Medical Communication Bag for Elderly Patients with Dementia/Delirium

Overview
Elderly patients that may sometimes experience dementia and delirium are in need of a product that is capable of storing, transporting, and organizing important medical devices and medical information. In hospital and nursing home settings, healthcare workers often do not have medical information about their patients readily available, including fall risk, allergies, medications, etc., that a dementia patient may not be able to provide correctly. Additionally, during emergencies, personal information, such as family contacts, funeral home contacts, and personal preferences are often missing, which healthcare patients need to properly treat their patients and to contact family members. The final product will provide patients with dementia and delirium a sense of familiarity and health care providers with information on how to treat the patient.

Objectives
The Medical Communication Bag will provide elderly patients with dementia and delirium a sense of familiarity during transportation between homes, hospitals and nursing homes. The Medical Communication Bag will also provide health care providers with information vital to immediately treating the patient like allergies, fall risk, and medications.

Approach
• Customer needs were gathered from nurses and social workers from the College of Nursing and local nursing homes
• A preliminary prototype was designed based on the ranking of three cardboard prototypes
• No patents have been filed for a product that houses both, medical information and assistive devices
• Biweekly meetings with sponsor were held on campus and site visits were made to local State College nursing homes to gather feedback and possible prototype improvements
• COMSOL Multiphysics was used to model possible misuse of the bag
• Various SolidWorks models of the bag were created to assist in assembling the prototype
• Two working prototypes were assembled that varied in size, materials, and construction process
• The bag was evaluated via surveys given to health care providers, bleach testing, cost analysis, and weighing of each prototype
• The COMSOL models showed that the final material (polyethylene) can withstand worst-case scenario misuse, and 8 of 10 customer needs were met based on the applied testing

Outcomes
• The final prototype safely houses, but maintains easy access to, necessary medical information and medical devices
• The final prototype can be further reduced in size and injection moulding can be used to create a more durable product
• The sponsor can move the product along to the manufacturing stages as well as marketing stages