

# Reducing Child Mortality Due to Rotavirus

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## Abstract

- Rotavirus is spread by the fecal-oral route. It causes severe diarrhea, vomiting, and abdominal pain which in children, can lead to death [5].
- This virus accounts for about 20,000 deaths each year in Bangladesh and is responsible for nearly 5% of all deaths and 16% of potentially vaccine-preventable deaths in children [1].
- There are 2 vaccines on the market for preventing Rotavirus [2,3].
- The first vaccination is given when the child is 6 weeks old and the second dose is administered 4 weeks later [2,3].

## Incidence

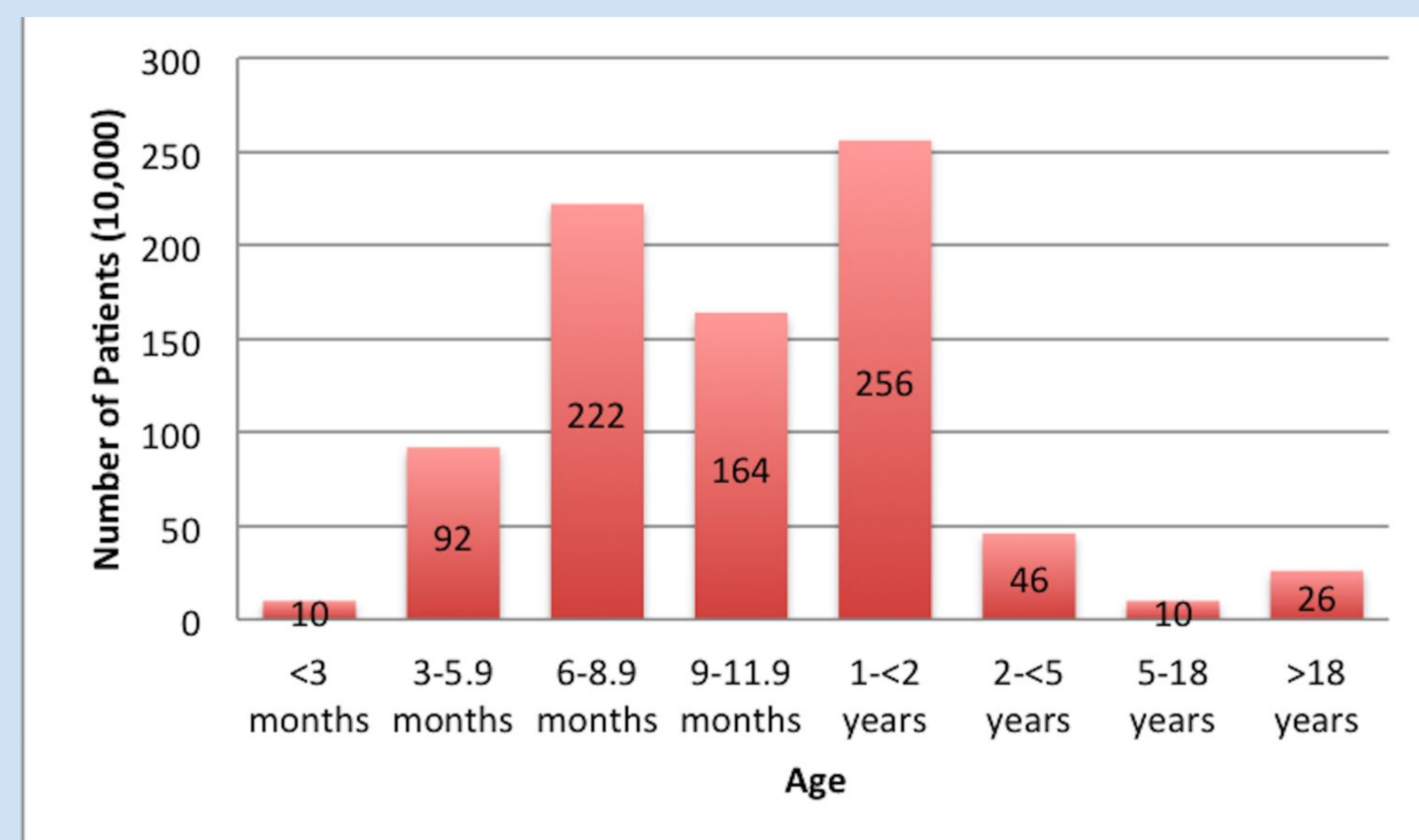


Figure 1. Age distribution for Rotavirus-positive patients in Bangladesh over a four year period [4].

## Project Goals and Objectives

- Lower child mortality in Bangladesh where children face extremely low odds of survival to age five due to the Rotavirus, which causes extreme diarrhea and dehydration.
- Prevent the Rotavirus in Bangladesh by administering vaccinations, over time.

