

# **Are Physiotherapy Guidelines for the Management of Osteoporosis Being Implemented? A UK-Wide Survey**

Running Headline: Osteoporosis Guideline Implementation

Catherine Bulley<sup>a</sup>, Marie Donaghy<sup>a</sup> Clare Dow<sup>b</sup>

- a) Queen Margaret University, Edinburgh, Queen Margaret University Drive, Musselburgh, East Lothian, EH21 6UU, UK
- b) Alliance Self Care Research, Department of Nursing & Midwifery  
R.G. Bomont Building, University of Stirling, Stirling, FK9 4LA, UK

## Corresponding Author:

Dr. Catherine Bulley, Queen Margaret University, Edinburgh, Queen Margaret University Drive, Musselburgh, East Lothian, EH21 6UU  
Tel: 0131 474 0000 Fax: 0131 474 0001 Email: [cbulley@qmu.ac.uk](mailto:cbulley@qmu.ac.uk)

## **Are Physiotherapy Guidelines for the Management of Osteoporosis Being Implemented? A UK-Wide Survey**

### **Abstract:**

The availability of increasing amounts of research has led to the development of clinical guidelines to facilitate evidence-based decisions. However, effective implementation must be evaluated. A survey was carried out to evaluate a clinical guideline for osteoporosis, endorsed by the Chartered Society of Physiotherapy (CSP). A stratified proportional sample of 588 relevant National Health Service providers was selected from Strategic Health Authorities/Health Boards throughout the UK. Random samples of 31 independent hospitals and 102 private practitioners were obtained from lists of seven UK-based service providers and the CSP website. 120 further surveys were sent through the clinical interest group, AGILE. The survey was developed to investigate awareness and use of the clinical guideline, current implementation strategies, and barriers to implementation. Of the clinical sites sampled, 25% responded, giving 243 usable surveys. While guidelines were available in 62% of responding sites, only 35% reported its use – although this was higher in services with a primary osteoporosis caseload (45%). Only 6% reported formal implementation. Barriers to guideline use frequently highlighted a lack of resources and training. Survey responses indicate a lack of guideline use; this should be facilitated through formal implementation strategies, requiring training and resources.

**Key words:** physiotherapy; osteoporosis; guideline; evaluation

# **Are Physiotherapy Guidelines for the Management of Osteoporosis Being Implemented? A UK-Wide Survey**

## **Introduction**

The provision of health care is constantly being informed by research [1] which can make clinical decision-making an insurmountable task. This has led to the development of clinical guidelines which aim to facilitate decisions regarding optimal management of the patient journey. Clinical guidelines have been defined as “systematically developed statements to assist practitioner and patient decisions about appropriate healthcare for specific clinical circumstances.”[2] This paper reports on a survey undertaken to evaluate the implementation of physiotherapy guidelines for the management of osteoporosis.[3]

Guidelines provide a framework for the ongoing evaluation and improvement of service, however, specificity varies. [4]. Several osteoporosis-related guidelines have been developed which make reference to limited aspects of physiotherapy management [5][6][7]. However, none gives comprehensive guidance on the physiotherapy assessment and management of osteoporosis. The Chartered Society of Physiotherapy (CSP) guideline on osteoporosis [3] aims to raise awareness of the role of physiotherapists in the prevention and management of osteoporosis. Clinical guidelines are only valuable if they are implemented effectively and benefit patients, therefore evaluation is required.

### *Clinical guideline evaluation*

A search was undertaken to identify studies into the dissemination, implementation, and evaluation of clinical guidelines. Search terms included guideline, evaluation, qualitative, general practice, physiotherapy, implementation, survey, questionnaire, osteoporosis and users. Sources included Medline, Embase and Google Scholar.

The results of this literature search produced several published evaluations specifically relating to osteoporosis. Prior to the publication of the CSP guideline one review systematically assessed the quality of international osteoporosis guidelines [8]. Interestingly, only one of the 21 reviewed was considered acceptable for use without modification [6]. More recently, five experts evaluated the Dutch guidelines for osteoporosis and found high scores for development and clarity of the guideline, but poorer scores for piloting and implementation. They recommended its use in clinical practice [9].

