

BME 484 Biomedical Engineering Capstone Design  
**Project Proposal**

Project Title: Safe and Efficient Infusion Pump Transport

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Abstract: Medical devices, just like most equipment in a hospital, have to be cleaned and remain sterile from patient to patient. While this may be an easy process for smaller devices, this becomes more difficult as the devices increase in size. Infusion pumps are devices that are transported on IV poles. Simultaneously transporting multiple IV poles for end-of-use cleaning can prove difficult, resulting in potentially severe damage. With an easy-to-use, efficient device that can connect IV poles together while keeping them stable, the hospital staff would have more success transporting infusion pump IV with fewer incidences of infusion pump damage.

Innovation: The goal is to create a piece to attach onto each IV pole that has three arms with rotating magnets attached at each end. Each arm is able to collapse when not in use. When being used the magnets attach to another on an IV pole allowing for easy transport and safe storage of 3 to 6 IV poles.

Materials: Small Neodymium magnets  
3-6 IV poles  
Stainless steel arms with hinges  
IV pole clamp

Subtasks:

- Research the optimal magnet strength
- Design magnet rotation on Solidworks
- Researching the most efficient and inexpensive material to use for the arm itself
- Using SolidWorks design how to connect the magnets to each arm
- Buying or 3D printing the pieces that were designed
- Using these at the hospital to transport multiple pumps at a time
- Optimizing this process/ solving any issues that may have occurred during the trial

Timeline:

Prototype design:	9/25/17
Grant proposal:	11/28/17
Project prototype:	12/5/17
Mid-year progress report:	10/31/17, 12/5/17
NEBEC Conference paper:	1/30/18
NEBEC Conference:	3/6/18
Final report:	5/1/18

References: ALCO. "Stretcher to I.V. Pole Clamping System." ALCO Sales, 2017,

[www.alcosales.com/products/75912.asp](http://www.alcosales.com/products/75912.asp).

SharnAnesthesia. "Nesting IV Pole." YouTube, YouTube, 11 Feb. 2013,  
[www.youtube.com/watch?v=C5Og5tSW9IA](http://www.youtube.com/watch?v=C5Og5tSW9IA).

"Patent US20130330164 - IV Pole Transportation Device and Method." Google Patents,  
Google, [www.google.com/patents/US20130330164](http://www.google.com/patents/US20130330164).

"IV to IV Transport Clamping System." AXtra Hand, AXtraHand, LCC, 2017.  
[axtrahand.com/products/iv-to-iv-transport-clamping-system/](http://axtrahand.com/products/iv-to-iv-transport-clamping-system/).