**Word count:** 248/250

**Title:** Cost analysis of the NIRUDAK clinical diagnostic model for volume deficit in patients with acute diarrhea

**Presentation format:** Scientific research

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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.

**Objectives:** This study aims to compare simulated treatment costs of acute diarrhea management using the World Health Organization (WHO) guidelines or the recently developed NIRUDAK model to the actual cost of care in patients over 5 years old.

**Method:** Cost of care for each patient included fluid administered, hospital costs, and equipment for patients presenting to icddr,b’s Dhaka Hospital from March 2019-2020. Total costs of resuscitation along with 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.

**Results:** Using the NIRUDAK model, patients had a median projected total cost of $5.18 (IQR:0-25.56), while median projected total costs using the WHO guidelines were $5.23 (IQR:5.09-22.17). Actual total cost of care was $37.75 (IQR:15.69-45.00). When isolating costs for initial fluid resuscitation, the median projected cost per patient was $3.27 (IQR:0-4.27) using the NIRUDAK model and $4.55 (IQR:0-5.76) using the WHO guidelines, while actual costs of care were $5.43 (IQR:4.16-5.43).

**Conclusion:** When using the NIRUDAK model to predict dehydration severity, patients had lower projected median total cost of care and cost of initial resuscitation compared to both the WHO guidelines and current clinical practice. Implementing the most cost-effective approach to diarrhea management will help optimize allocation of resources, which is especially critical in low resource settings.