



## Complete Summary

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### GUIDELINE TITLE

Management of unerupted and impacted third molar teeth. A national clinical guideline.

### BIBLIOGRAPHIC SOURCE(S)

Scottish Intercollegiate Guidelines Network. Management of unerupted and impacted third molar teeth. A national clinical guideline. Edinburgh (Scotland): Scottish Intercollegiate Guidelines Network (SIGN); 2000 Mar. 24 p. (SIGN publication; no. 43). [91 references]

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## SCOPE

### DISEASE/CONDITION(S)

Unerupted and impacted third molar teeth

### GUIDELINE CATEGORY

Management

### CLINICAL SPECIALTY

Dentistry  
Emergency Medicine  
Family Practice

### INTENDED USERS

Allied Health Personnel  
Dentists

Health Care Providers  
Hospitals  
Physician Assistants  
Physicians

#### GUIDELINE OBJECTIVE(S)

To assist individual clinicians, hospital departments, hospitals and commissioners of health care to produce local guidelines for the identification of patients who might benefit most from the removal of unerupted third molar teeth and those for whom removal is not necessary.

#### TARGET POPULATION

General population

#### INTERVENTIONS AND PRACTICES CONSIDERED

1. Clinical and radiological assessment of patients for third molar removal.
2. The clinical management of third molar removal, including:
  - Preoperative management
  - Anaesthesia
  - Surgical procedures (e.g., tooth removal and wound toilet completion)
  - Perioperative drug therapy with antibiotics, analgesia and/or steroids
3. The clinical management of common and serious complications associated with third molar removal.
4. Follow up practices and patient education.

#### MAJOR OUTCOMES CONSIDERED

- Patient quality of life
- Symptom relief
- Complications associated with treatment

## 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 initial literature search was carried out in May 1997 and was updated during the course of the guideline development.

The MEDLINE database from 1966 was searched for evidence-based literature. This identified 119 papers. The EMBASE database from 1974 was searched for

evidence-based English language papers relating to human subjects. This identified 313 results.

The evidence-based search criteria included research or evidence-based guidelines, meta-analyses, systematic review or overviews, literature or academic reviews, randomised controlled trials or studies, placebos, random allocation, triple, double or single blind method or masks or procedure, clinical trials, specifically excluding letters, historical articles, reviews of reported cases of multicase reviews or studies.

The search was limited by subject to impacted, unerupted, asymptomatic third or 3rd molar or molars or wisdom tooth or teeth.

In addition a general subject search of the MEDLINE database for English language papers relating to human subjects from 1985 identified 738 citations.

The general subject search for impacted, unerupted, asymptomatic third and 3rd molar or molars or wisdom tooth or teeth, but not limited to the evidence-based criteria listed above, covered mainly specific subject areas.

#### NUMBER OF SOURCE DOCUMENTS

MEDLINE, evidence-based criteria: 119

EMBASE: 313

MEDLINE, general subject search: 738

#### 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

Statements of Evidence

I a

Evidence obtained from meta-analysis of randomized controlled trials.

I b

Evidence obtained from at least one randomized controlled trial.

II a

Evidence obtained from at least one well-designed controlled study without randomization.

II b

Evidence obtained from at least one other type of well-designed quasi-experimental study.

### III

Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies and case studies.

### IV

Evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities.

## METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review

## DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

The Scottish Intercollegiate Guidelines Network (SIGN) carries out comprehensive systematic reviews of the literature using customized search strategies applied to a number of electronic databases and the Internet. This is often an iterative process whereby the guideline development group will carry out a search for existing guidelines and systematic reviews in the first instance and, after the results of this search have been evaluated, the questions driving the search may be redefined and focused before proceeding to identify lower levels of evidence.

Once papers have been selected as potential sources of evidence, the methodology used in each study is assessed to ensure its validity. SIGN has developed checklists to aid guideline developers to critically evaluate the methodology of different types of study design. The result of this assessment will affect the level of evidence allocated to the paper, which in turn will influence the grade of recommendation it supports.

## METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

## DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

The process for synthesizing the evidence base to form graded guideline recommendations is illustrated in the companion document titled "SIGN 50: A Guideline Developer's Handbook." (Edinburgh [UK]: Scottish Intercollegiate Guidelines Network. [SIGN publication; no. 50], available from the SIGN website.

Evidence tables should be compiled, summarizing all the validated studies identified from the systematic literature review relating to each key question. These evidence tables form an important part of the guideline development record and ensure that the basis of the guideline development group's recommendations is transparent.

In order to address how the guideline developer was able to arrive at their recommendations given the evidence they had to base them on, SIGN has introduced the concept of considered judgement.

