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Editorial

Measles and vaccination: when scientific evidence faces misinformation

Sarampión y vacunas: cuando la evidencia científica se enfrenta a la desinformación

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Reduction in infectious diseases mortality is closely linked to the effective implementation of public health measures that limit transmission. These measures spread out beyond the health sector, encompassing intersectoral initiatives such as improvements in housing, sanitation, hygiene, and the safe provision of food and water. While advances in antimicrobial and antiviral therapies have improved significantly, vaccination remains the most cost-effective intervention for disease prevention and control.(1)

Universal access to immunization enhances population health and supports broader developmental outcomes. Vaccine-preventable diseases, including diphtheria, measles, mumps, rubella, and pertussis, were largely controlled throughout sustained vaccination programs. However, the eradication of these diseases remains elusive, as maintaining adequate coverage is essential to prevent outbreaks.(2)

The World Health Organization has documented substantial reductions in measles incidence attributable to vaccination programs, representing a milestone in global health. However, recent years have witnessed a resurgence of measles cases worldwide, reversing prior gains. This resurgence is strongly associated with declining vaccination rates, influenced by antivaccine movements that disseminate pseudoscientific claims and exploit digital platforms to amplify misinformation.

The paradox is evident: measles, once nearly eliminated, has reemerged not due to biological limitation but because of eroded trust in vaccines.[3] Vaccine hesitancy, exacerbated by social media, is a top global health thread.

The introduction of measles, mumps, and rubella (MMR) vaccine in the 1960s radically reduced measles incidence, with coverage rates exceeding 95%, sufficient to sustain herd immunity against a virus with a basic reproduction number ranging from 12 to 18.[4] In recent years vaccination rates in some communities have fallen below the critical threshold 92–94%, triggering outbreaks in Europe, Latin America, and the United States. These outbreaks have resulted in thousands of preventable cases and deaths, highlighting the consequences of complacency and misinformation.

The mechanisms driving vaccine hesitancy are multifactorial and pointed out the antivaccine movements as one of the main actors involved. Antivaccine movements, composed of individuals and groups opposing vaccination for different reasons, have contributed to the persistence and reemergence of measles in population where the disease was controlled or eradicated. These movements promote skepticism about vaccine safety, often citing debunked links such as the association between the MMR vaccine and autism, and foster distrust in health authorities. The clustering of vaccines hesitancy in certain communities creates vulnerable pockets, undermining herd immunity and enabling outbreaks.

Social media platforms have dramatically increased the reach and speed of messages from antivaccine movements. Digital disinformation spreads emotionally charged narratives that undermine confidence in vaccine safety and efficacy. Generational complacency, stemmed from the historical success of immunization, fosters a diminished perception of risk. Institutional distrust, exacerbated by sociopolitical tensions, further undermines evidence-based medicine.[5] Collectively, these forces weaken one of the most emblematic achievements of public health: the elimination of measles.

The consequences of declining vaccination rates, fueled by online misinformation, had led to significant measles outbreaks. Measles is a highly contagious and potentially serious viral disease associated with severe complications, including pneumonia, encephalitis, and death, particularly among children and immunocompromised individuals.

Measles outbreaks impose significant economic burdens through hospitalizations and emergency vaccination campaigns, while jeopardizing milestones such as elimination certification. The reemergence of measles serves as a reminder that scientific progress is reversible when public trust is compromised.[6]

Addressing this challenge requires decisive, evidence-based action. Strategies must include improving social media literacy, promoting accurate information, engaging trusted community leaders, and implementing policies to limit non-

medical exemptions. Reinforcing vaccination coverage through targeted campaigns, implementing communicational approaches that counter misinformation and strengthening epidemiological surveillance to enable rapid detection and containment of outbreaks must be part of the solution.

Healthcare professionals play a pivotal role to actively defend vaccination, as doing so protects both the right to health and the legacy of public health achievements. Their responsibilities encompass diagnosing and treating measles, preventing transmission during outbreaks, and promoting vaccination. Continuing education programs should prioritize these topics to ensure preparedness against the emergence and reemergence of infectious diseases that impose substantial burdens on health systems and compromise public safety.

The reemergence of measles is a direct consequence of declining vaccination rates, with the antivaccine movement and social media playing central roles in spreading misinformation and eroding public trust. Against this threat, health professionals should be ready to take actions.

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