

# Epidemiological Surveillance and Control Strategies for Measles in Mexico: A Comprehensive Rehabilitative Approach

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**Abstract**— Measles remains a highly contagious viral disease and continues to represent a public health challenge in Mexico despite the interruption of endemic transmission in 2002. Imported cases, declining vaccination coverage, and misinformation have contributed to recurrent outbreaks between 2022 and 2024. This article analyzes the epidemiological surveillance system implemented in Mexico, particularly the role of the National Epidemiological Surveillance System (SINAVE), and examines prevention and rapid response strategies at primary, secondary, and tertiary levels of care. Furthermore, a comprehensive rehabilitative approach is proposed, integrating multidisciplinary management to address neurological, respiratory, auditory, and psychosocial sequelae. Strengthening vaccination coverage, inter-institutional coordination, community education, and health infrastructure are identified as essential pillars for measles elimination and reduction of morbidity and mortality.

**Keywords**— epidemiological surveillance, measles, public health, rehabilitation, vaccination

## I. INTRODUCTION

Measles is an acute viral disease caused by the Morbillivirus, characterized by high transmissibility and the potential to cause explosive outbreaks in communities with insufficient immunization

coverage. Although Mexico interrupted endemic transmission in 2002, imported cases continue to threaten public health stability.

Epidemiological surveillance functions as a key performance indicator of immunization systems.

Strengthening surveillance mechanisms ensures timely detection, containment, and prevention of outbreaks. This study analyzes surveillance and control strategies implemented by the Ministry of Health and proposes a comprehensive model integrating rehabilitation within measles control programs.

## II. METHODOLOGY

The study followed a descriptive and analytical design based on official national and international sources, including guidelines from the Ministry of Health, the World Health Organization (WHO), and the Pan American Health Organization (PAHO). The methodological structure included information gathering, analysis of surveillance processes under SINAVE, evaluation of prevention and outbreak response strategies between 2022–2024, and formulation of improvement recommendations

## III. DEVELOPMENT AND DISCUSSION

Understanding the natural history of measles is essential to comprehend its epidemiological implications. Transmission occurs via the respiratory route with an incubation period of 10–14 days. Complications such as pneumonia, otitis media, and encephalitis elevate morbidity and mortality, particularly in unvaccinated children.

SINAVE coordinates mandatory case notification, laboratory confirmation, epidemiological cordons, and vaccination reinforcement strategies. Challenges include declining vaccination coverage, insufficient protocol training among healthcare personnel, and vaccine misinformation on social media.

## IV. INTERVENTION AND CONTROL STRATEGIES

Seven strategic pillars guide measles control: strengthening vaccination coverage above 95%, active epidemiological surveillance, rapid outbreak response, community education, health infrastructure reinforcement, inter-institutional

coordination, and continuous monitoring and evaluation.

## V. REHABILITATION AS A TERTIARY PREVENTION STRATEGY

Rehabilitation plays a crucial role in tertiary prevention by reducing disability and improving quality of life in patients with complications. Strategies include respiratory rehabilitation, neurological rehabilitation, auditory and language therapy, and psychological and social reintegration through a multidisciplinary team.

## VI. CONCLUSION

Epidemiological surveillance remains a cornerstone of measles control in Mexico. Sustained vaccination campaigns, reinforced SINAVE mechanisms, and inter-institutional collaboration are essential to prevent resurgence. Incorporating rehabilitation into national control programs strengthens comprehensive care and supports long-term functional recovery.

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