A Pediatric Urgent Care Length of Stay Predictability Model Based on Correlating Physician & Nursing Team Staffing

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Purpose

- To determine whether Volume, Nurse Hours Per Unit of Service (NHPUOS) and Medical Hours Per Unit of Service (MDHPUOS) significantly affect daily median Length of Stay (LOS) in pediatric urgent care centers.
- To determine whether there is a significant interaction effect between volume, NHPUOS and MDHPUOS to predict daily Length of Stay in pediatric urgent care centers.

Background

- Length of the Stay at an Urgent Care is typically a desire to the consumer if perceived to be “too long.” Managing wait times and facilitating efficiencies to reduce the door to door time is an important value-based initiative. LOS is likely to be included on a merits driven quality dashboard as well as satisfaction survey questions posed to the consumer. Understanding the mechanisms of overlap between quality and increased staffing will help improve the patient satisfaction with care.

- Patient Satisfaction with Nursing
- Patient Satisfaction with Doctors

Results

- Key Performance Indicator Quality Dashboard is Through put LOS

- LOS Predictability Model with NHPUOS & Volume

Conclusion

- Results from the adjusted fixed effects model showed volume, NHPUOS, site as well the interaction between volume and NHPUOS significantly predicts median length of stay (p<0.05)
- By using median, 75% and 75th% quartiles of volume and NHPUOS, the expected daily median length of stay in the lowest when NHPUOS is as high as 1.18 and volume is as low as 1.25
- By using median, 25% and 75th% quartiles of volume and NHPUOS, the expected daily median length of stay in the highest when NHPUOS is as low as 0.78 and volume is as high as 1.25
- MDHPUS was not significantly associated with daily median length of stay (p>0.05)

References


Definitions

- LOS: Length of Stay is the door entry digital stamp when quick registration starts to the time the patient exits as discharge papers are signed digitally with subsequent escort to the exit door. LOS is represented as the median.
- NHPUOS: Worked hours of the nursing team (RN/LPN) per patient encounter as counted by the total number of hours of nursing on shift during the hours of operation divided by the number of patients registered for the hours of operation.
- MDHPUOS: Worked hours of the physician team (MD/APNP/PA) per patient encounter as counted by the total number of hours of physician on shift during the hours of operation divided by the number of patients registered for the hours of operation.

Study Design

- 5,184 data elements studied among nine (9) urgent care centers within the Nicklaus Children’s Hospital.
- Outpatient structure: 9 centers span three cities in South Florida. Data elements included: center, daily volume, daily median LOS, calculated worked hours NHPUOS & MDHPUOS.

- Generalized linear modeling (fixed effects) was applied to assess effects of volume, NHPUOS, MDHPUOS, controlled by year and site on daily median length of stay. Adjusted models using volume, NHPUOS, MDHPUOS, site, year, as well as interactions between volume and NHPUOS to predict median length of stay were built, Table 1.

- Descriptive statistics, including median and quartiles of daily median length of stay, volume, NHPUOS, MDHPUOS were calculated, Table 1.

- Median and quartiles were used due to non-normal distribution of the variables.