National University Hospital

National University Centre for Trauma

What You Need to Know About Chest Trauma

What is chest trauma?

Chest trauma is defined as an accidental or intentional external cause of injury to the chest. They may arise due to impact against surfaces, external objects, chemicals or environmental conditions such as heat.

Chest, also known as thorax, comprises the rib cage protecting these major organs: heart, lungs, gullet and windpipe.

More than one-third of patients with severe trauma have chest injuries. Almost all chest trauma are due to falls and vehicular accidents. Others could be caused by machinery and tools, falling objects or violent altercations.

The most common type of chest trauma is rib fracture

A rib fracture may take months to heal, resulting in significant loss of work days.

Rib fractures

A break or crack in one or more of the ribs causing pain at the site of the fracture, difficulty in breathing, tenderness, swelling and bruising. This can sometimes lead to pneumothorax and haemothorax.

Pneumothorax

This happens when air gets into the space between the lungs and the chest wall, causing the lung to collapse.

Haemothorax

This happens when blood collects in the space between the lungs and the chest wall.

healthy chest

fracture of ribs

Treatment for rib fracture

Treatment is often conservative with adequate pain management, allowing the fracture to heal on its own. If you feel your pain is not well managed, do review your medications with your doctor.

- It is important to follow the instructions given for the painkillers, which will help you breathe better and move around more comfortably.

Sometimes more invasive management may be recommended:

- Chest drainage to remove air and blood from space surrounding your lungs.
- Surgical intervention to repair your ribs. This can be considered if you have more than two fractured ribs, and poor quality of life despite optimal pain management. It is highly recommended if you have more than four fractured ribs and a flail chest.

Rehabilitation

Breathing exercises are crucial to facilitate your recovery and return to a comfortable daily living. They also reduce the risk of complications such as lung infections.

You are encouraged to do the following two breathing exercises that will help in your recovery:

1. Deep breathing with airway clearance: Complete this cycle 3-4 times every hour while awake.

a. Sit up straight with back supported and head resting on a pillow
b. Place your hand(s) on your stomach.
c. Take a deep breath slowly. Feel your lungs expand and your stomach rises.
d. Then breath out slowly.

After your fifth deep breath, force the air out as though you are steaming up a mirror. After that, cough to clear your airways.

To make coughing or "huffing" more comfortable, you can place a folded towel or a small pillow over the painful area and apply a firm downward pressure. Alternatively, you can wrap a towel around your chest and pull it tightly to apply pressure.

2. The incentive spirometer is a device to aid in deep breathing after operation to maintain adequate air entry to your lungs.

    a. Sit up upright.
    b. Take a full breath in and out.
    c. Hold your incentive spirometer upright and seal your lips around the mouthpiece firmly. **Breathe in slowly** through the mouthpiece as if sucking water through a straw
    d. Aim to hold the "yellow square" around smiley face area for 3-5 seconds (refer to picture below)
    e. Aim to gradually lengthen your holding duration to around 10 seconds.
    f. Breathe out slowly, make sure the marker returns to zero before the next inhalation.
    g. Rest between each breath.

Repeat 10 breaths every hour.

Strength exercises are also recommended and you can do them at home daily or at least twice a week, depending on your condition.

For each exercise, repeat 10 to 15 times. Perform one to three sets daily.

Neck

a. Tilt your neck to the side until you feel a gentle stretch.
b. Turn your neck to the side until you feel a gentle stretch.
c. You may use your hand to help bend your neck.

Shoulder Roll

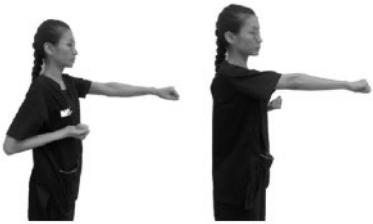
a. In a circular motion, gently roll your shoulders forward and backward.

Shoulder Flexion

a. Lift your arms up as high as possible with thumbs pointing towards the ceiling.
b It can be done while standing with feel apart, or while sitting.

Bicep Curls

a. Bend and straighten your elbow while keeping your elbow tucked close to your ribs.
b. It can be done in standing with feet apart or sitting.



Forward Punches

a. With arm at chest level, punch one arm forward and return to the starting position before alternating between arms.
b. It can be done in standing with feet apart or sitting.