Several studies evaluated aspects of awareness, use, or clinical impact of guidelines on osteoporosis. One evaluation focused on adherence to recommendations advocating the measurement of bone mineral density [10]. Of 3812 women aged 50 or over with a diagnosis of new fracture, only 46.4% had received appropriate investigations. Similarly in a UK study in nursing homes [11], only 13 out of the total of 128 patients were diagnosed with osteoporosis, and of these, 62% were not receiving treatment. Out of a further 14 individuals with recurrent falls or fractures, 77% were not being managed appropriately. A study undertaken in a US primary care clinic assessed patients' self-reported experiences of osteoporosis management. Of 469 female patients who met criteria for study inclusion, only 57.6% were managed according to guideline recommendations [12].

These negative findings need to be considered alongside the impact on patient outcomes. This search located three systematic reviews that evaluated the impacts of guidelines in professions allied to medicine. They synthesised 18, 91 and 235 studies, respectively.[13][14][15] Each review, while finding evidence of effectiveness of guidelines in improving patient care and outcomes, raised issues regarding guideline implementation.

#### *Guideline implementation strategies*

When reviewing studies of guideline impacts, the authors of one systematic review concluded that future efforts should use implementation strategies that are informed by theory and evidence.[13]

Passive dissemination, such as guideline distribution and didactic educational meetings, has been found to have little or no effect.[16] Several interventions have been reported to have variable effectiveness, including audit and feedback, use of local opinion leaders, local consensus processes, and patient-mediated interventions.[16, 17] Consistently effective interventions include educational outreach visits, manual or computerised reminders, multifaceted interventions (combined approaches), and interactive educational meetings such as workshops that incorporate discussion or practice.[16]

However, the question remains, when clinical guidelines are produced with the intention of facilitating clinical practice, why do so many practitioners choose not to use them, despite awareness of their existence?

#### *Barriers to guideline implementation*

Most studies of barriers to guideline implementation have used survey methods in physician populations. One Australian study, investigating opinions and attitudes of physicians, found difficulty accessing the guideline was the most commonly reported barrier.[18] A UK-based study of general practitioners and nurses found lack of applicability to individual patients and having too many guidelines were major barriers.[1] Similarly, a Canadian study investigating implementation of nutrition support guidelines in four intensive care units found: poor awareness, information overload with numerous guidelines, and lack of plans for updates.[19] A frequently-cited review included 76 studies of physician adherence to guidelines and derived seven categories of barriers: poor awareness, lack of familiarity, poor motivation, disagreement with content, external barriers such as restricted resources, and lack of belief in either ability to implement guidelines, or in their efficacy.[20]

Evidently the implementation and use of clinical guidelines represents a complex issue. Whilst the ultimate goal of a guideline evaluation should be to establish the impact on clinical practice, it is also important to evaluate the effectiveness of dissemination, implementation strategies and

potential barriers. A study was commissioned by the CSP to establish whether the osteoporosis guideline had been effectively disseminated and implemented.

In order to do this, different study designs were considered. Local evaluations have included audit of electronic medical records, or interviews of guideline users.[10][21][1] Most studies have used survey methods [22] predominantly with guideline users [23][18][1], but have on occasion addressed questions directly to patients.[12] In order to collect large quantities of data, survey methods were selected to address the study aims.

## **Methods**

The research team was facilitated by a project advisory panel. This included representatives from the CSP, the research team, the osteoporosis guideline development group, a clinician, a service user and a representative from the National Osteoporosis Society. The involvement of service users on advisory panels has been found to facilitate participatory involvement [24][25] and along with other members of the project advisory panel they offered valuable advice regarding survey development, sampling method, monitoring for bias, and presentation of results.

Survey methodology was selected to collect responses from physiotherapists in a short timescale, from a wide variety of geographical and clinical contexts. The Multi-Centre Research Ethics Committee regarded the study as an audit of current compliance with CSP guidelines and therefore did not require ethical approval. The quality of the research process and of data protection were monitored by the project advisory panel.

### *Survey Development*

A survey was developed with the aim of investigating:

- awareness and use of the clinical guideline and quick reference guide
- current dissemination sources and implementation strategies
- barriers to guideline implementation

The development of the survey items was informed by the study aims and literature. Closed, tick-box response questions and a limited number of open questions were used. They addressed the following topics:

- awareness and the extent to which the guideline is used
- where people had found out about the guideline package
- implementation strategies used and their perceived success
- audit and other evaluation of guideline impact
- barriers to use of the guideline
- awareness and use of other osteoporosis guidelines
- details of the service
- number of osteoporosis patients seen per year

Examples of questions are included in Appendix 1.

