

## Clinical haematology

# Using incentive spirometry in sickle cell disease

## Information for patients, relatives and carers

### Introduction

This leaflet has been provided to help answer some of the questions you may have about the use of incentive spirometry in sickle cell disease (SCD). People with sickle cell disease are more likely to develop lung problems such as acute chest syndrome, chest pain and chest infections. The cause of most cases of acute chest syndrome is uncertain but it almost always occurs together with a severe pain crisis. It is also often triggered by pneumonia or other respiratory infections.

### What is incentive spirometry?

It is a way to help improve lung function by using a medical device called an incentive spirometer. Medical research shows incentive spirometry can prevent the development of complications associated with acute chest syndrome in patients with sickle cell disease.

### How incentive spirometry can benefit you

Incentive spirometry is designed to help you take long deep breaths. The indicator on the side of the device shows how well you are taking deep breaths and expanding your lungs.

By making you breathe deeply it improves your ability to clear mucus from your lungs. It can also increase the amount of oxygen that gets deep into your lungs

The aim of incentive spirometry is to increase lung expansion and stop parts of the lungs collapsing (called atelectasis). This may help reverse or reduce the chance of developing breathing problems after:

- a sickle cell pain crisis
- acute chest syndrome
- chest infection (pneumonia)
- acute chest, back and abdominal pain
- surgery of the chest or abdomen (tummy)
- a long period of time when you are unable to move or have reduced levels of activity

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## How to use an incentive spirometry

Before you use the incentive spirometry device, your nurse or physiotherapist will set the yellow slider to a desired goal for you to reach, aiming for a minimum of 2 litres.



### Find the right position

If possible, sit up straight or lean forward slightly. Try not to slouch.

Hold the incentive spirometer in an upright position at the level of your chest, then:

1. Breathe out normally.
2. Place the mouthpiece in your mouth and seal your lips tightly around it.
3. Breathe in slowly and as deeply as possible. The coach indicator (yellow ball) in the middle will rise and you will see the white piston rising towards the top of the column – you should aim to reach the level of the yellow indicator on the right.
4. Hold your breath as long as possible, at least 5 seconds. Allow the piston to fall to the bottom of the column when you exhale

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Rest for a few seconds then repeat steps one to 4 at least 10 times

Move the yellow indicator on the right side of the spirometry device to show your best effort. Use it as a goal to work towards during each repetition.

After each set of 10 deeps breaths, practise coughing to make sure that your lungs are clear. If you have a wound, support it when coughing by placing a pillow firmly against it beforehand.

Once you can get out of bed, walk around in the ward and cough well, you can stop using the incentive spirometry unless told otherwise by your medical team or physiotherapist.

## When you should use it

You should use it every two hours during the time you are awake.

Make sure you keep the device within easy reach. Keep trying until you reach your goal.

You can also use it at home to prevent chest crisis or infection.

If you are in pain, tell your nurse. It is harder to take a deep breath if you are in pain. Take a painkiller before using the device.

## The risks of using incentive spirometry

- Breathing too quickly may cause dizziness. Take your time and if you feel dizzy or light-headed, stop and tell your nurse.
- Hyperventilation.
- Tiredness.

## Alternatives to incentive spirometry?

There are alternatives such as continuous positive airway pressure (CPAP), which is usually used in acute chest syndrome. CPAP is positive pressure applied throughout the respiratory cycle to improve breathing capacity. You may be advised to use this during an acute chest syndrome at first and then later step down to regular incentive spirometry.

## How to manage the pain

At first, the exercises will be painful when you breathe in, so please ask for your painkiller about 20 minutes before using the incentive spirometer. **Do not allow the pain to prevent you from using the spirometry frequently and taking deep breaths, as this could lead to further complications.**

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## Contact details for advice and further information

Clinical nurse specialist haemoglobinopathies (adult) 020 3313 8553 / 077 7622 7760

Fraser Gamble ward: 020 8383 4215 / 4216

Dacie ward: 020 8383 3189

Weston ward: 020 8383 4753 / 8159

## How do I make a comment about my visit?

We aim to provide the best possible service and staff will be happy to answer any of the questions you may have. If you have any **suggestions** or **comments** about your visit, please either speak to a member of staff or contact the patient advice and liaison service (**PALS**) on **020 3313 0088** (Charing Cross, Hammersmith and Queen Charlotte's & Chelsea hospitals), or **020 3312 7777** (St Mary's and Western Eye hospitals). You can also email PALS at [imperial.pals@nhs.net](mailto:imperial.pals@nhs.net) The PALS team will listen to your concerns, suggestions or queries and is often able to help solve problems on your behalf.

Alternatively, you may wish to complain by contacting our complaints department:

Complaints department, fourth floor, Salton House, St Mary's Hospital, Praed Street  
London W2 1NY

Email: [ICHC-tr.Complaints@nhs.net](mailto:ICHC-tr.Complaints@nhs.net)

Telephone: **020 3312 1337 / 1349**

## Alternative formats

This leaflet can be provided on request in large print or easy read, as a sound recording, in Braille or in alternative languages. Please email the communications team: [imperial.communications@nhs.net](mailto:imperial.communications@nhs.net)

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