

# Evidence-based medicine

## - Utfordringer i kardiologi

Asbjørn Jokstad

22/11/2004

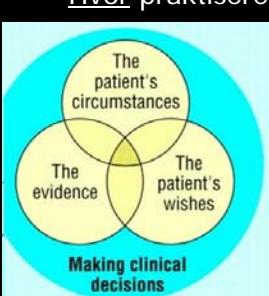
Evidence Based Medicine



The aim of evidence-based medicine is to eliminate the use of ineffective, expensive, or even dangerous medical decision-making

(Rosenberg & Donald, BMJ, 1995)

### Hvor praktiseres EBM?



1. Hvordan skal jeg løse mine daglige kliniske problemstillinger?  
- et praktisk spørsmål  
2. Hvordan kan jeg være rimelig sikker på at det jeg anbefaler og utfører er den beste behandlingen min pasient kan motta?  
- et etisk spørsmål

Svar: I behandlings-situasjoner

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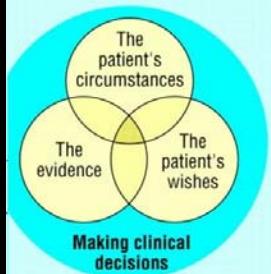
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**Hvor praktiseres EBM?**



The patient's circumstances  
The evidence  
The patient's wishes  
**Making clinical decisions**

1. Hvordan skal jeg løse mine daglige kliniske problemstillinger?  
- et praktisk spørsmål  
2. Hvordan kan jeg være rimelig sikker på at det jeg underviser som lærer ved en undervisningsinstitusjon er det mest korrekte?  
- et etisk spørsmål

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**Evidence Based Medicine**

Evidence-based medicine is the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients.

Its practice requires the integration of best available external clinical evidence with individual clinical expertise

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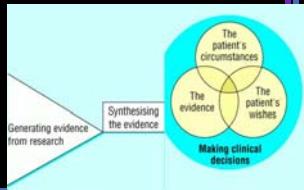
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**Evidence Based Medicine**

*"The conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients."*

Its practice requires the integration of best available external clinical evidence (from systematic research) with individual clinical expertise



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Hvor befinner du deg vitenskapsfilosofisk?

Diskusjonsnivå	Filosofisk standpunkt	
Ontologisk (hva vet vi?- hva er?)	Realist	Anti-realist Postmodernist?
Epistemologisk (hva kan vi vite?- hvordan kan vi vite?)	Rasjonalist	Empirist

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Hvordan praktiseres EBM?

1. Generere konkrete kliniske problemstillinger  
Spørsmål om terapi, prognose og bivirkninger
2. Mest mulig effektivt finne evidens
  - Søkning i databaser: teknikker og muligheter
  - Identifisere kliniske studier som er relevante
3. Bedømme validitet, resultat og anvendelighet
4. Anvende best evidens i daglig praksis

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Hvordan praktisere EBM?

1. Generere konkrete kliniske problemstillinger  
Spørsmål om terapi, prognose og bivirkninger

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Hva vil jeg anbefale? ..eller.. Er det konsensus om det optimale valg av:	Kariesetiologi Relevans av kaosteorier? Drikkevaner?
<b>Karies - Forebyggning</b> 1. Alternative fluortilførsler? 2. Vannfluoridering? 3. Hvilket munnskyllevann? 4. Hvor lenge skal vi pusse tennene? ... og med hva? 5. Verdien av fissurforsegling? 6. Verdi/innhold i fob veiledering om diett/munnhygienitiltak?	Kariesdiagnostikk Klinisk kriterier? Diagnodent?
<b>Kariesprognose</b> Kariesprediksjonstverdi? E.g. GC/Ivooclars <b>Kariesterapi</b> Holdbarhet? Nye teknologier Ozon? Carisolv? 9.(?) generasjon bond?	
<b>Forebyggning, Diagnostikk, Prognose &amp; Terapi av Dentinsensitivitet?</b> Tannerosjoner?	

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### Hvordan praktisere EBM?

1. Generere konkrete kliniske problemstillinger  
Spørsmål om terapi, prognose og bivirkninger
2. Mest mulig effektivt finne evidens  
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Selv om man kan betegne seg som en faglig dyktig tannlege er det til enhver tid en stor mengde ny informasjon innenfor odontologi som vi er ukjente med.

