Incentive spirometry for adult patients with sickle cell disease

North Central London Haemoglobinopathy Network jointly with Whittington Health, Royal Free London, and Luton and Dunstable NHS Foundation Trust

Joint Red Cell Unit
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What is incentive spirometry?

Incentive spirometry (IS) is a simple exercise and one of the best ways to prevent chest complications, or prevent your chest problem from becoming worse.

A randomised trial in 1995 of 29 patients with sickle cell disease (SCD) who were admitted to hospital 38 times with above-diaphragm chest and back pain showed that using incentive spirometry can help to prevent pulmonary (lung) complications[1].

Incentive spirometry is intended to copy sighing or yawning by encouraging you to take long deep breaths. This is achieved by using a visual device, called an incentive spirometer, and inhaling at a pre-set flow rate. Once you have taken the breath in, we will ask you to try to hold it for a minimum of three seconds before breathing out.

The aims of the exercise
This exercise aims to increase the amount of air that you breathe in and the pressure in your chest, and to improve the way your breathing muscles work. This can then prevent, or reverse, small pockets of lung from collapsing (known as atelectasis).

Atelectasis can increase the risk of acute chest syndrome which is a severe and potentially life-threatening complication of sickle cell disease. Incentive spirometry can help to reduce this risk, especially in people who are not up and about, or those who are not taking deep breaths.

Reasons for using incentive spirometry
• Chest pain
• Following an operation
• Back pain above the level of the diaphragm
• Acute chest syndrome
• Chest infection
• Worsening chest X-ray
• Reduced oxygen saturation (drop of 4% from baseline).

When to use your incentive spirometry device
At University College Hospital the doctors will prescribe the IS on your drug chart and a member of the nursing team may show you how to use the device initially. If there are any concerns, the physiotherapist will check your technique with you to ensure that you are using the device correctly.

We would like you to do this simple exercise 10 times in one hour if possible. Split the 10 breaths into two or three deep breaths at a time to avoid getting light-headed from hyperventilation.
How to use your incentive spirometry device

• Make sure you are sitting upright in the bed or on a chair, with the base of the device at mid-chest level.

• Ensure that the dial at the base of the device is set between two and four (low flow rate) to check your base comfort inhalation.

• Place the mouthpiece in your mouth with your lips pressed around it to prevent air leaks.

• As you inhale, you should notice the ball rising in the tube of the device. At the peak of your inhalation the ball should be at the top of the tube.

• See if you can hold the ball up there for one, two, three seconds before breathing out.

• Repeat this sequence one or two times.

• If you are able to do this exercise with ease, increase the flow rate at the base of the device to six or higher until you find it harder to keep the ball afloat.

• If you find inhalation painful, please let your doctor know so that we can explore the reason for the pain and put your mind at rest.

• This simple breathing exercise can improve your present sickle cell crisis or help prevent chest complications so it is important that you use your incentive spirometer every hour when you are awake.
Contact details

Haematology advice line (office hours, adults and children):
020 3447 7359

Adult haematology advice line (out of hours):
07852 220 900

Paediatric helpline (out of hours):
  • nurse in charge 07961 081 645
  • ward T11 south 020 3456 7890 ext. 71103 or 71143

Apheresis:
020 3447 1803

Address: The Joint Red Cell Unit
         Department of Haematology
         3rd Floor West, 250 Euston Rd
         London NW1 2PG

Website: www.uclh.nhs.uk/JRCU

Haematology consultants:
Professor John Porter
Dr Sara Trompeter
Dr Perla Eleftheriou
Dr Emma Drasar
Dr Bernard Davis
Dr Farrukh Shah

Specialist nurses:
Bernadette Hylton (adults)
Nancy Huntley (apheresis)
Nina Gorman (children)
Where can I get more information?

Sickle Cell Society
Tel:  020 8861 7795  
Website:  www.sicklecellsociety.org

NHS Sickle Cell and Thalassaemia Screening Programme
Website:  www.gov.uk/guidance/sickle-cell-and-thalassaemia-screening-programme-overview

UK Thalassaemia Society
Tel:  020 8882 0011  
Fax:  020 8882 8618  
Email:  office@ukts.org  
Website:  www.ukts.org

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