



## Complete Summary

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### GUIDELINE TITLE

Calcium.

### BIBLIOGRAPHIC SOURCE(S)

Hawley C, Elder G. Calcium. Westmead NSW (Australia): CARI - Caring for Australasians with Renal Impairment; 2005 Oct. 7 p. [14 references]

Hawley C. Calcium. Nephrology 2006 Apr;11(S1):S198-200.

### GUIDELINE STATUS

This is the current release of the guideline.

## COMPLETE SUMMARY CONTENT

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## SCOPE

### DISEASE/CONDITION(S)

- Chronic kidney disease
- Hypercalcemia
- Hyperparathyroidism

### GUIDELINE CATEGORY

Management  
Treatment

### CLINICAL SPECIALTY

Endocrinology  
Family Practice

Internal Medicine  
Nephrology  
Pediatrics

## **INTENDED USERS**

Physicians

## **GUIDELINE OBJECTIVE(S)**

To explore whether there is an association between serum calcium and all-cause mortality and cardiovascular mortality, in particular while giving consideration to the well-established link between hypocalcaemia and worsening hyperparathyroidism

## **TARGET POPULATION**

Adults and children with chronic kidney disease

## **INTERVENTIONS AND PRACTICES CONSIDERED**

Maintenance of serum calcium level within the normal range (considered but not recommended)

## **MAJOR OUTCOMES CONSIDERED**

- Cardiovascular mortality
- All-cause mortality
- Metabolic bone disease

## **METHODOLOGY**

### **METHODS USED TO COLLECT/SELECT EVIDENCE**

Searches of Electronic Databases

### **DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE**

**Databases searched:** MeSH terms and text words for kidney dialysis were combined with MeSH terms and text words for serum calcium. This search was carried out in Medline (1966 to April Week 3, 2005). The Cochrane Renal Group Trials Register was also searched for calcium trials not indexed in Medline.

**Date of searches:** 3 March 2004. A further Medline search was carried out for the period 1 Feb 2004 to 30 Apr 2005.

### **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**

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 serum calcium levels in patients with chronic kidney disease 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

#### No recommendations possible based on Level I or II evidence

#### Suggestions for Clinical Care

(Suggestions are based on Level III and IV evidence)

- In Stage 5 kidney disease, predialysis albumin-corrected serum calcium should be kept within the normal laboratory reference range, preferably towards the lower end (2.1 to 2.4 mmol/L) provided that keeping serum calcium at this level does not worsen hyperparathyroidism. (Opinion)
- In Stage 3 and 4 kidney disease, serum calcium should be kept within the normal laboratory reference range. (Opinion)
- A predialysis blood sample should be used. (Level III evidence)

#### 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 management of serum calcium levels in patients with chronic kidney disease

### **POTENTIAL HARMS**

Keeping serum calcium at the lower end (2.1 to 2.4 mmol/L) of normal may worsen hyperparathyroidism.

## **IMPLEMENTATION OF THE GUIDELINE**

### **DESCRIPTION OF IMPLEMENTATION STRATEGY**

An implementation strategy was not provided.

## **INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES**

### **IOM CARE NEED**

Living with Illness

### **IOM DOMAIN**

Effectiveness

## IDENTIFYING INFORMATION AND AVAILABILITY

### BIBLIOGRAPHIC SOURCE(S)

Hawley C, Elder G. Calcium. Westmead NSW (Australia): CARI - Caring for Australasians with Renal Impairment; 2005 Oct. 7 p. [14 references]

Hawley C. Calcium. Nephrology 2006 Apr;11(S1):S198-200.

### 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

*Authors:* Carmel Hawley and Grahame Elder

### 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 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**

This NGC summary was completed by ECRI Institute on June 5, 2008. The information was verified by the guideline developer on June 11, 2008.

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