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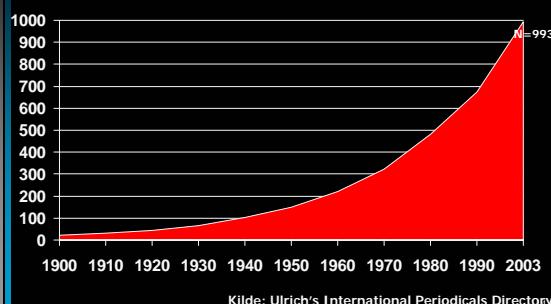
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## Informasjonseksplosjon

Enorm vekst av vitenskapelige publikasjoner  
i biomedisin - inkludert i odontologi

1. Antallet helsepersonnel og forskere stiger  
og  
Antall publikasjoner er nøkkel til pengar og ære
2. Antall publikasjoner fordoblet hvert 10. år
3. Antall tidsskrift øker kontinuerlig

## Odontologiske fagtidsskrift



Hvem står bak denne  
flommen av ny  
informasjon innen  
odontologi?



## The clinical practitioners



- Single handed GPs/ specialists in teams; secondary/tertiary care
- Great diversity of experience, interest and capacity
- Draw on a panoply of experience
- Pragmatism: what works - what creates problems

16

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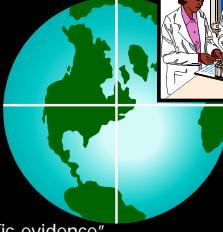
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## The researchers



- Creates "scientific evidence"
- Formulation of ideas, hypotheses, study design, data collection
- Peer review, internal/external validity, debates within paradigms
- Report findings in probabilities, not absolutes

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## The appraisers of evidence for clinical practice



- Epidemiologists, health economists, statisticians, social scientists, and clinicians
- Collect, abstract and appraise practice related knowledge
- Debates about value and balance between consensus and evidence, rigour of data and application of statistics

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Developers of local guidelines and protocols

- Local consensus, sometimes on national guidelines
- Clinical specialists seeking ways to influence peers

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A rapidly changing society

- The production of new knowledge is at maximum in historical context
- Incessant replacements of established ideas and concepts

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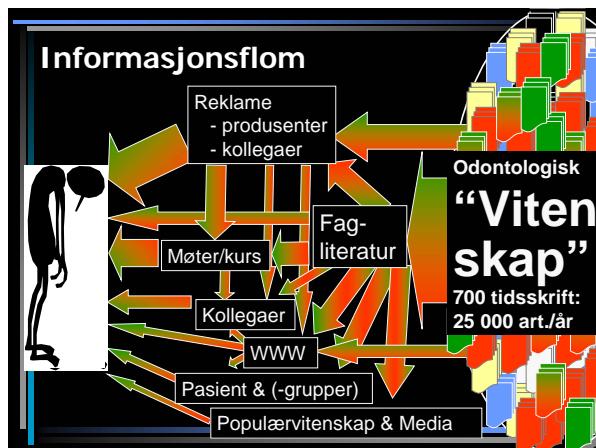
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Evidens basert medisin - strategi  
Hvordan vi skal forholde  
oss til kontinuerlige  
forandringer . . .  
...uten at vi noengang får  
vite det riktige svaret

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Vi må ikke bare ta stilling til  
**mengden av informasjon**  
**vi mottar**  
**men også**  
**kvaliteten på denne**  
**informasjonen.**

23

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Where search for scientific  
information on cardiology research?

1. FDI Guidelines Database
2. Cochrane Library
3. ISI Web of Knowledge
4. Medline
  1. Pubmed
  2. Ovid
5. Other databases

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The screenshot shows a Microsoft Internet Explorer window displaying the FDI World Dental Federation website. The URL in the address bar is [www.fdiworlddental.org](http://www.fdiworlddental.org). The page content includes a search bar at the top, followed by a section titled "Nasjonale og internasjonale retningslinjer, prinsippvedtak, uttalelser, mottorapporter og -referat. Meta-analyser." Below this are several small flags representing different countries. A table titled "Painmedisinske problemer" lists various dental topics such as "Akutt- & nadbehandling", "Endodonti", "Errosjon & tannvitstasje", and "Handicappede pasienter", each with a link to the FDI website.