To test content, clarity and readability the survey was reviewed by the advisory panel and piloted in three local physiotherapy services. Respondents commented on the structure of the survey questions, the clarity, relevance and comprehensiveness, resulting in minor changes to the content and structure.

### *Sampling strategy*

The aim of the sampling strategy was to target the National Health Service (NHS), independent services and private practitioners, ensuring a full spectrum of services had the opportunity to respond.

National Health Services were sampled using stratified proportional sampling. [26] Stratification at the first level was by strategic health authority/health board. At the time of this survey there were 28 in England, 15 in Wales, 22 in Scotland and 4 in Northern Ireland. A total random sample of 588 services was sought from these areas using hospital addresses held by the NHS. In all but Northern Ireland both hospital (acute) services and community services were selected. Northern Ireland is

unusual in having combined services. If seen to be non-relevant, services were excluded; for example: children's hospitals, adult mental health, and cancer services.

Survey packs were sent by surface mail, addressed for the attention of the physiotherapy manager. Each pack contained two copies of the survey, one to be completed by the service manager and one to be completed by the team leader. A total of 1176 surveys were sent out to NHS settings.

A random sample of 31 independent hospitals was obtained from seven UK based service providers (Abbey Hospitals, Aspen Healthcare Ltd, BMI Healthcare, BUPA Hospitals Ltd, Catio Healthcare UK Ltd, HCA International Ltd, Nuffield Hospitals). Each hospital was sent a single survey. A random sample of 102 private practitioners was obtained from the CSP website. Physiotherapists registered as providing either an orthopaedic, musculoskeletal, women's health or elderly care service were selected.

A further 120 surveys were sent out through AGILE, a clinical interest group of the CSP for therapists working with older people. This was to improve the chances of targeting specialist osteoporosis services, as these could not be identified specifically through the information used for sampling. As a result, it is possible that services received more than one survey, although it was assumed that only one would be completed.

#### *Mailing procedure*

A covering letter invited physiotherapy managers to complete the survey and distribute copies to relevant team leaders. All surveys were coded and responses were checked against an anonymised master list of services. A reminder pack was sent to all services who had not replied after five weeks. Respondents were assured that their responses would be stored securely, separately from any identifiable information, and that any analysis would be carried out on anonymised responses.

#### *Analysis*

Data were analysed descriptively using the SPSS version 12 and Excel. For open questions, frequencies of responses were calculated and presented because an individual may have included

more than one response. For closed questions, percentage responses were calculated to indicate the proportion of the total sample selecting a specific response.

## **Results**

### *Response rates*

In total, 243 useable surveys were returned; 210 of the sites contacted sent at least one response, representing a 25% return rate according to clinical site. Table 1 presents the breakdown of surveys sent and responses received according to each section of the sample frame. All areas responded; geographically, the highest percentage response rate was from the English sector and the lowest was from Wales. Unexpectedly few surveys that were sent through the clinical interest group were returned, although some clinicians may have already received the questionnaire through their clinical site.

→ Table 1

### *Aim 1: Reported awareness and use of the clinical guideline and quick reference guide*

There was a predominance of services reporting the availability of the guideline package (62%). Of those, 35% said they were actively using the guideline or quick reference guide.

Availability and use of the guideline varied according to geographical area. Scotland and Ireland showed a higher proportional use while more services in England and Wales reported that the guideline package was not available. The findings from Wales and Ireland should, however, be treated with caution as they are based on a relatively low number of responses.

In comparison to the sample as a whole, services reporting a primary osteoporosis case load demonstrated higher percentage use of the guideline (45% versus 35%). Where services provided management for patients with osteoporosis as a secondary diagnosis/underlying condition and offered limited or specific treatment, there was also a higher percentage use of the guideline (38% versus 35%).

### *Aim 2: Dissemination and implementation strategies*

People had learnt about the guidelines from a range of sources (Figure 1), the most common being the CSP website and professional magazine.

→ Figure 1

Responses indicated low levels of formal guideline and quick reference guide implementation (6% and 1% respectively), increasing in services reporting a primary osteoporosis caseload (7% and 3%). Figure 2 demonstrates that the least frequently used strategies were local consensus processes and involvement of an opinion leader or champion. The most frequent was education.

