Lucas Center SOP
Respiratory Bellows at Lucas MRI

I. Respiratory bellows (to monitor breathing pattern)
   A. Requirements
      1. Imaging sequence on the MRI system must be compatible with the respiratory option.
      2. If physiological monitoring is required for fMRI studies
   B. Equipment location
      1. Respiratory bellows belt is located on the side of the magnet.
      2. Please check for cracked housing or frayed cable (report damages to magnet manager)
   C. Anatomical location
      1. Velcro strap is placed over sheet that covers MR table pad so that tubing will exit straight out of magnet bore (any turns in air tubing will obstruct air flow).
      2. Patient lies supine (on their back) with Velcro strap under them.
      3. Respiratory bellows belt is oriented so that the tubing exits directly out of the magnet bore.
      4. With the patient lying down, observe patient's chest and abdomen during normal breathing.
      5. Position rubber bellows over the area where the breathing motion is the greatest (see below).
         a. "Chest breather"
         b. "Abdomen breather"
   D. Placement
      1. Fasten the bellows with the Velcro straps.
         a. Bellows should be snug with minimal stretching.
         b. Bellows should expand and contract ½ inch to 1 inch with the patient's breathing (see below).
            i. "Correct expansion"
            ii. "Incorrect expansion" (Too loose or too tight)
         c. Give the system a few seconds to stabilize, then check the respiratory waveform.
            i. Amplitude of waveform
            ii. Consistency of waveform frequency

"Chest breather"  "Abdomen breather"

Expansion of bellows:
"Correct Expansion"  "Incorrect Expansion" (accurate respiratory cycle may not be detected)
Too loose  Too tight