Heel Raises

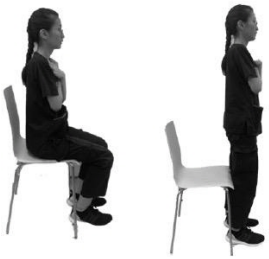
a. Stand with your feet apart, with your hands lightly resting on a chair in front of you for support.
b. Raise your heels off the floor while keeping your knees straight.
c. It can also be done while sitting.

Hip Abduction

a. Stand with your feet apart, with your hands lightly resting on a chair in front of you for support.
b. Keep your knees straight, toes pointed forwards and lift your leg up sideways.
c. Keep your upper body and back straight during the exercise.

Marching on the spot

a. Stand with your feet apart, with your hands lightly resting on a chair in front of you for support.
b. Alternating between both legs, lift your knee to about hip height before placing it down.
c. It can also be done while sitting.



Sit-to- stand

a. Sit on a sturdy chair with both feet placed firmly on the ground.
b. Stand up and sit down in a controlled manner.
c. Hold on to a rail or table for support if needed.

Post-discharge advice

Chest trauma usually resolves over time. The following are some post-discharge recommendations for you:

Activity and Rest	Gradually increase activity as tolerated but avoid any strenuous activity or heavy lifting until you are cleared by your doctor.
Pain Management	Take pain medication as prescribed to manage discomfort.
Wound Care	If you have any wound or incision, follow your healthcare provider's instruction for wound care to prevent infection and promote healing.
Lifestyle Modifications	Stop smoking and make dietary changes to promote overall health and reduce risk of complications.

Proceed to the Emergency Department immediately if you experience any of the following symptoms:

- Fever
- Chest pain or shortness of breath
- Abnormal heartbeats (heart is pounding, racing, beating abnormally)
- Increasing pain, bleeding, redness, persistent swelling or pus discharge at wound site

Frequently asked questions (FAQs)

Will I suffer further injury by doing the suggested exercises?
The exercises are designed to help your recovery and prevent deconditioning and chest infections. If done appropriately, they will not worsen your current condition.

What happens if I felt pain when exercising?
If this occurs whilst you are in the ward, inform the physiotherapist to review your rehabilitation as required. If this occurs whilst at home, it may mean that you need to reduce the repetitions or range of movement temporarily until the pain settles.

We recommend listening to your body and stopping any exercise or activity that increases your pain.

To ease the pain and discomfort of rib injuries, do take your pain relief medication as prescribed as this will help optimise the activities you can complete and make them more manageable.

If the intensity of pain persists or increases, stop the exercises and call the appointment line listed in this booklet to make an appointment, or visit the emergency department if the pain is intolerable.

Why has my pain worsened?
It is not unusual for patients with rib injuries to experience more pain before their conditions improve. Slight increase in pain or discomfort tends to occur around five to 10 days after the injury.

Rib fractures can take several months to heal. If you have any concerns or symptoms that worry you, please consult your doctor.

How long should I continue with the exercises?
You should do your deep breathing and physiotherapy exercises for at least 4 weeks after being discharged from hospital. You may reduce these exercises as you gradually return to your normal level of activity. Aim to maintain 150 minutes of moderate-intensity aerobic exercise each week.

Surgical Specialist Centre (SSC)
NUH Medical Centre Level 15a
Email: surgical_specialists_centre@nuhs.edu.sg

University Surgical Centre (USC)
Kent Ridge Wing Level 5
Email: usc@nuhs.edu.sg

Appointment Line: (65) 6772 2002

Opening Hours:
Monday to Friday: 8:30am – 5:30pm
Closed on Sat, Sun & Public Holidays

Notes

Our Patient Care Institutions

National University Hospital
Ng Teng Fong General Hospital &
Jurong Community Hospital
Alexandra Hospital
National University Polyclinics
Jurong Medical Centre
National University Cancer Institute, Singapore
National University Heart Centre, Singapore
National University Centre for Oral Health, Singapore
NUHS Diagnostics
NUHS Pharmacy

Scan the QR code for more information on our patient care institutions.

If you have further questions, please do not hesitate to contact us at:

National University Hospital
5 Lower Kent Ridge Road, Singapore 119074
OneNUHS Hotline: (65) 6908 2222
OneNUHS General Enquiries: contactus@nuhs.edu.sg
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