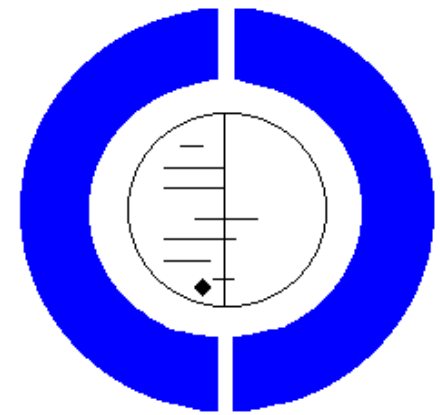


Evidence-based
medicine

-

Utfordringer i
kariologi

Asbjørn Jokstad

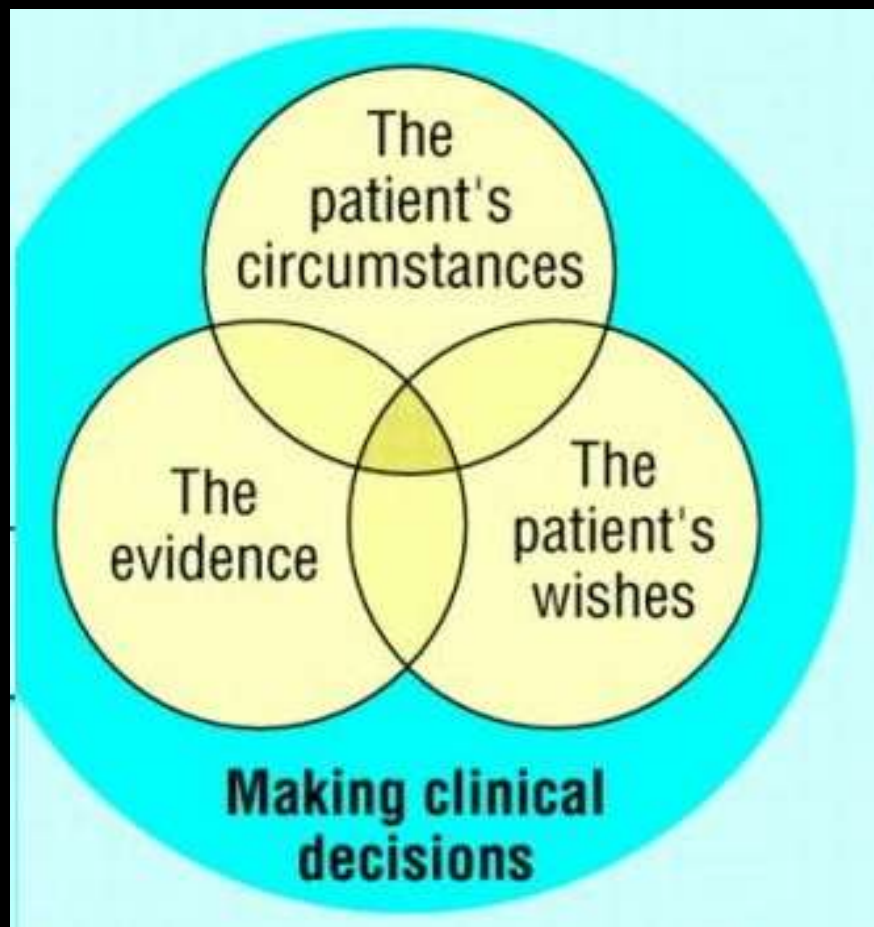


Evidence Based Medicine

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?