The screenshot shows a Microsoft Internet Explorer window displaying the Cochrane Library website. The URL in the address bar is [www.cochranelibrary.org](http://www.cochranelibrary.org). The page content includes a search bar at the top, followed by a section titled "The Cochrane Database of Systematic Reviews". It lists several databases: "Database of Abstracts of Review of Effects" (4421), "The Cochrane Central Register of Controlled Trials (2004, Issue 1)" (2385), "The Cochrane Database of Methodology (Review)" (11), "The Cochrane Methodology Register (CMR) (2)", and "About the Cochrane Collaboration (4 ver 0.85)". On the right side, there is information about the Cochrane Library, including the logo "the cochrane library", a brief description of its purpose, and links to "About the Cochrane Library", "Using The Cochrane Library", "Contact and Feedback", "Technological Support", "Reviewer's Handbook", "Reviewer's Handbook Glossary", and "Release Notes".

The screenshot shows a Microsoft Internet Explorer window displaying the PubMed Clinical Queries website. The URL in the address bar is [www.ncbi.nlm.nih.gov/databases/query/cclinical.html](http://www.ncbi.nlm.nih.gov/databases/query/cclinical.html). The page content includes a sidebar with various filters like "Adult", "Pediatric", "Full Text", "Cited in PubMed", "Cited in PMC", "MeSH", "PMID", "Author", "Journal", "Date", "NCBI Taxonomy", "NCI Thesaurus", "Chemical Substances", "Clinical Trials.gov", "PubMed Central", and "Privacy Policy". The main area has a heading "Select from two filters to limit your retrieval. Choose either Clinical Queries or Systematic Reviews. Enter your search topic in the box below and click On." Below this, there is a note: "Note: If you want to retrieve everything on a subject area, go to the PubMed homepage. These filters are intended to limit retrieval to citations to articles conducted with specific methodologies including those that report applied clinical research." There is a section titled "Clinical Queries using Research Methodology Filters" with a note: "These search filters, based on the work of [Hepner HL et al.](#), are intended for clinicians. Four categories are provided, and the emphasis may be more 'inclusive' (i.e., more relevant article but probably some less relevant ones) or more 'specific' (i.e., mostly relevant article but probably excluding a few). See the [Help Table](#) for details." A red arrow points to the "Systematic Reviews" checkbox. To the right of the search box, it says "n= 9690 3282 6768 2201 538 258 457 310". At the bottom left, a red box contains the number "N=296".

## Hvordan praktisere EBM?

1. Generere konkrete kliniske problemstillinger  
Spørsmål om terapi, prognose og bivirkninger
2. Mest mulig effektivt finne evidens
  - Søkning i databaser: teknikker og muligheter
  - Identifisere kliniske studier som er relevante
3. Bedømme validitet, resultat og anvendelighet

28

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## Tre hovedspørsmål

1. Er studien gyldig (valid)?
2. Hva er resultatene ?
3. Er resultatene relevante for mitt problem?

29

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## 1 Er studien gyldig (valid)?

- Er problemstillingen klar?
- Benyttes det en hensiktsmessig studiedesign for å besvare problemstillingen?
- Ble studien utført reliably?
- Kan du følge hva forfatterne gjorde?

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## Studiedesign på kliniske studier og terminologi = Babelsk forvirring?

analytical study	ecological study	prospective cohort study
case control study (89)	etiological study	prospective follow-up study, observational or experimental
case serie	experimental study	prospective study (67)
case study, case report	explorative study	quasi-experimental study
cause-effect study	feasibility study (79)	randomized clinical trial, RTC
clinical trial (79)	follow-up study (67)	randomized controlled trial, RCT (89)
cohort study (89)	historical cohort study	retrospective cohort study
cohort study with historical controls	incidence study	retrospective follow-up study
controlled clinical trial (95)	intervention study	retrospective study (67)
cross-sectional study (89)	longitudinal study (79)	surveillance study
descriptive study	N=1 trial	survey, descriptive survey
diagnostic meta-analysis	non-randomized trial with contemporaneous controles	therapeutic meta-analysis
diagnostic study	non-randomized trial with historical controles	trohoc study
double blind randomized therapeutical trial with cross-over design	observational study	
	prevalence study	

| Kliniske studier og design (Medline termer): |  |

- (Kasuspresentasjon/kasusserie)
- Tverrsnittsstudie
- Kasus-kontrollstudie
- Kohortstudie
- Randomisert kontrollert studie

Kritisk analyse av studier - kriterier	
• Finnes for:	
– behandlingsvalg	
– terapi	
– diagnose	
– screening	
– prognose	
– kausalstudier	
– kvalitetsevaluering	
– økonomiske analyser	

