Guest editorial

Databases for hip fracture audit

Two papers in this issue of Acta Orthopaedica present data from the Norwegian hip fracture audit. The number of orthopedic audit databases continue to increase (Kolling et al. 2007), but perhaps it is time for us to make a critical appraisal of their value. What is their purpose, what information should be collected, and is the cost justified? Hip fracture databases have been established in some countries such as Sweden and Scotland (www.shfa.scot.nhs.uk) for some years now, with a vast amount of data having been collected. Unfortunately, there still remains a lack of published articles on the value of such datasets and their cost effectiveness.

Firstly, what is the purpose of a hip fracture audit? Is it to identify poorly performing centers or even surgeons, and to enable them to make improvements? This should include a later audit of results to ensure that these changes have been effective, thus closing the audit cycle. Alternatively, the dataset may be used to help define what the optimum mode of care is. Such an example of this is in this issue of Acta Orthopaedica (Gjertsen et al. 20008a), and here the dataset has moved from an audit to a research project.

In establishing a hip fracture audit dataset, it is necessary to decide what information should be recorded. This should of course include basic patient demographics and the types of treatment used. Outcomes can be divided into process outcomes (such as hospital stay, delay of surgery, reoperations, and complications) and the more important final outcome measures of mortality, residual pain, and regain of function. Because of problems of confounding factors and observer bias in the data collection, it is unlikely that a hip fracture audit would detect differences in the final outcome measures (Lilford et al. 2008). Differences in process outcomes should, however, be identified if a patient sample of sufficient size is collected.

If the audit is being used as a way of assessing quality of treatment, then specific standards of care should be defined. These may be in the form of the ideal standard (e.g. that all patients should have surgery with 24 h of admission) or acceptable standards (e.g. that patients should have surgery within 48 h of admission). These standards need to defined with a careful review of the literature, and may be based on the evidence guidelines for hip fracture treatment such as those of the SIGN group (SIGN 2002). The combination of audit, guidelines, and standards constitutes the basis of clinical governance for hip fracture care (Currie and Hutchison 2005).

Having defined the objectives of the audit, consideration should be given to how the data is collected. Should the information be obtained from the administrative database of the hospital or should there be a separate hip fracture database? Also, can the dataset be linked to the national death register? It is certainly attractive to consider using the hospital administrative database, but unfortunately current experience suggests that the information in many hospital administrative databases may not be sufficiently accurate for clinical purposes. An example of this was in the UK, where analysis of the hospital information datasets for cardiac surgery suggested that one center for cardiac surgery had a significantly increased mortality. Subsequent analysis using a specific clinical dataset revealed that the apparent increase in mortality was caused by differences in the recording of operations within the hospital administrative system. On correction of the dataset for these coding errors, it emerged that there was no real increase in mortality (Westaby et al. 2007).

This is not to say that hospital episode data cannot be used for a hip fracture audit. If there were improvements in the coding and collection

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of data within each hospital, much of the data recorded from a basic hip fracture audit could be collected on a national basis—and at a much lower cost than a stand-alone dataset (Aylin et al. 2007). Continuing developments in hospital information technology are leading to a situation in which progressively more details about each patient's treatment are being recorded. It seems probable that this method of auditing of patient outcomes will be increasingly used. We need to ensure that where the information from hospital episode data is used for clinical audit that is correctly interpreted and presented.

Alternatively, if a stand-alone dataset is used, it is important to ask the following. Will the data be collected continuously, or should there be limited data collection for a specified number of consecutive patients and a subsequent re-audit at a later stage? Whichever method is used, a national data center is required to submit the dataset to analysis and to provide comparative data. Statistical participation is also required, in order to determine whether any observed differences in the outcomes are significant.

Another important issue related to audit databases is whether consent from the patient is required. There have been differing opinions between parties regarding the necessity for informed consent. What is inevitable is that if consent is required, many of the frailer patients and those with dementia will be excluded. This would still occur if consent was sought from relatives of those unable to give informed consent, because of the administrative issues involved. The completeness of the database would then become dependent on the enthusiasm of those seeking consent. The Norwegian register, which requires consent, reported that about 70% of patients had data entered on the register (see the article by Gjertsen et al. (2008a) in this issue). Also of concern is that only 56% of those registered completed the 4-month questionnaire. It seems likely that a hip fracture database that requires consent from individual participants will not be representative of all patients, and will therefore be of questionable value for comparing one center's results against the national average.

The Norwegian registry seems to be moving away from a traditional audit and audit cycle, to become one of a research project—using the data obtained to define the optimum mode of treatment. The other paper of Gjertsen and colleagues in this issue (2008b) addresses the continuing question of internal fixation vs. arthroplasty for displaced intracapsular fractures. Whilst this may seem a sensible aim, the information obtained will never be as precise as that of a randomized controlled trial. There will always be biases in patient selection for the different treatment methods. Encouraging the development of multi-center randomized controlled trials such as those of the International Hip Fracture Research Collaborative (http://www.ihfrc.ca) may be a more effective method for defining the optimum method of treatment.

The individual patient cost for a basic stand-alone hip fracture audit and a central database is approximately 80 euros. There will also be additional set-up costs. While this may seem a small amount for an individual patient, on a national basis the budget will inevitability amount to millions of euros. As for all healthcare service costs, the extra expenses involved with audit must be justified—and critics would argue that such audit projects have not yet demonstrated their cost effectiveness.

In summary, there is currently growing interest in central databases in orthopedics. It remains to be seen whether this will be sustained or whether it is a passing fashion. The exact role and value of hip fracture databases remains undefined, and in the coming years patient administration systems may provide an alternative and easier way of obtaining the required information.

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