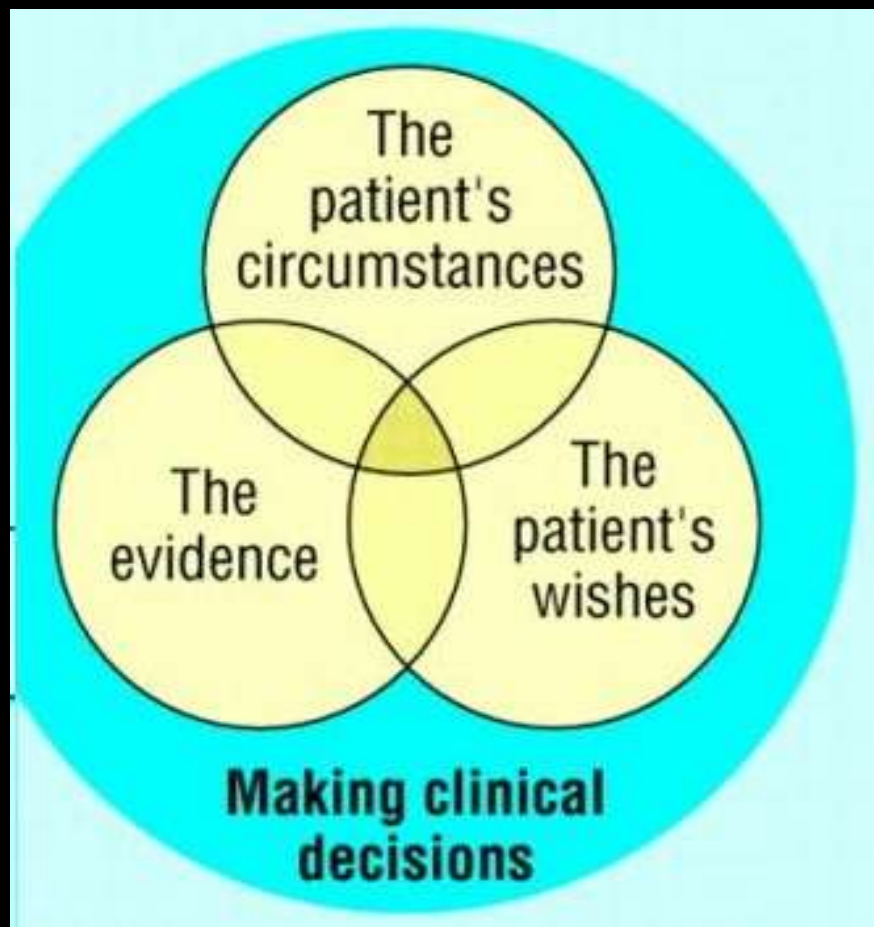
- et praktisk spørgsmål

2. Hvordan kan jeg være rimelig sikker på at det jeg anbefaler og udfører er den bedste behandlingen min pasient kan motta?

- et etisk spørgsmål

svar: I behandlings-situasjoner

Hvor praktiseres EBM?



1. Hvordan skal jeg løse mine daglige kliniske problemstillinger?

- et praktisk spørgsmål

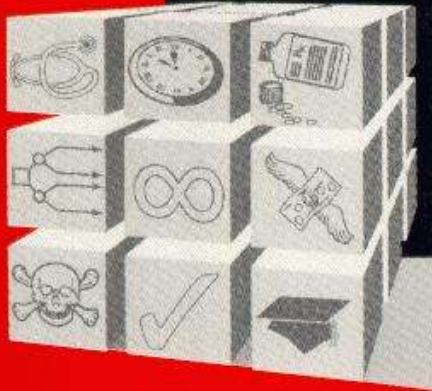
2. Hvordan kan jeg være rimelig sikker på at det jeg underviser som lærer ved en undervisningsinstitusjon er det mest korrekte?