→ Figure 2

### *Aim 3: Barriers to guideline implementation*

Respondents identified a range of barriers to implementation of the guideline (Table 2). The categories ‘unaware’, ‘no barriers’, ‘no patients with a diagnosis’, and ‘no service’ were added due to their common specification under the option ‘other’.

→ Table 2

### *Summary*

To summarise, survey responses demonstrated reasonable availability, but poor implementation of the guideline and quick reference guide, with geographical variation. There was greater implementation of the guideline in services with a greater osteoporosis caseload. There appears to be an under-use of implementation strategies. The most common perceived barriers to implementation of the guideline and audit toolkit were lack of resources, training, and access, time involvement, and inapplicability to individual patients. Finally, a low response rate was evident, although there was representation from all sectors and geographical areas included in the stratified sample.

## **Discussion**

### *Poor survey response rate*

All findings must be viewed in the light of the 25% clinical site response rate that resulted despite reminders being sent to potential participants. Although survey responses represented varied service types and geographical locations, it is difficult to know how well responses represent guideline use across the UK; response rates from clinical sites were highest for England (31.7%), followed by Scotland, Northern Ireland, and Wales (25.7%, 25.0%, 16.3% respectively).

### *Poor guideline implementation*

One would expect that response to a survey will be biased towards interest in the subject matter; however, while over half of the respondents stated that the guideline was available, more than a quarter of these services did not use it. This lack of use may have been underestimated due to the low response rate if poor response was related to lack of interest. A discrepancy between guideline availability and use has been found in several previous studies. Among general practitioners, awareness of clinical guidelines did not equate with use [23], while an audit of medical records regarding adherence to osteoporosis-related recommendations, found that under half of the large study sample (n=3812) was being managed appropriately. [10] Similar findings have been located in other clinical areas, such as chronic pulmonary disease, with poor physician adherence to clinical guidelines found in studies based in Denmark, Greece, France and the UK.[11 22]

Guideline use varied according to specificity in this study. More people with a primary osteoporosis caseload or where osteoporosis was a secondary diagnosis used the guideline, indicating that outside these areas the guideline is seen as less applicable. The preventive activities advocated in the osteoporosis guidelines are of relevance to most physiotherapy services, however this message does not seem to have been effectively conveyed. Osteoporosis may be a difficult area for guideline implementation due to limited availability of specific services [27]. The scope of practice is also fairly wide, for example, when compared with a guideline relating to physiotherapy treatment for urinary incontinence. This may make it harder to develop guidelines that are perceived as directly relevant. As a result, the use of effective implementation strategies is likely to be even more important.

### *Guideline implementation strategies*

The findings demonstrated that the professional organisation's website and magazine are relatively well used, with a majority of the sample reporting them as sources of their awareness of the osteoporosis guideline. Others heard about it through their Special Interest Group, at a conference or through word of mouth. It would be useful to explore how the dissemination source relates to guideline implementation. Optimal strategies include the involvement of a local opinion leader, interaction between researchers and research users, reminders to care providers, and facilitating change through increased resources and training.[16][17][28][29]

In the current study it was evident that some of the implementation strategies thought to be most effective were not used very often. This may be responsible for under-use of the guideline, as passive dissemination may not be sufficient to address barriers to guideline use.

### *Barriers to guideline use*

The barriers to guideline implementation confirm previous findings in the literature, where barriers included awareness and access issues, lack of faith in the development, content and/or format of the guideline, information overload, and environmental or resource restrictions.[1][18][19][20][22]

Support in the implementation of clinical guidelines appears to be necessary as does positive attitudes of staff. [30] In the current study, many barriers were described that do not suggest positive attitudes; however, potential facilitators were also listed: respondents felt the need for more training, resources, time and staff, as well as regular updates. These facilitators might foster positive attitudes towards guideline use, and form elements of an implementation strategy. Professional websites and magazines could be used to disseminate ongoing updates and reminders relating to the osteoporosis guideline. Opinion leaders could also be involved in regular update processes, helping to address the growing time period since guideline publication (1999). Further successful strategies include facilitation techniques such as reminders and training, and discussion of guideline application in the local context.

