



Complete Summary

GUIDELINE TITLE

Haemodialysis anticoagulation and adequacy.

BIBLIOGRAPHIC SOURCE(S)

Haemodialysis anticoagulation and adequacy. Nephrology 2005 Oct;10(S4):S78-80.

Haemodialysis anticoagulation and adequacy. Westmead NSW (Australia): CARI - Caring for Australians with Renal Impairment; 2005 Jul. 7 p. [7 references]

GUIDELINE STATUS

This is the current release of the guideline.

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SCOPE

DISEASE/CONDITION(S)

End-stage kidney disease (ESKD)

GUIDELINE CATEGORY

Assessment of Therapeutic Effectiveness
Management
Treatment

CLINICAL SPECIALTY

Family Practice
Internal Medicine

Nephrology
Nursing

INTENDED USERS

Nurses
Physicians

GUIDELINE OBJECTIVE(S)

To review the available evidence for the effects of different intradialytic heparin regimens on hemodialysis adequacy

TARGET POPULATION

Patients with end-stage kidney disease (ESKD) on prolonged hemodialysis

INTERVENTIONS AND PRACTICES CONSIDERED

Management/Monitoring

Monitoring for:

- Hemodialysis adequacy
- Heparin-induced thrombocytopenia
- Thrombosis
- Hemorrhage

Treatment

Hemodialysis anticoagulation

- Standard unfractionated heparin
- Low molecular weight heparins

MAJOR OUTCOMES CONSIDERED

- Urea clearance (Kt/V)
- Urea reduction ratio
- Heparin-induced thrombocytopenia
- Thrombosis
- Hemorrhage

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Databases searched: Medical Subject Headings (MeSH) terms and text words for dialysis were combined with MeSH terms and text words for adequacy and anticoagulation and then combined with the Cochrane highly sensitive search strategy for randomised controlled trials. The search was carried out in Medline (1966 – July Week 2 2004). The Cochrane Renal Group Trials Register was also searched for trials not indexed in Medline.

Date of searches: 27 July 2004.

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

Level I: Evidence obtained from a systematic review of all relevant randomized controlled trials (RCTs)

Level II: Evidence obtained from at least one properly designed RCT

Level III: Evidence obtained from well-designed pseudo-randomized controlled trials (alternate allocation or some other method); comparative studies with concurrent controls and allocation not randomized, cohort studies, case-control studies, interrupted time series with a control group; comparative studies with historical control, two or more single arm studies, interrupted time series without a parallel control group

Level IV: Evidence obtained from case series, either post-test or pretest/post-test

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

Not stated

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

Not applicable

COST ANALYSIS

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

METHOD OF GUIDELINE VALIDATION

Comparison with Guidelines from Other Groups
Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Recommendations of Others. Recommendations regarding hemodialysis anticoagulation and adequacy from the following groups were discussed: Kidney Disease Outcomes Quality Initiative, British Renal Association, Canadian Society of Nephrology, European Best Practice Guidelines, and International Guidelines.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Definitions for the levels of evidence (I–IV) can be found at the end of the "Major Recommendations" field.

Guidelines

- a. No clear differences in haemodialysis adequacy results have been demonstrated using standard unfractionated heparin and low molecular weight heparins. (*Level II evidence, limited data*)
- b. No differences in dialysis adequacy results are achieved using different low molecular weight heparins. (*Level II evidence, limited data*)
- c. There is no clear difference in the risk of thrombosis or haemorrhage with low molecular weight heparins compared with standard heparins, although the results of individual studies have been quite variable. (*Level I evidence*)

Suggestions for Clinical Care

(Suggestions are based on Level III and IV sources)

- Low molecular weight heparins (LMWHs) have been suggested to have a number of other potential benefits with regard to bleeding risk, anticoagulant efficacy, risk of heparin-induced-thrombocytopenia and lipid profile. These benefits remain unproven in patients on dialysis, with inconclusive and sometimes conflicting data available from randomized controlled trials (RCTs).
- LMWHs are simpler and more convenient to use given their once-only bolus method of administration; this may be an important consideration for some centres and some groups of patients. (*Opinion*)
- This convenience is balanced by the substantially higher cost of these agents compared with unfractionated heparin. Until more data directly comparing the two becomes available, individual units should make a decision based on whether the extra cost can be justified by the issues of convenience. (*Opinion*)
- LMWHs have a limited duration of action, so a single bolus injection may not provide adequate anticoagulation for long dialysis sessions (e.g., overnight dialysis).

Definitions:

Levels of Evidence

Level I: Evidence obtained from a systematic review of all relevant randomized controlled trials (RCTs)

Level II: Evidence obtained from at least one properly designed RCT

Level III: Evidence obtained from well-designed pseudo-randomized controlled trials (alternate allocation or some other method); comparative studies with concurrent controls and allocation not randomized, cohort studies, case-control studies, interrupted time series with a control group; comparative studies with historical control, two or more single arm studies, interrupted time series without a parallel control group

Level IV: Evidence obtained from case series, either post-test or pretest/post-test

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Appropriate use of anticoagulants in patients with end-stage kidney disease (ESKD) on hemodialysis
- Low molecular weight heparins are simpler and more convenient to use given their once-only bolus method of administration; this may be an important consideration for some centres and some groups of patients

POTENTIAL HARMS

Substantially higher cost of low molecular weight heparins compared with unfractionated heparin

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

Implementation and Audit

Consideration should be given to ongoing measurement of adequacy (either locally or by database e.g., the Australia and New Zealand Dialysis and Transplant Registry [ANZDATA]) in those patients changed over to low-molecular weight heparin (LMWH).

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Living with Illness

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

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ADAPTATION

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

DATE RELEASED

2005 Oct

GUIDELINE DEVELOPER(S)

Caring for Australasians with Renal Impairment - Disease Specific Society

SOURCE(S) OF FUNDING

Industry-sponsored funding administered through Kidney Health Australia

GUIDELINE COMMITTEE

Not stated

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

All guideline writers are required to fill out a declaration of conflict of interest.

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the [Caring for Australasians with Renal Impairment \(CARI\) Web site](#).

Print copies: Available from Caring for Australasians with Renal Impairment, Locked Bag 4001, Centre for Kidney Research, Westmead NSW, Australia 2145

AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- The CARI guidelines. A guide for writers. Caring for Australasians with Renal Impairment. 2006 May. 6 p.

Electronic copies: Available from the [Caring for Australasians with Renal Impairment \(CARI\) Web site](#).

PATIENT RESOURCES

None available

NGC STATUS

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