust by a clinician working within the trust.

### What does the study involve?

A member of the study team will discuss the study with you and assess whether you are suitable. If you are happy to take part, a CT will be requested for you as soon as is practical. In the radiological department, you will be asked to lie down in the CT scanner. A member of the study team will close off your chest drain and administer sterile water solution through your drain. You will be asked to make a long loud noise. There will be four phases of CT scans. There is no follow-up requirements with the study.

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

#### Benefits:

Your participation in this study will help improve our understanding of air leak in patients with pneumothorax and evaluate how good this CT scanning technique is at demonstrating an air leak. With this information, we will be able to run larger studies, with the results of which we may be able to offer more targeted therapies to treat air leak and resolve a patient's pneumothorax more quickly. This could benefit patients in your position in the future.

#### Risks:

During the study, we will administer 500ml of 0.9% sodium chloride (saline) solution into the

chest drain. Saline is commonly used in patients with chest drains; we will often flush a chest drain several times a day to ensure that it doesn't become blocked or use larger volumes of saline to break down pockets of fluid in patients with infection in their pleural space. The saline itself is very safe but sometimes can be a little uncomfortable as it is administered and can sometimes leak out from around the drain as well as through it. There is a very small risk that we can introduce infection into the space when we access the drain to administer the saline, but we wash our hands, wear sterile gloves and clean the tap attached to the drain thoroughly to reduce that risk.

On occasion, air can accumulate again in the pleural space when the drain is closed off, if the air leak continues. A member of the study team will be present during your CT scan and will be monitoring you closely. If you feel more breathless or develop worsening chest pain during the CT scan, let the radiographer know and we will open the drain again. This will allow any air that has accumulated to drain out and resolve your symptoms quickly.

CT scans are often used to investigate patients with a pneumothorax, either to ensure that the drain is adequately positioned within the chest or to look at the underlying lung tissue to explore why you may have developed a pneumothorax in the first place.

If you take part in this study, you will have a multi-phase CT scan of the chest. This will be extra to that which you would have if you did not take part in the trial. This procedure uses ionising radiation to form images of your body and provide your doctor with other clinical information. Ionising radiation may cause cancer many years or decades after the exposure. We are all at risk of developing cancer during our lifetime. 50% of the population is likely to develop one of the many forms of cancer at some stage during our lifetime. Taking part in this study will increase the chances of this happening to you to about 50.11 % (0.11% increase over natural incidence).

Where is the study run from?  
North Bristol NHS Trust (UK)

When is the study starting and how long is it expected to run for?  
April 2024 to May 2026

Who is funding the study?  
Academy of Medical Sciences (UK)

Who is the main contact?  
Dr Steve Walker, [steven.walker@bristol.ac.uk](mailto:steven.walker@bristol.ac.uk)

## Contact information

### Type(s)

Public, Scientific

### Contact name

Ms Jenny Symonds

### Contact details

University of Bristol  
Southmead Hospital  
Bristol  
United Kingdom

BS10 5NB

-

Jenny.Symonds@nbt.nhs.uk

### **Type(s)**

Principal investigator

### **Contact name**

Dr Steve Walker

### **Contact details**

University of Bristol  
Southmead Hospital  
Bristol  
United Kingdom  
BS10 5NB

-

steven.walker@bristol.ac.uk

## **Additional identifiers**

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

327232

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

61757

### **Protocol serial number**

SGL027\1076

## **Study information**

### **Scientific Title**

Radiological ASsessment of Pneumothorax (RASP)

### **Acronym**

RASP

### **Study objectives**

Primary objective:

To assess the utility of 320-MDCT in identifying visceral air leak in patients with spontaneous, traumatic or iatrogenic pneumothorax

Secondary objectives:

1. To test whether open continuous drainage increases incidence of visceral pleural leak point when compared to closed (clamped) drainage.
2. To evaluate the relationship between digital air leak (DAL) measurements and detectable visceral pleural leak point identified on 320-MDCT.
3. To determine whether application of digital suction increases the incidence of visceral pleural leak point when compared to no suction.

## **Ethics approval required**

Ethics approval required

## **Ethics approval(s)**

approved 16/04/2024, East of England - Cambridge Central Research Ethics Committee (2 Redman Place, Stratford, London, E20 1JQ, United Kingdom; +44 207 104 8063; cambridgecentral.rec@hra.nhs.uk), ref: 24/EE/0072

## **Study design**

Interventional non-randomized

## **Primary study design**

Interventional

## **Study type(s)**

Screening

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

Pneumothorax

## **Interventions**

A multi-phase 320-MDCT scan will be requested and performed at the earliest convenience. Whilst the participant is on the CT trolley, digital assessment of the air leak and an ultra-low dose helical whole chest CT scan will be performed. 500ml of sterile 0.9% sodium chloride will then be instilled into their chest drain and the drain clamped. The next phase of the CT scan will then be performed whilst the participant makes a sustained loud vocalisation (such as a moan or yell). The drain will then be unclamped and the next phase of the CT scan performed whilst the participant makes a sustained loud vocalisation (such as a moan or yell). The drain will then be placed on -20cm of suction and the final phase of the CT scan performed whilst the participant makes a sustained loud vocalisation (such as a moan or yell).

Once the scan is complete, the drain will be left unclamped and suction returned to pre-intervention settings as decided by the clinician responsible for their care. The participant will return to the ward and their ongoing care will continue under their clinical team. There is no further trial follow up required.

## **Intervention Type**

Other

## **Phase**

Not Specified

## **Primary outcome(s)**

Rate of identification of visceral air leak on 320-MDCT by radiologist

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

1. The proportion of participants in whom a visceral air leak is identified on 320-MDCT with the drain clamped, unclamped and on suction
2. Measurement of digital air leak on a Thopaz device with the drain unclamped and on suction

**Completion date**

12/05/2026

## Eligibility

**Key inclusion criteria**

1. Spontaneous, traumatic or iatrogenic pneumothorax
2. Chest drain in situ for management of pneumothorax
3. Detectable ongoing air leak

**Participant type(s)**

Patient

**Healthy volunteers allowed**

No

**Age group**

Adult

**Sex**

All

**Key exclusion criteria**

1. Unable to lie flat
2. Unable to tolerate clamped ICD
3. Aged less than 50 years of age
4. Pregnant or breastfeeding patient
5. Inability to consent or comply with trial requirements.

**Date of first enrolment**

30/11/2024

**Date of final enrolment**

01/01/2026

## Locations

**Countries of recruitment**

United Kingdom

England

**Study participating centre**

**Southmead Hospital**

Southmead Road

Westbury-on-trym

Bristol  
United Kingdom  
BS10 5NB

## Sponsor information

### Organisation

North Bristol NHS Trust

### ROR

<https://ror.org/036x6gt55>

## Funder(s)

### Funder type

Research organisation

### Funder Name

Academy of Medical Sciences

### Alternative Name(s)

The Academy of Medical Sciences

### Funding Body Type

Private sector organisation

### Funding Body Subtype

Universities (academic only)

### Location

United Kingdom

## Results and Publications

### Individual participant data (IPD) sharing plan

The current data sharing plans for this study are unknown and will be available at a later date

### 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?
-------------	---------	--------------	------------	----------------	-----------------

[Participant information sheet](#)

version 1.1

05/04/2024

19/12/2024

No

Yes