- et etisk spørgsmål

Evidence-based
MEDICINE

How to Practice & Teach EBM

David L. Sackett
W. Scott Richardson
William Rosenberg
R. Brian Haynes



CHURCHILL LIVINGSTONE

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

Evidence Based Medicine

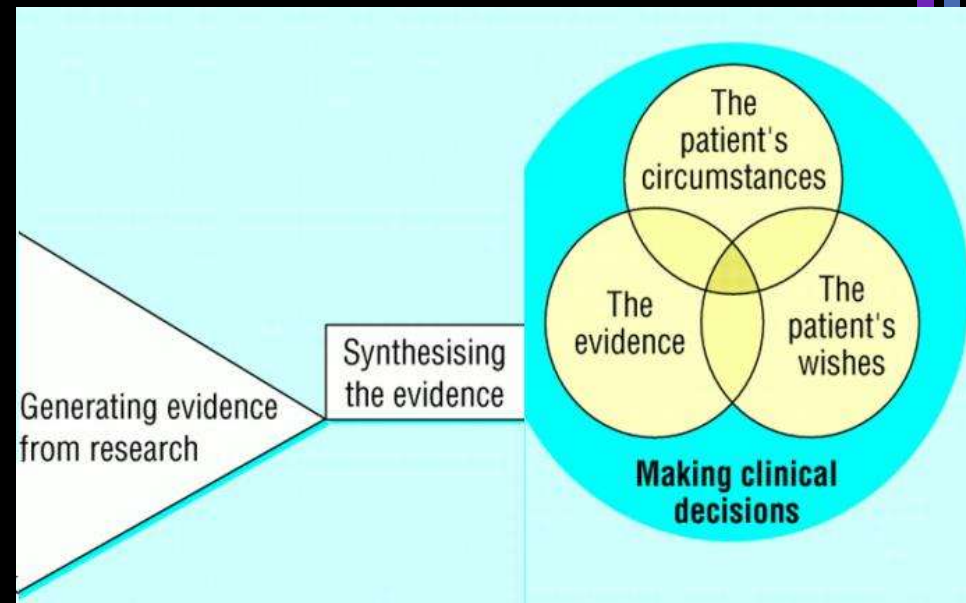
“The conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients.”

Its practice requires the integration of best available external clinical evidence

(from systematic research)

with

individual
clinical expertise



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

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

Hvordan praktisere EBM?

1. Generere konkrete kliniske problemstillinger

Spørsmål om terapi, prognose og bivirkninger

Hva vil jeg anbefale? ..eller..
Er det konsensus om det optimale valg av:

Karies - Forebygging

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 veiledning om diett/munnhygienetiltak?

Kariesetiologi

Relevans av kaosteorier?
Drikkevaner?

Kariesdiagnostikk

Klinisk kriterier?
Diagnodent?

Kariesprognose

Kariesprediksjonsverdi?
E.g. GC/Ivoclar

Kariesterapi

Holdbarhet?
Nye teknologier
Ozon?
Carisolv?
9.(?) generasjon bond?

Forebygging, Diagnostikk, Prognose & Terapi av
Dentinsensitivitet?
Tannerosjoner?

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

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.

Informasjonseksplasjon

Enorm vekst av vitenskapelige publikasjoner i biomedisin - inkludert i odontologi

