

Spring 2021

Adjustable Prone Trolley Design for People Suffering from Spinal Cord Injuries in Nepal

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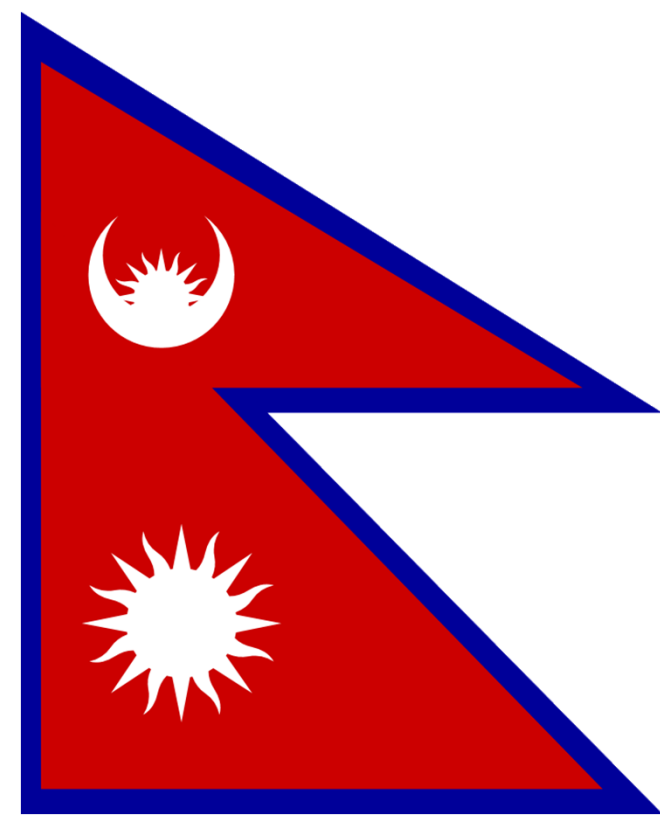
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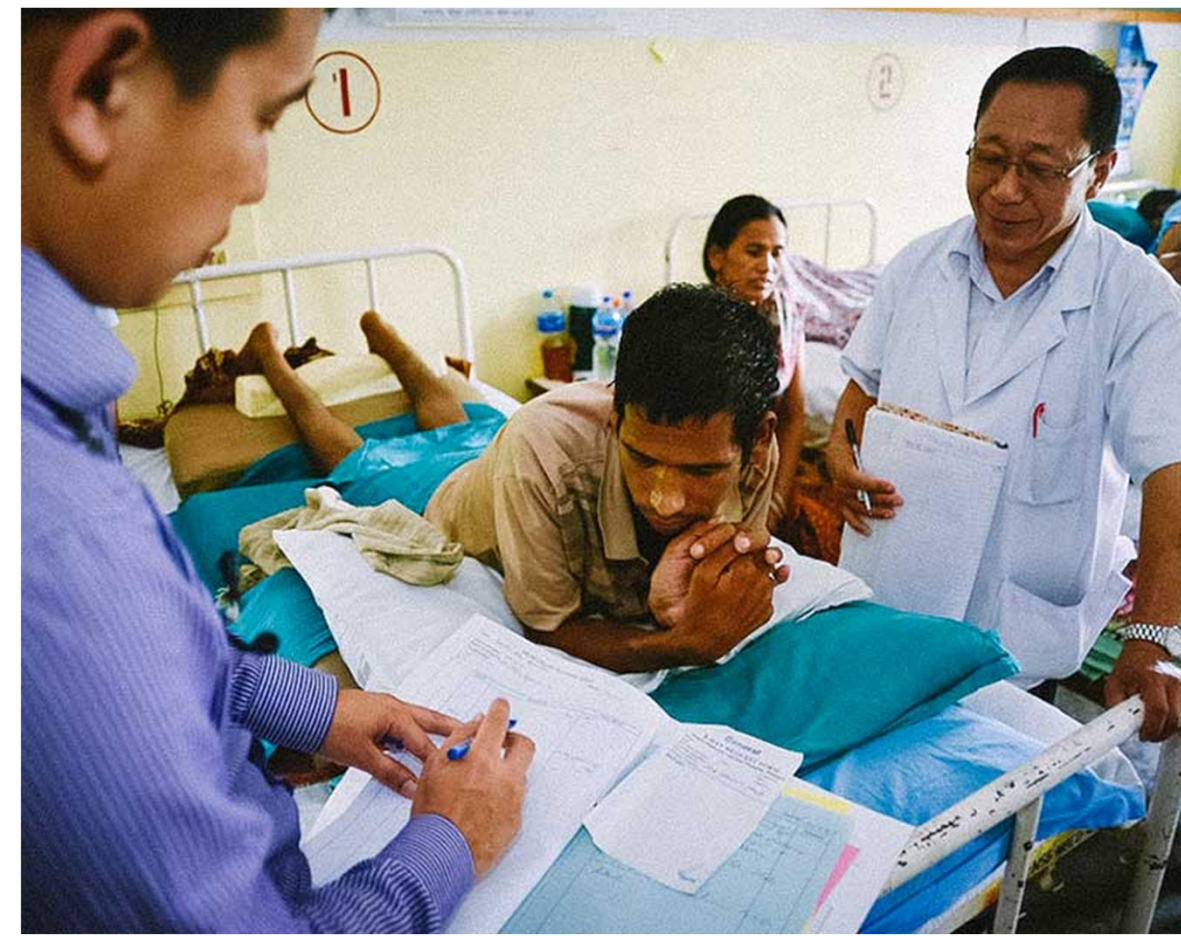


