# Abstract Submission- Implementation and Maintenance of a Smart Bed System

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In 2019, Sinai Health was in a precarious situation with the status of its hospital bed fleet. The bed frames ranged from 15-20 years of age, and the mattresses were a comprised of a dozen different models. The lack of standardization caused confusion to end users, and general difficulty with supplying patients with the correct bed and mattress for their needs. One interim approach to addresses these needs were to rent mattresses as needed, which contributed to significant equipment rental costs. Recognizing these challenges, and the high risk of mass bed frame failures, the Clinical Engineering team embarked on a fleet replacement of the beds. This project saw the replacement of 340 frames and mattresses. While this method of full fleet replacement creates a large capital cost upfront, it enables the standardization of equipment which optimizes staff workflows and knowledge retention, also therefore increasing patient safety. It also allowed Sinai Health to build out the infrastructure to create a full smart bed solution including bed locators, which communicate with a server to log bed availability and status. Another infrastructure piece which is enabled for use by standardizing the bed type is alerting. For use where there’s risk of patient falls, the new beds are equipment with built-in patient exit alarms. Tracking of this data in year 1 of the bed replacement showed a 50% reduction in patient falls, and a 42.5% reduction in equipment rental costs. The new bed fleet has now been in place for over two years, and there is still optimization and maintenance work to be done. One item being worked on is to have secondary alerts sent to nurse phones to alert them of the patient exit alarms. Secondly, we are working to optimize the use of the server data to ensure continued uptime of the bed fleet. Another initiative is to optimize the workflow around low air loss and other specialty mattresses.

In this paper or presentation, we will present the workflow followed to achieve the current state at Sinai Health, future steps to continue optimizing the system, as well as lessons learnt and suggestions to improve the process for others.