### *Study limitations*

The primary limitation of this study was the low response rate, which casts some doubt on the ability to generalise findings. While responses could have been more rigorously pursued, further reminders using mail or any other medium were not seen to be ethical, as non-response is an indication of non-consent. When looking at previous surveys of guideline use, response rates vary. A 71% response rate occurred in a North American study of family physicians that included a small financial incentive.[18] A Dutch survey of physiotherapists achieved a 76% response rate, with no documented incentive.[28] In the UK however, a lower response rate of 54% resulted in a survey of GPs.[23] All of these studies attracted higher response rates than the present study. There was, however, no way of obtaining reasons for non-response, or of comparing characteristics of services which did and did not respond.

Although the information provided by survey respondents is useful, there is a lack of depth which limits understanding. We need greater understanding of the types of resources and training that would enable implementation, and reasons why guidelines are perceived to be inapplicable to individual patients. Is the latter a misconception that relates to a lack of training, or to the internal attributes of individual recommendations? Issues such as these could be explored through discussion and qualitative analysis techniques.

When looking at sources of awareness of the clinical guideline, the professional organisation's website and magazine were frequently cited. This could be used to facilitate future surveys, using 'pop-up' messages on the website and features in the magazine. These could emphasise the value of the survey and potential use of information provided. Evidently more attention must be given to optimising the survey response at the design stage, in order to increase the strength of conclusions possible from the results. It may also be beneficial to involve local opinion leaders and managers in the provision of encouragement regarding survey completion. However, this is difficult to achieve for a large survey and was not possible within the study's scope.

## **Conclusion**

This study has led to insights about the use of physiotherapy guidelines and the osteoporosis guideline in particular. The survey demonstrated poor awareness and use of the osteoporosis guideline throughout the UK. When reviewing the literature, it became evident that poor guideline use could be expected where formal implementation strategies were lacking. This suggests that processes are needed to encourage local discussion and decisions in relation to guideline implementation. A deeper understanding of the implications of the guideline is required, especially in more general services that do not perceive the direct relevance of recommendations to their clients. Clinicians and users need to develop a sense of ownership in their service developments, with time to discuss and plan adaptations to practice where appropriate, and to provide feedback into guideline review processes. This will require the investment of resources and training. It is important to note that awareness and use of a guideline does not imply that there is definitely a positive impact on user-centred outcomes. This requires another angle of investigation, the comparison of relevant outcomes before and after guideline implementation. However, both the findings of this study and those of previous research indicate that guideline evaluations are limited without the use of formal implementation strategies. Therefore, it is recommended that guideline implementation and evaluation strategies are combined.

## **Acknowledgements**

We would like to thank the Chartered Society of Physiotherapy for funding the study all respondents for their participation in the survey and to Sushant Jeurkar and Pratchi Poyarekar for their diligence in processing and analysing the data.