Under the heading of considered judgement, guideline development groups are expected to summarise their view of the total body of evidence covered by each evidence table. This summary view is expected to cover the following aspects:

- Quantity, quality, and consistency of evidence
- Generalisability of study findings
- Applicability to the target population of the guideline
- Clinical impact (i.e., the extent of the impact on the target patient population, and the resources need to treat them.)

Guideline development groups are provided with a pro forma in which to record the main points from their considered judgement. Once they have considered these issues, the group are asked to summarise their view of the evidence and assign a level of evidence to it, before going on to derive a graded recommendation.

The assignment of a level of evidence should involve all those on a particular guideline development group or subgroup involved with reviewing the evidence in relation to each specific question. The allocation of the associated grade of recommendation should involve participation of all members of the guideline development group. Where the guideline development group is unable to agree a unanimous recommendation, the difference of opinion should be formally recorded and the reason for dissent noted.

The recommendation grading system is intended to place greater weight on the quality of the evidence supporting each recommendation, and to emphasise that the body of evidence should be considered as a whole, and not rely on a single study to support each recommendation. It is also intended to allow more weight to be given to recommendations supported by good quality observational studies where randomised controlled trials (RCTs) are not available for practical or ethical reasons. Through the considered judgement process guideline developers are also able to downgrade a recommendation where they think the evidence is not generalisable, not directly applicable to the target population, or for other reasons is perceived as being weaker than a simple evaluation of the methodology would suggest.

On occasion, there is an important practical point that the guideline developer may wish to emphasise but for which there is not, nor is their likely to be, any research evidence. This will typically be where some aspect of treatment is regarded as such sound clinical practice that nobody is likely to question it. These are marked in the guideline as "good practice points." It must be emphasized that these are not an alternative to evidence-based recommendations, and should only be used where there is no alternative means of highlighting the issue.

## RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

### Grades of Recommendations

Grade A: Requires at least one randomized controlled trial (RCT) as part of a body of literature of overall good quality and consistency addressing the specific recommendation (Evidence levels Ia, Ib).

Grade B: Requires the availability of well conducted clinical studies but no randomised clinical trials on the topic of recommendation (Evidence levels IIa, IIb, III).

Grade C: Requires evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities. Indicates an absence of directly applicable clinical studies of good quality (Evidence level IV).

Good Practice Points: Recommended best practice based on the clinical experience of the guideline development group.

## 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

1. National open meeting discusses the draft recommendations of each guideline.
2. Independent expert referees review the guideline.
3. The Scottish Intercollegiate Guidelines Network (SIGN) Editorial Board reviews the guideline and summary of peer reviewers' comments.

# RECOMMENDATIONS

## MAJOR RECOMMENDATIONS

Note from the Scottish Intercollegiate Guidelines Network (SIGN) and National Guideline Clearinghouse (NGC): In addition to these evidence-based recommendations, the guideline development group also identifies points of best clinical practice in the full-text guideline document.

Removal of Unerupted and Impacted Third Molars is NOT Advisable:

B\* – In patients whose third molars would be judged to erupt successfully and have a functional role in the dentition.

C – In patients whose medical history renders the removal an unacceptable risk to the overall health of the patient or where the risk exceeds the benefit.

B – In patients with deeply impacted third molars with no history or evidence of pertinent local or systemic pathology.

C – In patients where the risk of surgical complications is judged to be unacceptably high, or where fracture of an atrophic mandible may occur.

C – Where the surgical removal of a single third molar tooth is planned under local anaesthesia the simultaneous extraction of asymptomatic contralateral teeth should not normally be undertaken.

#### Removal of Unerupted and Impacted Third Molars IS Advisable:

C – In patients who are experiencing or have experienced significant infection associated with unerupted or impacted third molar teeth.

C – In patients with predisposing risk factors whose occupation or lifestyle precludes ready access to dental care.

C – In patients with a medical condition when the risk of retention outweighs the potential complications associated with removal of third molars (e.g., prior to radiotherapy or cardiac surgery).

C – In patients who have agreed to a tooth transplant procedure, orthognathic surgery, or other relevant local surgical procedure.

C – Where a general anaesthetic is to be administered for the removal of at least one third molar, consideration should be given to the simultaneous removal of the opposing or contralateral third molars when the risks of retention and a further general anaesthetic outweigh the risks associated with their removal.

#### There are Strong Indications for Removal When:

C – There have been one or more episodes of infection such as pericoronitis, cellulitis, abscess formation; or untreatable pulpal/periapical pathology.

