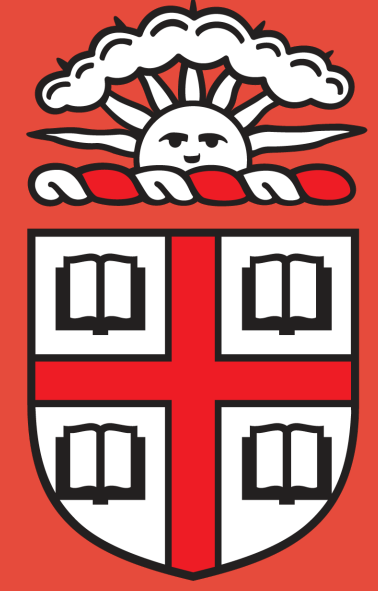


Cost analysis of the NIRUDAK & DHAKA clinical diagnostic model for volume deficit in patients with acute diarrhea



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Background

- With over 6.5 billion cases and 1.4 million deaths in 2019, diarrheal diseases are a major cause of morbidity and mortality and place a heavy burden on healthcare systems worldwide
- This study aims to compare simulated treatment costs of acute diarrhea management using the World Health Organization (WHO) guidelines^a or the recently developed NIRUDAK^b and DHAKA models^c to the actual cost of care at the International Centre for Diarrhoeal Disease Research (icddr,b)
- The NIRUDAK model predicts fluid resuscitation requirements for patients over 5 years of age
- The DHAKA model predicts fluid resuscitation requirements for patients under 5 years of age

Methods

- Cost of care for each patient presenting to icddr,b's Dhaka Hospital between March 2019 – March 2020 represents the summed costs of
 - fluid administered
 - hospital fees
 - equipment (e.g. IV tubing and needles)
- NIRUDAK model: total costs of resuscitation & cost of fluid required for initial resuscitation (within first 6 hours of admission) were calculated and reported as median and interquartile range (IQR) in USD
- DHAKA model: due to data limitations, total costs of fluid were calculated and reported as median and IQR in USD