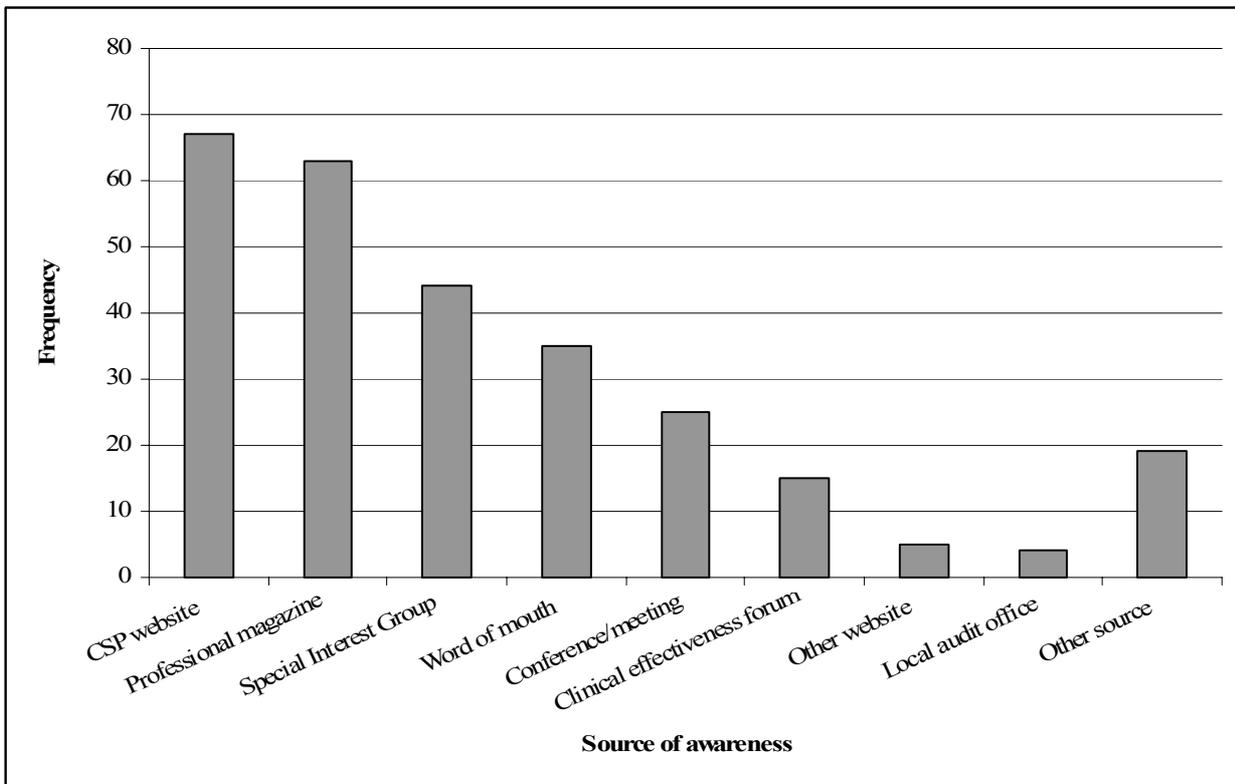
## References

1. Hutchinson A, McIntosh A, Cox S, Gilbert, C. Towards efficient guidelines: how to monitor guideline use in primary care. *Health Technology Assessment* 2003; 7: 18
2. Institute of Medicine. *Clinical practice guidelines: directions for a new program*. Washington, National Academy Press; 1990
3. Chartered Society of Physiotherapy. *Physiotherapy guidelines for the management of osteoporosis*. CSP (ref: CSP 103); 1999
4. Thomson R, Lavender M, Madhok R. Fortnightly review: how to ensure that guidelines are effective. *Br Med J* 1995; 13: 237-242
5. Scottish Intercollegiate Guidelines Network. *SIGN Publication No 71: Management of Osteoporosis*. Edinburgh, SIGN; 2003
6. Royal College of Physicians, *Osteoporosis - Clinical guidelines for prevention and treatment*. Available from [<http://www.rcplondon.ac.uk/files/osteosummary.pdf>] RCP, London; 1999.
7. Clinical Resource Efficiency Support Team. *Guidance on the prevention and treatment of osteoporosis*. Belfast, CREST; 2001
8. Cranney A, Waldegger L, Graham I, Man-Son-Hing M, Byszewski A, Ooi D. Systematic assessment of the quality of the osteoporosis guidelines. *BMC Musculoskelet Disord* 2002; 3:20
9. Geusens P, Lems W, Verhaar H, Leusink G, et al. Review and evaluation of the Dutch guidelines for osteoporosis. *J Eval Clin Pract* 2006; 12: 539-548.
10. Feldstein A, Nichols G, Elmer P, Smith D et al. Older women with fractures: patients falling through the cracks of guideline-recommended osteoporosis screening and treatment. *J Bone Joint Surg Am* 2003; 85A: 2294-2302.
11. Sanders S. Observation of SIGN guidelines in nursing homes. *Geriatr Med* 2006; 36: 45-47.

12. Wei G, Jackson J, O'Malley P. Postmenopausal osteoporosis risk management in primary care: how well does it adhere to national practice guidelines? *J Am Med Womens Assoc* 2003; 58: 99-104.
13. Thomas L, Cullum N, McColl E, Rousseau N, Soutter J, Steen N. Guidelines in professions allied to medicine. *The Cochrane Database of Systematic Reviews* 1999 Issue 1. Art. No.: CD000349. DOI: 10.1002/14651858.CD000349
14. Effective Health Care. Implementing clinical practice guidelines: can guidelines be used to improve clinical practice. University of Leeds. 1994; 8: 1-12.
15. Grimshaw J, Thomas R, MacLennan G, et al. Effectiveness and efficiency of guideline dissemination and implementation strategies. *Health Technology Assessments* 2004; 8: 1-72.
16. Bero L, Grilli R, Grimshaw J, Harvey E, et al. Getting research findings into practice: Closing the gap between research and practice: an overview of systematic reviews of interventions to promote the implementation of research findings. *Br Med J* 1998; 317: 465-468
17. Walter I, Nutley S, Davies H. What works to promote evidence-based practice? A cross-sector review. *Evidence and Policy* 2005; 1: 335-364
18. Rebeck T, Maher C, Refshauge K. Evaluating two implementation strategies for whiplash guidelines in physiotherapy: a cluster-randomised trial. *Aust J Physiother* 2006; 52: 165-173.
19. Jones N, Suurdt J, Ouellette-Kuntz H, Heyland D. Implementation of the Canadian clinical practice guidelines for nutrition support: a multiple case study of barriers and enablers. *Nutr Clin Pract* 2007; 22: 449-457.
20. Cabana M, Rand C, Powe N et al. Why don't physicians follow clinical practice guidelines? A framework for improvement. *JAMA* 1999; 282: 1458-1465.
21. Gerhardt W, Schoettker PJ, Donovan EF, Kotagal U et al. Putting evidence-based clinical practice guidelines into practice: an academic pediatric center's experience. *Joint Comm J Qual Patient Saf* 2007; 33: 226-235.

