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## Adherence to the infant vitamin D supplementation policy in Ireland; data from two longitudinal, prospective birth cohort studies

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### Abstract

The high prevalence of maternal deficiency and the low vitamin D content of breastmilk places newborns and infants at particular risk of vitamin D deficiency. In response to an increase in the incidence of nutritional rickets, the Food Safety Authority of Ireland published an interim infant vitamin D supplementation policy in 2007, which was implemented by the Health Service Executive in Ireland in May 2010. This recommends that all infants be given a 5µg exclusive vitamin D<sub>3</sub> supplement daily from birth to 12 months. As adherence is not monitored nationally and the policy has not been evaluated, the aim of this study was to conduct a detailed evaluation of supplementation practices across two maternal-infant cohort studies. Data from the prospective BASELINE (recruited 2008–2011) and COMBINE (recruited 2015–2017) birth cohorts, based in Cork, Ireland, were used to examine supplementation practices. After supplementation policy implementation, BASELINE collected vitamin D supplement use data ( $n = 1528$ ) at 2, 6 and 12 months. In COMBINE, 7 study visits from birth to 12 months allowed continuous collection of detailed longitudinal supplementation data in 364 participants. Use of supplemental vitamin D was higher in COMBINE than BASELINE at 2 (93 vs. 49%), 6 (89 vs. 64%) and 12 (72 vs. 44%) months (all  $P < 0.001$ ). In COMBINE, 92% initiated vitamin D supplementation at birth and the median supplementation duration was 51 (40, 52) weeks, although there was a wide range (3–52 weeks). 94% of COMBINE parents used a vitamin D<sub>3</sub> only supplement and 88% used the recommended 5µg dose. Half (51%) always supplemented daily; a further 33% supplemented at least 3–6 times/week. Full policy adherence was defined as the provision of a 5µg vitamin D<sub>3</sub> supplement daily from birth; 64% adhered fully to 2 months and 52% did so to 6 months. By 12 months, 30% had adhered fully to the policy and a further 16% gave 5µg frequently for the full 12 months. This data indicates a high level of awareness of the supplementation policy amongst new mothers, with substantially higher rates of supplementation in our current cohort compared with BASELINE. While most parents gave an exclusive 5µg vitamin D<sub>3</sub> supplement, frequency and duration were the key barriers to full policy adherence. Given the lack of a maternal vitamin D supplementation policy in Ireland and high prevalence of low vitamin D status at birth, supplementation of infants with vitamin D remains a vital public health policy.

### Conflict of Interest

There is no conflict of interest