



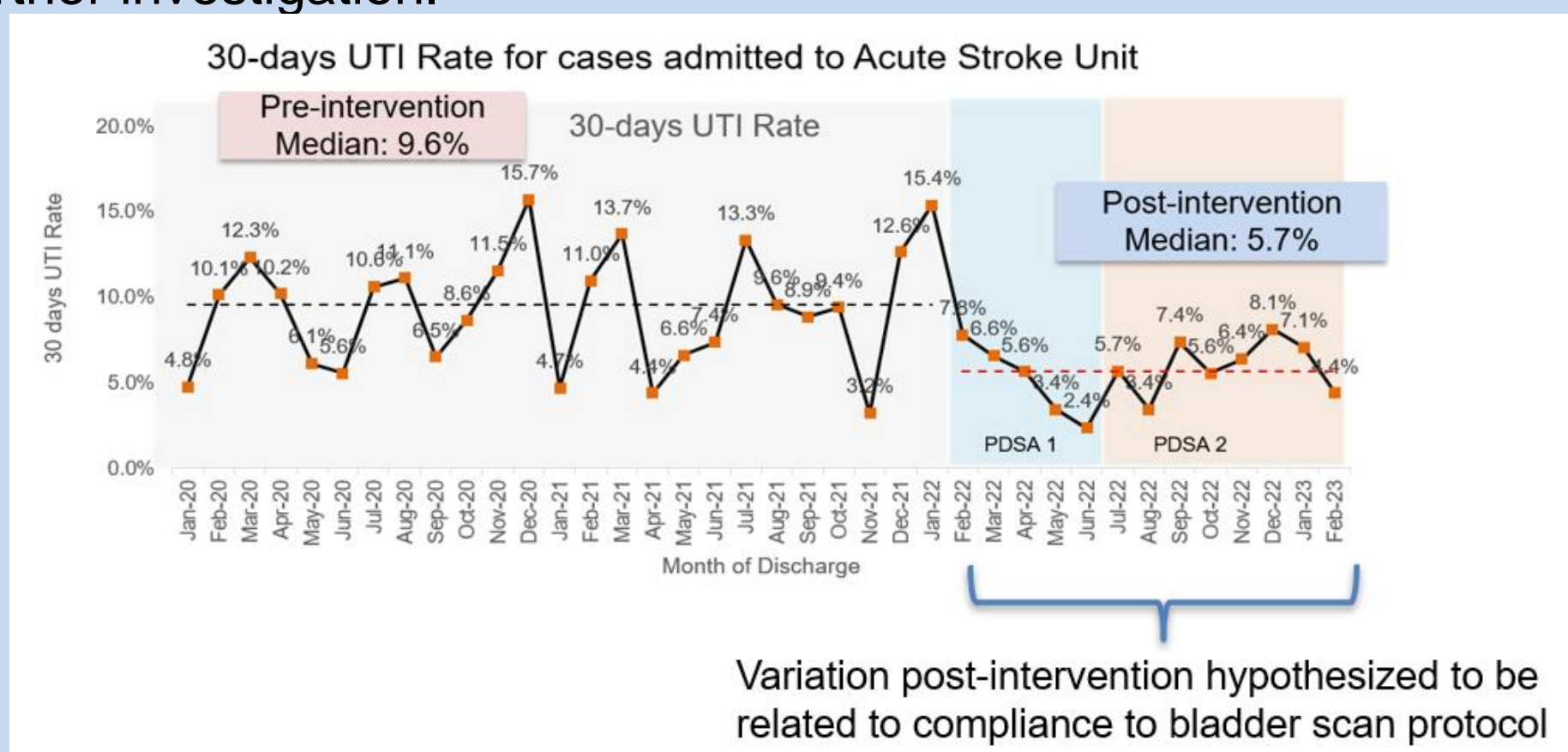
The Role of Compliance to Bladder Scan Protocol in Prevention of Urinary Tract Infection in Ischemic Stroke Patients