**Eksempel: Terapeutisk effektivitet - sammenheng mellom studieddesign og bevisstyrke?**

22/11/2004 34

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Bevisstyrke på terapeutisk effektivitet	
<b>US Agency of Health Care Policy &amp; Research, 1992</b>	<b>EBM Working Group, McMaster University 1993</b>
Ia. Meta-analysis of randomized controlled trials	Systematic reviews and meta-analyses
Ib. At least one randomized controlled trial	RCT with definite results (ie. result with CI that do not overlap the threshold clinically significant effect)
IIa. At least one well-designed controlled study without randomization	RCT with non-definite results (ie. a point estimate that suggests a clinically significant effect, but with CI overlapping the threshold for this effect)
IIb. At least one other quasi-experimental study	Cohort studies Case-control studies Cross sectional studies Case reports
III. Well-designed non-experimental descriptive studies, such as comparative studies, correlation studies and case-control studies.	
IV. Expert committee reports or opinions and/or clinical experience of respected authorities	

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Bevisstyrke på terapeutisk effektivitet	
<b>Richards &amp; Lawrence, Br Dent J 1995;175:270</b>	<b>Sackett et al., Editorial. EBM 1995;1:4</b>
•at least one published systematic review of multiple well designed randomised controlled trials	(I-1) Based on 2 or more well designed randomised controlled trials (RCT), meta-analyses, or systematic reviews. (I-2) Based on a RCT.
•at least one published properly designed randomised controlled trial of appropriate size and in an appropriate clinical setting	(II-1) Based on a cohort study. (II-2) Based on a case controlled study. (II-3) Based on a dramatic uncontrolled experiment.
•published well-designed trials without randomisation, single group pre-post, cohort, time series or matched case controlled studies	(III) respected authorities, expert committees (consensus)etc.
•well-designed experimental studies from more than one centre or research group	(IV) ...someone once told me
•opinions of respected authorities based on clinical evidence, descriptive studies or reports of expert consensus committees	

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## Bevisstyrke på terapeutisk effektivitet

CEBM, 1999. (<http://cebm.jr2.ox.ac.uk/docs/levels.html>)

- 1a. Systematic review (with homogeneity of RCTs)
  - 1b. Individual RCT (with narrow confidence interval)
  - 1c. All or none
  - 2a. Systematic review (with homogeneity) of cohort studies
  - 2b. Individual cohort study (and low quality RCT; e.g., <80% follow-up)
  - 2c. "Outcomes" research
  - 3a. Systematic review (with homogeneity) of case-control studies
  - 3b. Individual case-control study
  4. Case-series (and poor quality cohort and case-control studies)
  5. Expert opinion without explicit critical appraisal, or based on physiology, bench research or "first principles"

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## 2. Hva er resultatene?

- Er resultatene presentert på en klar og enkel måte?
  - Er det en klar konklusjon?
  - Er konklusjonen viktig klinisk?

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3. Er resultatene relevante for mitt problem?

- Er deltakerne tilnærmet like mine egne?
  - Er det realistisk at jeg kan utføre behandlingen på mine pasienter?

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Hvordan praktisere EBM?

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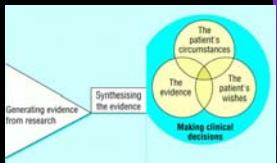
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Hvordan utøve evidens-basert praksis?

1. Lære selv hvordan evidens-basert odontologi utføres
  - Bøker
  - Seminarer
  - Internett
    - Online link-lister
    - Online kurs
    - Online ressurser



41

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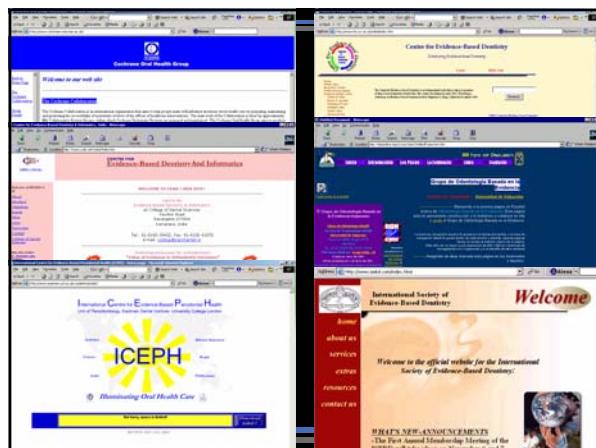
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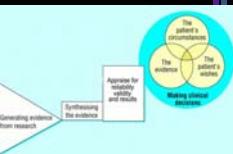
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## Hvordan utøve evidens-basert praksis?

