Complete Summary

GUIDELINE TITLE

Acute management and immediate rehabilitation after hip fracture amongst people aged 65 years and over.

BIBLIOGRAPHIC SOURCE(S)

New Zealand Guidelines Group (NZGG). Acute management and immediate rehabilitation after hip fracture amongst people aged 65 years and over. Wellington (NZ): New Zealand Guidelines Group (NZGG); 2003 Jun. 26 p. [60 references]

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SCOPE

DISEASE/CONDITION(S)

Hip fractures

GUIDELINE CATEGORY

Management
Rehabilitation
Treatment

CLINICAL SPECIALTY

Emergency Medicine
Family Practice
Geriatrics
Internal Medicine
Orthopedic Surgery

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Emergency Medical Technicians/Paramedics
Health Care Providers
Nurses
Patients
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

To provide clinicians and people suffering hip fractures with evidence for current best practice in acute management and immediate rehabilitation after hip fracture

TARGET POPULATION

People in New Zealand aged 65 years and over with hip fractures

INTERVENTIONS AND PRACTICES CONSIDERED

Management

Pre-hospital Care

Fluid replacement and catheterization as indicated

Emergency Department Care

1. "Fast Track" protocol for assessment and admission
2. Fluid replacement
3. Preoperative traction (considered but not recommended)
4. Systematic pain assessment and relief
    - Administration of narcotics, paracetamol, ibuprofen, propoxyphene-containing compounds and local analgesic nerve blocks
5. Oxygen therapy

Ward Care

1. Prophylaxis against venous thromboembolism
    - Adequate fluid balance and early post-operative mobilisation
    - Administration of either aspirin or low molecular weight heparin
    - Foot or calf pumps
    - Thromboembolism stockings (considered but not recommended)
2. Antibiotic prophylaxis
3. Prevention of pressure sores with high specification foam and pressure relieving mattresses
4. Nutritional supplementation
5. Urinary tract management
    - Catheterisation

6. Management of dementia/delirium
    - Measurement of cognitive function
    - Geriatric medical team
    - "Active reorientation"
    - Continuity of nursing care

Surgical Management

1. Early (non-delayed) operation
2. Regional anaesthesia
3. Undisplaced intracapsular fractures
    - Screws vs. unthreaded pins
4. Displaced intracapsular fractures
    - Open vs. closed reduction
    - Arthroplasty vs. internal fixation
        - Bone cement
    - Unipolar hemi-arthroplasty vs. bipolar hemi-arthroplasty
    - Total hip replacement (considered but not recommended)
5. Extracapsular (trochanteric) fractures
    - Sliding hip screw vs. fixed nail plate devices or intramedullary devices
6. Surgical suction wound drains (considered but not recommended)
7. Post-operative mobilisation

Immediate Rehabilitation

1. Provision of formal hip fracture programmes
    - Early multidisciplinary assessment teams
2. Early Supported Discharge Programmes

MAJOR OUTCOMES CONSIDERED

- Length of hospital stay
- Incidence of main hospital complications
- Proportion of patients returning to previous residential and mobility status
- Readmission to hospital
- Reoperation
- Health–related quality of life measures

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Hand-searches of Published Literature (Secondary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The scope of the guideline and the topics to be researched were established by consensus within the group, and a search for evidence conducted. Guidelines developed by other countries and other organisations and relevant medical

literature were reviewed. These were identified by searching the Internet, and the electronic databases, The Cochrane Library, MEDLINE, EMBASE, and CINAHL, and reviewing references cited in other guidelines and identified papers. Identified references were screened for eligibility according to predetermined criteria shown below, and the studies considered eligible were retrieved and underwent critical appraisal using pre-determined templates.

Eligibility and Inclusion Criteria

Types of studies

Systematic reviews and meta-analyses, descriptive reviews where no systematic review were found, randomised controlled trials (RCTs), non-randomised controlled clinical trials (CCTs), cohort studies, case-control studies, and cross-sectional studies. For each topic, a final decision on the level of study admissibility was made following completion of the initial search. For selected topics, qualitative studies were admissible.