B – There is caries in the third molar and the tooth is unlikely to be usefully restored, or when there is caries in the adjacent second molar tooth which cannot satisfactorily be treated without the removal of the third molar.

B – There is periodontal disease due to the position of the third molar and its association with the second molar tooth.

B – In cases of dentigerous cyst formation or other related oral pathology.

B – In cases of external resorption of the third molar or of the second molar where this would appear to be caused by the third molar.

#### Other Indications for Removal:

C – For autogenous transplantation to a first molar socket.

C – In cases of fracture of the mandible in the third molar region or for a tooth involved in tumour resection.

C – An unerupted third molar in an atrophic mandible.

C – Prophylactic removal of a partially erupted third molar or a third molar which is likely to erupt may be appropriate in the presence of certain specific medical conditions.

C – Atypical pain from an unerupted third molar is a most unusual situation and it is essential to avoid any confusion with temporomandibular joint or muscle dysfunction before considering removal.

C – An acute exacerbation of symptoms occurring while the patient is on a waiting list for surgery may be managed by extraction of the opposing maxillary third molar.

C – A partially erupted or unerupted third molar, close to the alveolar surface, prior to denture construction or close to a planned implant.

#### Clinical Assessment

B – Routine regular radiographic examination of unerupted third molars is not recommended.

B - In the presence of any of the signs demonstrated to be associated with a significantly increased risk of nerve injury during third surgery, great care should be taken in surgical exploration and the decision to treat carefully reviewed. The patient should be advised of the risks.

#### Clinical Management

A - Preoperative steroids should be considered (unless contraindicated) where there is a risk of significant postoperative swelling.

#### Common Complications Associated with Treatment

B – Where signs of systemic involvement are present (pyrexia, regional lymphadenopathy) antibiotics should always be prescribed.

C – When a retained root fragment gives rise to symptoms it should be removed.

#### Serious Complications Associated with Treatment

B - Late recognition of nerve damage may require further surgical exploration.

\*Definitions:

Grades of Recommendations:

- A. Requires at least one randomised controlled trial as part of a body of literature of overall good quality and consistency addressing the specific recommendation. (Evidence levels Ia, Ib)

- B. Requires the availability of well conducted clinical studies but no randomised clinical trials on the topic of recommendation. (Evidence levels IIa, IIb, III)
- C. Requires evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities. Indicates an absence of directly applicable clinical studies of good quality. (Evidence level IV)

#### Statements of Evidence

##### I a

Evidence obtained from meta-analysis of randomized controlled trials.

##### I b

Evidence obtained from at least one randomized controlled trial.

##### II a

Evidence obtained from at least one well-designed controlled study without randomization.

##### II b

Evidence obtained from at least one other type of well-designed quasi-experimental study.

##### III

Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies and case studies.

##### IV

Evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities.

#### CLINICAL ALGORITHM(S)

None provided

### EVIDENCE SUPPORTING THE RECOMMENDATIONS

#### TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The specific type of supporting evidence is explicitly identified in each section of the guideline.

There are no well-designed randomized controlled trial evidence to compare the long term outcome of early removal with the deliberate retention of pathology-free third molars.

The available evidence is generally from non-experimental descriptive studies (evidence level III) and the recommendations, although based on the best evidence available, are therefore mostly graded as B or C.

## BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

### POTENTIAL BENEFITS

- Improved identification and appropriate management of individuals with unerupted third molar teeth.
- Reduced variation in management practices. Specifically, it has been reported that conservative treatment with more rigorous adherence to specific indicators for the removal of third molar teeth would reduce surgical cases by up to 60%.
- In select circumstances, timely removal of the third molar reduces the cost to the patient, time off work, and the risks associated with repeated conservative treatment, e.g., with antibiotics.

### POTENTIAL HARMS

- All forms of surgery, whether under local anaesthesia or general anaesthesia, carry some risk of complications – at worst, death – and there is an inevitable and measurable morbidity (including pain, swelling, together with the possibility of temporary or permanent nerve damage, resulting in altered sensation of lip or tongue) associated with the surgical removal of teeth.
- Common complications associated with the surgical removal of third molars include bleeding, bruising, minor infection of soft tissue, retention of root fragment, displacement of tooth, wound dehiscence, and damage to adjacent teeth.
- Serious complications associated with the surgical removal of third molars include fracture of the mandible and/or maxilla, oro-antral communication, retained foreign body (e.g., broken instrument) and/or nerve damage.

Subgroups Most Likely to be Harmed:

There is an increased risk for complications associated with the surgical removal of third molar teeth with increasing age.

