

# Lessons from the National Hip Fracture Database

Chris Boulton  
Rob Wakeman

## Abstract

The National Hip Fracture Database, in the United Kingdom, produces an effective means of benchmarking hip fracture services. Its success is based not only on clinical leadership and a well structured dataset, but also on a strong supporting team of audit administrators and coordinators, web developers and statisticians, and a host of data collectors and hospital leads.

**Keywords** National audit; National Hip Fracture Database

## Introduction

The National Hip Fracture Database (NHFD) was conceived as a means of improving hip fracture care throughout the United Kingdom, based on a paperless upload of clinical data with web-based near real-time reporting of key performance indicators, to allow hospitals to benchmark the quality of their hip fracture pathway and to use the output to inform their local audit and quality improvement programmes. Planning commenced in 2004, and data collection began in 2007. Since then over 450 000 patient records have been entered from 190 hospitals in England, Wales and Northern Ireland and it is now the largest hip fracture registry in the world. The past 11 years have seen some notable successes in driving improvement, but also provide a number of lessons for those looking to establish large scale clinical audit projects.

## National audit requires a considerable investment of time and personnel

The NHFD was conceived by Professor David Marsh, then of Queen's University, Belfast, who brought together a committed group of clinicians from the British Orthopaedic Association (BOA) and British Geriatrics Society (BGS) to develop a web-based hip fracture audit, building on concepts developed by the Myocardial Ischaemia National Audit Project (MINAP). Although it was recognized from the outset that stakeholders included patient groups, nurses and professions allied to medicine, and that clinicians from a number of specialities were involved in hip fracture patient care, it was believed that the emergence of the subspeciality of orthogeriatrics justified a joint BOA/BGS audit initiative to identify variation in practice in the shared care of patients with hip fractures.

**Chris Boulton** BA(hons) Project Manager, National Hip Fracture Database, Clinical Effectiveness and Evaluation Unit, Royal College of Physicians, London, UK. Conflicts of interest: none declared.

**Rob Wakeman** FCS(SA)Orth Orthopaedic Clinical Lead, Clinical Effectiveness and Evaluation Unit, Royal College of Physicians, London, UK. Conflicts of interest: none declared.

At the outset, it was determined that the purpose of the NHFD was to evaluate aspects of the care given throughout the hip fracture acute care pathway at an institutional level, rather than to look at the performance of individual implants or surgeons. This was based on a professional consensus that outcomes from the management of hip fractures were likely to be determined by the resources that a unit made available to its hip fracture service, rather than individual aspects of consultant-delivered care. In addition, the follow-up achievable through the NHFD was unlikely to be able to detect significant differences in the outcome of individual implants.

Apart from the individuals who form the central audit team, effective audit is heavily reliant on a strong local team. These teams flourish where strong clinical leadership maintains managerial engagement and provides effective support to the data collectors and data entry personnel. It was apparent from the outset that in the majority of units the best person to undertake data collection was an individual who could do so concurrently with the admission, often a hip fracture nurse or fragility fracture nurse. A successful audit has to maintain good communication with these individuals, particularly in the early stages. For the first seven years of the audit, two project coordinators with hip fracture nursing backgrounds provided clinical telephone support for the individuals who were collecting and entering data. In addition, regional workshops were arranged around the hospitals contributing to the NHFD. These meetings enabled contributors to meet the NHFD team and to see how problems could be overcome. As the database has matured, this support has developed into increased on-line help functions alongside a support hub managed by the Falls and Fragility Fracture Audit Programme (FFFAP) team with telephone and email helplines. Some support aspects, such as user registration and assistance with login have been largely automated.

As the audit has progressed the participation of local lead clinicians has become more important. While a contact clinician was sought at the time of unit registration it was not until 2012 that the role was set out formally. Clinicians should be available to advise on correct data entry and should export the data for review on a regular basis. Ideally, the local clinical leadership will have input from orthopaedics, orthogeriatrics and anaesthesia as part of a Hip Fracture Programme team, and will therefore have a forum for the presentation of data and to develop quality improvement.

One aspect of the NHFD's success is its breath. In the current economic environment, multidisciplinary audit of major health-care issues is more likely to achieve sustainable public funding than a single speciality audit of an important but limited topic.

## Quality improvement requires engagement from the care providers

National clinical audit is not primarily an exercise in quality assurance, but rather a determined effort to stimulate individual hospitals to recognize where good practice exists and should be maintained, and where Quality Improvement is required. A responsive audit can then provide the data to drive the Plan, Do, Study, Act cycle in near real-time. One catalyst for change is the introduction of models of success that are suitable for reproduction in other settings.