## Predicted Results and Outcomes

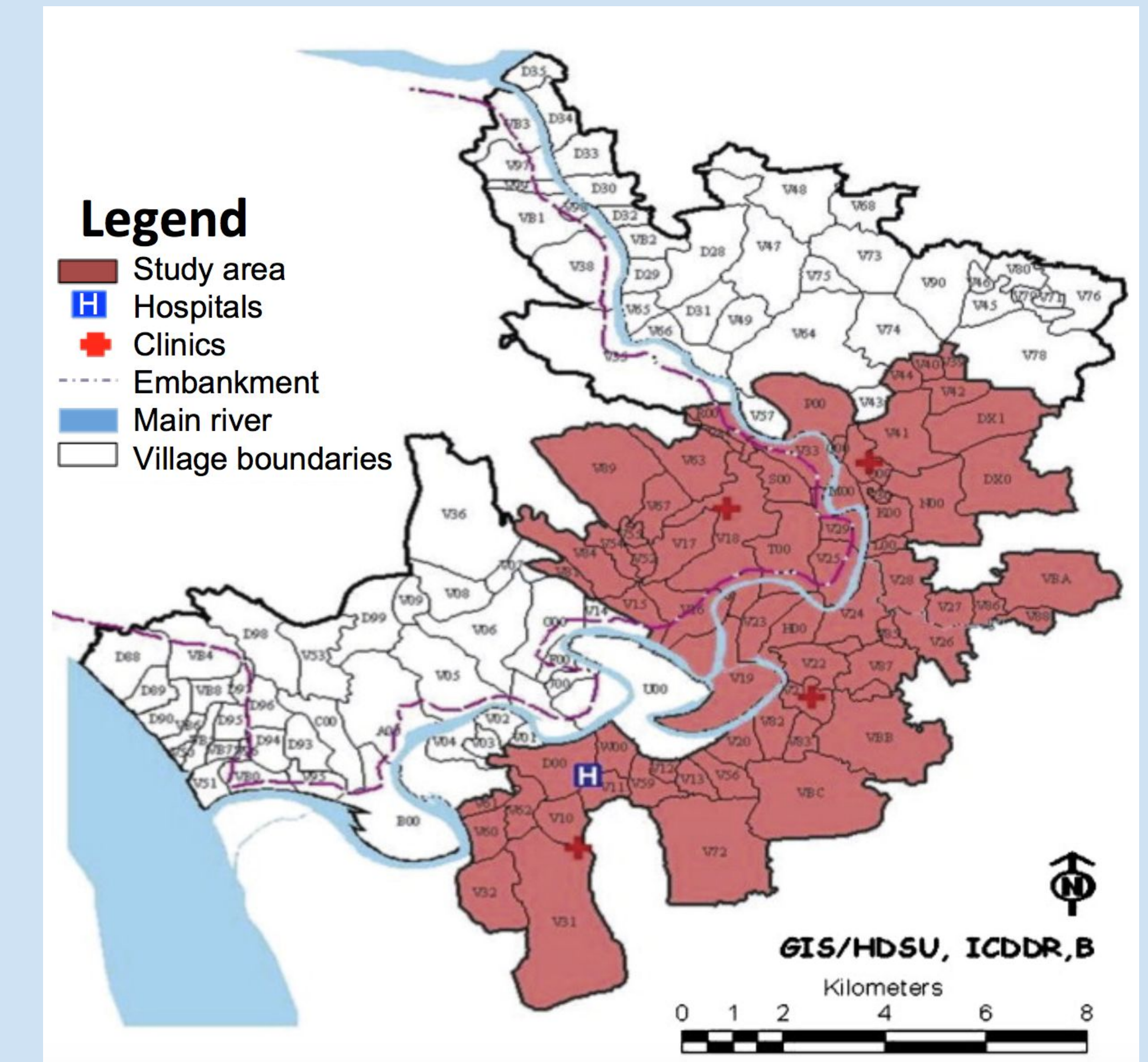
