



<b>Title</b>	<b>The Clinical Effectiveness of Glucosamine and Chondroitin Supplements in Slowing or Arresting Progression of Osteoarthritis of the Knee: A Systematic Review and Economic Evaluation</b>
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<b>Reference</b>	Volume 13.52. ISBN 1366-5278. <a href="http://www.hta.ac.uk/project/1717.asp">www.hta.ac.uk/project/1717.asp</a>

## Aim

To assess the clinical and cost effectiveness of glucosamine sulphate/hydrochloride and chondroitin sulphate in modifying the progression of osteoarthritis (OA) of the knee.

## Conclusions and results

There was evidence that glucosamine sulphate shows some clinical effectiveness in treating OA of the knee and evidence to support the potential clinical impact of glucosamine sulphate. The value of information analysis identified 3 research priorities: quality of life (QoL), structural outcomes, and knee arthroplasty. The biological mechanism of glucosamine sulphate and chondroitin remains uncertain, and the proposal that the active substance may be sulphate should be explored further. Five systematic reviews and one clinical guideline met the inclusion criteria. They reported inconsistent conclusions with only modest effects on reported pain and function. A reduction in joint space narrowing was more consistently observed, but the effect size was small and the clinical significance uncertain. A separate review of 8 primary trials of >12 months' duration showed evidence of statistically significant improvements in joint space loss, pain, and function for glucosamine sulphate, but the clinical importance of these differences was unclear. Two studies of glucosamine sulphate showed a reduced need for knee arthroplasty from 14.5% to 6.3% at 8 years' follow-up. For glucosamine, chondroitin, and combination therapy, less evidence supported a clinical effect. Cost-effectiveness modeling was restricted to glucosamine sulphate. Over a lifetime horizon the incremental cost per quality-adjusted life-year (QALY) gain for adding glucosamine sulphate to current care was estimated to be 21 335 pounds sterling (GBP). Deterministic sensitivity analysis suggested that the cost effectiveness of glucosamine sulphate therapy depended particularly on the magnitude of the QoL gain, the change in knee arthroplasty probability with therapy, and the discount rate. At a cost per QALY gained threshold of GBP 20 000, the likelihood that glucosamine sulphate would be

more cost effective than current care is 0.43, while at a threshold of GBP 30 000, the probability rises to 0.73. Probabilistic sensitivity analysis showed that estimates were imprecise and subject to a degree of decision uncertainty. Value of information analysis demonstrated the need for further research. Several biologically plausible mechanisms of action for glucosamine sulphate and chondroitin were proposed.

## Recommendations

No trial data came from the UK, and in the absence of good UK data about the current referral practice, management, and surgical rate, caution should be exercised in generalizing these data to UK health care. Cost effectiveness was not conclusively demonstrated, with substantial uncertainty related to the magnitude and duration of QoL gain following treatment. There was evidence from biological studies to support the potential clinical impact of glucosamine sulphate. For other agents, the evidence base was less consistent (chondroitin) or absent (glucosamine hydrochloride).

## Methods

See Executive Summary link [www.hta.ac.uk/project/1717.asp](http://www.hta.ac.uk/project/1717.asp).

## Further research/reviews required

See Executive Summary link [www.hta.ac.uk/project/1717.asp](http://www.hta.ac.uk/project/1717.asp).