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Abby Miller, Blake Clemmer, Jared Pavlovich

OUR CLIENT: INTERNATIONAL NEPAL FELLOWSHIP

The Nepal Prone Trolley Team is partnered with International Nepal Fellowship (INF), a Christian, medical organization that manages a hospital in Pokhara, Nepal (Green Pastures Hospital) and specializes in patients with spinal cord injuries.

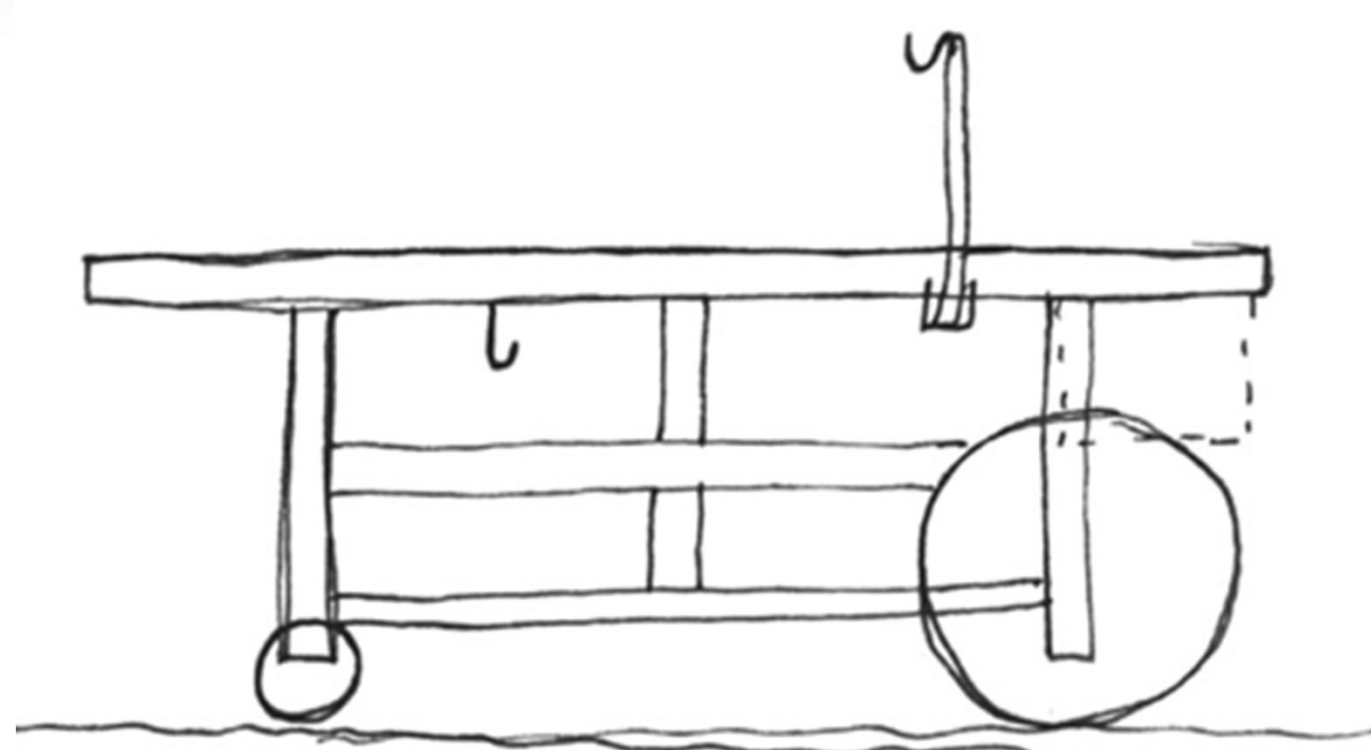
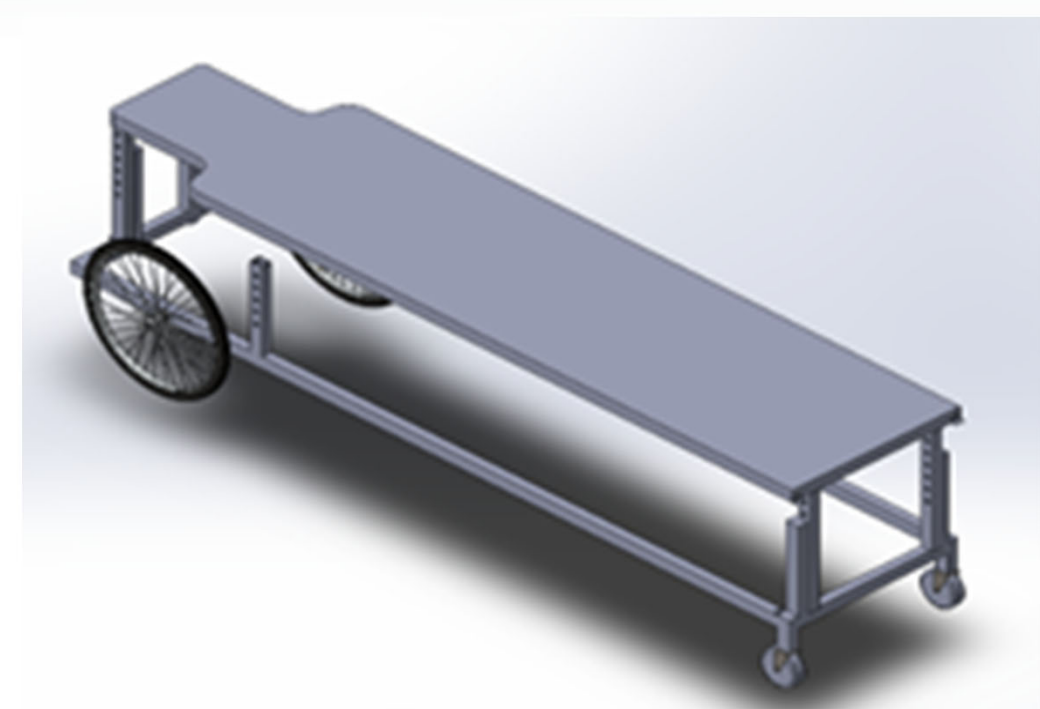
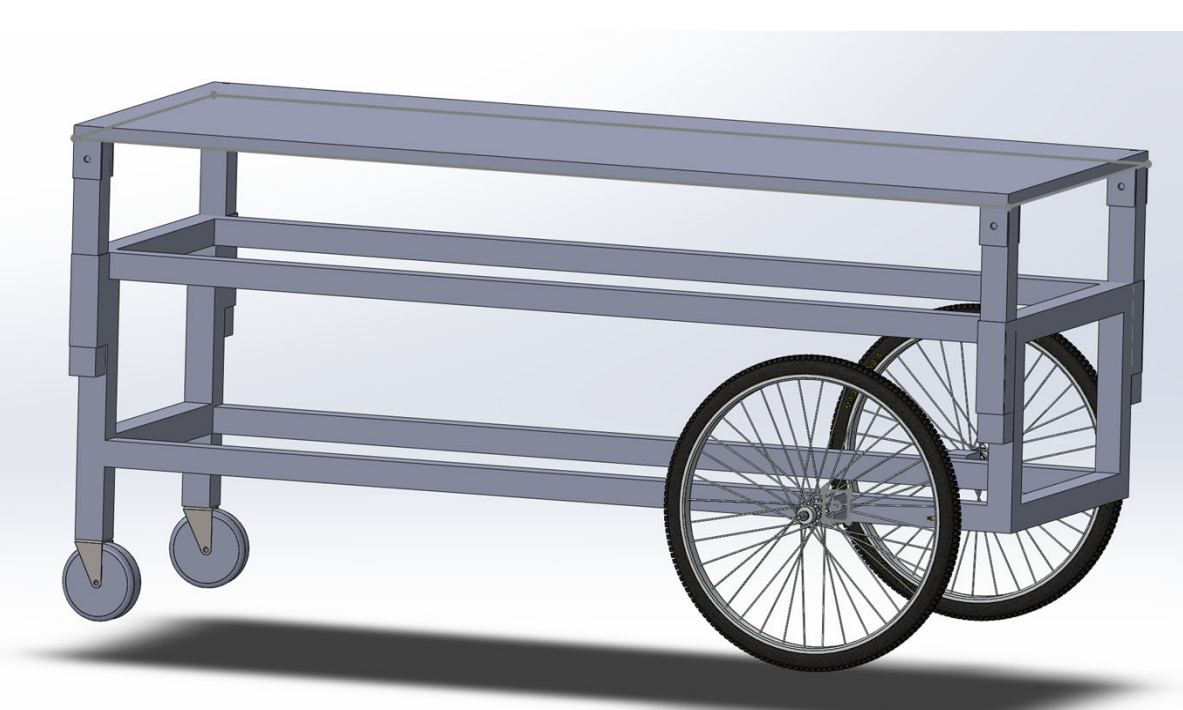
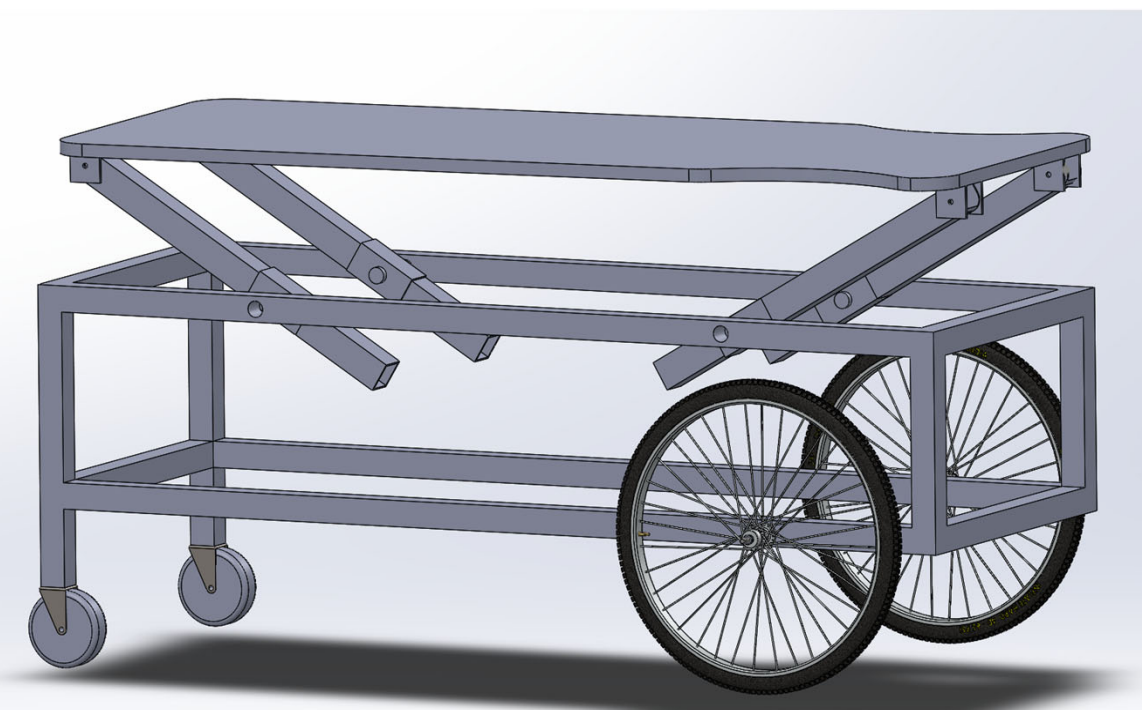