1. Lære selv evidens-basert odontologi
2. Søke og anvende evidens-baserte sammendrag utarbeidet av andre.
1. Fagtidsskrift som kritisk evaluerer primærstudier
2. Systematiske oversikter
  - Cochrane Collaboration
  - Nat. Health Serv. R&D
  - Litteratur





**Evidence-Based Dentistry**

A central resource for the most cutting-edge knowledge in determining the evidence-based approach in dentistry today. A *British Dental Journal* and *Nature Publishing Group* publication.

**View tables of contents**

**Abstracts**

**Evidence-Based Dentistry** is a journal for general dental practice. It keeps ahead of the best research in dentistry and highlights aspects of clinical dentistry that are important for practitioners needing to keep up-to-date with awareness of new applications of dentistry.

\*Please click [here](#) for the full homepage of this journal.

**Vol 31:**  
Benchmarking the dental controlled literature on wisdom teeth... (CONTINUE)

**Statement of purpose and methods**

**EVIDENCE-BASED DENTAL PRACTICE**

Table of Contents for  
July 2011 / Volume 3 Number 1

**Free Full Text Paid items**

**Evidence-based information is not a conspiracy to limit insurance benefits**



## Hvordan utøve evidens-basert praksis?

3. Akseptere og anvende kliniske retningslinjer som er baserte på evidens-baserte prinsipper

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AHRQ Agency for Healthcare Research and Quality

DARE NHSEED HTA

Evidensbasert TANDVÅRD

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### KARIES – Forebygging

1. Diett?
2. Alternative fluorbehandlinger?
3. Vannfluoridering?
4. Hvilket munnskyllevann?
5. Hvor lenge skal vi pusse tennene? ... og med hva?
6. Verdien av fissurforsiegling?
7. Betydningen av oligomorer?
8. Betydningen av tannforebyggende tiltak generelt?

Sverige  
Skottland  
USA

Populasjonsnivå?  
Individnivå?

48

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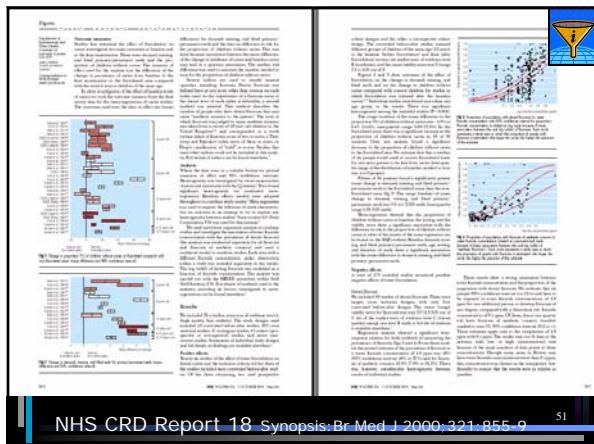
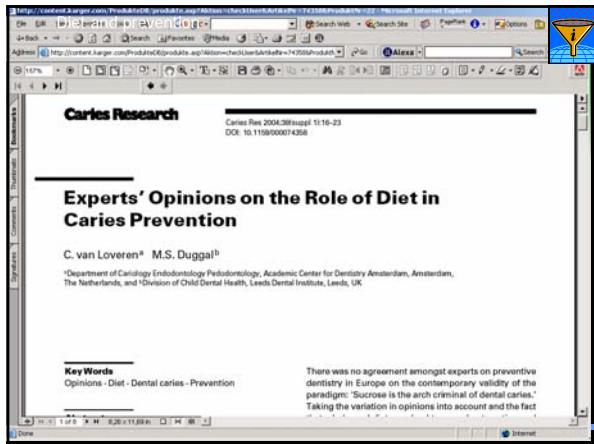
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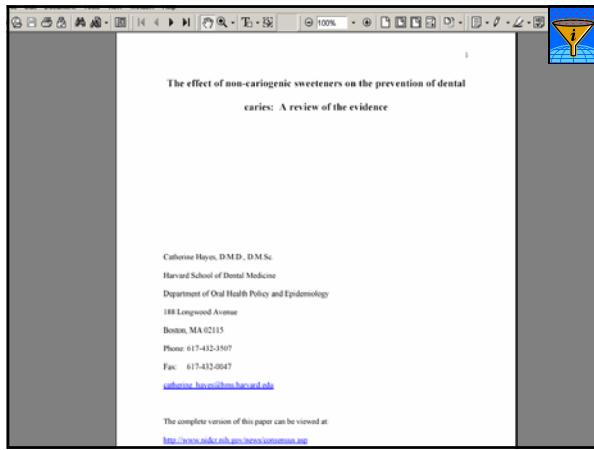
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NHS CRD Report 18 synopsis: Br Med J 2000; 321: 855-9



