

Review: External hip protectors reduce the risk for hip fractures in elderly persons

Parker MJ, Gillespie LD, Gillespie WJ. Hip protectors for preventing hip fractures in the elderly. Cochrane Review, latest version 1 May 1999. In: The Cochrane Library. Oxford: Update Software.

QUESTION

In elderly persons living in an institution or in the community, do external hip protectors reduce the risk for hip fractures with a fall?

DATA SOURCES

Studies were identified up to August 1998 by searching the Cochrane Musculoskeletal Injuries Group Trials Register (which includes studies from MEDLINE, EMBASE/Excerpta Medica, CINAHL, CENTRAL, and *Current Contents*); searching bibliographies of relevant papers; hand-searching orthopedic journals and conference publications; and contacting authors.

STUDY SELECTION

Randomized controlled trials (RCTs) or quasi-randomized controlled trials were selected if they assessed hip fractures, compared persons allocated to hip protectors with those allocated to no hip protectors, and included elderly persons living in the community or an institution.

DATA EXTRACTION

Data were extracted on study quality; rate of hip fractures, nonhip fractures, or falls; mortality; compliance with hip protec-

tors; and adverse effects.

MAIN RESULTS

12 trials were identified; 5 RCTs (1681 participants; 3 in Scandinavian countries, 1 in Japan, and 1 in the United Kingdom) met the inclusion criteria. 2 studies (1409 participants) randomized nursing homes or nursing home wards, and 3 studies (272 participants) randomized participants. All studies involved elderly persons in nursing homes or residential care. 1 study was primarily a compliance study whose results were excluded from the analysis. Meta-analysis of 2 studies that randomized nursing homes or nursing home wards and 2 studies that randomized participants showed that hip protectors reduced the rate of hip fractures ($P < 0.01$

and $P = 0.02$, respectively)* (Table). Groups did not differ for rates of nonhip fractures, number of reported falls, or mortality. Long-term compliance was generally poor. Few adverse effects with hip protectors were reported.

CONCLUSION

External hip protectors reduce hip fractures among elderly persons in nursing homes or residential care who have fallen.

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* P values calculated from data in article.

Hip protectors vs no hip protectors (control) for hip fractures in elderly persons†

| Follow-up | Unit of randomization | Weighted event rates | | RRR (95% CI) | NNT (CI) |
|-------------|-----------------------|----------------------|---------|----------------|---------------|
| | | Hip protector | Control | | |
| 11 mo | Nursing home or ward | 2% | 6% | 60% (25 to 78) | 31 (20 to 77) |
| 12 to 19 mo | Participant | 1% | 15% | 86% (28 to 97) | 8 (5 to 28) |

†Abbreviations defined in Glossary; RRR, NNT, and CI calculated from data in article.

COMMENTARY

Falls are the leading cause of nonfatal injury in the United States, resulting in 800 000 hospitalizations and \$40 billion in societal losses each year (1). Hip fractures, numbering nearly 300 000/y (2), are one of the most severe consequences of falls and result in increased mortality (3).

Because of emerging data on the role of fall severity in the cause of hip fracture, interest in the use of trochanteric padding to prevent hip fracture in the elderly who are prone to falls has increased. In this systematic review by Parker and colleagues, 4 RCTs with relatively low methodologic quality scores were reviewed to estimate the protective effect of hip protectors on the risk for hip fracture among elderly persons in nursing homes or residential care. These studies have potential biases because of randomization by facility or by unit; in 1 study, bone mass differed between the treatment and control groups (4).

Fall intervention trials have had only modest success in reducing injurious falls. Passive protection systems could reduce the incidence of hip fractures in those at greatest risk, who can be identified using results from large prospective studies (5). Because elderly persons living in nursing homes represent a group with one of the

highest incidences of hip fracture, further studies in these settings would add to the limited evidence of the efficacy of hip protectors. Better systems (less obtrusive and more comfortable, affordable, and durable) are needed to overcome the generally low compliance with current devices.

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