PROBLEM STATEMENT

A prone trolley is a flat table with 4 wheels, that is self-propelled which allows spinal cord injury patients to maintain mobility and to gain strength. International Nepal Fellowship, has prone trolleys at their Green Pastures Hospital in Pokhara, Nepal; however, they are becoming outdated and are hard to maintain. The Nepal Prone Trolley project seeks to come alongside INF by designing, prototyping and creating manufacturing documentation for a new prone trolley design that is cheaper and more durable than their current options

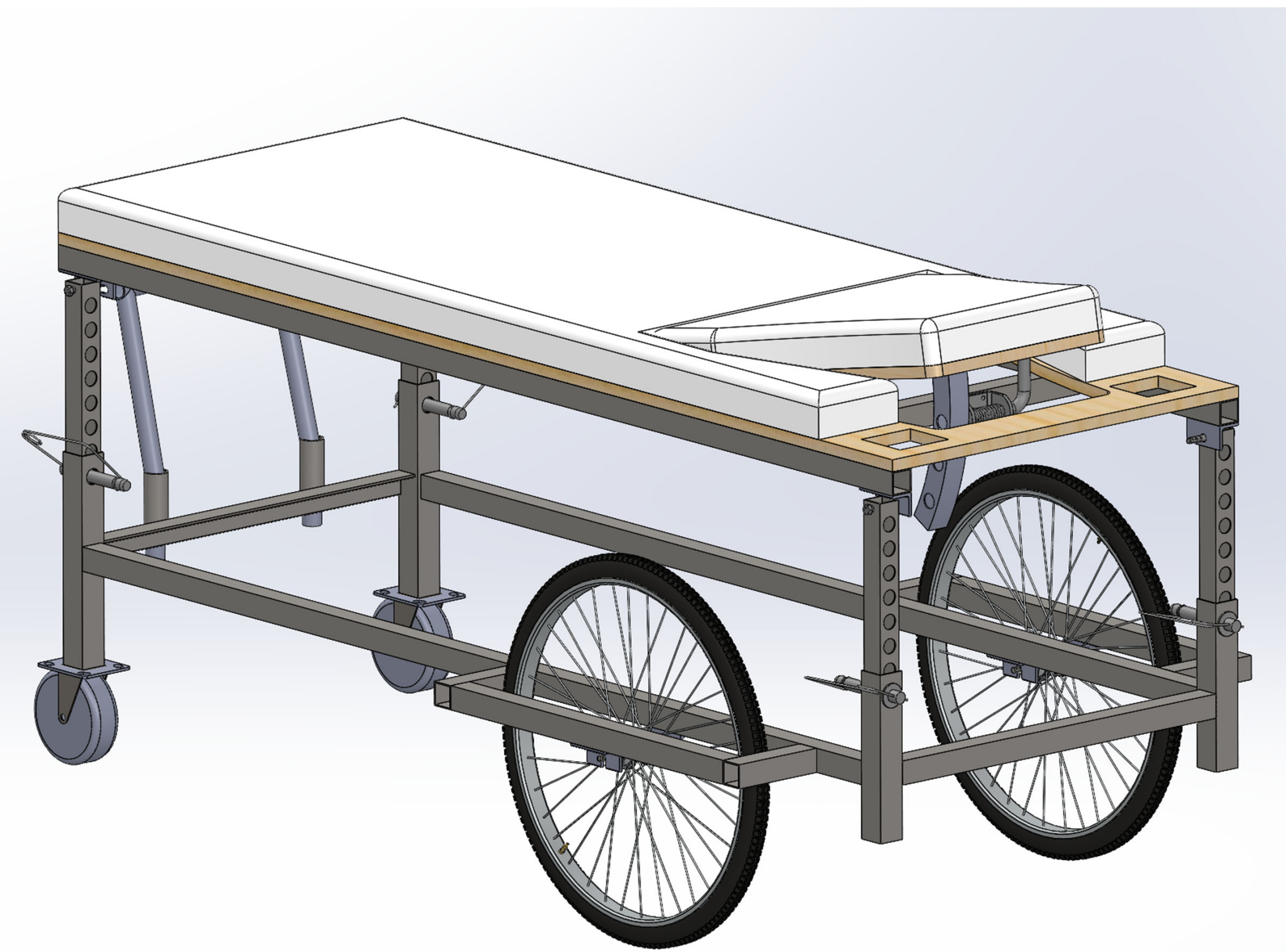
PRELIMINARY DESIGN

The team developed four preliminary designs in the Fall of 2020. Seen below are Angled Tube, Simple Tube, The Folding Trolley, and Design #4.