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Background

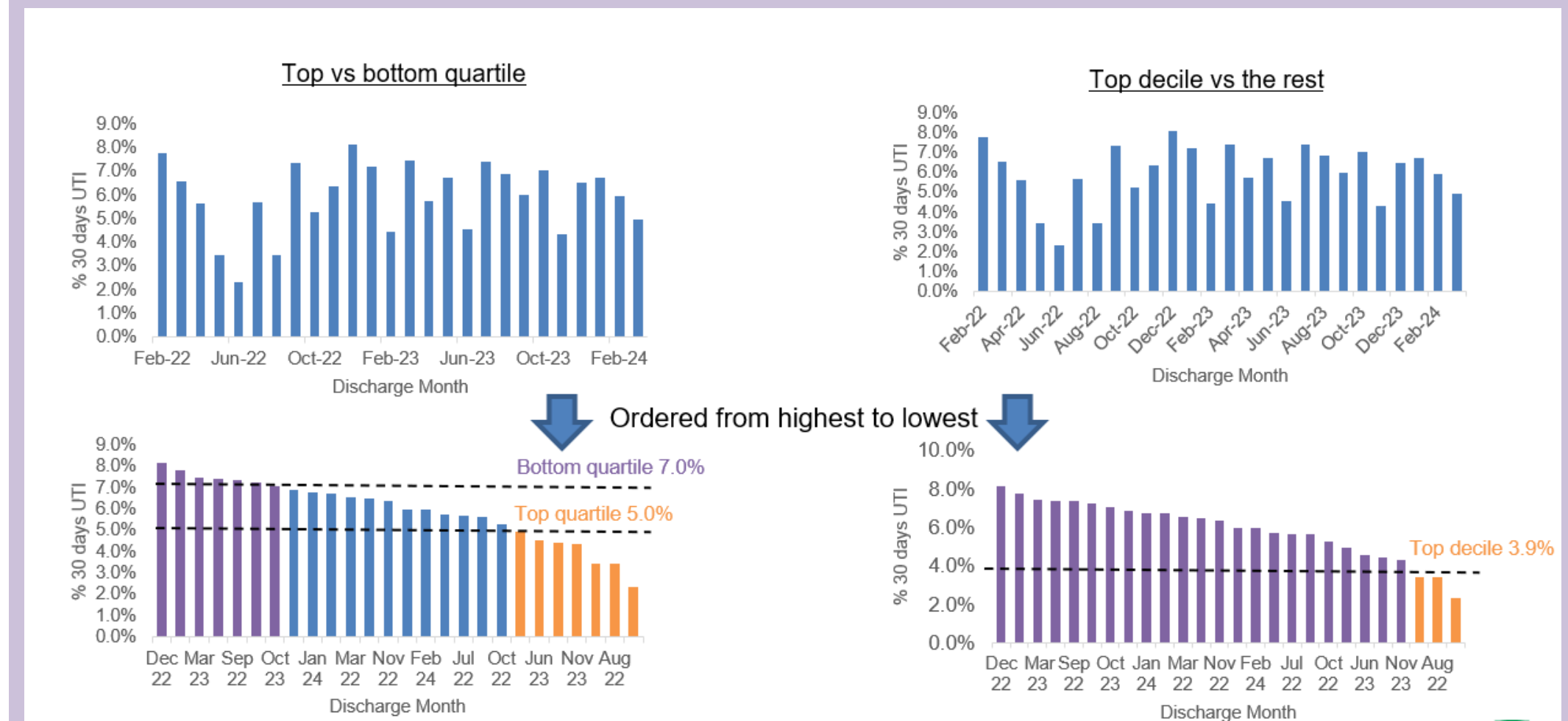
- Urinary tract infection (UTI) is a common complication among ischemic stroke patients, increasing morbidity and hospitalisation duration.
- A value analysis performed in 2021 identified 30-day UTI rates as an area for improvement. Acute urinary retention was determined to be a primary etiological factor. A nurse-led protocol incorporating bladder ultrasonography was implemented, resulting in a statistically significant reduction in UTI incidence¹.
- However, persistent variations in UTI rates were observed, prompting further investigation.



- We aim to prove the hypothesis that UTI incidence was attributed to variability in protocol adherence through a retrospective analysis of 30-day UTI rates as a ranked outcome to elucidating the factors differentiating periods of high and low UTI incidence.

Methods

- Monthly UTI rates from Feb 2022 to Mar 2024 were ranked from highest to lowest. To improve robustness, they were grouped using two different methods: 1. top vs bottom quartiles, and 2. top decile vs rest of cohort.



Risk factors for UTI (gender, age, National Institutes of Health Stroke Scale (NIHSS), and diabetes) were identified from literature review² and along with compliance to protocol were extracted from electronic medical records.

Statistical analyses were performed using chi-squared test for categorical variables and Mann-Whitney U test for continuous variables. Statistical significance was defined as $p < 0.05$.

Results

Comparison of Top vs bottom quartile of monthly UTI incidence

| | Top quartile (N= 630) | Bottom quartile (N= 592) | p-value |
|--------------------------|-----------------------|--------------------------|------------------|
| % 30d UTI | 4.0% | 7.4% | |
| % Male | 61.7% | 60.6% | 0.692 |
| Median Age | 68 (60,75) | 69 (60,77) | 0.146 |
| Median NIHSS | 2 (0,5) | 2 (0,5) | 0.345 |
| % Diabetes | 27.8% | 28.4% | 0.815 |
| % Compliance to protocol | 30.2% | 18.8% | <0.001 |

Comparison of Top vs other deciles of monthly UTI incidence

| | Top Decile (N= 259) | Other deciles (N= 1990) | p-value |
|--------------------------|---------------------|-------------------------|------------------|
| % 30d UTI | 3.1% | 6.3% | |
| % Male | 58.7% | 60.3% | 0.618 |
| Median Age | 66 (59,75) | 68.5 (60,77) | 0.184 |
| Median NIHSS | 2 (0,4) | 2 (0,5) | 0.008 |
| % Diabetes | 28.6% | 29.0% | 0.888 |
| % Compliance to protocol | 33.6% | 23.1% | <0.001 |

- Compliance to protocol was a significant factor for higher UTI incidence rates in both analyses.

Conclusion

- Our analyses demonstrated a significant inverse correlation between bladder scan protocol adherence and UTI incidence rates.
- These findings suggest that protocol compliance is a key factor in UTI prevention among ischemic stroke patients. Thus, strategies to improve compliance rates should be explored.

References

1. Rizal A, Tan IF, Chew JS et al. Reducing the incidence of urinary tract infection developing within Acute Stroke Unit. Poster presented at ICHOM; 10 Oct 2023; Barcelona, Spain
2. Li YM, Xu JH, Zhao YX. Predictors of urinary tract infection in acute stroke patients: A cohort study. Medicine 2020;99:27(e20952)

Acknowledgement

We would like to thank Dr Dimitri Alex Dimitroyannis from the Value Institute for Health and Care at the University of Texas Austin for his guidance on the analysis methodology.