**Lumbar Puncture Simulator II**

*Case: Osaka City University, Faculty of Medicine Skills Simulation Center*

**WEB** [http://www.med.osaka-cu.ac.jp/ssc/](http://www.med.osaka-cu.ac.jp/ssc/)

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**ITEMS TO PREPARE**

- **Bed**
- **Chair**
- **Table**
- **Training table**

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**TRAINING TRICKS**

- Don’t give immediate assistance to the trainees when they are struggling. Wait to allow them to forge their capability to solve problems by themselves. Even if they fail at any task, letting them thinking back on their failure and its reason will make them learn about it.
- In the actual clinical working place, advice may not always be given at once. In those moments, the capability of thinking and solving problems by themselves will be important for their growth as professionals.
- Practice in pairs: It’s recommended to make the training session in pairs. One person performs the procedure, while the other one supports the simulator. This way, the person holding the simulator can watch their partner and imagine how himself/herself will do next. Also they can notice rooms for improvement and earn a better learning experience.
- Self-revision using the simulator: With Lumbar Puncture Simulator II, it’s possible to see the place on the spinal cord where the puncture was applied by taking off the skin on the lumbar area. Also, since the lumbar spine model that shows from the 2nd to the 5th lumbar vertebrae is included, it is possible to learn the opening and shutting movement of the vertebra according to the body’s position.

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**CARRYING OUT THE TRAINING**

The below example is for one hour of training session.

**Preparatory Meeting**

Share the training contents and flow among instructors to advance the training session more smoothly.

**Orientation**

15 min.

- The previous studies and experience of the trainees about lumbar puncture are reviewed.
- The trainees receive an explanation about the training's flow.

**Demonstration of the procedure**

15 min.

1. **Selection of The Puncture Site**

   - The demonstrator palpates the iliac and find the Jacoby’s line. Then marks L4/L5 lumbar intervertebral space.
   - Using a SP for this step allows a close-to-life demonstration. The SP lies on his/her side and holds the knees to round the back.

2. **Puncture, Collecting Cerebrospinal Fluid**

   - Affix the red seal to the puncture’s site on the body.
   - After advising the patient that the cotton ball is cold, sterilize the puncture area.
   - Wear the sterilized gloves and place the drape on the simulator.
   - In case that the training time is limited, adjust the time by omitting wearing the gown, etc.

3. **Let’s explain how to use the utensils.**

   - The training session would advance more smoothly if the trainees learn beforehand an explanation about how to use the spinal needle with three-way stopcock when measuring initial CSF pressure and collecting cerebrospinal fluid.
   - Carry out the puncture. Demonstrate how to advise the patient when they are going to apply the puncture, and ask the patients to indicate if the gain expands to the leg.
   - Advance the needle 3 to 5cm and verify that CSF outflows. Then measure the initial pressure and collect the CSF while explaining to the trainees.
   - Let’s study some failure cases as well.

   - Since the needle is picked horizontally respect the floor and perpendicularly to the patient’s body, if the patient’s shoulder line is not perpendicular to the bed, the needle will get diagonally into the body, making easy to occur failure in the procedure. It’s important to keep the patient in a posture perfectly perpendicular to the bed.

**Training in Pairs**

- Ten minutes of hands-on training, and three minutes of debriefing per person.
- One person applying the puncture, and the other one holding the simulator. Then turn.

   - It’s recommended that the instructor doesn’t point the trainee’s mistakes immediately on the practice but during the debriefing time.

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**TOPICS**

- Lumbar Puncture
- Demonstration of the procedure
- Puncture, Collecting Cerebrospinal Fluid
- Let’s study some failure cases as well.