

**HTA REPORT | VOLUME 1 | ABSTRACT****The value of ultrasound diagnostic technologies in the prevention of fractures in patients with osteoporosis****Aidelsburger P, Hessel F, Wasem J**

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**BACKGROUND**

This rapid health-economic HTA evaluates the cost-effectiveness of Quantitative Ultrasound (QUS) as a technique for screening and diagnosing osteoporosis and subsequently for the prevention of osteoporotic fractures. It is compared to the dual X-ray absorptiometry (DXA) which still is the gold standard in measuring bone density and therefore the most common technique for diagnosing osteoporosis.

**METHODS**

An extensive literature search was performed in medical and in economic literature databases, in HTA databases as well as in an internet search that included the main international HTA databases. All considered studies were shortly described and the strong and weak points of each study were pointed out with the help of a recently developed checklist. A qualitative and a quantitative information synthesis were done in form of tables. The incremental cost-effectiveness of a two-step proceeding (all women get an examination with QUS as a first step; in case of a positive outcome in QUS a DXA is performed as a second step) compared to a one-step proceeding (all women get an examination with DXA) as well as a comparison of the one step proceeding QUS alone vs. DXA alone was calculated by the authors of this report.

**RESULTS**

We identified 66 references of publications and projects, only four of them were included in the further analysis. One primarily not identified study was included after the review. The results of the studies are heterogeneous, for the most part because of different study populations. Due to methodical weaknesses of the studies the results can not be used without restrictions. A trend could be found that QUS is more cost-effective but diagnoses less women with osteoporosis. The cost-effectiveness of a two-step proceeding compared to a one-step proceeding relies on the relation of costs of QUS to the costs of DXA. Depending on

the considered study a two-step proceeding is cost-effective as long as the costs of one examination with QUS lie between 31% and 51% of an examination with DXA.

**DISCUSSION**

None of the studies considered the long-term outcomes of identified osteoporosis on the prevalence and on the incidence of fractures, of avoided deaths and of improved quality of life just as little as the costs of a treatment of osteoporosis and of the treatment of fractures, including follow up costs. All of the included studies showed considerable methodical limitations that reduce the evidence of each of the studies.

**FURTHER RESEARCH**

Despite the existence of four studies that deal with the cost-effectiveness of QUS due to the restricted evidence of the studies further research is needed. German data concerning costs of QUS and of DXA do not presently exist and have to be evaluated in further studies. These further studies should also consider the long-term outcomes and costs.

**CONCLUSION**

No recommendation for a prioritisation of a two-step (QUS / DXA) or a one-step proceeding can presently be formulated from an economic perspective due to the missing data and the lack of evidence.

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