Types of study participants

Older people who had sustained a proximal femoral (hip) fracture. Data specifically dealing with hip fractures in children, younger adults, or resulting from metastatic malignancy were excluded. For selected topics, qualitative data were admissible.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Levels of Evidence

1++

High quality meta-analyses/systematic reviews of randomised controlled clinical trials (RCTs), or RCTs with a very low risk of bias

1+

Well-conducted meta-analyses/systematic reviews, or RCTs with a low risk of bias

1-

Meta-analyses/systematic reviews, or RCTs with a high risk of bias

2++

High quality systematic reviews of case-control or cohort studies

High quality case-control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causal

2+

Well-conducted case-control or cohort studies with a low risk of confounding or bias and a moderate probability that the relationship is causal

2-

Case-control or cohort studies with a high risk of confounding or bias and a significant risk that the relationship is not causal

3

Non-analytic studies (e.g., case reports). Case series

4

Expert opinion

Qualitative material was systematically appraised for quality, but was not ascribed a level of evidence.

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Retrieved studies were obtained and their content reviewed for relevance to the various topics of the review. Each topic was assigned to two members of the group who read the retrieved reports, agreed on what would be included in the guideline, and appraised the included material using the pathway in the original guideline to filter the included material (see original guideline supporting material). The strength of the evidence was defined using the revised Scottish Intercollegiate Guidelines Network (SIGN) criteria, which are described in the text of the original guideline document.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Grades of Recommendations

A

At least one meta-analysis, systematic review, or randomized controlled trial (RCT) rated 1++ and directly applicable to the target population

or

A body of evidence consisting principally of studies rated as 1+, directly applicable to the target population, and demonstrating overall consistency of results

B

A body of evidence consisting principally of studies rated as 2++, directly applicable to the target population, and demonstrating overall consistency of results

or

Extrapolated evidence from studies rated as 1++, or 1+

C

A body of evidence consisting principally of studies rated as 2+, directly applicable to the target population, and demonstrating overall consistency of results

or

Extrapolated evidence from studies rated as 2++

D

Evidence level 3 or 4

or

Extrapolated evidence from studies rated as 2+

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

External Peer Review
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

A draft of the guideline was widely circulated to over 30 individuals/organisations for peer review.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Definitions for the Levels of Evidence (1++ to 4) and Grades of Recommendation (A to D) are given at the end of the "Major Recommendations" field.

Non-Surgical Management

Pre-hospital Care

D In isolated areas, fluid replacement and catheterisation prior to transport to hospital may be indicated.

Emergency Department Care

C Hospitals treating hip fracture should have formal "fast track" protocols for assessment and admission of people aged 65 years and over.

Fluid Replacement

D After hip fracture, there is a risk of dehydration because of inability to gain access to sufficient fluids. Careful fluid management is required, as there is also risk of fluid overload when fluid replacement is given intravenously.

Pre-operative Traction

A Routine use of temporary leg traction appears to be unnecessary.

Pain Relief

C Use of systematic pain assessment tools helps to avoid undertreatment or overtreatment of pain.

D As frail older people tolerate narcotics poorly, multiple modalities should be considered for analgesia.

D Narcotic use must be carefully titrated and supervised.

B Paracetamol should be preferred to aspirin as their effects are similar milligram for milligram, but paracetamol has fewer side effects.

B Ibuprofen is a non-steroidal anti-inflammatory drug (NSAID) effective in post-operative pain and appears to have lower incidence of adverse effects than other NSAIDs.

B Propoxyphene-containing compounds are not recommended in people aged 65 years and over with hip fracture.

A The use of local analgesic nerve blocks reduces the need for parenteral or oral analgesia.

Oxygen Therapy

C Oxygen should be administered to maintain adequate tissue oxygenation, as indicated by oximetry and clinical status.

Prophylaxis Against Venous Thromboembolism

D Adequate fluid balance and early post-operative mobilisation lower the risk of postoperative venous thromboembolism (VTE).