1. Antallet helsepersonnel og forskere stiger

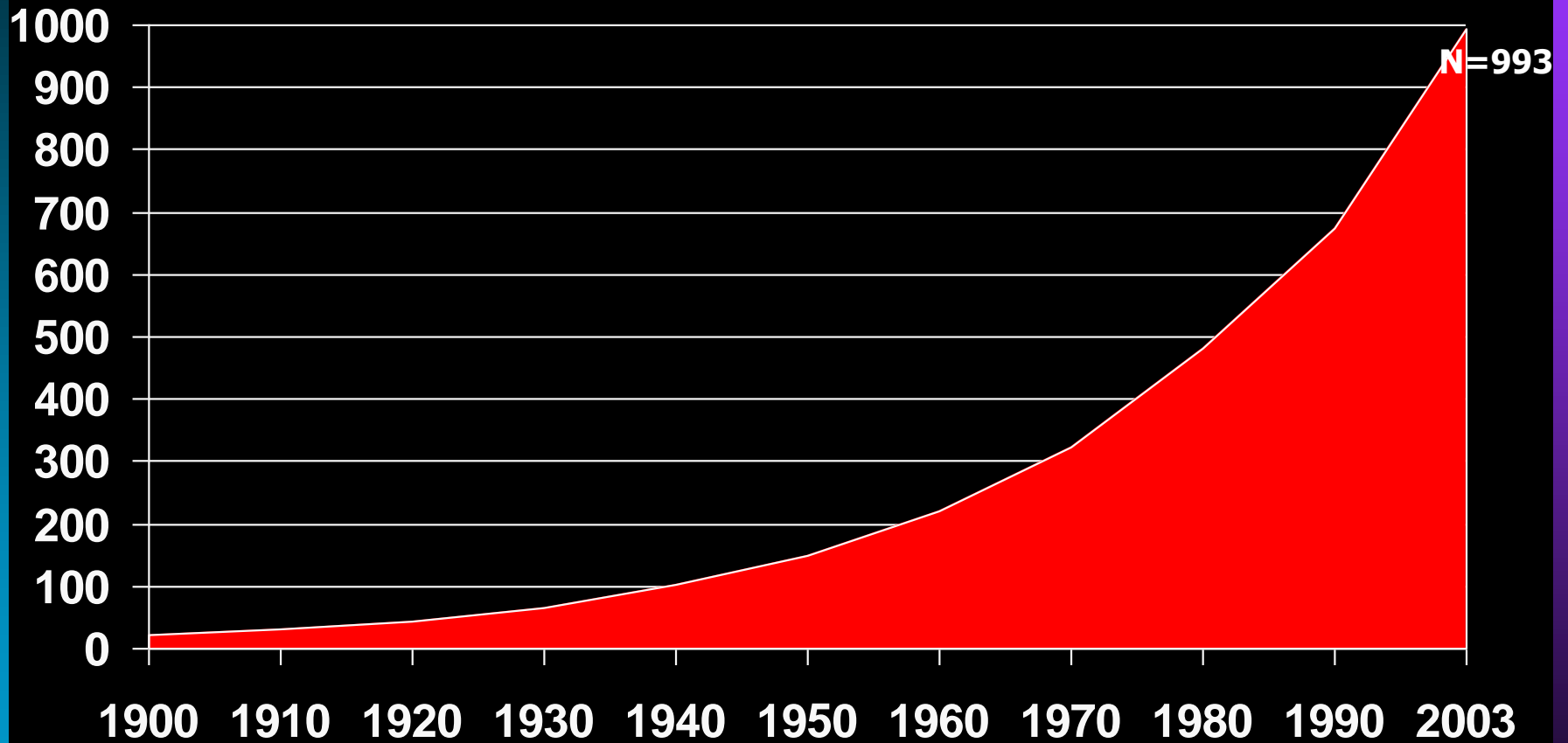
og

Antall publikasjoner er nøkkel til penger og ære

2. Antall publikasjoner fordoblet hvert 10. år

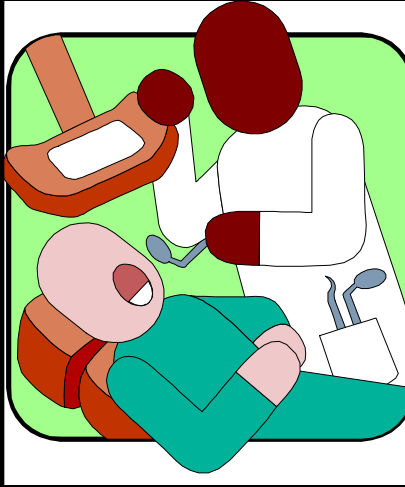
3. Antall tidsskrift øker kontinuerlig

Odontologiske fagtidsskrift

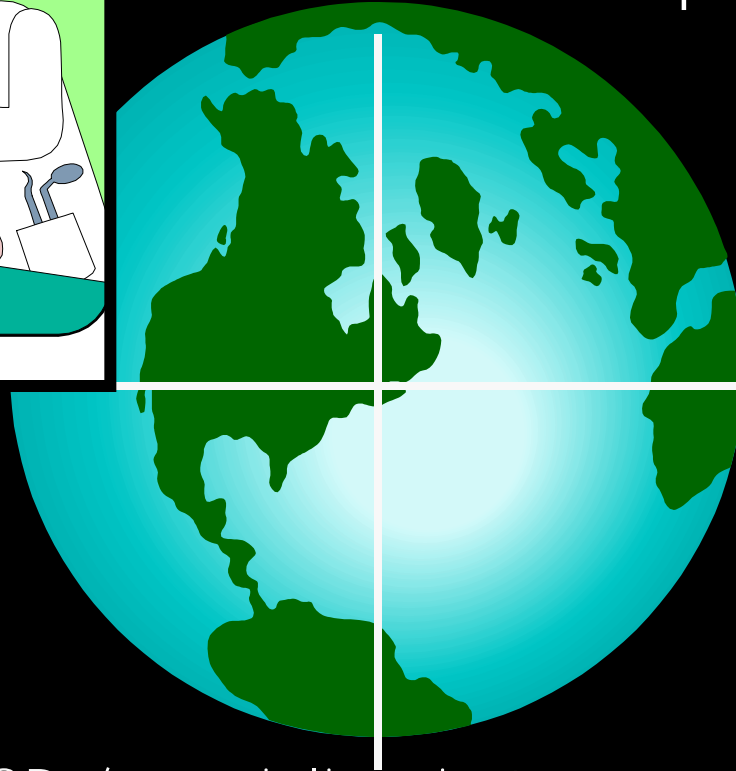


