D.F. MAHONEY. From nursing simulation lab to engineering lab: Experiential training aiding robotic design. Gerontechnology 2010;9(2):307; doi:10.4017/gt.2010.09.02.152.00 **Purpose** Every year between 40-50% of nurses experience a back injury[1]. More than 1/3 of back injuries among nursing staff are associated with manually lifting, transferring, and repositioning patients[2]. It is estimated that nurses lift 1.8 tons per shift, causing wear and tear on the spine[3]. Amid an increasing nursing shortage, 12-18% of nurses leave the profession each year due to disabling back injuries. Traditional strategies teaching 'proper body mechanics' and 'safe manual lifting techniques' are ineffective and give a false sense of security. Ergonomic interventions, such as fixed ceiling lifts, technologically engineer out the energy/force from the nurses' job task and form the basis for the Safe Patient Handling Movement and No manual Lift policies[4-5]. Technology developers claim that robots offer the potential of decreasing injuries by substituting for nurses but deployment has focused on ambulation, communication, and affective features. Nurses claim that many new technologies are designed without their input and then don't match their needs. Would teaming nurses and engineers in a clinical experience make a difference in a robotic design? **Method** Using a simulation lab, nurses (n=3) demonstrated on a 'pseudo- patient' in a shared hospital room, key maneuvers essential to safely assisting and positioning a patient in six common clinical situations. The robotic team first observed the nurse's action, then heard her verbalize the steps and rationale while performing again, and finally saw how the nurse 'cues' a helper. Engineers (n=4) rotated between being positioned in the hospital bed to experience being moved and moving each other. The workshop was videotaped. Immediately afterwards, a debriefing discussion session was held, and a content analysis of the notes were used to identify key findings. **Results & Discussion** Engineers revealed that none of them had ever been in a hospital and this simulation was extremely helpful in gaining a more practical understanding of the environmental constraints. Obstacles to the robot such as poles/ tubing, furniture, medical equipment, and small turning radius are now considered to be more important. They also expressed new awareness about the variety of motions and required synchronicity of nursing actions. With greater understanding, a redesign of certain robotic features was deemed necessary and subsequently occurred. While inter-disciplinary teams are becoming commonplace, at times it is necessary to put members in the 'shoes of the nurse' to really understand the challenges associated with clinical practice to foster optimal technology design, clinical usability, and adoption.

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Figure 1. Engineers experiencing "working" and "staying" in a hospital