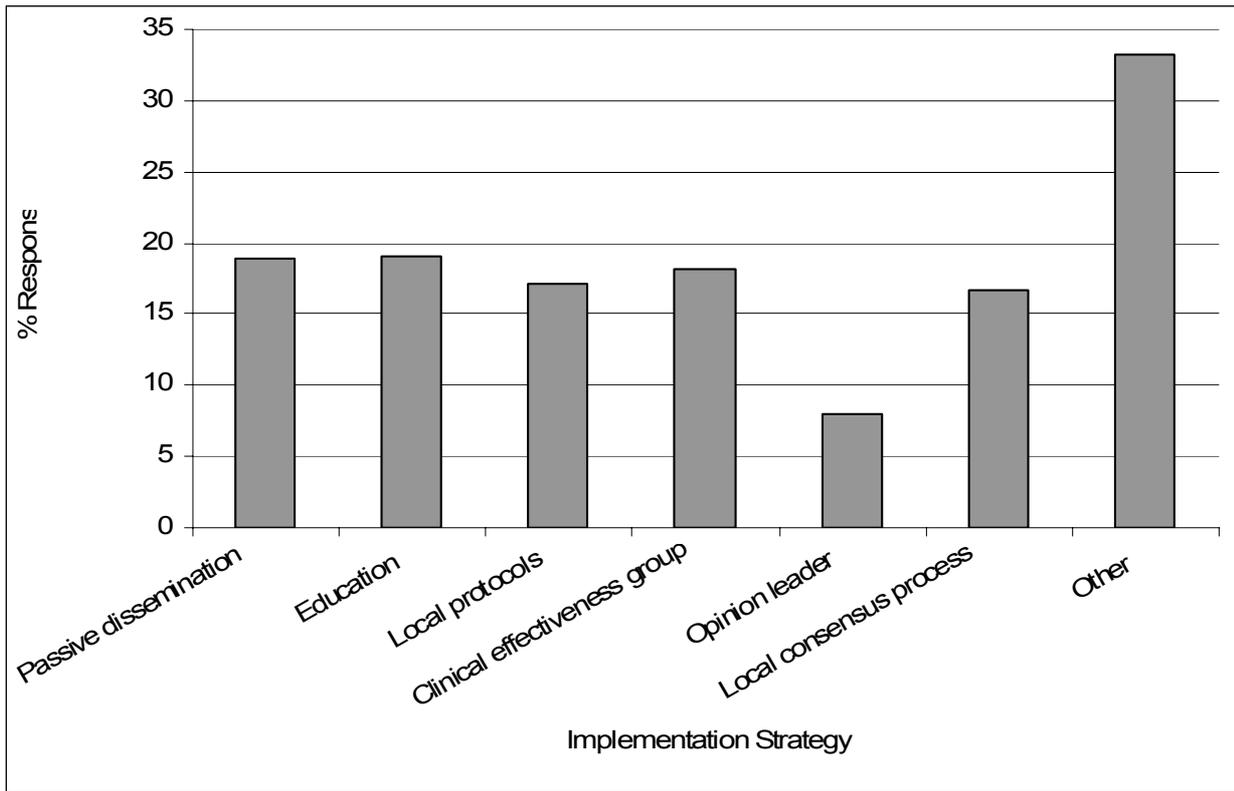
22. Heffner J, Ellis R. The guideline approach to chronic obstructive pulmonary disease: how effective? *Respir Care* 2003; 48: 1257-1268.
23. Newton J, Knight D, Woolhead G. General practitioners and clinical guidelines: a survey of knowledge, use and beliefs. *Br J Gen Pract* 1996; 46: 513-517.
24. Hanley B, Bradburn J, Barnes M, Evans C. et al. Involving the public in NHS, public health and social care research: briefing notes for researchers (second edition) INVOLVE; 2003
25. Ridley J, Jones L. User and public involvement in health service: a literature review. Building Strong Foundations Toolkit. Available from  
[<http://www.show.scot.nhs.uk/involvingpeople/A%20literature%20review.pdf>] Edinburgh, Scottish Executive; 2002
26. Munn P, Drever E. Using questionnaires in small-scale research: a teacher's guide. Edinburgh, The Scottish Council for Research into Education; 1999
27. Royal College of Physicians'. National audit of the organisation of services for falls and bone health for older people. Available from:  
[<http://www.rcplondon.ac.uk/college/ceeu/fbhop/NationalAuditReportFinal30Jan2006.PDF> ]  
London: Royal College of Physicians': Clinical Effectiveness and Evaluation Unit; 2006.
28. Bekkering G, Engers A, Wensing M, Hendriks H, van Tulder M, Oostendorp R, Bouter L. Development of an implementation strategy for the physiotherapy guideline on low back pain. *Aust J Physiother* 2003; 49: 208–14.
29. Feldstein A, Elmer P, Smith D, Herson M et al. Electronic medical record reminder improves osteoporosis management after a fracture: a randomized, controlled trial. *J Am Geriatr Soc* 2006; 54: 450-457.
30. Quiros D, Lin S, Larson E. Attitudes towards practice guidelines among intensive care personnel: a cross-sectional anonymous survey. *Heart & Lung* 2007; 36: 287-297.