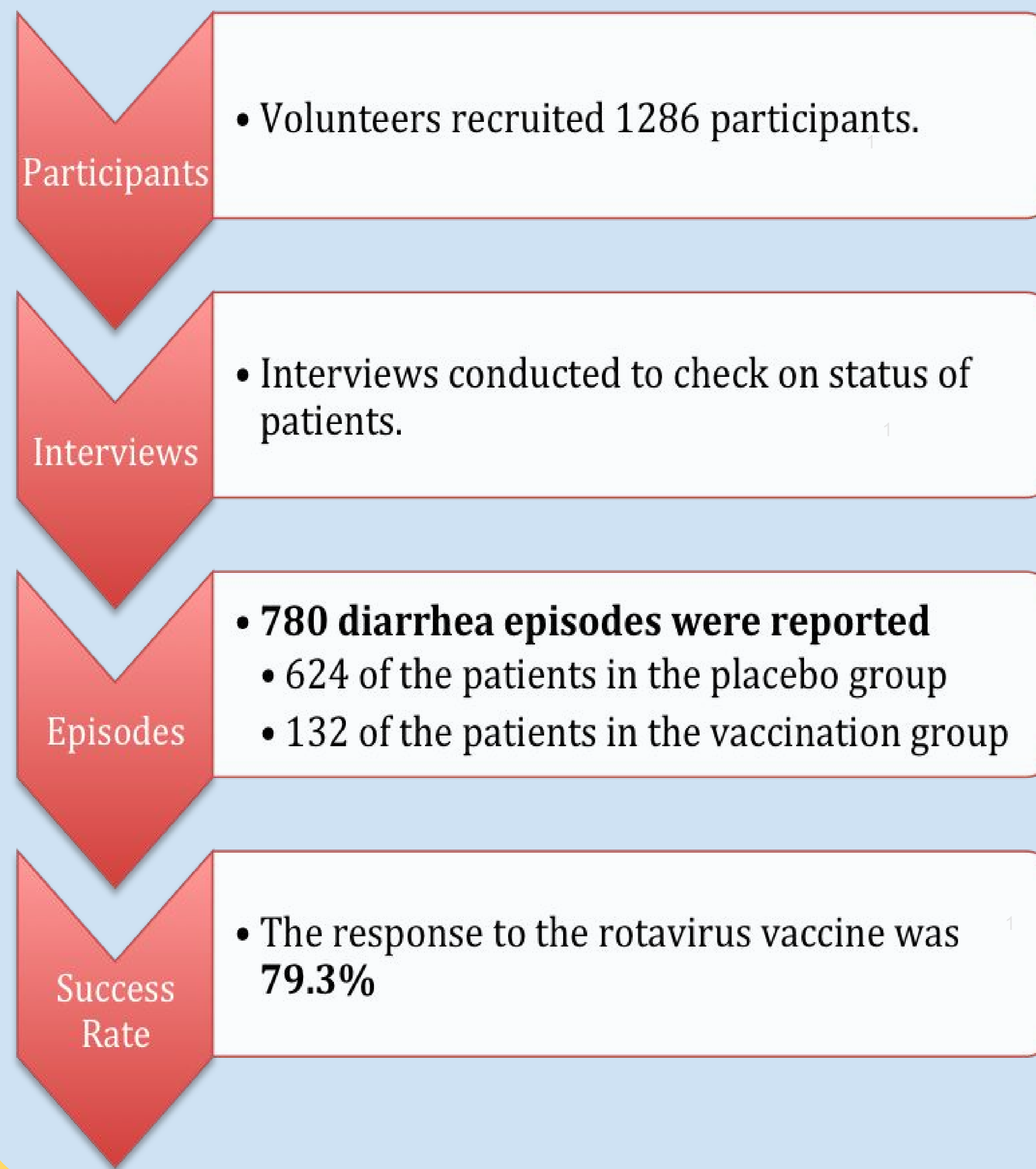