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Sammanfattning av SBU:s rapport om:  
**Att förebygga karies**  
En systematisk litteratuöversikt  
Oktober 2002

Rapporten har utarbetats av:

Astrid Anna Holm  
Carin Brattberg  
Susanna Juhola  
(projektkoordinator)  
Helen Edelquist  
Göran Hammarby  
Carina Karlsson  
Ebbe Lægreid  
Peter Logström

Ingrid Skjøn  
Görel Sundström  
Andrea Ståhl  
Lars Brönmark  
Lars Ekstrand  
(projektkoordinator)  
Regina Törler  
Kajsa Wesslen

Marcusgruppen har granskat av:

Dagla Karlsson  
Eva Jansson  
Sten Sandström  
Paul Rydlin  
Eva Wiktorin

Rapport - Att förebygga karies • Typ: En systematisk litteratuöversikt  
SBU:s Att Rikta sig mot • Rapport 503 • Uppdragsnr 2002-1

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SIGN  
Scottish Intercollegiate  
Guidelines Network

Preventing Dental Caries  
in Children at High Caries Risk  
Targeted prevention of dental caries in the permanent teeth of 6-15 year olds presenting for dental care

please note: 01.01.2001-15.01.2002  
This guideline was issued in 2000 and will be reviewed in 2002 or sooner if new evidence becomes available. Any updates to the guideline in the interim period will be made on the SIGN website. Comments are invited to allow for review and update. All comments and requests for further background information regarding the guideline should be sent to: SIGN Executive, Royal College of Physicians, 9 Queen Street, Edinburgh EH2 1QJ. Tel: 0131 225 7324, Fax: 0131 225 1769, e-mail: [sign@rcpe.ac.uk](mailto:sign@rcpe.ac.uk), [www.sign.ac.uk](http://www.sign.ac.uk)

December 2000

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<p><b>A Comparison of Selected Evidence Reviews and Recommendations on Interventions to Prevent Dental Caries, Oral and Pharyngeal Cancers, and Sports-Related Craniofacial Injuries</b></p> <p>Barbara F. Gooch, DMD, MPH; Benedict I. Truelove, DDS, MPH; Susan O. Griffin, PhD; William G. Kohn, DDS, EdD; Barbara Sorenson, DDS, MA; Helen C. Gott, PhD; Alice M. Horowitz, PhD; Carolyn A. Evans, PhD, DDS, MPH</p> <hr/> <p><b>Medical Subject Headings:</b> MSH: cariogenic agents, community dentistry, community-based medicine, dental services, decision making, dental caries, evidence-based medicine, facial injuries, fluoridation, intervention studies, mouthguards, mouth protectors, oral health, pharyngeal neoplasms, pit and fissure sealants, practice guidelines, preventive dentistry, preventive health services, public health dentistry, public health practice, review literature, tooth injuries</p> <hr/> <p><b>Introduction</b></p> <p>The reports in this supplement<sup>1,2</sup> represent the work of the Task Force on Community Prevention, which is part of the National Institute of Dental and Craniofacial Research. The Task Force is a nongovernmental group of national, regional, and local public health and prevention services experts supported by public and private partners.</p> <p>This report is one in a series of reports from the Task Force on the <i>Community Preventive Services in the Community Guide</i>. Previously published topics include vaccine-preventable diseases, tobacco control, and reducing injuries to people through occupational, dental, and sports-related activities. A full listing of published articles can be found at the website (<a href="http://www.ahrqcommunityguide.org">www.ahrqcommunityguide.org</a>).</p> <p>In addition to expanding the <i>Community Guide</i>, the Task Force has developed a new set of recommendations for dental caries prevention, oral and pharyngeal cancer prevention, and sports-related craniofacial injury prevention. These interventions have been developed to provide guidance to personnel in state and local health departments, partners of health care, people responsible for public health programs, policymakers, dental payers, and others who have an interest in or responsibility for improving oral and related general health in all segments of the population.</p> <p>This report is a comparison of selected evidence reviews and guidance to personnel in state and local health departments, partners of health care, people responsible for public health programs, policymakers, dental payers, and others who have an interest in or responsibility for improving oral and related general health in all segments of the population.</p> <p>This report compares the results of selected evidence reviews and evidence reviews available as of August 2001, and provides an overall review of the current evidence base for each intervention. The interventions evaluated by the Task Force are those interventions designed to prevent dental caries (through community water fluoridation, school-based or school-linked programs, dental sealants, pit and fissure sealants, and community-wide promotion programs), oral and pharyngeal cancers (and prevention programs), oral and pharyngeal cancers, and sports-related craniofacial injuries.</p>	
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<p><u>KARIES -</u></p> <p>Etiologi</p> <ul style="list-style-type: none"> <li>• Kaosteorier?</li> <li>• Drikke?</li> </ul>	<p><u>Forebyggning, Diagnose, Prognose &amp; Terapi av:</u></p>
<p><u>Screening/Diagnostikk</u></p> <ul style="list-style-type: none"> <li>• Recall - betydning?</li> <li>• Kariesdiagnostikk           <ul style="list-style-type: none"> <li>Rotkaries?</li> <li>Diagnodent?</li> </ul> </li> </ul>	<p>Dentinsensitivitet Tannvev &amp; erosjon</p>
<p><u>Prognose</u></p> <ul style="list-style-type: none"> <li>• Kariesprediksjonsverdi</li> <li>GC</li> </ul> <p><u>Terapi</u></p> <ul style="list-style-type: none"> <li>• Rotkaries</li> <li>• Fyllingers holdbarhet</li> <li>• Nye teknologier           <ul style="list-style-type: none"> <li>Ozon</li> <li>Carisolv</li> </ul> </li> </ul>	<p><u>Populasjonsnivå?</u></p> <p><u>Individnivå?</u></p>
	<p>56</p>