Kilde: Ulrich's International Periodicals Directory

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

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

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

Developers of local guidelines and protocols

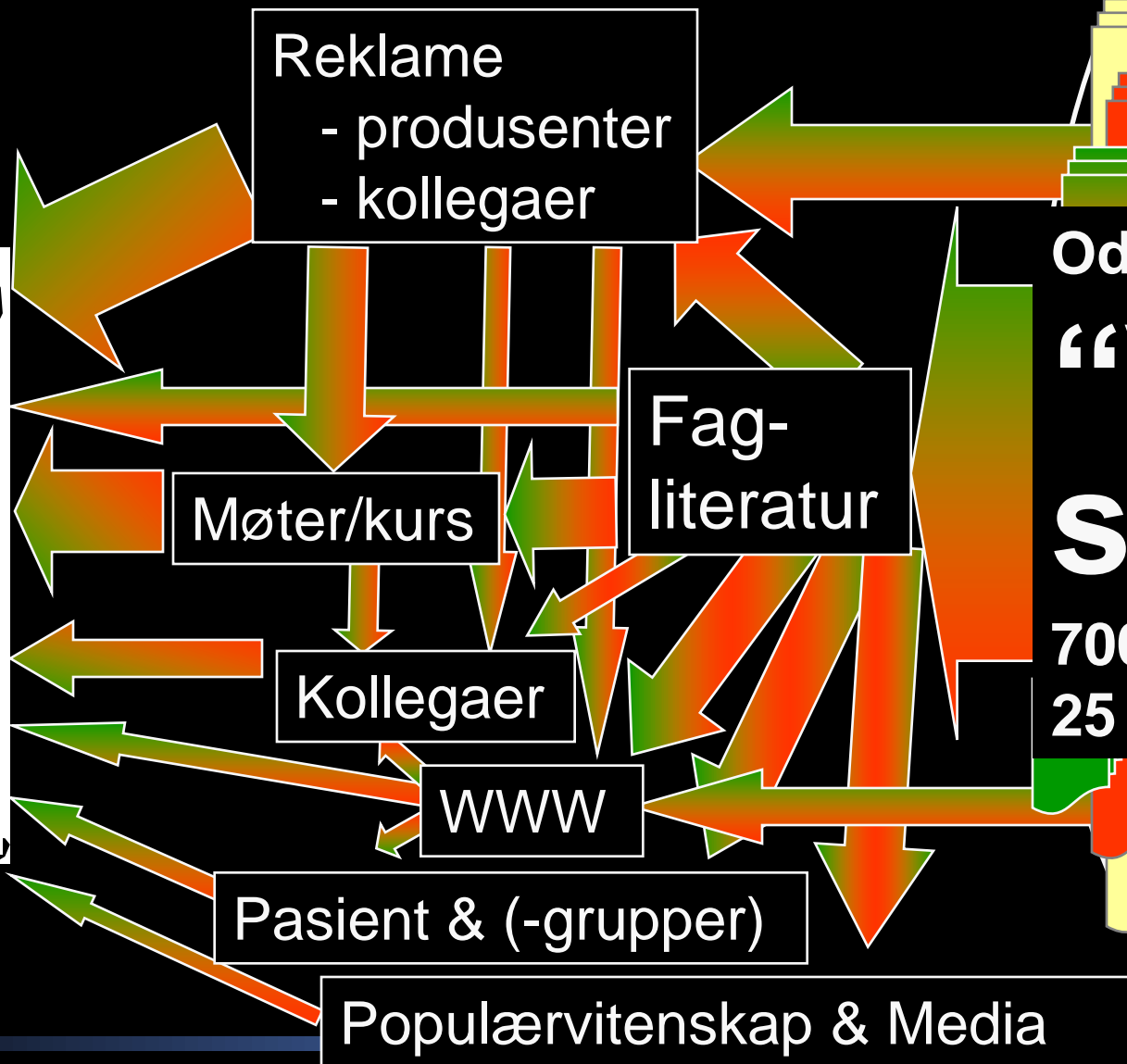
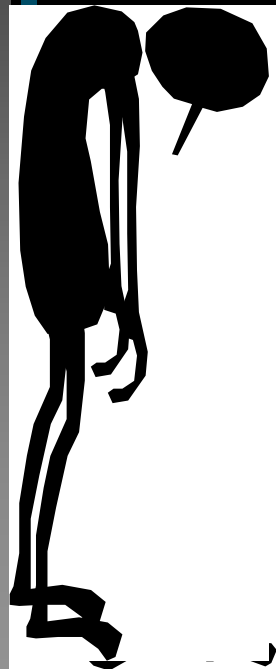


