
Using the Declaration of Alma Ata's definition of total health to understand the barriers impeding equitable and effective rotavirus vaccination in LMICs



Student Name: Alexa Higginbotham

Program Stream: Innovation Stream

Scholarly Paper Advisor: Dr. David Goldfarb

Practicum Organization: UPenn-Botswana University Partnership; Clinical Research in Botswana at Princess Marina Hospital

Practicum Supervisor: Dr. David Goldfarb

Background: Diarrheal diseases are a major global health challenge that can be addressed through innovation and improved access to clean water, sanitation, medical treatments and prevention strategies. Diarrheal diseases, because of barriers to necessary healthcare treatments and prevention strategies, disproportionately affect low and middle-income countries (LMICs).¹ Two million people die because of diarrheal diseases every year. The rotavirus is the leading cause of severe diarrhea in children under the age of five; between 352,000 and 592,000 deaths occur each year because of rotavirus infections.² The introduction of rotavirus vaccines, such as RotateqTM (manufactured by Merck & Co.) and RotarixTM (manufactured by GlaxoSmithKline Biologicals), has helped address the rotavirus morbidity burden in developed areas.^{3,4} However, these vaccines have not proved to be as efficacious in developing areas.^{5,6} The issues surrounding rotavirus vaccination in LMICs elucidates the disparity in health equity that is present in today's world. The Declaration of Alma-Ata highlights how equitable access, public participation, health promotion, appropriate technology, and intersectional cooperation are required for primary healthcare.⁷ By highlighting the interactions between the political, economic, social and health sectors of society, the concepts of equitable total health outlined by the Declaration of Alma Ata can lead us to the understanding of how and why rotavirus infections affect those in LMICs more so than in high-income countries.

Methodology: A targeted literature review was conducted to critically analyze articles from a number of databases pertaining to the historical and current factors affecting the physical, economic, political and social aspects of healthcare affecting rotavirus vaccination in LMICs.

Findings: Challenges affecting rotavirus vaccination in LMICs include: reduced efficacy of presently licensed vaccines, limited financial means to support vaccination programs, political barriers preventing vaccine implementation, issues regarding social acceptance of vaccination programs, and infrastructural limitations.^{8,9,10,11,12} The reduced efficacy of presently licensed vaccines may be negatively affecting the decision to roll out these vaccines in the most heavily burdened areas. Economic constraints in various developing areas impede rotavirus vaccination inclusion in immunization programs. Without political support and involvement these economic challenges cannot be fully addressed. Finally, without the support of the public at large vaccination programs will not succeed.

Conclusions and Recommendations: Future research agendas should not only include innovative approaches to further vaccine development and improve the efficacy of the rotavirus vaccines in LMICs, but also improve methods for LMICs to take on a leadership role in vaccine development and manufacturing to help reduce the economic burden of vaccination programs.

Innovative ways to include governments in the development and decision-making process of vaccine programs, the engagement of the public during both the

Using the Declaration of Alma Ata's definition of total health to understand the barriers impeding equitable and effective rotavirus vaccination in LMICs

decision and implementation stages of rotavirus vaccine adoption, and innovative ways to avoid relatively simplistic infrastructural challenges to allow for equitable access to rotavirus vaccines are required.

In order for health equity regarding rotavirus infections to be realized, total health must be understood and all sectors of societal health must be innovatively addressed.

Global Health Relevancy

Diarrheal diseases demonstrate the disparity in health equity across the globe. Although these diseases are an important contributing factor to morbidity issues in developed countries, 98% of diarrheal deaths occur in low-income countries.¹³ Gastroenteritis cases, particularly those caused by the rotavirus, are global health issues that warrant a global innovative response. Innovation and economic involvement as well as health care delivery systems affecting the efficacy and access to rotavirus vaccination is of particular interest to anyone hoping to reduce the inequity in gastroenteritis care across the globe.