The initial uptake of the database was promoted by the BOA and BGS in their publications and at their conferences, and encouraged through the use of regional meetings. Following the NHFD launch in September 2007, press coverage, presentations at relevant national meetings, and word of mouth ensured that the rate of recruitment was rapid. By 31st January 2009, 136 hospitals had registered interest in participating in NHFD – some 69% of those eligible – and 92 were contributing cases to the NHFD web tool. The regional meetings were based on the Scottish Hip Fracture Audit ‘Hipfests’ where data from the audit were presented along with contributions from nationally recognized invited speakers. Crucially, time was given over to local speakers who had used NHFD data to drive significant improvements in the provision of their services and individuals were encouraged to seek support from other represented organizations.

Once the project was sufficiently well-established to be a credible vehicle for national data collection, it was adopted as the means of determining whether or not the care of patients in England warranted a Best Practice Tariff (BPT) uplift on the tariff that the hospital was paid for their hip fracture care. The tariff was funded in a way that was cost neutral across the NHS in England, so that the general tariff was slightly reduced to retain enough money to make the payment in the 25% of cases that initially achieved the required standard of care. The rationale was that by encouraging trusts to invest in better care there would be an overall reduction in the acute hospital length of stay with an overall cost saving. Subsequently, the tariff developed such that for patients whose care does not attract the uplift, the hospital receives £1335 less than prior to the introduction of BPT in 2010. Hence, any improvement in care that has been achieved since 2010 has been achieved without any additional central funding. While a BPT could have been introduced using administrative data sources, with an appropriate delay, the use of NHFD data allows for the use of clinically important factors that are not recorded in Hospital Episode Statistics (HES), and hence gives a broader picture of the overall care a patient receives. The alignment of the NHFD with national policy such as the NHS Outcomes Framework, increases engagement at hospital and Clinical Commissioning Group (CCG) level.

**Datasets should be as small as necessary to demonstrate clinically important variation in the quality of the services provided**

At an early stage in the development of NHFD, existing hospital-run hip fracture databases were compared and over one hundred and fifty possible data fields were identified. It was clear that it would be impractical to deliver a comprehensive audit tool that could be applied across all of the acute hospitals of the UK, as many of these fields were of little interest outside an individual organization. The challenge was to develop mechanisms for data collection and entry that would keep those with legacy systems engaged, allowing them to retain their established datasets while making the minimum dataset sufficiently lean to encourage units that would be engaging in routine hip fracture data collection for the first time. This was achieved by the development of import protocols that allowed mapped uploading from established legacy systems; and the use of fields that could be customized by users for bespoke local audit, for those for whom the minimum

dataset covered most, but not all of the areas that they were interested in. Hospitals that were new to continuous data entry could use the web-tool for data entry and the integrated export facility allowed all entered fields and a number of calculated fields to be downloaded as spreadsheets for local analysis to support clinical governance activity.

The initial dataset was therefore aimed at providing data on the process of the acute hospital stay, with the knowledge that these data could be linked to Office of National Statistics data to give casemix adjusted 30-day mortality rates. The minimum number of casemix factors and the minimum number of process factors that would permit reporting of aspects of care that showed the greatest variation across the almost 200 acute hospitals that undertook the initial management of hip fractures were identified and a 38 field dataset was introduced in 2007. This has been revised on a regular basis with advice from a multidisciplinary Advisory Group.

Comparative audit produces a number of problems where there is a wide variation in the infrastructure of the local NHS. An example of this is the accurate comparative profiling of NHS stay, since each local health and social care economy varies in its provision of rehabilitation beds. Some hospitals opt for rapid transfer to community trusts for rehabilitation while others undertake all care in the acute trust prior to discharge from NHS inpatient care. Some hospitals now also utilize non-NHS providers for rehabilitation care. So while it is possible to link an index admission to HES rehabilitation episodes, patients may have an NHFD discharge destination of ‘rehabilitation’, with no relevant HES rehabilitation episode, so that measuring the total time in NHS care following a hip fracture remains imprecise.

One way around this problem would be to look at the whereabouts of individuals 120 days following hip fracture. Routine fracture clinic follow up is not always arranged at that stage, as there is little that needs specific orthopaedic review, and general practitioners can arrange follow up if required. Approximately 100 units arrange routine telephone or postal follow up to identify any post-discharge problems and to see that secondary fracture prevention has been actioned, particularly continuance of bone protection medication if this is indicated.

Another benefit of 120-day follow up would be a clearer picture of reoperation rates. In well organized units where appropriate supervision of surgical trainees takes place, short term revision rates of less than 2% of should be achievable. Unfortunately, the current completeness of follow up is such that we cannot advise on how frequently this is achieved in practice.

The latest version of the dataset has been developed to allow for more detail in the recording of fracture types. This, with previous improvements in the identification of surgical procedures, would lead to the possibility of national reoperation rate figures by specific fracture subtypes or operations, if it is accompanied by a greater input of follow up data.

Expansion to 120-day follow up requires an investment of time and money and will only occur if the wider health economy sees an overall benefit from the improvement of the patient experience and greater adherence to effective secondary prevention. Concentration on the initial hospital episode, despite its limited scope, is the more straightforward undertaking.

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