- Local consensus, sometimes on national guidelines
- Clinical specialists seeking ways to influence peers

A rapidly changing society

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

Informasjonsflom



Odontologisk
“Viten
skap”

700 tidsskrift:
25 000 art./år



Evidens basert medisin - strategi

Hvordan vi skal forholde

oss til kontinuerlige

forandringer

...uten at vi noengang får

vite det riktige svaret

Vi må ikke bare ta stilling til
**mengden av informasjon
vi mottar**

men også

**kvaliteten på denne
informasjonen.**

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



SITE SEARCH:

www.fdiworldental.org

The FDI World Dental Federation is the authoritative worldwide organisation of dentistry representing more than 700.000 dentists in over 150 countries around the globe.

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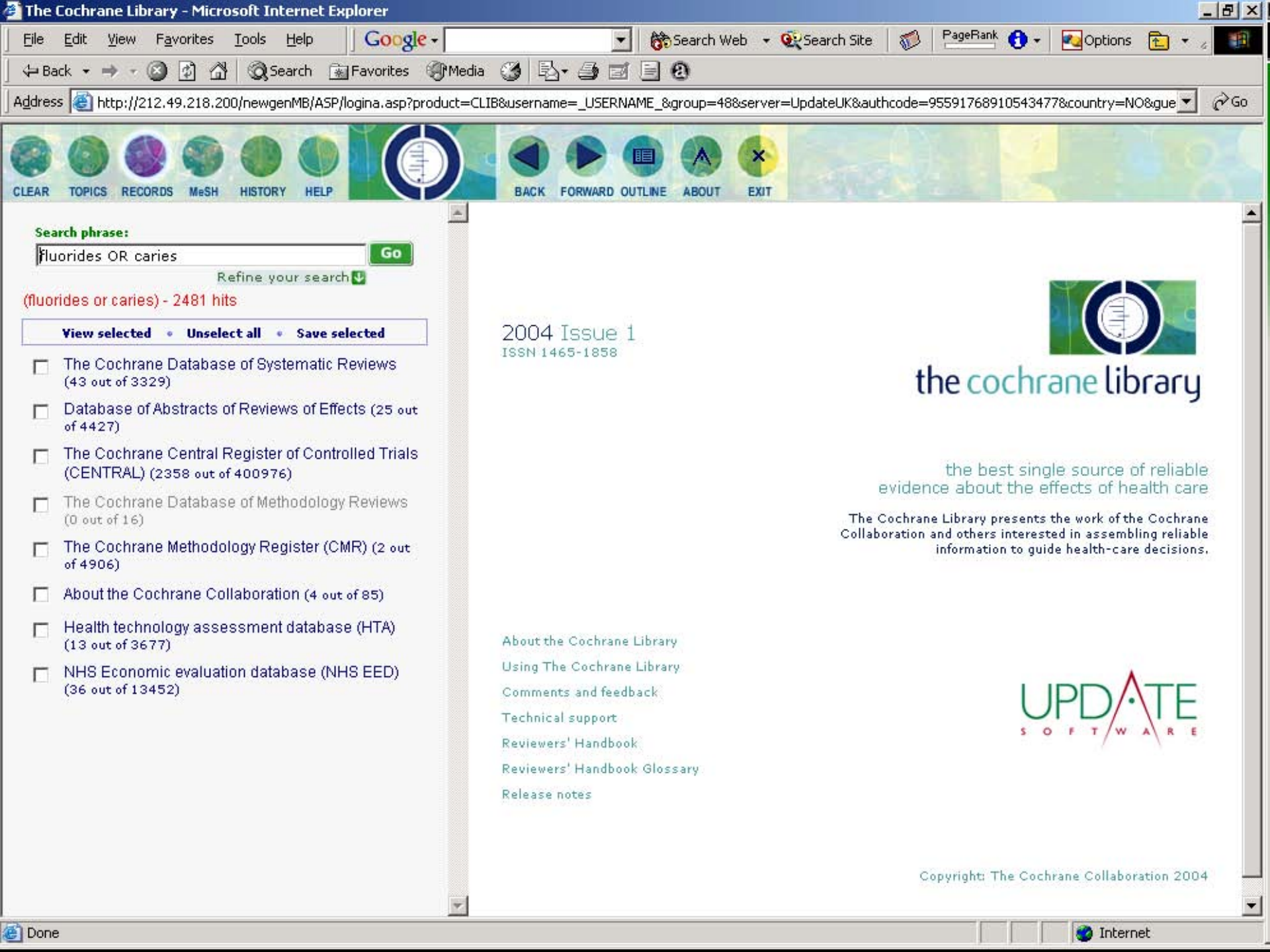
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Editor: FDI Head Office
Last modification: 15.08.2003

