

Title: Improved Satisfaction and Performance with Emergency Department Renovation

Objective of program: Premier Health's Upper Valley Medical Center (UVMC) Emergency Department (ED) in Troy, Ohio was recently renovated and opened in the summer of 2017. Through thoughtful engagement of ED administrators, clinicians, auxiliary service providers, and best-practice research the medical planning team was able to design a new emergency department which solved spatial and flow issues and improved both staff and patient satisfaction. Prior to renovation ED performance fell between the 25th and 65th percentile, when compared to industry benchmarks. Upon deeper review, a series of infrastructure issues existed which compromised the quality and stood in the way of the efficient delivery of care.

Analysis of data from before and after renovation shows marked improvement in a variety of service indicators including, increased patient and staff satisfaction, decreased patient length of stay, quickened arrival to diagnosis time, increased primary and secondary market share capture, and increased ambulance traffic.

Planning/research methods: While in design phase, the team performed a thorough review of literature regarding best-practice solutions to the many operational and flow issues in the current design. These reviews of the literature were shared with the executive team to inform design decisions and instigate discussions regarding workflow. Upon completion, the success of the executed design solution was measured both qualitatively (interviews and surveys) and quantitatively (electronic medical records data and health network performance measurements).

Implementation methods: As part of the renovation, several key components of the physical ED space and, consequently, the flow of work throughout it were reconfigured.

- Upon arrival at the renovated ED, a Registered Nurse (RN) and ED technician greet patients and perform an initial assessment. Patients are assigned acuity level and directly bedded. Full registration is implemented at the patient bedside.
- Central nurse stations were enlarged and more robustly equipped to meet the needs of a multi-disciplined team of both clinicians and auxiliary staff. Decentralized nursing stations were positioned throughout patient corridors to enable close monitoring of at-risk patients and serve as overflow work stations.
- Patient rooms were designed to be universal, supported by supply carts stocked with standardized quantities and goods. Ample space was built into each room to accommodate family members and visitors.
- The path to imaging and the capacity of the imaging suite were improved. Rather than a circuitous route across a public corridor, the renovated ED now has a straight path to the imaging suite. An additional CT scanner was installed for fast-tracking potential stroke patients directly by Emergency Medical Services (EMS).
- Natural light from both windows and skylights was incorporated into the floor plan to bolster workplace satisfaction. Ample support space for ED staff and EMS personnel was integrated into the design to provide respite and minimize burnout.
- A new helipad and ambulance entry were constructed to better assist patients arriving (and leaving) with the help of a care team. A new EMS lounge was included in the scope of the renovation to encourage stewardship and support the auxiliary support network.

Results: Analysis of data from before (2015) and after the renovation (2017):

- Increased patient and staff satisfaction has been demonstrated through interviews and survey
- Metrics harvested from UVMC electronic medical record data show*:
 - Mean Time between ED Arrival to ED departure for admitted patients:
2015: 255.2 YTD average (25th percentile) 2017: 220.22 average upon completion (10th percentile)
 - Admit Decision time to ED Departure Time
2015: 157.8 YTD average (65th percentile) 2017: 107.42 average upon completion (40th percentile)
 - Mean Time between ED Arrival to ED departure for discharged patients
2015: 162.6 YTD average (30th percentile) 2017: 134.98 average upon completion (15th percentile)
 - Mean Time Door to Diagnostic Evaluation by a Qualified Personnel
2015: 36.0 YTD average (50th percentile) 2017: 10.74 average upon completion (5th percentile)
 - Mean Time to Pain Management for Long Bone Fracture
2015: 60.8 YTD average (35th percentile) 2017: 43.34 average upon completion (15th percentile)
- Increased primary and secondary market share capture as measured by internal performance measurement
- Increased ambulance traffic

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