



Incentive spirometry for adult patients with sickle cell disease

A patient's guide

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.



Incentive spirometer

1. Bellet PS, Kalinyak KA, Shukla R, Gelfand MJ, Rucknagel DL. Incentive spirometry to prevent acute pulmonary complications in sickle cell diseases. N Engl J Med. 1995 Sep 14;333(11):699-703.



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 Whittington Health 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

Specialist nurses

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Haematology consultants

Dr Bernard Davis
 Dr Farrukh Shah
 Dr Ali Rismani
 Dr Emma Drasar

Paediatric consultants

Dr Andrew Robins
 Dr Janine Younis

If you or your family have any other questions please do not hesitate to contact any of the above healthcare professionals at Whittington Health.

Patient advice and liaison service (PALS)

If you have a compliment, complaint or concern please contact our PALS team on 020 7288 5551 or whh-tr.whitthealthPALS@nhs.net

If you need a large print, audio or translated copy of this leaflet please contact us on 020 7288 3182. We will try our best to meet your needs.

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