A Administration of either aspirin or low molecular weight heparin is associated with reduced risk of VTE, but some increase in adverse bleeding events.

A Foot or calf pumps reduce the incidence of VTE, but have some adverse skin effects and compliance problems.

B There is insufficient evidence to confirm the effectiveness of thromboembolism stockings after hip fracture.

Prophylaxis Against Wound and Other Infections

A Antibiotic prophylaxis is effective in reducing wound infection after hip fracture surgery.

Use of Beds, Mattresses and Cushions to Prevent Pressure Sores

A The use of high specification foam bed mattresses and pressure relieving mattresses on operating tables reduces the incidence of pressure sores.

Nutritional Supplementation after Hip Fracture

A Oral multinutrient feeds reduce unfavourable outcome (death or post-operative complication) after hip fracture.

Management of Urinary Retention

D Routine catheterisation after hip fracture is not recommended.

A When urinary retention occurs, intermittent catheterisation results in quicker restoration of normal voiding than indwelling catheterisation.

Management of Dementia/Delirium

C Initial admission data should include a formal measure of cognitive function.

B Early involvement of a geriatric medical team in hip fracture care has been associated with a significant reduction in the incidence of post-operative delirium.

A Active reorientation by provision of clock, calendar, radio, television, and telephone does not appear to reduce post-operative cognitive deterioration.

D Continuity in nursing care may reduce post-operative cognitive deterioration.

Surgical Management

Delay Before Surgery

C Early operation (within 24 hours) for people aged 65 years and over with hip fracture is associated with shorter hospital stay and decreased mortality/morbidity.

Anaesthesia

A Regional anaesthesia for hip fracture surgery is associated with a lower rate of deep venous thrombosis than general anaesthesia, but no significant differences in mortality or other measures of morbidity.

Undisplaced Intracapsular Fractures

B Screws appear to provide better fixation and fracture healing than unthreaded pins.

Displaced Intracapsular Fractures

A Any benefit of open reduction over closed reduction of a femoral neck fracture prior to internal fixation is unproven.

A Evidence for the superiority of arthroplasty compared with internal fixation for displaced intracapsular fractures of the hip, reflected by lower re-operation, is limited.

A Arthroplasty is associated with a lower re-operation rate than internal fixation.

A In arthroplasty after hip fracture, the use of bone cement may be associated with less late pain in the limb.

A Unipolar hemi-arthroplasty appears as effective as bipolar hemi-arthroplasty, and is less expensive.

A There is insufficient evidence to identify whether the use of total hip replacement is superior to the use of hemi-arthroplasty in displaced fracture of the femoral neck.

Extracapsular (trochanteric) Fractures

A Fixation with a sliding hip screw gives superior results to fixed nail plate devices or intramedullary devices.

Surgical Suction Wound Drains

A The usefulness of surgical suction wound drains after hip fracture surgery is unproven.

Post-operative Mobilisation

D People with hip fracture should be mobilised, weight bearing with support as tolerated, as soon as possible after surgery.

Immediate Rehabilitation

A Hospitals providing treatment for people aged 65 years and over with hip fracture should provide formal hip fracture programmes which include early multidisciplinary assessment by a geriatric team.

A Early Supported Discharge Programmes reduce mean hospital stay and are associated with a higher rate of effective return to previous residential status.

Definitions:

Levels of Evidence

1++

High quality meta-analyses/systematic reviews of randomised controlled clinical trials (RCTs), or RCTs with a very low risk of bias

1+

Well-conducted meta-analyses/systematic reviews, or RCTs with a low risk of bias

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2++

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4

Expert opinion

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Grades of Recommendations

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or

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C

A body of evidence consisting principally of studies rated as 2+, directly applicable to the target population, and demonstrating overall consistency of results

or

Extrapolated evidence from studies rated as 2++

D

Evidence level 3 or 4

or

Extrapolated evidence from studies rated as 2+

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The advice on acute management and immediate rehabilitation after hip fracture amongst people aged 65 years and over given in this guideline is based on epidemiological and other research evidence, supplemented where necessary by the consensus opinion of the expert development team based on their own experience.

