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LETTER TO THE EDITOR

The imminent danger related to measles virus infection from the perspective of paediatric dentistry

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Dear Editor-in-Chief,

The prevalence of measles, a highly contagious disease caused by infection with a negative polarity and single-stranded RNA virus belonging to the genus *Morbillivirus*, the subfamily *Paramyxovirinae* and the family *Paramyxoviridae*, with an average size of 150 nm, has been increasing recently. A high fever is indeed one of the initial symptoms of measles, typically appearing around 10–12 days following exposure to the virus. This fever can persist for approximately 7 days. During the prodromal period, lasting 2–4 days, symptoms such as nausea, conjunctivitis, cough, malaise, myalgia, photophobia, and periorbital edema are observed (Dardis 2012). Following the prodromal period, body temperature begins to rise. Immediately afterwards, Koplik spots, which are the pathognomonic finding of measles, appear on the oral mucosa 1–2 days before the body rash. Koplik spots, which are bluish-white lesions approximately 1 mm in diameter against a red background, are found in the mucosa at the level of the second premolar teeth, around the area where the Stenon canal opens into the mouth (Koplik 1962). While their number is quite high at the end of the first day when the rash is observed, their number decreases as the rash on the body spreads, and the oral mucosa returns to normal by the third day of the rash. Body rashes are erythematous and maculopapular, usually observed 12–14 days after infection. Lesions observed in the intraoral mucosa before body rashes are of great importance in terms of detecting the disease through oral findings. Additionally, oral candidiasis, ulcerative gingivitis, and necrotizing stomatitis are among other reported oral findings (Katz et al. 2003).

The erythematous maculopapular rashes spread from the head and neck area to the entire body within 3–4 days. Exanthema is particularly pronounced on the face and trunk, with lesions often coalescing in these regions. The lesions typically resolve within 5–10 days, beginning from the head and neck area and progressing outward, leaving behind brown scars that may persist for a few days (Bentley et al. 2014).

The virus spreads through inhalation of airborne droplets or direct/indirect contact, such as touching contaminated objects, with nasal and throat secretions of infected individuals. The incubation period for measles typically ranges from 10 to 12 days after exposure. Infected individuals are considered contagious from up to four days before the onset of rash to four days after (Bester 2016). Paediatric dental practices and adherence to sterilization, disinfection, and protection protocols are crucial in preventing the transmission of measles, given its contagious nature and the periods during which individuals are infectious.

The main complications of measles include otitis media, pneumonia, post-infectious encephalitis, and death. Pneumonia is responsible for 60% of fatalities among children. Additionally, potential complications encompass blindness, thrombocytopenia, laryngitis, hepatitis, appendicitis, pericarditis, myocarditis, glomerulonephritis, Stevens-Johnson syndrome, staphylococcal infections, diarrhea, and subacute sclerosing panencephalitis. Measles during pregnancy may lead to miscarriage, stillbirth, premature birth, and low birth weight in newborns (Centers for Disease Control 2009).

The World Health Organization (WHO) has issued a concerning report regarding the significant rise in measles cases within the European Region. Between January and October 2023, over 30,000 measles cases were reported across 40 of the 53 Member States in the Region. This starkly contrasts with the 941 cases reported throughout the entirety of 2022, underscoring the gravity of the situation. There are projections indicating a further acceleration in case numbers in recent months, with this trend anticipated to persist unless

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immediate measures are implemented to curtail further spread across the region (World Health Organization 2023).

In a statement released by the United Nations on January 24, 2024, it was confirmed that there were 42,200 reported measles cases across 41 member countries within the WHO European Region in 2023. The WHO attributes this alarming surge in measles cases primarily to declining vaccination rates. Vaccination efforts have played a pivotal role in preventing measles-related fatalities, averting an estimated 56 million deaths between 2000 and 2021. To ensure children develop immunity, it is imperative to administer two doses of the vaccine. The first dose is typically administered at nine months of age in regions where measles is prevalent, and at 12–15 months in other areas. Subsequently, the second dose should be given during later childhood, usually between 15–18 months. The measles vaccine is administered either as a standalone immunization or in combination with vaccines for mumps, rubella, and/or chickenpox (United Nations 2024).

The heightened prevalence of measles in children, coupled with its elevated risk of contagion, underscores the significance of the disease in the context of paediatric dentistry. Moreover, the occurrence of intraoral manifestations preceding the appearance of skin lesions further emphasizes the importance of measles awareness and vigilance within paediatric dental practice.

In this context, implementing infection control strategies can effectively mitigate the transmission of airborne pathogens into dental water systems. For instance, the use of face masks serves as a physical barrier against splashes from dental unit water, as well as patients' blood and saliva, thereby preventing potential contamination. Furthermore, minimizing microbial contamination in the air can be achieved through enhanced ventilation systems or by eliminating potential sources of infection (Zemouri et al. 2020). Moreover, healthcare professionals can benefit from inquiring about vaccination status and familiarizing themselves with both general and regional symptoms of measles for effective clinical management. Indeed, it would be prudent for clinicians to inquire about measles vaccination status as part of patients' medical histories and to stay informed about the prevalence and status of measles cases in the local area. This proactive approach enables clinicians to better assess the risk of measles transmission and to tailor patient care, accordingly, thereby contributing to effective disease prevention and management within the community.

The significant rise in measles cases globally and particularly in Europe poses a heightened risk for dentists who treat paediatric patients, given the potential for disease transmission and associated complications. Moreover, the potential for disease spread from the dental setting to other individuals underscores the importance of public health considerations. In this context, it is imperative for clinicians to undertake necessary precautions and maintain up-to-date knowledge about measles to ensure the safety of both patients and the broader community.

Sincerely,

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Declarations

Conflict of interest The author declares no competing interest.

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