

**Tania Winzenberg**

MBBS, FRACGP,
MMedSc(ClinEpi), PhD, is
Research Fellow – General
Practice, Menzies Research
Institute, University of
Tasmania. tania.winzenberg@
utas.edu.au

Rachelle Buchbinder

MBBS(Hons), MSc, PhD,
FRACP, is Director, Monash
Department of Clinical
Epidemiology, Cabrini Hospital,
Professor, Department
of Epidemiology and
Preventive Medicine, Monash
University, Victoria, and Joint
Coordinating Editor, Cochrane
Musculoskeletal Group.

Kelly Shaw

MBBS, MPH, PhD, FRACGP,
FAFPHM, is Public Health
Physician, Department of
Health and Human Services,
and Honorary Associate,
Menzies Research Institute,
Tasmania.

Graeme Jones

MBBS(Hons), FRACP, MMedSc,
MD, FAFPHM, is Head,
Musculoskeletal Unit, Menzies
Research Institute, Tasmania.

Musculoskeletal conditions

What's new from Cochrane and how might this affect your practice?

Australian Family Physician is pleased to introduce a series of articles facilitated by the Cochrane Musculoskeletal Group (CMSG). This series aims to place the findings of recent Cochrane musculoskeletal reviews in a context immediately relevant to general practitioners. Each article will present the results of CMSG reviews relevant to a particular topic, and use common general practice scenarios to show how the results can be applied in practice. The first topic considers the value of calcium supplementation in children.

Many general practitioners would suspect from their every day practice that musculoskeletal conditions such as osteoarthritis, rheumatoid arthritis and osteoporosis are common general practice clinical problems. This has been confirmed by research – an estimated 16.7/100 GP-patient encounters are for a musculoskeletal condition.¹ The costs to the community of these conditions are high, both economically and because they are a significant cause of morbidity and mortality.^{2,3} Due to the high impact of musculoskeletal disorders, the World Health Organisation designated 2001–2010 as the 'bone and joint decade' and, since 2002, arthritis and related conditions have been an Australian National Health Priority Area.⁴

The Cochrane Collaboration

The Cochrane Collaboration is an international not-for-profit organisation that provides up-to-date information about the effects of health care by synthesising the best available evidence into systematic reviews.⁵ The collaboration includes a number of Cochrane review groups. The Cochrane Musculoskeletal Group (CMSG), established in 1993, has become one of the largest Cochrane review groups, with over 200 active researchers, health care professionals, and consumer representatives from 26 countries.⁶ Its main focus is to synthesise the results of high quality studies to determine the effectiveness and safety of interventions for the prevention, treatment and rehabilitation of musculoskeletal disorders.

In 2005, an Australian satellite editorial office of the CMSG was established, based at Cabrini Hospital in Melbourne, Victoria. An important aim of the Australian

CMSG is to facilitate the dissemination of the results of relevant Cochrane reviews to clinicians, consumers, and policy makers in Australia.

Calcium supplements for children

Overview

Because the use of complementary medicine and supplements in the community is high,⁷ GPs are increasingly asked to comment on the usefulness or otherwise of these types of interventions.

The increasing prevalence of osteoporosis and associated fractures² means that prevention of osteoporosis is of great public health importance. About 90% of the peak bone mass reached in adult life accumulates in childhood,⁸ so there is increasing interest in determining whether intervening in childhood can improve peak bone mass.⁹ Calcium intake plays an important role in bone health⁹ and adequate calcium intakes are widely promoted. In view of this, we performed a systematic review to answer the question: are calcium supplements useful as an intervention to improve bone density in healthy children? The review results are given in *Table 1* and how these results might affect practice are shown in the case discussions in *Table 2*.

Conclusion

While it is clear that calcium supplementation in healthy children has minimal effect, the review's results cannot be extrapolated to other populations, such as children with diseases or who are on medication affecting bone metabolism, or those who have a very low calcium intake as might be seen in children who completely avoid dairy products. Case-by-case assessment will be needed to

make decisions about the usefulness of calcium supplements for these children until more evidence to support practice becomes available in these populations.

Conflict of interest: none declared.

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Table 1. Key review results^{10,11}

- The review included 19 randomised controlled trials (RCTs) involving 2859 children. RCTs were in children aged 3–18 years, and ranged in duration from 8.5 months to 7 years (15 trials were 1–2 years long)
- Calcium supplementation does not improve bone mineral density (BMD) at two of the major sites of osteoporotic fracture in later life: the femoral neck and lumbar spine
- A short term increase in total body bone mineral content was noted but did not persist after supplementation ceased, so this is unlikely to be clinically significant
- There was an increase in BMD at the upper limb, which persisted after supplements were withdrawn but which was very small, equivalent to about a 1.7% difference. This is unlikely to produce a meaningful decrease in fracture risk either in childhood or in adult life
- These results were consistent across a range of baseline calcium intakes (as low as 300 mg/day) regardless of age or gender
- Adverse events were reported infrequently and were minor in nature, including raised urinary calcium to creatinine ratio (one child), and gastrointestinal side effects (four children)

Table 2. Putting evidence into practice

Case study 1

In the course of a consultation, Mrs Hueso mentions that her 75 year old mother has just fractured her hip in a minor fall. She wants to discuss her own risk of osteoporosis with you and also says: 'It makes me wonder about the kids, too. Do you think I should try to get Julie (her 15 year old daughter) to take calcium tablets?' You know Julie is a very healthy teenager, and ascertain from Mrs Hueso that she probably takes two serves of dairy products per day on average.

What can you advise based upon the evidence from the review?

You can tell Mrs Hueso that – as Julie is healthy overall and as she does consume dairy products – adding a calcium supplement to her diet is not worthwhile. Calcium supplements would generally only be indicated in healthy children who avoid dairy products.

Case study 2

Mrs Yeoh comes in with her 8 year old son, Robert, whom you are reviewing a week after he presented with a flare up of his juvenile idiopathic arthritis. You note that he has required high doses of oral corticosteroids over a lengthy period of time. You ask about Robert's diet and find that he consumes a couple of serves of dairy products most days.

Do you suggest that Mrs Yeoh consider giving Robert a calcium supplement?

Robert is at risk of low bone mineral density due to his corticosteroid use and the juvenile arthritis itself.^{12,13} While the effects of calcium supplementation in healthy children are small, the studies in the review excluded children with other medical conditions which might affect bone health. Therefore these results may not apply to Robert. Unfortunately there are no published RCTs in children that address Robert's situation. The review did show that the side effects of using calcium supplements were minor and infrequent, so taking calcium supplements is unlikely to cause harm and may provide benefits (based on extrapolation from trials in adults). You decide to discuss the evidence with Mrs Yeoh and Robert and present calcium supplementation as an option.