## QUALIFYING STATEMENTS

### QUALIFYING STATEMENTS

This guideline is not intended to be construed or to serve as a standard of medical care. Standards of medical care are determined on the basis of all clinical data available for an individual case and are subject to changes as scientific knowledge and technology advance and patterns of care evolve.

These parameters of practice should be considered guidelines only. Adherence to them will not ensure a successful outcome in every case, nor should they be construed as including all proper methods of care or excluding other acceptable methods of care aimed at the same results. The ultimate judgement regarding a particular clinical procedure or treatment plan must be made by the doctor in light of the clinical data presented by the patient and the diagnostic and treatment options available.

Significant departures from the national guideline as expressed in the local guideline should be fully documented and the reasons for the differences explained. Significant departures from the local guideline should be fully documented in the patient's case notes at the time the relevant decision is taken.

## 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

Getting Better

### IOM DOMAIN

Effectiveness

## IDENTIFYING INFORMATION AND AVAILABILITY

### BIBLIOGRAPHIC SOURCE(S)

Scottish Intercollegiate Guidelines Network. Management of unerupted and impacted third molar teeth. A national clinical guideline. Edinburgh (Scotland): Scottish Intercollegiate Guidelines Network (SIGN); 2000 Mar. 24 p. (SIGN publication; no. 43). [91 references]

### ADAPTATION

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

### DATE RELEASED

2000 Mar

### GUIDELINE DEVELOPER(S)

Scottish Intercollegiate Guidelines Network - National Government Agency [Non-U.S.]

### SOURCE(S) OF FUNDING

Scottish Executive Health Department

### GUIDELINE COMMITTEE

Not stated

#### COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Guideline Development Group: Dr James Rennie (Chairman); Mrs Laetitia Brocklebank; Dr Ivor Chestnutt; Mr John Craig; Dr Gareth Davies; Mr Glenn Lello; Dr Helen Marlborough; Professor Khursheed Moos; Dr Jim McDonald; Dr Neil MacLeod; Professor Graham Ogden; Mr Nick Renny; Miss Margie Taylor; Mr Dennis Toppin.

#### FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

All members of the Scottish Intercollegiate Guidelines Network (SIGN) guideline development groups are required to complete a declaration of interests, both personal and non-personal. A personal interest involves payment to the individual concerned, e.g., consultancies or other fee-paid work commissioned by or shareholdings in the pharmaceutical industry; a non-personal interest involves payment which benefits any group, unit or department for which the individual is responsible, e.g., endowed fellowships or other pharmaceutical industry support. SIGN guideline group members should be able to act as independently of external commercial influences as possible, therefore, individuals who declare considerable personal interests may be asked to withdraw from the group. Details of the declarations of interest of any guideline development group member(s) are available from the SIGN executive.

#### GUIDELINE STATUS

This is the current release of the guideline.

This guideline was issued in 2000 and will be reviewed in 2002 or sooner if new evidence becomes available.

Any amendments to the guideline in the interim period will be noted on the [Scottish Intercollegiate Guidelines Network \(SIGN\) Web site](#).

#### GUIDELINE AVAILABILITY

Electronic copies: Available from the [Scottish Intercollegiate Guidelines Network \(SIGN\) Web site](#).

#### AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- Quick reference guide: Management of unerupted and impacted third molar teeth. Scottish Intercollegiate Guidelines Network, 2000 Mar. 2 p. Available from the [Scottish Intercollegiate Guidelines Network \(SIGN\) Web site](#).
- SIGN 50: A guideline developer's handbook. Edinburgh (Scotland): Scottish Intercollegiate Guidelines Network, 2001 Feb. (SIGN publication; no. 50). Electronic copies available from the [SIGN Web site](#).

- Appraising the quality of clinical guidelines. The SIGN guide to the AGREE (Appraisal of Guidelines Research & Evaluation) guideline appraisal instrument. Edinburgh (Scotland): Scottish Intercollegiate Guidelines Network, 2001. Available from [SIGN Web site](#).
- A background paper on the legal implications of guidelines. Edinburgh (Scotland): Scottish Intercollegiate Guidelines Network.

#### PATIENT RESOURCES

None available

#### NGC STATUS

This summary was completed by ECRI on September 11, 2000. The information was verified by the guideline developer on October 17, 2000.

#### COPYRIGHT STATEMENT

This NGC summary is based on the original guideline, which is subject to the guideline developer's copyright restrictions. Please refer to the guideline developer's Web site, <http://www.sign.ac.uk>, for further details.

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The logo for FirstGov, featuring the text "FIRST GOV" in a stylized font with a red star above the "I".