Figure 2. Rotavirus Vaccine Study Area [6]

## Conclusion

- Introduction of the Rotavirus vaccine in Bangladesh will result in a significant decrease of childhood diarrheal cases and deaths.
- Expanding the study to other cities in Bangladesh would be the next step to eradicating Rotavirus completely as shown in Figure 3.

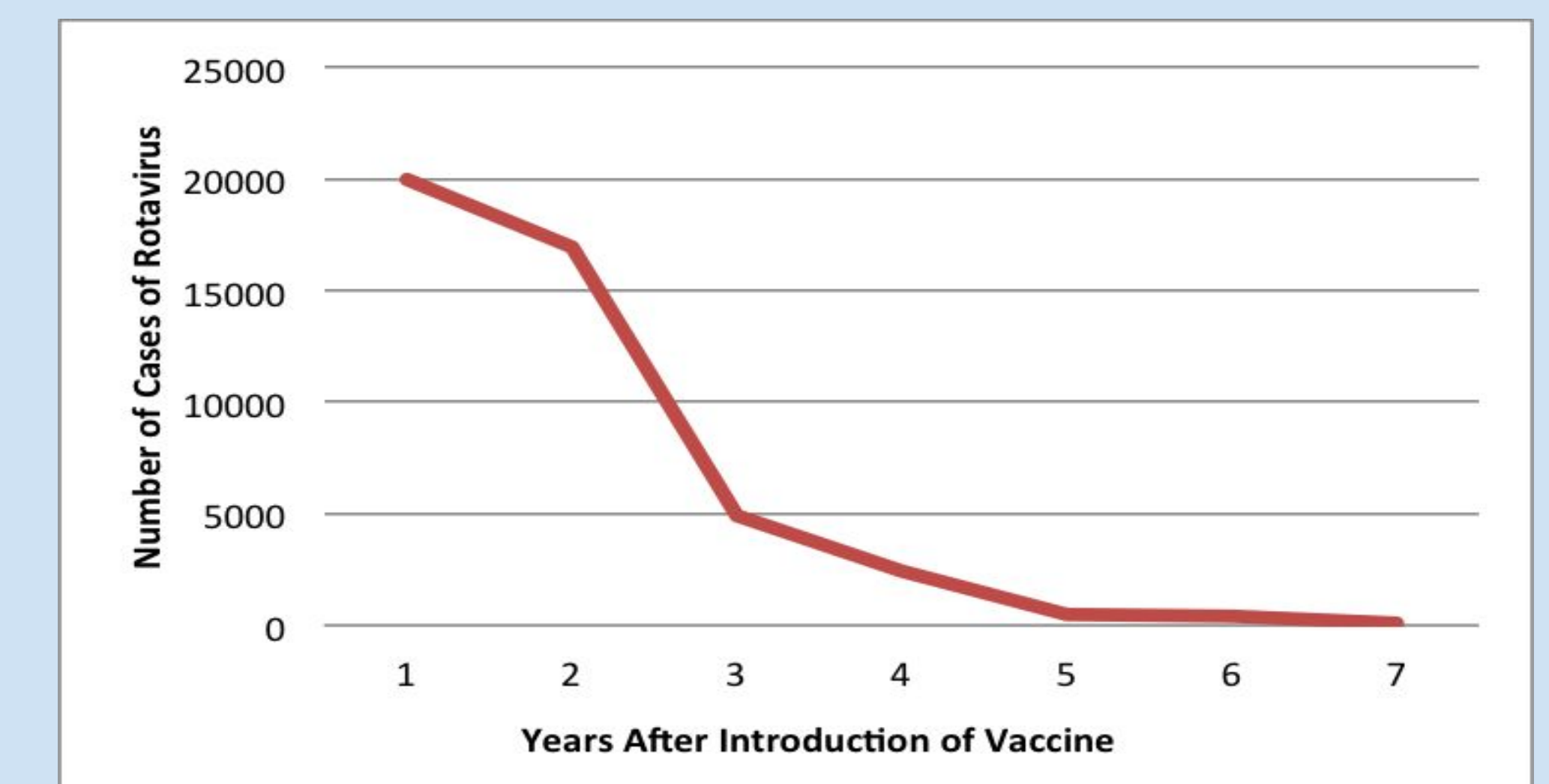


Figure 3. Eradication of Rotavirus 6 Years After Vaccine Introduction [7]

## Methods and Process



## References

- [1] Zaman, K., Yunus, M., Arifeen, S., Azim, T., Faruque, A., Huq, E., . . . Sack, D. (2012). Methodology and lessons-learned from the efficacy clinical trial of the pentavalent rotavirus vaccine in Bangladesh. *Vaccine*, 30(1), A94-A100. doi:10.1016/j.vaccine.2011.07.117
- [2] Rotarix. Retrieved November 12, 2015, from <http://www.fda.gov/BiologicsBloodVaccines/Vaccines/ApprovedProducts/ucm133920.htm>
- [3] RotaTeq® (Rotavirus Vaccine, Live, Oral, Pentavalent). Retrieved November 12, 2015, from <https://www.merckvaccines.com/Products/RotaTeq/Pages/home>
- [4] Rahman, M., Sultana, R., Ahmed, G., Nahar, S., Hassan, Z., Salada, F., . . . Azim, T. (2007). Prevalence of G2P[4] and G12P[6] Rotavirus, Bangladesh. *Emerging Infectious Diseases*, 13(1), 18-24.
- [5] Symptoms. (2014, May 12). Retrieved December 4, 2015, from <http://www.cdc.gov/rotavirus/about/symptoms.html>
- [6] Zaman, K., Yunus, M., Arifeen, S., Azim, T., Faruque, A., Huq, E., . . . Sack, D. (2012). [Online image] Methodology and lessons-learned from the efficacy clinical trial of the pentavalent rotavirus vaccine in Bangladesh. Retrieved from *Vaccine*, 30(1), A94-A100. doi:10.1016/j.vaccine.2011.07.117
- [7] Dulgheroff, A.C.B., Figueiredo, E.F., Gouveia, V.S., & Domingues, A.L.S. (2014). Changes in epidemiology of rotavirus in the Triângulo Mineiro region of Brazil: lack of two consecutive rotavirus seasons. *Brazilian Journal of Medical and Biological Research*, 47(12), 1091-1095. Epub September 23, 2014. <https://doi.org/10.1590/1414-431X20141156>