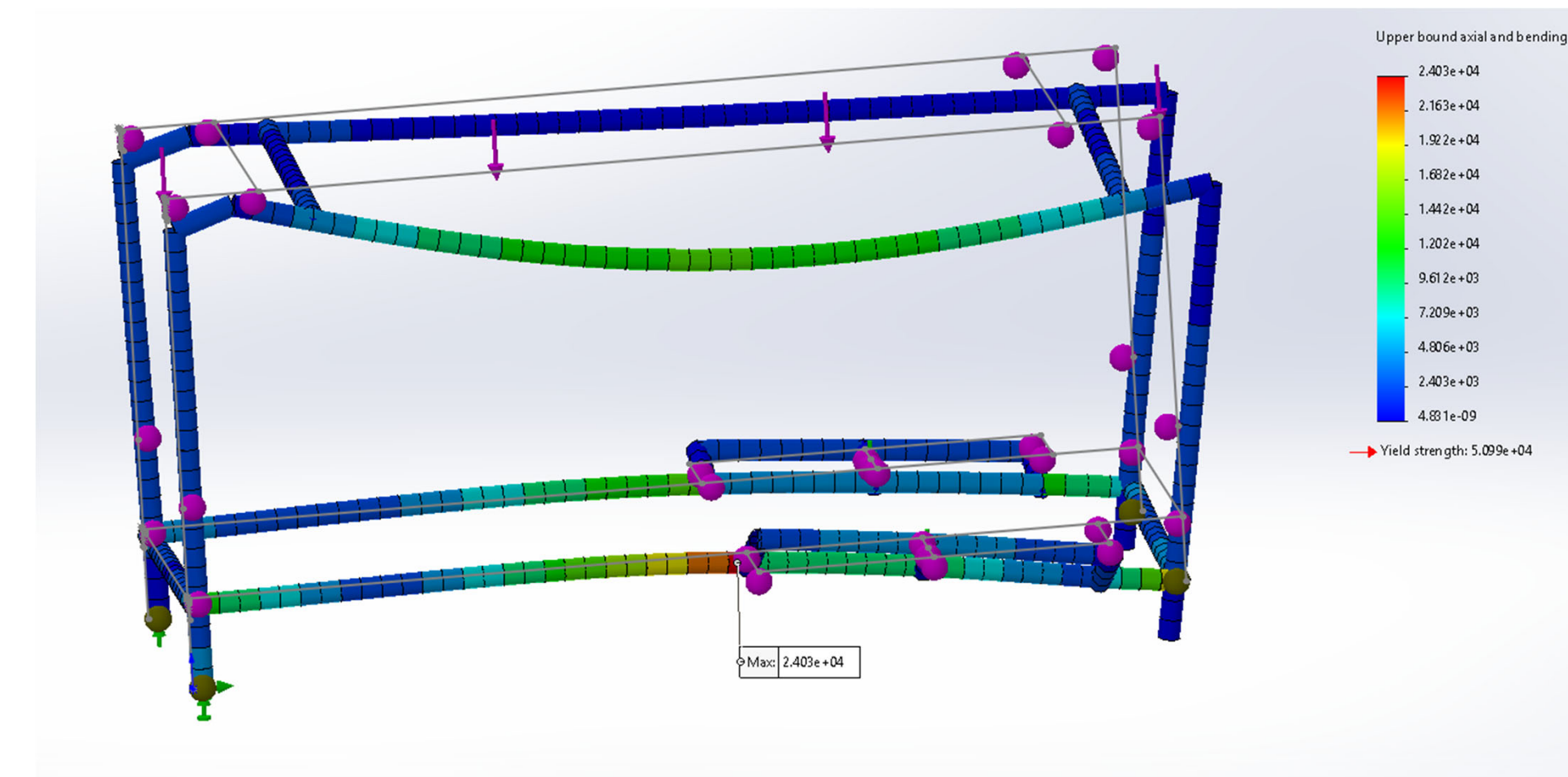
The Merged Design

The team meet with employees of INF to discuss the two best preliminary designs in hopes of settling on one. After deliberation we came to the conclusion to merge the top of the Simple Tube trolley with the frame of Design #4. The combination is shown below and is the current model called The Merged Design.



