



Disruption of Vaccination in Childhood and the Re-emergence of Poliomyelitis

Çocukluk Çağı Aşılamaında Aksama ve Poliomyelitinin Yeniden Ortaya Çıkışı

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Although poliomyelitis is a vaccine-preventable disease, it has shown re-emergency in some parts of the world because of civil war and natural disasters (drought, flooding, and earthquakes). The current situation is summarized in this editorial.

Poliomyelitis, commonly known as polio, is a highly infectious viral disease caused by the poliovirus. It primarily affects children and spreads through person-to-person contact, primarily via the fecal-oral route or, less commonly, through contaminated water or food. The virus invades the nervous system, potentially causing paralysis, which can be permanent in severe cases. Approximately 1 in 200 infections lead to irreversible paralysis, typically in the legs. In some cases, paralysis can affect the respiratory muscles, leading to death when breathing support is unavailable.^[1]

Global vaccination efforts, particularly through the use of the oral polio vaccine (OPV) and inactivated polio vaccine, have significantly reduced polio cases worldwide. Despite these advances, the disease remains endemic in a few countries, primarily because of insufficient immunization coverage and challenges, such as political instability and conflict, which hinder vaccination campaigns.^[2] Additionally, vaccine-derived poliovirus (VDPV) has emerged as a concern in areas with low immunization rates, where the weakened virus in the OPV can circulate and mutate.^[3]

Impact of Vaccination Disruption

The global eradication of poliomyelitis has been one of the most ambitious goals for public health initiatives. Because of mass immunization campaigns, wild poliovirus transmission has been reduced to only a few endemic countries. However, recent disruptions in routine childhood vaccination programs, exacerbated by the COVID-19 pandemic and other sociopolitical factors, have raised alarms about the potential resurgence of vaccine-preventable diseases, including poliomyelitis. Maintaining high immunization coverage is crucial not only to prevent the spread of wild poliovirus (WPV) but also to mitigate the risk of circulating vaccine-derived poliovirus (cVDPV).^[2]

The COVID-19 pandemic significantly disrupted healthcare systems, leading to the suspension of routine vaccination programs. According to the World Health Organization (WHO), more than 23 million children missed essential vaccines in 2020, the highest number in over a decade.^[4] This disruption particularly affected low- and middle-income countries, where healthcare systems were already fragile. The suspension of vaccination campaigns led to gaps in immunization, causing new cases of cVDPV in regions considered to be polio-free for years.^[2]

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Re-emergence of Vaccine-Derived Poliovirus

Although wild poliovirus is now endemic only in Afghanistan and Pakistan, the re-emergence of cVDPV has become a significant concern. Cause by the increasing violence in Middle Eastern Countries, poliomyelitis has shown re-emergency. In areas with low immunization coverage, the weakened virus in OPV can circulate and mutate, regaining the ability to cause paralysis. In 2021, more than 1,000 cases of cVDPV were reported globally, highlighting the importance of maintaining high vaccination coverage even in polio-free regions.^[2]

Recent reports have highlighted the global resurgence of circulating cVDPVs between January 2023 and June 2024, particularly in countries with a high proportion of under vaccinated children. Data from the WHO Polio Information System identified 74 cVDPV outbreaks in 39 countries, with the majority occurring in Africa. Of these, 64% were new outbreaks. The transmission of cVDPV2 was the most common, affecting 38 countries. Prolonged transmission has been observed in nations, such as Nigeria and Somalia, where security issues hinder vaccination efforts, leading to the spread of virus to neighboring regions. These findings emphasize the need for timely, high-quality outbreak responses to prevent further international spread and reinforce the importance of increasing population immunity to effectively control cVDPV outbreaks.^[5] Recent reports have detected poliovirus in countries, such as the United Kingdom and the United States, through wastewater surveillance revealing signs of poliovirus circulation, underscoring the fact that no country is immune to the effects of declining vaccination rates.^[6] These findings emphasize the need for robust immunization strategies to prevent further outbreaks.

Addressing cVDPV and the Role of New Vaccines

One of the key strategies to combat the spread of cVDPV has been the development of a novel OPV type 2 (nOPV2) designed to reduce the risk of cVDPV while maintaining immunity against poliovirus.^[7] The nOPV2 has shown promise in reducing outbreaks in countries where cVDPV is circulating, but its success depends not only on the vaccine's efficacy but also on robust public health infrastructure to support its distribution and monitor immunization coverage.^[3]

Healthcare systems, especially in underserved regions, must be strengthened to rebuild immunization programs that were disrupted during the pandemic. International organizations, such as WHO and the Global Polio Eradication

Initiative, are essential in supporting countries with limited resources to ensure that vaccination programs are restored and gaps in healthcare are addressed.^[1,2]

Restoring Routine Immunization Programs

The COVID-19 pandemic highlights the importance of resilient healthcare systems capable of managing multiple public health priorities simultaneously. National governments must prioritize catch-up vaccination campaigns for children who missed their immunization. Public health messaging should focus on rebuilding trust in vaccines, particularly in communities affected by misinformation and vaccine hesitancy.^[4] Moreover, integrating polio vaccines into broader healthcare services, such as nutrition programs and primary care, can improve coverage and improve the resilience of communities.^[2]

Conclusion

The re-emergence of poliomyelitis caused by vaccination disruptions is a stark reminder of the fragility of global health progress. Despite significant strides toward eradicating poliovirus, the pandemic has exposed vulnerabilities in healthcare systems worldwide. To prevent the reversal of these gains, global health authorities must act quickly to restore routine immunization programs, strengthen healthcare infrastructure, and address the ongoing threat of VDPV. A renewed commitment to vaccination is critical for safeguarding future generations against the debilitating effects of poliomyelitis.

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