



Title	A Systematic Review of the Effectiveness of Strategies for Reducing the Fracture Risk in Children with Juvenile Idiopathic Arthritis with Additional Data on Long-Term Risk of Fracture and Cost of Disease Management
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Aim

1) To review outcome measures in children with juvenile idiopathic arthritis (JIA) and low bone mineral density and/or fragility fractures. 2) To review evidence for effectiveness and safety of bisphosphonates and calcium and/or vitamin D in these children. 3) To assess long-term bone health in adults with JIA. 4) To review the costs of treating children with JIA and low bone mineral density and/or fragility fractures. 5) To evaluate the cost of treating JIA.

Conclusions and results

Review of outcomes: 22 studies evaluated dual energy x-ray absorptiometry (DXA), 2 evaluated quantitative computerized tomography (QCT), and 7 evaluated quantitative ultrasound (QUS). DXA was sensitive to differences between different subtypes of disease, disease severity, and factors such as treatment with corticosteroids, but results in children must be interpreted with care due to technical issues. QCT provides a true volumetric density, but scanning equipment is harder to access and doses of radiation are relatively high. QUS is a promising technique, but data on children are limited. Two studies described the use of either patient-based outcomes or fractures as outcome measures. Twenty-four studies examined biochemical markers of bone turnover, but results were not consistent.

Systematic review of effectiveness: 16 studies assessing bisphosphonates were identified (1 randomized controlled trial, 3 controlled cohort studies, 11 case series, 1 case report). At baseline, children with JIA had bone mineral density below the expected values. In all studies, treatment increased bone mineral density compared with baseline.

Recommendations

DXA is currently the most practical outcome measure, but results in children must be interpreted with care. Limited evidence shows that bisphosphonates are effective in managing children with JIA, but many questions

remain unanswered about their use, eg, optimum dose and frequency of administration and length of treatment.

Methods

See Executive Summary link at www.nchta.org/execsumm/summ1203.shtml.

Further research/reviews required

The ongoing arc-funded randomized controlled trial of bisphosphonates and 1 alphahydroxycholecalciferol in children with JIA should address some research issues that have been identified, eg, the effectiveness and safety of risedronate in corticosteroid-treated children. Other questions include the choice of bisphosphonate and optimal dose and route of administration, effectiveness and safety in noncorticosteroid-treated children and long-term effectiveness and safety.