

Study shines light on 'low-value' vitamin D tests

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Doctors are ordering unnecessary, costly and invasive blood tests for children to detect vitamin D deficiency, when instead it would be better to take simple preventative steps to ensure children receive supplements

of the essential nutrient, according to research led by Macquarie University.

Vitamin D deficiency, especially during the first 12 months of life, puts children at risk of developing nutritional rickets, a potentially disabling and, on rare occasions, fatal disease. To prevent this, the current global recommendations say that all children should receive vitamin D supplements for their first 12 months of life, but routine testing for vitamin D levels in children who have no symptoms is not recommended. But according to researchers, a smaller number of children would benefit from having supplementation for longer.

A study of 61,809 blood tests requesting vitamin D levels in 46,960 children and adolescents presenting to GPs in Victoria found the chance of a child having a [blood test](#) for vitamin D in 2018 was 30 times greater than in 2003—a huge increase. But the chance of detecting a vitamin D deficiency stayed the same.

Even when vitamin D deficiency was detected, only 4% of children were followed up within three months to check whether their vitamin D levels had improved.

"All this testing seems counterintuitive and is symptomatic of low-value care," says Professor Yvonne Zurynski, Professor of Health System Sustainability at the Australian Institute of Health Innovation, and one of the study's lead authors.

Prevention over testing

The study was published in the journal *Archives of Disease in Childhood*. It follows an earlier recommendation by a group of international experts that testing for vitamin D deficiency without [clinical signs](#) was unnecessary. This advice doesn't seem to have taken root in [general](#)

[practice](#) in Australia, says Professor Zurynski.

"GPs need more education about the latest evidence-based global guidelines, so that prevention rather than testing is their first choice, and patients get best-practice care," says Professor Craig Munns, a co-author of the study.

Professor Munns is Director of the Child Health Research Center at the University of Queensland, a pediatrician at Queensland Children's Hospital and an Honorary Professor at Macquarie University.

Children with vitamin D deficiency have serious clinical complications, Professor Munns says.

"It's a spectrum: you can go from being completely asymptomatic, to having vague aches and pains, to having nutritional rickets, to having hypocalcemia (very low calcium) and then having a seizure. Thankfully, the severe end of the spectrum is very rare."

From a clinical perspective, children with bones affected by rickets may be reluctant to walk because they have sore legs or tire easily. They may have skeletal deformities such as thickening of the ankles, wrists and knees, bowed legs, soft skull bones and rarely, bending of the spine.

The primary source of vitamin D in Australia comes from exposure to the sun. In summer, even a relatively small amount is adequate. When skin is exposed to [ultraviolet light](#) from the sun it creates vitamin D. People with darker skin are at higher risk of developing vitamin D deficiency, Professor Zurynski says.

"Breast milk alone does not have adequate amounts of vitamin D in it," says Professor Zurynski.

"If a baby is covered in clothes, or has excessive sunblock on all the time when they go outside, they may be getting very little from sun exposure."

Professor Munns was the lead author of a study by 33 global experts in 2016 who created [the Global Consensus Recommendations on Prevention and Management of Nutritional Rickets](#).

These international guidelines recommend doctors "universally supplement all infants with vitamin D from birth to 12 months, independent of their mode of feeding."

Many countries have adopted these guidelines, including the US, Canada, UK and Europe and [food products](#) in these countries are also fortified with vitamin D.

Australia has yet to adopt these recommendations nationally—although some local government health authorities have taken them up—and none of our foods are vitamin D fortified.

Professors Munns and Zurynski are among a group of Australian experts pushing to have the recommendations adopted here.

There are still cases of vitamin D deficiency in Australia, Professor Munns says, leading to about 4.9 cases of rickets per 100,000 children, compared with 2.9 cases per 100,000 children in Canada and 7.5 cases per 100,000 children in the UK.

"If we provided vitamin D supplements to all babies for the first 12 months of life, then we would eradicate it, just the same as we've done by giving folate to pregnant women to prevent spina bifida. It's within our reach," Professor Munns says.

More information: Yvonne Zurynski et al, Vitamin D testing in

children and adolescents in Victoria, Australia: are testing practices in line with global recommendations?, *Archives of Disease in Childhood* (2023). [DOI: 10.1136/archdischild-2022-325000](https://doi.org/10.1136/archdischild-2022-325000)

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