**A Safe and Efficient IV Pole**

Jamestown Children's Hospital (JCH) is a children's general hospital located in Michigan. JCH provides children with the required extra time, monitoring, specialized medications, and specially trained health care providers who are compassionate and understand kids of all ages. Stemming from the vision of five mothers to open a hospital for children, JCH has gone from serving its first patient in November 1952 to admitting 15,000 patients in 2015.

In providing quality healthcare, safety of the patient is paramount, which includes using medical equipment that meets strict safety guidelines. Recently, the Biomedical Director, William Stanley, identified safety risks associated with the current design of intravenous (IV) poles.

The hospital uses standard stainless steel heavy duty IV Poles. The current design of the IV poles consists of two hooks on the top where bags of glucose, blood, etc. for transfusion are hung. At the bottom, the base of the pole consists of four legs with casters that enable the pole to move from one place to another. Per the Director's safety review, the current design poses several risks for the patients and hospital staff, including: (1) top-heavy loading, particularly when laden with IV-bags, pumps and meters, leading to tipping hazards, (2) small wheel widths which catch in elevator gaps and subsequently lead to tipping hazards, and (3) entanglement complications in storage attributed to the multi-leg base designs.

Your task is to address the safety risks identified above by redesigning the IV poles to reduce the potential risk to patients and hospital staff. The redesigned IV pole should not only minimize the safety hazards, but also consider constraints of cost, ease of mobility and storage convenience.

The goal of your team is to learn about the issues surrounding the use of traditional IV poles (empathize), provide what the problems are at hand (define). Consider issues like what center of gravity, load distribution, and light-weight materials. Within your group, you need to think about probable designs that you could use to address the problem (*ideate*). Propose a *prototype* model as a part of your solution that reduces the factors that increase. Finally, *test* your solution by presenting it to your peers which will help you look at the limitations in your solution

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