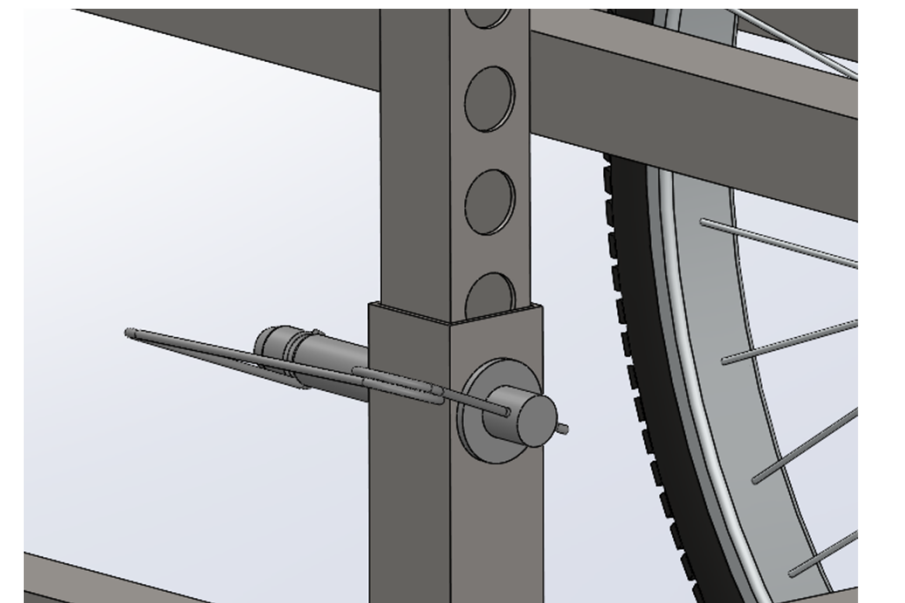
Frame Analysis

The team performed a frame analysis on a computer modelling program to determine the necessary material needed to support the trolley loads. Results showed much of the frame could be made with angle iron to lower weight, but maintain strength and stiffness.