The evidence supporting the recommendations was derived from systematic reviews and meta-analyses, descriptive reviews where no systematic review were found, randomised controlled trials (RCTs), non-randomised controlled clinical trials (CCTs), cohort studies, case-control studies, and cross-sectional studies. For selected topics, qualitative studies were admissible.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

By following the evidence-based recommendations, most older people suffering hip fracture will be able to access the most effective treatment and return quickly to their previous residence and activities.

POTENTIAL HARMS

Not stated

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

While the guidelines represent a statement of best practice based on the latest available evidence (at the time of publishing), they are not intended to replace the health professional's judgment in each individual case.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

Implementation

The recommendations of this guideline are intended to assist decision-making, and are based on current best evidence. The guideline is not intended to serve as, or be construed as, a standard of health care. Adoption and implementation of the recommendations will be a matter for Accident Compensation Corporation (ACC), District Health Boards (DHBs), Independent Practitioners´ Associations (IPAs), Primary Healthcare Organisations (PHOs), and local provider units to consider. The guideline should provide a basis at local level for protocols, continuing health professional education, audit, and quality assurance activities. Suggestions for audit are described below.

Dissemination

The guideline will be sent to:

- ACC
- colleges and associations representing relevant health professional vocational groups
- members of IPAs
- PHOs
- chief executives and chief medical officers of DHBs
- tertiary education institutions offering health professional programmes
- providers of Aged Care services in the community
- selected others.

Summary guidelines will also be prepared. The guidelines and summaries will be posted on the NZGG website www.nzgg.org.nz and on the ACC website http://www.acc.co.nz

Audit and Performance Indicators

Quality

People aged 65 years and over suffering with hip fracture, service providers, and funders of services to people with hip fracture all have an interest in the quality of the care and management of people with hip fractures. This places a responsibility on service providers to collect information relevant to different perspectives. Suggestions include:

- a minimum data set for collection relating to each individual with hip fracture aged 65 years and over
- additional data for periodic audit (by an internal or external agency).

Suggested data for routine collection

- Basic demographics of people at risk for hip fracture (age and gender)
- Current living status (own home – alone, residential, family support)
- Maternal history of hip fracture
- Smoker status. Number of attempts at quitting
- Diabetes diagnosed. Using insulin?
- Number of strokes
- Number of falls in the previous 12 months
- Previous fractures (hip, wrist, humerus, spine)
- Current medications and dose levels (anticonvulsants, bisphosphonates, corticosteroids, opioids, hormone replacement therapy [HRT], psychotropic drugs, and type Ia antiarrhythmic)
- Use of vitamin D supplements and calcium
- Side effects of medication.

Audit

Audit is a systematic, independent, and documented process for obtaining evidence and evaluating it objectively to determine the extent to which a service, such as a primary health care practice, is meeting best practice standards. In order to assess whether acute management and immediate rehabilitation after hip fracture is being provided effectively, performance indicators should be assessed.

Suggested performance indicators

Process indicators:

- Average length of time in the emergency treatment
- % assessed systematically for pain and provided with appropriate analgesia
- % receiving operation in 12 hrs or less; 12 to 24 hrs; 24 to 36 hrs; more
- % receiving prophylaxis for venous thromboembolism
- % receiving antibiotic prophylaxis
- proportion of people with hip fracture requiring catheterisation who receive intermittent catheterisation
- % receiving early multidisciplinary geriatric assessment before discharge
- % referred to an early supported discharge programme
- average length of hospital stay.

Outcome indicators:

- % who develop thromboembolic complications
- % who develop post-operative wound infection
- % requiring reoperation during primary admission
- % requiring readmission after discharge
- % receiving osteoporotic medications on discharge (with details of the medications prescribed).