Results

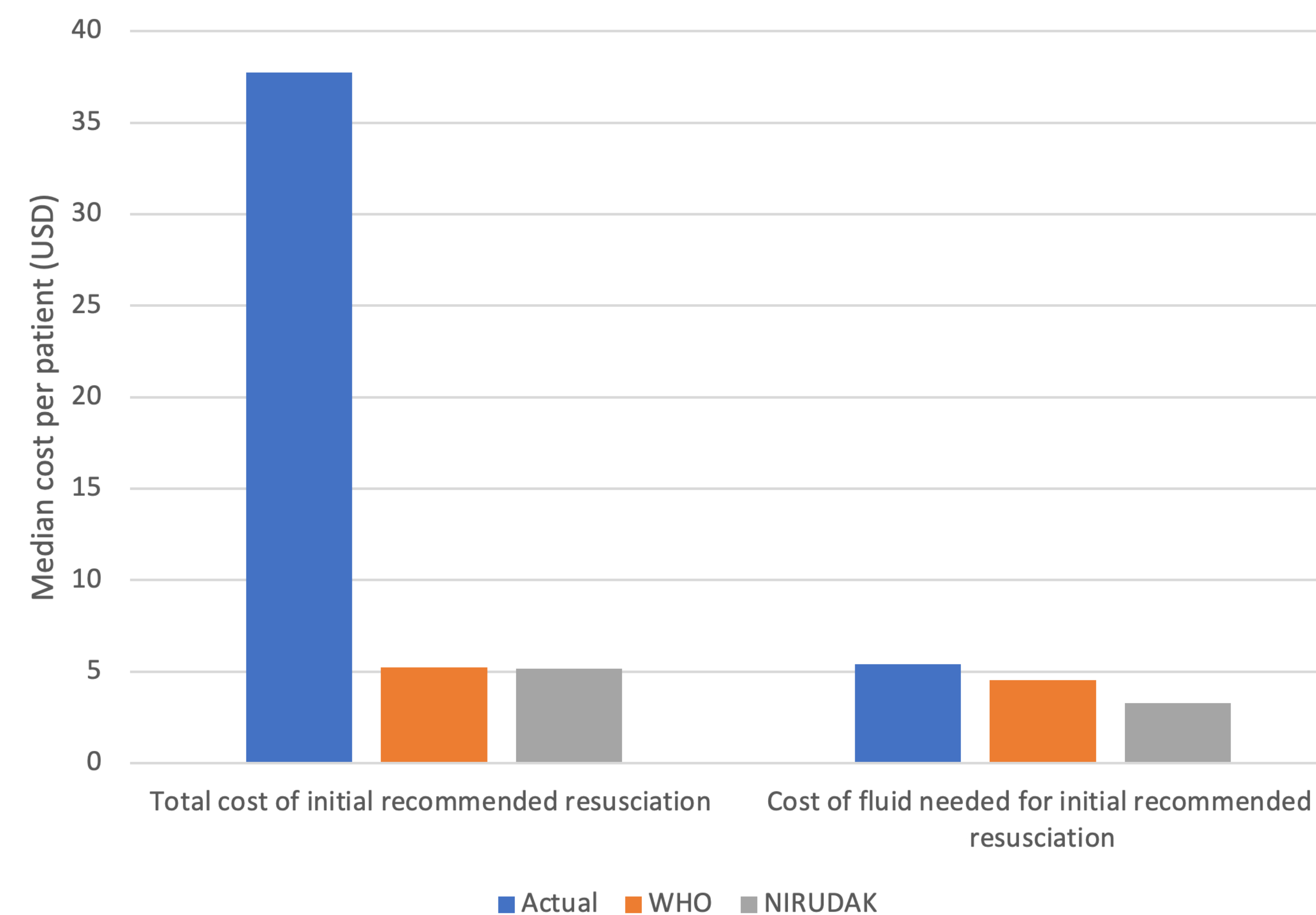


Figure 1. Summary of cost comparisons – NIRUDAK model

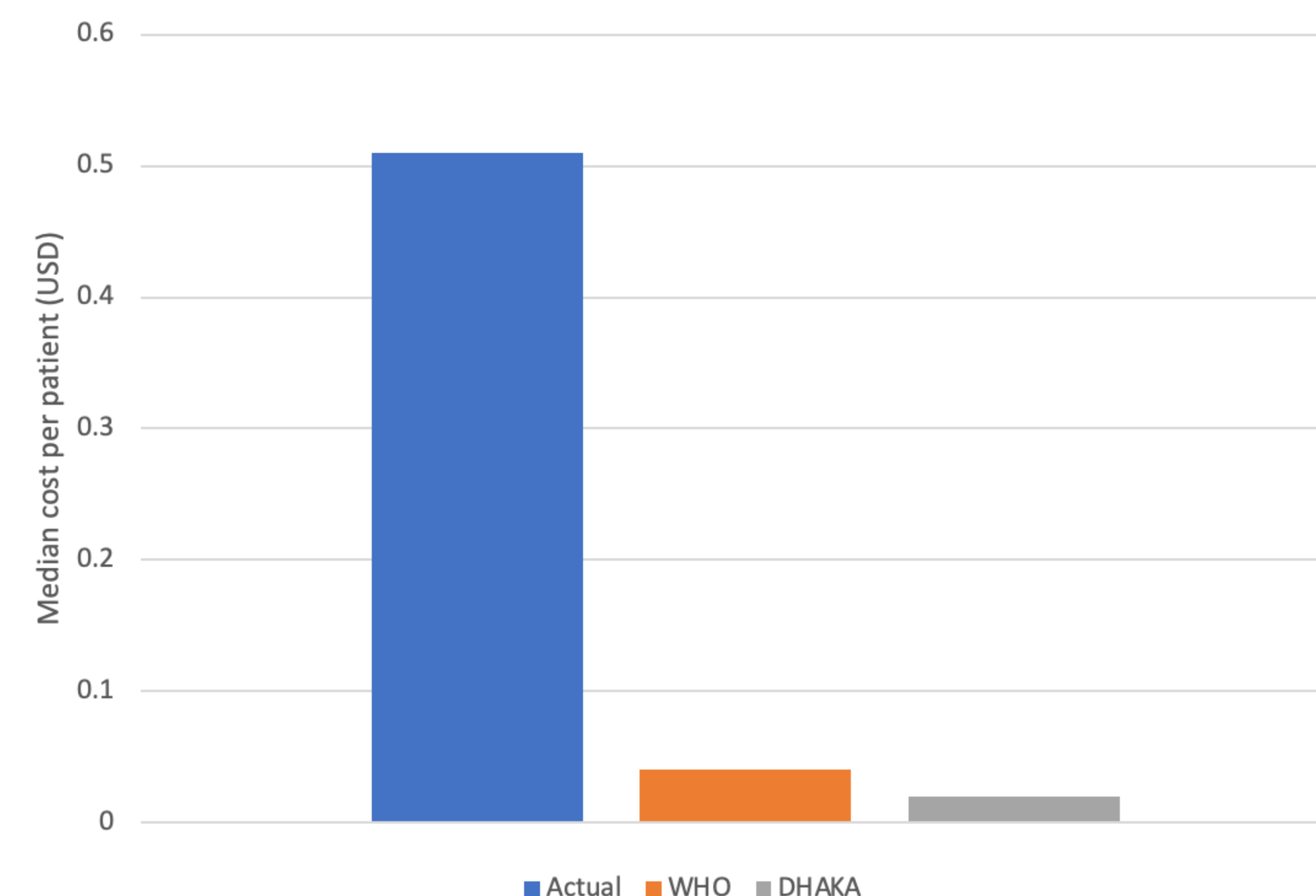


Figure 2. Total cost of fluid – DHAKA model

Results cont. & Conclusion

- NIRUDAK model, median total cost per patient: \$5.18 (IQR: 0 – 25.56)
 - WHO: \$5.23 (IQR: 5.09 – 22.17)
 - Actual (at icddr,b): \$37.75 (IQR: 15.69 – 45.00)
- NIRUDAK model, initial fluid resuscitation median cost per patient: \$3.27 (IQR: 0 – 4.27)
 - WHO: \$4.55 (IQR: 0 – 5.76)
 - Actual: \$5.43 (IQR: 4.16 – 5.43)
- DHAKA model, total fluid cost: \$0.02 (IQR: 0 – 0.97)
 - WHO: \$0.04 (IQR: 0.03 – 1.24)
 - Actual: \$0.51 (IQR: 0.45 – 1.71)
- Implementing the most cost-effective approach to diarrhea management will help optimize allocation of resources
 - Especially critical in low resource settings
- Measuring the societal cost savings (e.g., of hospital beds, physician and nurse labor, transportation to healthcare facilities, etc.) is beyond the scope of this analysis
 - However, more accurately diagnosing patient dehydration levels can
 - free up hospital beds and resources for the most severely ill patients
 - saving moderately ill patients the costs of in-patient care
 - Thus, the NIRUDAK and DHAKA models may also provide positive externalities unable to be captured here

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Disclosures

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