The clinical effectiveness and cost-effectiveness of routine dental checks: a systematic review and economic evaluation

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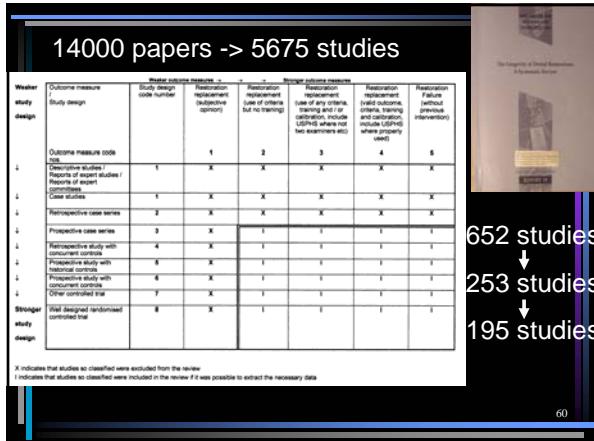
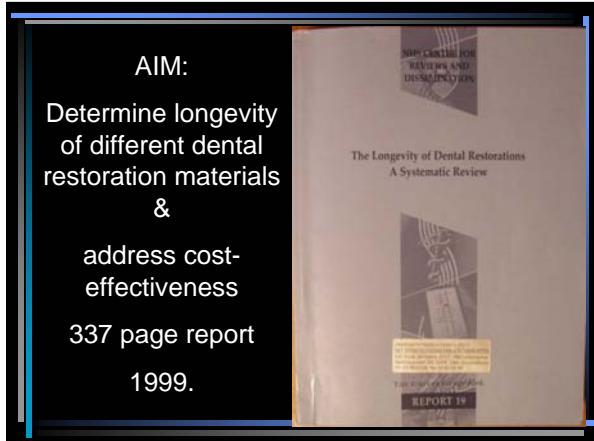
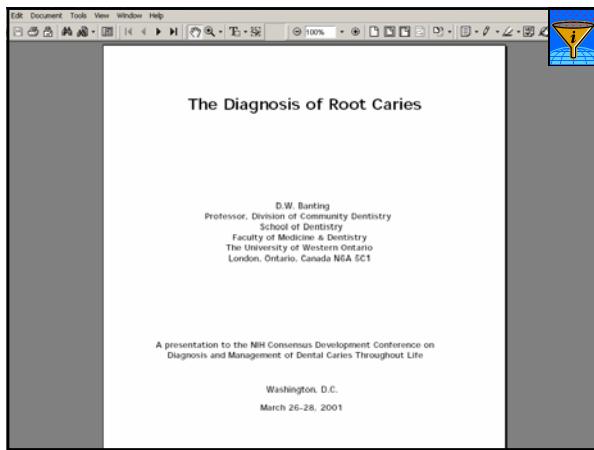
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**I: Am J Dent 2002 Feb;15(1):26-30** Related Articles, Books, Clinical

Evaluation of published clinical studies for reproducibility, comparability and adherence to evidence-based methods.