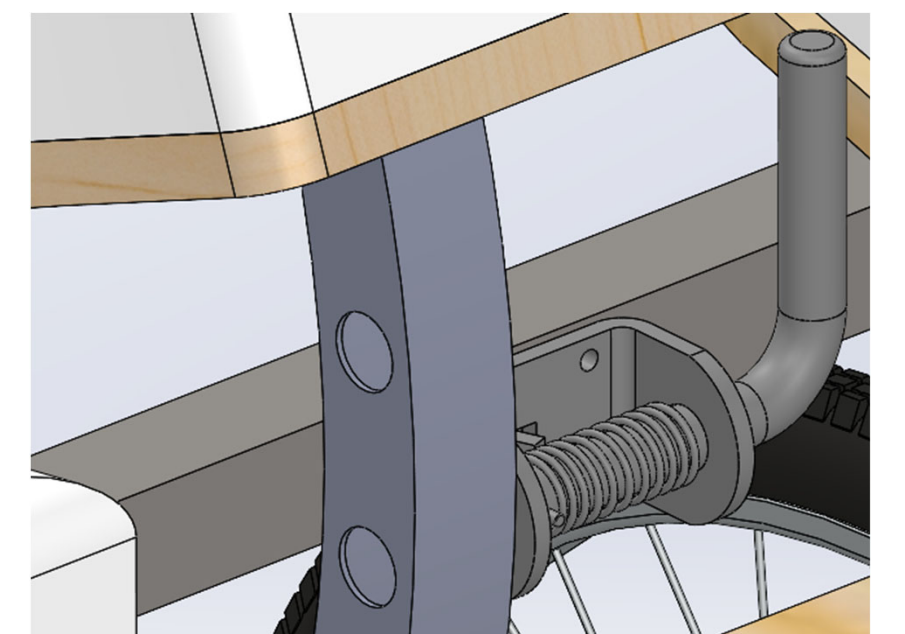


Trolley Functions

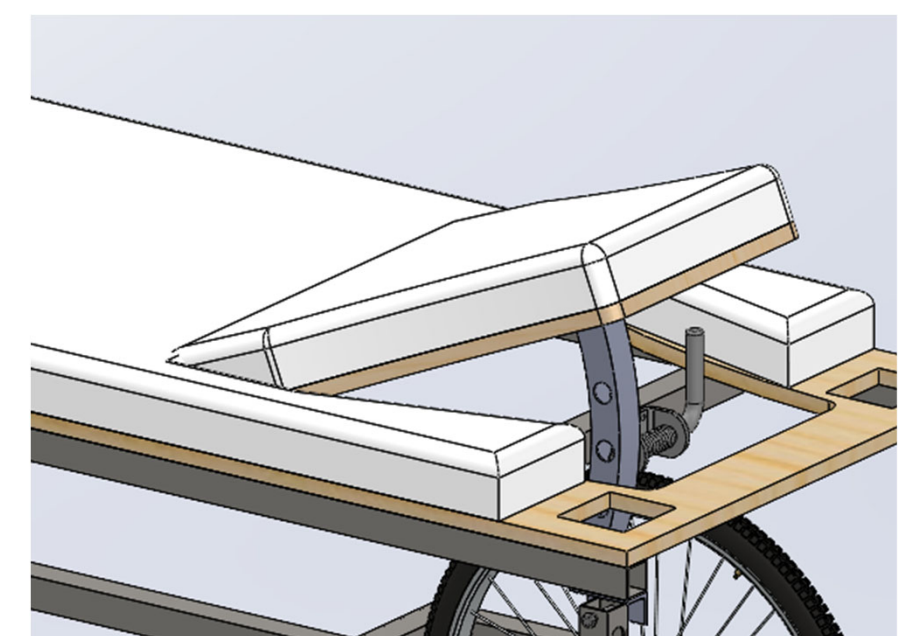
The trolley adjusts vertically using a tube-in-tube design. The platform can sit as low as 26 inches and as high as 36.5 inches during use.



A pin-in-hole design is used to lock the trolley in at each setting. This is also the case for the adjustable chest piece.

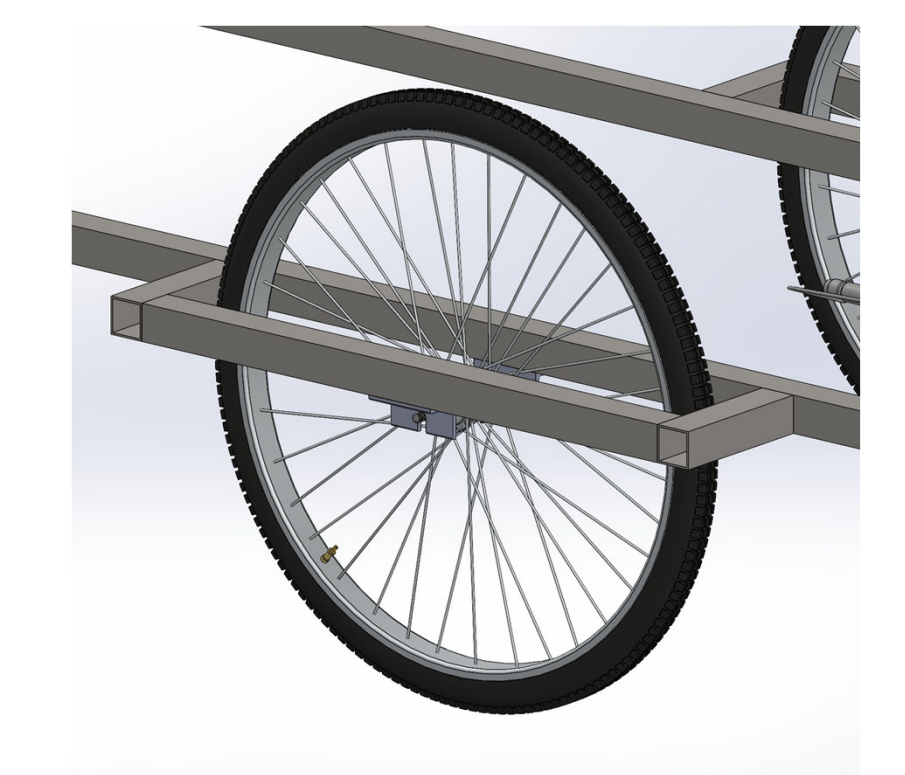


The adjustable chest piece allows patients to change the angle they lie on the trolley for maximum comfort.



The chest piece can be angled from 0-30 (actually put in the degree symbol here) to achieve this.

24-inch wheels with push rims allow patients to move on their own. A push handle in the rear of the trolley allows care takers to push the trolley if necessary.



The trolley will be fitted with high density foam for comfort and support as well as an anti-microbial cover.

ACKNOWLEDGMENTS

Dr. Tim Van Dyke John Meyer
Megan Barker Aryan Knulst
Dylan Derstine Derek Thrush
Ivan Oon



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