Figure 1: Frequency of the source that people reported hearing about the osteoporosis guidelines



(Note: as each individual may have submitted more than one response to the question, percentage responses are not useful and frequencies are presented; 239 responses from 157 respondents)

Figure 2: Implementation strategy use



Note: Figure 2 summarises responses to a specific question in the survey, with one response per respondent, therefore a percentage response could be calculated for each strategy

Table 1: Response rate summarised for each section of the sample frame

	<b>Total surveys sent</b>	<b>Total useable surveys returned</b>	<b>Percentage response</b>
England	750	144	19.2
Scotland	226	35	15.5
Wales	160	14	8.8
Northern Ireland	40	6	15.0
Independent hospitals	31	8	25.8
Private practitioners	101	16	15.8
Clinical Interest Group	120	20	16.7
<b>TOTAL</b>	<b>1428</b>	<b>243</b>	<b>17.0</b>

Table 2: Frequencies of barriers to implementation of the osteoporosis guideline.

(Note: as each individual may have submitted more than one response to the question, percentage responses are not useful and frequencies are presented)

<b>Factor</b>	<b>Frequency of comments</b>
Lack of resources / funding / access	153
Lack of training	75
Too prescriptive or irrelevant to individual patients / everyday practice	93
Unaware	32
Guidelines are too long or poorly formatted	36
Not applicable (acute care / primary care / no osteoporosis service)	44
Too many guidelines / conflict with other guidelines	18
No patients with the diagnosis of osteoporosis	11
The guideline is not updated often enough	11
Lack of confidence in the evidence	1
Other	24
No barriers to implementation	8
	<b>51 responses from 237 respondents</b>

Note: responses have been collected into 'theme' areas that describe related ideas

Appendix 1: Sample of survey questions

Question 2:

USE/AWARENESS OF CSP GUIDELINES ON OSTEOPOROSIS

Please complete the following questions about the availability and use of the CSP Osteoporosis Guideline Package. Please tick all that apply.

- The Guideline Document and Quick Reference Guide are available
- The Guideline Document and Quick Reference Guide are available to individual staff
- Individual staff use the Guideline Document in their practice
- Individual staff use the Quick Reference Guide in their practice
- The service has formally implemented and is using the Guideline Document and Quick Reference Guide

Question 4:

IMPLEMENTATION OF CSP GUIDELINES ON OSTEOPOROSIS

What strategies have been used to implement the CSP guidelines in your service?

- Passive dissemination
- Development of local management protocols
- Education (seminars and workshops)
- Opinion leaders
- Local consensus processes
- Other (please specify)