Respiratory: Assisted Cough or ‘Quad Cough’
A guide for patients

Key points
If you have a spinal cord injury (SCI) in the cervical spine or upper back (T12 or above), your ability to take a deep breath and cough strongly is reduced. It is important to be able to take a deep breath and cough, so that you can clear your lungs of secretions, and prevent lung collapse and infections. A normal effective cough is only possible with the use of abdominal muscles, and these may not be working effectively as a result of muscle paralysis.

When your abdominals are paralysed it is necessary to replace the action of the abdominal muscles, by either a carer or yourself, by pushing on your abdomen forcefully. A forceful push on the abdomen is given at the same time as you attempt to cough, and is referred to as an assisted cough or a ‘quad cough’. The aim of the ‘quad cough’ is to mimic the action of the abdominals, and push the diaphragm up and inwards (see pictures below). If you smoke, have a cold or flu, then it is important to use this technique as often as necessary to keep the lungs clear. Your reduced ability to take deep breaths, and inability to cough without assistance, significantly increases your risk of serious chest infections which may require hospitalisation.

Technique
A quad cough/assisted cough can be done either lying down, or sitting up. To ensure the cough is most effective, the timing between the ‘push’ and the cough is critical. You should take a deep breath in, close off the back of your throat, then ‘cough’ (opening the back of the throat), as the carer creates the thrust to expel the air. The sound of the cough is usually a good guide as to the force required; the cough should sound like a normal cough. Force is gradually increased until it produces an effective cough.

Often people with cervical lesions need help clearing nasal secretions, as they do not have the force necessary to clear their nose. A quad cough is used in the same way to help clear the nose. Nasal stuffiness is common early in cervical SCI, and decongestant drops may be helpful.

There are some contraindications and precautions for assisted cough, as it is a forceful technique. Seek advice from your doctor or physiotherapist.
Abdominal hand placement

- The carer should feel for the base of the sternum (breast bone) and the belly button.
- Place the heel of the hand midway between the two points.
- As the person is about to cough, the carer should thrust the heel of the hand firmly inwards and upwards, towards the diaphragm.

- An alternative to the above position is to use a closed fist.
- As with the above position, the carer will need to locate the sternum and the belly button.
- Position the bottom arm midway between these two points and the top arm on the ribcage.
- As the patient coughs, compress the ribs with the top arm and push up and in with the bottom arm.
Chest hand placement:

One person assist

- The carers should feel for the base of the sternum and the belly button.
- Place the heel of one hand midway between the two, and the other on the ribcage.
- As the patient coughs, compress the ribs with the top hand, and push up and in with the bottom hand.

Two person assist

Assisted cough in a wheelchair:

- Position the wheelchair against a wall, so that the chair does not fall backwards.
- Apply the brakes.
- The carer should feel for the base of the sternum and the belly button.
- Place the heel of the hand or a closed fist midway between the two.
- As the person is about to cough, the carer should thrust the hand firmly inwards and upwards, towards the diaphragm.
Independent assisted cough

Paraplegic patients above T6 who have no active abdominal muscles, may still require assistance to achieve an adequate cough. In such patients who have sufficient arm strength and mobility, may be able to perform an assisted cough independently on themselves. There are two methods which can be used.

Abdominal hand placement:

You may also be able to assist yourself to cough in a sitting position.

Long-Sitting assisted cough:

- Sit with your legs out in front of you, holding around your knees/thighs.
- Take a breath in
- As you are about to cough, pull yourself forward, causing your abdominal contents to be thrust upwards and inwards toward your diaphragm → air being rapidly expelled.

Assisted cough sitting in wheelchair:

- Sitting in your wheelchair, holding around your knees/thighs
- Take a breath in
- As you are about to cough, pull your knee(s) up towards your chest and lean forwards – the pressure of your knee(s) on your abdomen will help to force the air out and improve the effectiveness of your cough

Contact

State Rehabilitation Service
Fiona Stanley Hospital
11 Robin Warren Drive, Murdoch WA 6150
Phone Helpdesk: (08) 6152 2222
www.fsh.health.wa.gov.au

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