Short Communication

Vaccine dilemma for children at risk: Recently approved malaria vaccine versus ongoing COVID-19 vaccination campaign

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ABSTRACT

Recently, the World Health Organization (WHO) approved RTS, S/AS01 (RTS, S) as the world’s first malaria vaccine for partial malaria protection in young children at risk. While this immunization drive begins during the unprecedented pandemic of the SARS-CoV-2 Virus, the WHO has also approved 7 Vaccines in 2021 for the vaccination of children at risk. This article explores the quandary that would occur to the officials in charge of carrying out large vaccination campaigns against these two deadly infectious illnesses in several regions including the continent of Africa. The article also outlines the priorities for resolving this dilemma, offers evidence-based solutions, and provides a summary of recent significant events and their consequences. While providing the latest data, a discussion on the causation of the dilemma with clear recommendations for possible solutions has been explored as well.

1. Introduction

RTS, S/AS01 (RTS, S) is the world’s first malaria vaccine that has been demonstrated to give partial malaria protection in young children. The World Health Organization (WHO) recommends that children in Sub-Saharan Africa and other areas with moderate to high P. falciparum malaria transmission get the RTS, S malaria vaccine. The advice is based on the findings of a trial program that has touched over 800,000 children in Ghana, Kenya, and Malawi since 2019 [1]. Despite the fact that it is a revolutionary endeavor against a serious infectious illness, the immunization push will begin while the COVID-19 vaccination programs continue. Only 15 of Africa’s 54 countries have reached the 10% objective. Half of the continent’s countries have vaccinated fewer than 2% of their population. Some larger countries with vast populations fell well short of this goal. Egypt has just approximately 5% of its people completely immunized, while Ethiopia and Nigeria both have less than 3%. Burundi and Eritrea are the only two African countries that have failed to implement immunization programs [2]. The authors explore the quandary that African healthcare officials confront when carrying out large vaccination campaigns against two deadly infectious illnesses in this region. The authors outline the priorities for resolving this dilemma, offer evidence-based solutions, and provide a summary of recent significant events and their consequences.

1.1. Recent updates: malaria vaccination for at-risk children

Malaria continues to be the leading cause of juvenile sickness and mortality in Sub-Saharan Africa [1]. RTS, S is the first Plasmodium falciparum malaria vaccine to show a protective benefit in young children in a late-stage clinical study. RTS, S Phase III clinical trials were completed in 2014, demonstrating vaccine efficacy against clinical malaria of 36.3% and efficacy against severe malaria of 32.2% in children aged 5–17 months at the first dose, over 48 months of follow-up [3]. The vaccine will be critical for malaria-endemic nations with
1.2. Recent updates: COVID-19 vaccinations for children

Meanwhile, discussions and updates are rampant being made regarding the COVID-19 vaccination status for children at risk. According to statistics, children represent 14.3% of COVID-19 patients in the United States [6]. Although the clinical manifestations of children with COVID-19 are usually mild or asymptomatic compared to adults, a small proportion of patients are severe, resulting in hospitalization and even death. Recent surveillance in the United States has shown increases in morbidity and severe cases in children, which should be of great concern [6]. Furthermore, acute respiratory infections are the most common illness in children and the manifestations of COVID-19 in children are difficult to distinguish from other respiratory infections. Infected children, as a source of infection, may play a greater role in transmission in the community (including families, daycare centers and schools). Children are, therefore, an important group of the population that needs a COVID-19 vaccine.

Currently, the WHO has approved seven COVID-19 vaccines for emergency use in children. China approved the emergency use of inactivated COVID-19 vaccines in children ages 3 to 17 [7]. Canada, the United States, Europe, Singapore, the United Arab Emirates, Kuwait, and other countries have also approved emergency vaccination with the COVID-19 vaccine for children and adolescents 12–17 years of age [8]. By August 2021, nearly 10 million children ages 12 to 17 in the United States completed their COVID-19 mRNA vaccination. In China, children ages 12 to 17 received more than 60 million doses of the vaccine [9]. Meanwhile, the status of COVID-19 vaccinations in LMICs still remains in a dilemma due to various government, local, population-related, funding, and administration-related hurdles.

