

Product Design Specifications: Patient Transfer Device

Team Roles:

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Function: Currently, patients are transferred by 5-6 workers using an articulating roller, which is designed for a flat bed to flat bed patient transfer. The client would like a jointed roller system that will allow for efficient transfer of patients who are to remain in a sitting up or “crunched” position through the transfer. Design needs to be reliable, lightweight, and compact to fit behind the door of the recovery room.

Client Requirements:

- Must not harm patient or staff members
- Must be simple and easy to use
- Must be cost efficient
- Must be durable
- Must be easy to store

Design Requirements:

- Must be lightweight
- Parts must be easy to replace
- Device must be easy to clean
- Device must be able to be used at various bed angles
- Device must fit effectively under a patient
- Device must be easy to carry

1. Physical and Operational Characteristics

- a. Performance Requirements:** The patient transfer device must be able to transfer a patient from bed to bed, without affecting the position of the patient. This product specifically focuses on keeping the patient in a seated position. This device will be used multiple times each day, with varying weights applied.

- b. Safety:** There must be no sharp edges on the device which could otherwise harm the patient or operators transporting the patient. The device must also be able to support patients up to 158.76 kg.
- c. Accuracy and Reliability:** The product needs to be durable enough to withstand daily use without breaking down. Accuracy is not a factor with this project.
- d. Life in Service:** Parts should be made replaceable, increasing the service life indefinitely. The product should be able to withstand use multiple times per day.
- e. Shelf Life:** Storing the product will have no effect on its ability to perform
- f. Operating Environment:** This device will primarily be used in an operating room. This environment will be room temperature and completely sterile.
- g. Ergonomics:** The patient transfer device should be able to withstand all human interaction of proper use.
- h. Size:** The patient transfer device must be small enough to fit beneath the person and on the current holding rack (1.143m x .381m x .0254m).
- i. Weight:** The weight of the product should be less than 9.07 kg.
- j. Materials:** Materials for this product must be able to support a load up to 350 lbs, and be able to rotate with limited friction. Most components will be made of aluminum, along with some steel components depending on the structural stability.
- k. Aesthetics, Appearance, and Finish:** The patient transfer device should appear safe and operable in order to not scare the patient or operators.

2. Product Characteristics

- a. Quantity:** One unit will be needed.
- b. Production Cost:** We have been provided with a preliminary budget of \$300, with the option to expand if needed.

3. Miscellaneous

- a. Standards and Specifications:** No standards or specifications are required.
- b. Customer:** The customer would like a device that prevents patients from shifting position during transport while seated. He has stressed that durability is a major priority with this project.
- c. Patient-related concerns:** The patient may be under anesthesia while this device is used. In this situation the entire weight of the patient will be under control of the operators and patient transfer device.

b. Competition: Currently no product exists that meets all of the requirements of our client.