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Hexavalent and Measles-Mumps-Rubella (MMR) vaccines: analysis of administration timing in the 2022–2025 birth cohorts within the Local Health Authority of Catania

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Introduction. The hexavalent (HEX) and Measles-Mumps-Rubella (MMR) vaccines are mandatory components of the pediatric immunization schedule and are included among the core indicators of the Italian New Healthcare Guarantee System (NSG): complete HEX vaccination series (P01C) and first dose of MMR vaccine (P02C). Adherence to the recommended vaccination schedule is essential for achieving target vaccination coverage rates. Suboptimal 24-month vaccination coverage in Sicily prompted the implementation of targeted interventions aimed at improving compliance with vaccination timing, including strengthened active call-recall systems, increased involvement of pediatricians, participation of public health specialists in prenatal education courses, and training programs for healthcare professionals involved in immunization activities.

Materials And Methods. The analysis included vaccination activities carried out in the outpatient clinics of the ASP of Catania between January 1, 2022, and April 30, 2025. Vaccination registry data were extracted to assess administration dates for the hexavalent vaccine (first, second, and third doses) and the first dose of the MMR vaccine among children born in 2022, 2023, 2024, and 2025.

Results. The data showed a progressive reduction in both mean and median administration times across successive birth cohorts. First HEX dose 2022 cohort: median 85 days, mean 123 days 2023 cohort: median 81 days, mean 109 days 2024 cohort: median 80 days, mean 99 days 2025 cohort: median 77 days, mean 88 days Second HEX dose 2022 cohort: median 166 days, mean 230 days 2023 cohort: median 160 days, mean 209 days 2024 cohort: median 160 days, mean 193 days 2025 cohort: median 153 days, mean 165 days Third HEX dose 2022 cohort: median 397 days, mean 484 days 2023 cohort: median 386 days, mean 449 days 2024 cohort: median 373 days, mean 409 days 2025 cohort: median 346 days, mean 353 days First MMR dose 2022 cohort: median 440 days, mean 504 days 2023 cohort: median 412 days, mean 458 days 2024 cohort: median 402 days, mean 431 days 2025 cohort: median 382 days, mean 386 days

Conclusions. Analysis of vaccination timing is a valuable tool for assessing adherence to the recommended immunization schedule. The findings demonstrate that the interventions implemented were effective in improving compliance with the timing established by the current vaccination schedule.