

Transporter Table System

University:	
PI and Co-PI name(s): David Dick Adam Macmillan Vijay K. Goel Anand Agarwal	Proposed Budget: (includes 10% indirects): \$39,600
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CDMI trainee name: N/A	CDMI trainee title: (e.g. grad student, postdoc, SRA)
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<p>Need and Industrial Relevance:</p> <p>Patients are put at risk when they must be moved between beds. These risks are especially acute in the perioperative setting, where the patient may have unstable injuries preoperatively and fragile surgical sites postoperatively. Excessive handling of these patients can exacerbate their injuries. In addition, there is a risk that the patient may be dropped if the beds separate during the transfer.</p> <p>These factors are compounded by the increasingly heavy patients that are presenting for treatment.</p> <p>On the caregiver side, nurses, aides, orderlies, and attendants experience high rates of musculoskeletal disorders, often caused by the necessity of moving these increasingly heavy patients.</p> <p>A system is needed for moving patients between gurneys and OR tables that is safer for both patients and caregivers while minimizing the manpower required to effect the transfer.</p>	
<p>Project Aims (including Hypotheses):</p> <ol style="list-style-type: none"> 1) Design a system to safely move patients between a gurney and OR table using wheels 2) Build such a system and demonstrate its efficacy. 	
<p>Methods:</p> <p>We propose to build a prototype system to mount on an existing gurney and OR table, and to test this system with a simulated patient weight. The initial plan is to use air pressure to raise and lower the wheels, as this provides a lightweight and compact system. We intend for this system to be easily adapted for commercial use. The steps we plan to take are:</p> <ul style="list-style-type: none"> • Produce a prototype. This will allow us to test the concept and identify areas to improve. The prototype will have the following characteristics: <ul style="list-style-type: none"> ○ Capable being mounted on an existing OR table and gurney. ○ Provide a set of retractable wheels on each surface. These wheels will rest beneath the table/gurney surface when not in use and rise under power to allow the patient to roll. ○ Provide a pallet to carry the patient between the tables 	

- Provide positive locks to prevent the pallet from moving unless deactivated by the user
- Provide a system to lock the gurney and table together during the transfer
- Provide means to direct the movement of the pallet to prevent skewing.
- Provide continued access to existing gurney and table features such as accessory rails and guard rails.
- Evaluate the prototype in terms of ease of use, safety, and aesthetics:
 - Demonstrate that the system will function at the design patient weight
 - Demonstrate that patient transfers can be done safely at this weight.
 - Measure the effort required to effect the transfer.
 - Seek input from OR personnel with experience in patient transfers.

Milestones:

- Provide a CAD model of a proposed design
- Produce a prototype.
- Evaluate the prototype.

Deliverables (must include):

Quarterly presentation updates:

- December 2017 – conference call
- Spring 2018 – Spring Symposium @ UT (conference call option for non-UT teams)
- June 2018 – conference call
- September 2018 – Fall Symposium @ UCSF (conference call option for non-UCSF teams)

Final written report including results – November 2, 2018

Specific work product::

- October 2017 - Solid model of design
- November 2018 – Prototype
- June 2018 – Prototype evaluation complete

General Budget Outline:

Personnel	\$	20,000
Supplies	\$	16,000
Total Direct	\$	36,000
Indirects (10%)	\$	3,600
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Total	\$	39,600

Start Date: October 15, 2017	End Date: September 30, 2018

Please limit this document to 2-3 pages and email it to kimberley.mcintosh@utoledo.edu by **September 8th**.