1.3. Dilemma in vaccination norms

During the COVID-19 pandemic, Malaria Vaccine has been approved by the WHO for infants (6–12 weeks) and young children (5–17 months). This ignites the dilemma among the parents of these infants and children who are eligible for both COVID-19 and Malaria Vaccine as to which vaccine should be administered and what the gravity of the situation poses. The public would be in the constant dilemma of their point would hold the ground for this dilemma. Last, recommendations to rope researchers together to create joint action plans for qualitative improvement and implementations should be put forth to evaluate the situation. This would help to create feedback for the governing bodies to modify plans on basis of need. These studies’ outcomes will further help policymakers tackle any roots of hesitancy about the vaccine and device timely strategies.

be inferred that the chances of interactions would be minimal.

Based on the economic dilemma of this situation, the RTS, S/AS01 vaccine is priced at $5 dollar per dose, and considering the fund received in low and middle-income countries the cost may vary from $0.7 to $2.5 per dose. The cost of a fully vaccinated child to the government would be $12 to $14 [12]. COVID-19 Vaccine which is available freely in most of the countries will pursue the parents to select the COVID-19 Vaccine over the malaria vaccine. No government has officially included the malaria vaccine in their immunization schedule as it has just received WHO approval. Moreover, it will take a significant amount of time for low and middle-income countries to give the priority to such a new vaccine because of lack of funding, weak health policies, slow implementation of new policies, and lack of awareness among the individuals. Keeping in mind that the rate of spread of COVID-19(Pandemic) infection is significantly high as compared to that of malaria (Endemic), there is a good chance that governments will prioritize the COVID-19 vaccine over the malaria vaccine at this given moment in time.

Lastly, the mortality of COVID-19 in the pediatric population is around 0.18% which is very low [13]. The mortality of malaria varies from country to country and its health resources. The total burden of malarial mortality under 5 years of age is 5.2% in African countries, while, on the contrary malaria is eradicated in the US [14]. These demographics pose a problem and a solution for the guidance in making government norms in developed versus developing countries.

2. Recommendations

Alongside the entire overview and analysis of updates for the Vaccination schedules and keeping in mind the dilemma, the following proposed recommendations could channel the governing bodies to make more efficient decisions in these unprecedented times. The WHO said the vaccine, known as RTS, S, should be widely used among children in sub-Saharan Africa and in other regions with moderate to high transmission of malaria which is currently being administered in four doses to children starting at 5 months of age. In this view, the first formal recommendation points to the inclusion in the National Immunization Schedules as a mandatory rather than a supplementary vaccination.

As the COVID-19 pandemic continues to loom in the various continents, the new malaria vaccine can significantly reduce the burden of malaria from the endemic regions. Although the dilemma between tackling the endemicity of Malaria versus the pandemic situation of COVID-19 exists, recommendations could be inclusive for handling both at the same time. For this, a new government program could be implemented for the combined effort for children at risk. However, the challenge is prioritizing the delivery of the new malaria vaccine while continents are already dire need of COVID-19 vaccines. A multidisciplinary approach is needed between countries across the continent to ramp up the efforts in the delivery of the malaria vaccine. This calls for collaboration between countries to prioritize the vaccine for countries where the malaria burden is significant.

COVID-19 vaccine hesitancy has cost enormous losses to various countries such as those in Africa. To tackle the hesitancy in the malaria vaccine, lessons should be learned from COVID-19 vaccination campaigns and must be implemented into newer strategies. This calls for actions on social media campaigns to disseminate accurate information about the vaccine should start in advance. Programs on patient education, mass media communication, standardization of norms, and others could possibly lead to a quicker means of communication.

Lastly, recommendations to rope researchers together to create joint action plans for qualitative improvement and implementations should be put forth to evaluate the situation. This would help to create feedback for the governing bodies to modify plans on basis of need. These studies’ outcomes will further help policymakers tackle any roots of hesitancy about the vaccine and device timely strategies.
3. Conclusion

In conclusion, the RTS, S/AS01 (RTS, S), the world’s first malaria vaccine approved by the WHO, during these COVID-19 times, has been the latest potential solution to one of the leading endemic diseases [15]. Simultaneously, the WHO has approved seven COVID-19 vaccines for emergency use in children. The current dilemma unfolds in this situation to tackle two of the greatest problems to the children’s at-risk populations. This article provides the latest data and a discussion on causation of dilemma with clear recommendations for possible solutions. The article intends to make a positive change in this situation and pose a possible direction for the associated policy makers.

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Author contributions

MMH: conceived the idea, designed the study and drafted the manuscript.

PAS, AMS, SYP, SR, MMH, MYE, BM: conducted literature search and created the illustrations.

PAS, AMS, MMH: revised the manuscript critically and refined the illustrations.

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Registration of research studies

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Consent

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Declaration of competing interest

NA.

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