Community provision of hearing aids and related audiology services
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Authors' objectives
To undertake a systematic review of the evidence relating to community provisions of NHS hearing aids and related audiology services for adults. The review was supplemented by primary research: a national 'provider survey' of NHS audiology/hearing aid service managers, a 'community clinic survey' involving a sample of all NHS audiology/hearing aid centres and a costing study. Only data pertaining to the systematic review is presented here.

Searching
MEDLINE, EMBASE, PsycLIT, databases on BIDS, Index to Theses, DARE and NHS EED were searched, going as far back as the early 1970s where possible. The search terms were provided in an appendix. Researchers and practitioners (on a worldwide basis for audiology and UK only for medical specialties) were contacted to identify ongoing or unpublished studies. Relevant professional journals (listed in the text) not covered by any of the electronic databases were handsearched. The reference lists of retrieved articles were also checked.

Study selection
Study designs of evaluations included in the review
All forms of study design were considered eligible, ranging from randomised controlled trials (RCTs) to surveys of professional opinion. However, studies of opinion were only included if they were based on professionals drawn from eight or more different purchasing or providing bodies.

Specific interventions included in the review
The authors were mainly interested in community-based adult hearing aid (audiology) services. However, due to the lack of studies specific to this topic, studies relating to community clinics in medical (including surgical) specialties were also considered. The inclusion criteria for medical-based studies were the provision of out-patient services at community locations, excluding non-UK studies. In the case of audiology, broader criteria were used, which included papers concerned with hearing aid use and after care, screening for hearing loss, counselling and the views of general practitioners (GPs). Community-based service was defined as a form of out-patient clinic or session that was provided by hospital staff (or equivalent) in a setting away from the main hospital base, other than the patient's own home. Studies were included when a patient or professional opinion was being canvassed in relation to community-based services, real or hypothetical. The findings of studies relating to medical and surgical specialties were only included when the reviewers were reasonably convinced that it was appropriate to generalise them to clinics providing hearing aid services (e.g. if there was consistent results across a wide variety of specialties).

Participants included in the review
The participants were adults attending community clinics. Studies of community-based antenatal clinics were excluded because of the very specific nature of the patient group and the variety of forms that the clinics took. However, studies in paediatrics were included on the basis that the clinics were attended by adults along with children and were of the same form as out-patient clinics in other specialties.

Outcomes assessed in the review
The outcomes of interest included: the extent and nature of community provision; patient access and satisfaction; professional opinion; clinical effectiveness and efficacy; impact on referrals and hospital work; cost; the primary-secondary care interface; and equity issues. Studies were excluded if no relevant objective evidence was presented.

How were decisions on the relevance of primary studies made?
One reviewer went through the titles resulting from the search and excluded all those that were obviously inappropriate. The reduced list, together with abstracts where available, were examined by each of the four team members independently, who classified each title as not relevant, possibly relevant, or probably relevant - obtain paper. The authors did not state how the eligibility of the retrieved studies was assessed, or how many reviewers were involved in...
this process.

**Assessment of study quality**
The studies were assessed using a four-category quality rating scale. Each study was first assessed against a small number of 'core' factors relevant to most studies, and then according to potential confounders specific to the study itself. A separate quality rating was made for each issue, as the quality could vary from one research issue to another, even within the study, and because a factor that is a potential confounder for one issue might be an outcome of interest in another. The authors did not state how the papers were assessed for quality, or how many reviewers performed the quality assessment.

**Data extraction**
The data were extracted by a single reviewer who went through the data at least twice, with an intervening period of 2 months or more, to ensure that nothing of importance had been missed or incorrectly transcribed.

**Methods of synthesis**
How were the studies combined?
The studies were combined in a narrative summary.

How were differences between studies investigated?
Differences between the studies were discussed in the text.

**Results of the review**
Forty-four studies were included, of which three were specifically concerned with hearing aid clinics in the UK. These included (some studies used more than one design): one RCT; 14 cohort studies with concurrent control using prospective data; 9 cohort studies with concurrent control using retrospective data; 5 cohort studies with concurrent control using a mixture of retrospective and prospective data; one cohort study with historical control using retrospective data; 7 cross-sectional studies using prospective data; 3 cross-sectional studies using retrospective data; 2 before-and-after studies (retrospective data); and 10 surveys of professional opinion.

Four studies were given a quality rating of I, 10 a rating of II, 21 a rating of III, and 9 a rating of IV. None of the three studies that were specifically concerned with hearing aid clinics were of a good quality. Two were MSc theses (quality rating III) and the third was a very small study with major drawbacks (retrospective before-and-after study, quality rating IV).

The main overall findings of the review were as follows.

Community clinics have clear advantages in terms of convenience for patients.

Non-attendance rates are generally lower and patient waiting times usually shorter.

There were indications that community clinics can increase GP referrals and encourage patient compliance and use of after care, thus increasing 'success' rates and reducing resource usage.

Large majorities of patients prefer local services, provided quality is not compromised too much.

The risk of significant pathology going untreated appeared to be potentially higher in the community.

A degree of service inequity exists in clinics held in GP fundholding practices.

**Cost information**
The review included an assessment of the relative costs of out-patient clinics in community and main hospital settings.
Community clinics resulted in reduced patient costs. A costing study of adult hearing aid clinics at a number of settings was also undertaken.

Authors' conclusions
There was insufficient evidence for recommendations to be made in relation to any general policy of expansion or contraction of community-based hearing aid services.

CRD commentary
The review addressed a very broad question using clear inclusion and exclusion criteria. The literature search was comprehensive and included an attempt to identify unpublished data. Four reviewers independently assessed which studies should be retrieved, but it was not stated how many were involved in deciding which of these articles should be included. The data were extracted by a single reviewer, who checked their own work for accuracy after an interim period of at least a month. The quality of the included studies was assessed, but it was unclear how many reviewers were involved in this process. Relevant data for the included studies were presented in tabular format. The studies were combined in a narrative summary, which was appropriate, bearing in mind the large diversity in the included studies. The authors’ conclusions appear to follow from the results provided.

Implications of the review for practice and research
Practice: The authors suggested that community service providers should consider:

- maintaining standards of audiometric testing at community sites;
- maintaining standards of patient safety;
- providing information for patients;
- establishing remote links to centralised records;
- reducing the costs at community sites; and
- ensuring that an accessible after-care service is provided for patients fitted with hearing aids in the community.

Research: The authors stated that primary research specific to hearing aid services is needed in all areas. They also noted that there is an immediate need for research into the effectiveness of community provision on outcomes for hearing aid patients and level of service use.

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Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.