Registries and databases in trauma and orthopaedics

Introduction

Registries and databases have proven to be a great help to medical progress. They provide clinicians and researchers with real-time information about certain diseases and treatment methods (Ingelfinger and Drazen, 2004). Although much of the information is observational, they help us look at current practice and trends and thereby introduce changes as necessary (Lyratzopoulos et al, 2008).

Several such national and international registries and databases exist in the field of orthopaedics. The more popular ones include those relating to total joint replacements, major trauma and hip fractures. There are other databases looking at more specific areas such as musculoskeletal tumours or anterior cruciate ligament reconstruction, which are popular among those who have a subspecialty interest.

Joint replacement or arthroplasty registries

National joint registries have now been successfully established and running in several countries. The first one started in Sweden, but Finland, Germany, Britain, Norway, Switzerland and Australia, among others, now have their own national registries (Kolling, 2007), with the United States heading this way as well. These registries have been immensely helpful in improving joint replacement practice in these countries and worldwide.

Joint registries give evidence about which are the best performing implants and similarly which have high failure rates. Thus joint registries identify best surgical practice across orthopaedic units and help with continuous improvement of outcomes. Most registries focus on hip and knee replacement, while registries in Finland, New Zealand, Norway and Sweden record information on other joints as well, mainly the shoulder, elbow and ankle, but some also include finger and toe joints. Annual reports of implant survival, and newer procedures like metal on metal hip arthroplasty or unicondylar knee replacement, are some of the topics which have been recently debated at orthopaedic conferences.

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Swedish National Hip Arthroplasty Register (www.jru.orthop.gu.se/)

This is one of the oldest registries and collects information about primary and revision hip arthroplasty, including hemiarthroplasty. It has several useful variables including the 90-day mortality and publishes annual reports in Swedish and English.

Nordic Arthroplasty Registry (www.nordicarthroplasty.org/)

The arthroplasty registers in Norway, Denmark and Sweden formed an association, the Nordic Arthroplasty Register Association, in 2007. The idea was to analyse patient demography in different countries and to find common and standardized 'case mix variables'.

National Joint Registry, England and Wales (www.njrcentre.org.uk)

This was set up in 2002 and started collecting data from 2003 about hip and knee replacements in England and Wales. It has a useful online statistics link which can provide gross figures for individual hospitals and more detailed statistics for surgeons who have a login.

The Norwegian Arthroplasty Register (www.haukeland.no/nrl)

This originally started as a total hip replacement registry in 1987, but now gathers data about knee and other joint replacements. The Norwegian Cruciate Ligament Register and the Norwegian Hip Fracture Register are also located within the Arthroplasty Register.

Australian Orthopaedic Association National Joint Replacement Registry (www.dmac.adelaide.edu.au/aoanjrr/)

This has data related to hip and knee replacements in Australia. This includes records of various forms of partial hip replacement or hemiarthroplasty. Recent annual reports have provided some useful and significant information related to resurfacing hip arthroplasty. They have shown that females have a significantly higher rate of revision for resurfacing arthroplasty and the risk of revision increases with age. Similarly males after the age of 65 years have a higher risk of revision for their resurfacing arthroplasty.

Danish Hip Arthroplasty Register (www.dhr.dk/) and Danish Knee Arthroplasty Register (www.dshk.org/)

These record and examine the epidemiology of hip and knee arthroplasty in Denmark. They are synchronized with the Danish national patient registry to record re-admission and revision surgery rates. Data related to bone grafting techniques used in hip arthroplasty are also reported in the hip registry.

Hip fracture databases

These help in auditing the current practice and strive for continuous improvement of fracture and geriatric services. Hip fracture databases are popular in the UK but have been established in other countries such as Norway. These help in auditing the current practice and strive for continuous improvement of fracture and geriatric services.

Scottish Hip Fracture Audit (www.shfa.scot.nhs.uk/)

This has data related to patients older than 50 years with hip fractures in Scotland. Several variables including targets like maximum 4-hour stay in emergency department and within 24 hours operating times are recorded. Patient outcomes at 30 days and 120 days post-admission are recorded and reported annually.

National Hip Fracture Database (www.nhfd.co.uk/)

This was launched in 2007 by the British Orthopaedic Association and British Geriatrics Society to collect data related to hip fractures in England and Wales. It also has links to the 'Blue Book' (Currie, 2007), which is a compilation of best practice and sets multidisciplinary standards for the care of fragility fractures.

The Norwegian Hip Fracture Register (www.haukeland.no/nrl)

This was established in 2005 and has the advantage of allowing better analysis of hip fracture surgery because of its association with the arthroplasty register. Various operation details are initially recorded and a questionnaire is sent to patients at different intervals after the operation. These relate to the health-related quality of life, visual analogue pain scales and patient satisfaction. Initial published reports from this register show that there is no national consensus about the method of operative treatment for proximal femoral fractures (Gjertsen et al, 2008).

Major trauma databases

Major trauma registers have been helpful in improving pre-hospital and hospital trauma care standards (Jurkovich and Mock, 1999). They measure trauma outcomes at various levels. Several trauma databases have been established at local, regional and international level because of epidemiological differences of the trauma care.

Trauma and Audit Research Network (www.tarn.ac.uk/)

This has easily accessible data related to standards of care useful to the hospital, surgeons and patients. The data are collected from various hospitals across England and Wales. This has several subsidiaries including the TARNlet (for paediatric trauma). EuroTARN (http://eurotarn.man.ac.uk/) is an evolving ambitious initiative to include trauma data from 14 different countries across Europe.

National Trauma Data Bank (www.ntdb.org/)

This collects information from various trauma centres in the United States and has been established by the American College of Surgeons Committee on Trauma. It publishes annual reports with detailed analysis of demographics, injury pattern and outcomes. It registers data with injury severity score, length of hospital stay and level of facilities provided. Some informative graphs about the use of drugs and alcohol among the injured group and different fatality rates related to mechanism of injury are shown in the annual reports.

Conclusions

The above list is not exhaustive but summarizes some useful sources of information. Some of these produce annual reports which can be a useful read for orthopaedic trainees. Any research or study into current practices in orthopaedics would be incomplete without considering these databases. Thus registries and databases will continue to be a useful source of information in trauma and orthopaedics, as they are in other medical fields. BJHM

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KEY POINTS

- Arthroplasty registries show evidence about best performing and high failure implants.
- Hip fracture databases are useful in auditing geriatric or fragility fracture services.
- Trauma databases are the key to evaluation, prevention, and research of trauma care.