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

New Zealand Guidelines Group (NZGG). Acute management and immediate rehabilitation after hip fracture amongst people aged 65 years and over. Wellington (NZ): New Zealand Guidelines Group (NZGG); 2003 Jun. 26 p. [60 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2003 Jun

GUIDELINE DEVELOPER(S)

New Zealand Guidelines Group - Private Nonprofit Organization

SOURCE(S) OF FUNDING

Ministry of Health

GUIDELINE COMMITTEE

Guideline Development Team

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Research and Writing Group Members: William Gillespie, ChM, FRACS, FRCPEd, Orthopaedic Surgeon, Dean, Hull York Medical School (Convenor); John Campbell, MD, FRACP, Professor of Geriatric Medicine, University of Otago Medical School; Melinda Gardner, Mphty, PhD, Physiotherapist, Fall Prevention Research, Northern DHB Support Agency Ltd; Lesley Gillespie, BSc (Soc Sci), MMedSci (Clin Epi), RGN, Trial Search Coordinator for the Cochrane Musculoskeletal Injuries Group,

The University of York, Orthopaedic Nursing, Clinical Epidemiology; Jan Jackson, Fractured Neck of Femur Clinical Nurse Specialist, Auckland District Health Board; Clare Robertson, BSc (Hons), BCom, PhD, Senior Research Fellow, Fall Prevention Research, Economic Evaluation, University of Otago Medical School; Jean-Claude Theis, MD, MChOrth, FRCS Ed, FRACS, Associate Professor of Orthopaedic Surgery, Dunedin School of Medicine; Raymond Jones, Project Coordinator, Otago District Health Board

Consultation Group Members: Marion Robinson (Dunedin); Heather Thomson (Opotiki); Jim Reid (Dunedin)

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Declaration of Competing Interests

John Campbell has received research funding from the Accident Compensation Corporation (ACC).

ENDORSER(S)

Age Concern New Zealand, Inc. - Medical Specialty Society
College of Nurses Aotearoa NZ - Academic Institution
Hospitals Association, Inc. (New Zealand) - Professional Association
New Zealand College of Practice Nurses (NZNO) - Professional Association
New Zealand Home and Health Association, Inc. - Professional Association
New Zealand Nurses Organization - Professional Association
New Zealand Orthopaedic Association - Professional Association
New Zealand Society of Physiotherapists - Professional Association
NZ Geriatric Society - Professional Association
Osteoporosis New Zealand - Medical Specialty Society
Residential Care NZ, Inc. - Professional Association
Royal New Zealand College of General Practitioners - Medical Specialty Society
Women's Health Action - Medical Specialty Society

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the New Zealand Guidelines Group Web site.

Print copies: Available from the New Zealand Guidelines Group Inc., Level 30, Grand Plimmer Towers, 2-6 Gilmer Terrace, PO Box 10-665, Wellington, New Zealand; Tel: 64 4 471 4188; Fax: 64 4 471 4185; e-mail: info@nzgg.org.nz.

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- New Zealand Guidelines Group (NZGG). Guideline summary. Acute management and immediate rehabilitation after hip fracture amongst people aged 65 years and over. Wellington (NZ): New Zealand Guidelines Group (NZGG); 2003 Jun. 4 p. Available from in Portable Document Format (PDF) from the New Zealand Guidelines Group Web site.
- New Zealand Guidelines Group (NZGG). Search strategy. Acute management and immediate rehabilitation after hip fracture amongst people aged 65 years and over. Wellington (NZ): New Zealand Guidelines Group (NZGG); 2003 Jun. 7 p. Available from in Portable Document Format (PDF) from the New Zealand Guidelines Group Web site.

Print copies: Available from the New Zealand Guidelines Group Inc., Level 30, Grand Plimmer Towers, 2-6 Gilmer Terrace, PO Box 10-665, Wellington, New Zealand; Tel: 64 4 471 4188; Fax: 64 4 471 4185; e-mail: info@nzgg.org.nz..

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on June 16, 2004. The information was verified by the guideline developer on July 19, 2004.

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