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Biomedical Senior Design – North Carolina State University

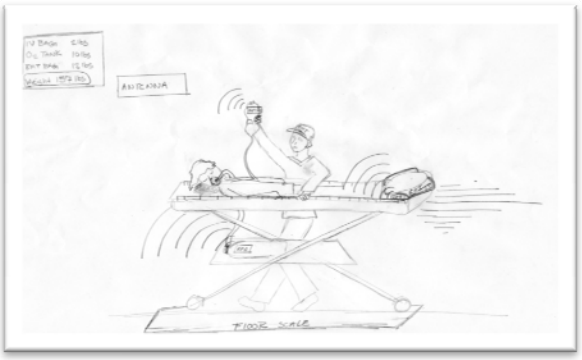
"They are coming in with new eyes and innovative minds. Working together, we can develop practical solutions to health care challenges" –Susan Jackson Wake Med's VP and Chief Learning Officer

Project Overview:

- Managed an engineering team using a 5 phase design control process based on the FDA's Quality System Regulations.
- Conducted in depth interviews with WakeMed Hospital to uncover unmet needs in the medical field.
- Developed a medical device, business plan, and design history file with over 30 controlled deliverables which was selected to be presented at the 2010 NC Biotech Design Symposium.

Team mate demonstrating prototype

RFID Tag Antenna with mounted display



Final Concept Sketch

Design Problem:

A local Level 1 trauma hospital had no accurate method for determining the weight of unconscious patients. Emergency care staff would often be forced to estimate the patient's weight, in order to correctly dose necessary medications. Our goal was to design an economical and intuitive solution that would quickly assess patient weight while still maintain the timing and flow of patients from the ambulance bay to the operating room.

Design Solution:

Using the local hospital's own RFID (radio frequency identification) tags which were currently used for inventory tracking, we created a database to pair each tag's medical device with its respective weight. Placing an RFID antenna, at the ambulatory entrance allowed us to gather data about the medical devices entering the hospital with the patient (stretcher, oxygen tank, cardiac monitor, etc). The patient's stretcher would then be rolled over an embedded floor scale clearly marked in the entranceway to the emergency room. Thus by knowing the total weight and the weight of the individual medical devices, a more accurate patient weight could be assessed. Additionally we created an LCD monitor mounted to be mounted above the entranceway which would list the medical devices tagged. This would allow the emergency staff to perform a double check to ensure all tagged items were accounted for.