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**PURPOSE:** To evaluate the "Materials and Methods" of long-term clinical studies in relation to documentation, reproducibility and comparability with and without employing the systematic methods of evidence-based medicine. **MATERIALS AND METHODS:** The "Materials and Methods" sections in 45 clinical long-term published studies of direct posterior resin-based composite restorations were evaluated for their use of systematic methods of evidence-based medicine. The search was limited to the years 1990–1999 and key words "clinical study-evaluation", "comparative", "in vivo", "posterior, Class II/L, composite, restoration". Special attention was directed to comparisons of the underlying documentation, descriptions of the operative techniques used, and their reproducibility. In addition, an evidence-based search was carried out using the Internet PubMed interface for MEDLINE, using identical synonyms, to identify studies with high levels of quality of evidence. Documentation, reproducibility, and comparability of "Materials and Methods" were also evaluated. **RESULTS:** Results revealed how difficult it is to interpret results based on tenuous premises, subjective standards, and inadequate study designs. Only one article could be identified when the search was limited to "humans" and "randomized clinical trials". None of the articles, even when fulfilling the highest quality of evidence, showed sufficient or satisfactory quality of reproducibility in their descriptions in Materials and Methods.

PMID: 12074225 [PubMed - in process]

Clinical Decision Making for Caries Management in Root Surfaces

A Report for the NIH Consensus Development Conference on Diagnosis and Management of Dental Caries Throughout Life

March 26-28, 2001  
Natcher Conference Centre,  
National Institutes of Health  
Bethesda MD USA

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New and Emerging Technology Briefing

National Horizon Scanning Centre

HealOzone for tooth decay (primary carious lesions)

January 2003

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**Summary**  
HealOzone was shown to treat early decay (primary carious lesions). The only study using HealOzone found a significant reduction in primary root caries lesions (PRCL) in patients with a history of PRCL. HealOzone is a dental device which uses a combination of ultraviolet light and ozone to sterilise and disinfect dental instruments and surfaces. It has been developed to reduce the transmission of cross-infection during and following dental procedures.

**Device:** [www.healozone.com](#) developed by Koral Dental Ltd.

**Healthcare:** London is the UK capital. Since 2003, London is a local member of the European Union.

**Market:** - **Carious lesions:** £2 and £70 per treatment cost of £2000 for which less approximately one month. The cost of the unit is £10,000 (including VAT) with annual maintenance costs of £1000. The cost of the device is £1000 and the cost of ozone is included VAT.

**Implementation and integration:** There are no relevant factors.

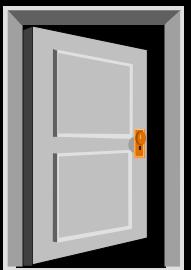
- **Healthcare providers:** HealOzone dental powder canisters are a different way to sterilise dental instruments and the cost of ozone is relatively low. Ozone is stable and provides a long shelf life. HealOzone canisters are available from the manufacturer. HealOzone also provide training and support for staff.
- **Healthcare providers:** HealOzone dental powder canisters are a different way to sterilise dental instruments and the cost of ozone is relatively low. HealOzone also provide training and support for staff.
- **Healthcare providers:** The initial cost and maintenance costs of HealOzone are relatively high. However, the cost of ozone is relatively low and savings for many practices are likely to be considerable.

**Background**

Tooth decay (primary carious lesions) is one of the most common diseases occurring for dentists on a daily basis. In children, caries is the most common disease and problem for dentists on a daily basis, in adolescents, it is the second most common disease and problem for dentists on a daily basis. The main cause of tooth decay is the acid produced by the bacteria that live in the mouth. These bacteria produce acid as they break down carbohydrates found in food and drink. This acid attacks the enamel of the teeth. After periods of time the acid attacks the enamel of the teeth causing a hole in the tooth called a cavity.

January 2003

Kanskje kan  
dette nye  
“EBM” hjelpe  
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