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FRANCE
Tel: +33 4 50 40 50 50

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Endokarditt	[Globalt]	[FDI]	
Erosjon & tannslitasje	[Globalt]	[FDI]	[FDI vedtak]
Handicappede pasienter	[Globalt]	[FDI]	



Search phrase:

fluorides OR caries



Refine your search

(fluorides or caries) - 2481 hits

View selected Unselect all Save selected

- The Cochrane Database of Systematic Reviews (43 out of 3329)
- Database of Abstracts of Reviews of Effects (25 out of 4427)
- The Cochrane Central Register of Controlled Trials (CENTRAL) (2358 out of 400976)
- The Cochrane Database of Methodology Reviews (0 out of 16)
- The Cochrane Methodology Register (CMR) (2 out of 4906)
- About the Cochrane Collaboration (4 out of 85)
- Health technology assessment database (HTA) (13 out of 3677)
- NHS Economic evaluation database (NHS EED) (36 out of 13452)

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- Privacy Policy

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 Go.

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.

Clinical Queries using Research Methodology Filters

These search filters, based on the work of [Haynes RB et al.](#), are intended for clinicians. Four categories are provided, and the emphasis may be more sensitive (i.e., most relevant articles but probably some less relevant ones) or more specific (i.e., mostly relevant articles but probably omitting a few). See the [filter table](#) for details.

Indicate the category and emphasis below:

Category: therapy diagnosis etiology prognosis
Emphasis: sensitive search (broad) specific search (narrow)

n=	9690	3282	6768	2201
	538	258	457	310

Systematic Reviews

This feature retrieves systematic reviews and meta-analysis studies for your search topic(s). For more information, see [Help](#). [Related sources](#) are also provided.

Enter subject search:

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

Tre hovedspørsmål

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

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?

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	feasability 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 studiedesign og
bevisstyrke?

Bevisstyrke på terapeutisk effektivitet

US Agency of Health Care Policy & Research, 1992

- Ia. Meta-analysis of randomized controlled trials
- Ib. At least one randomized controlled trial
- IIa. At least one well-designed controlled study without randomization
- IIb. At least one other quasi-experimental study
- 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

EBM Working Group, McMaster University 1993

Systematic reviews and meta-analyses

RCT with definite results (ie. result with CI that do not overlap the threshold clinically significant effect)

RCT with non-definite results (ie. a point estimate that suggests a clinically significant effect, but with CI overlapping the threshold for this effect)

Cohort studies

Case-control studies

Cross sectional studies

Case reports

Bevisstyrke på terapeutisk effektivitet

**Richards & Lawrence, Br Dent J
1995;175:270**

- at least one published systematic review of multiple well designed randomised controlled trials
- at least one published properly designed randomised controlled trial of appropriate size and in an appropriate clinical setting
- published well-designed trials without randomisation, single group pre-post, cohort, time series or matched case controlled studies
- well-designed experimental studies from more than one centre or research group
- opinions of respected authorities based on clinical evidence, descriptive studies or reports of expert consensus committees

**Sackett et al., Editorial. EBM
1995;1:4**

(I-1) Based on 2 or more well designed randomised controlled trials (RCT), meta-analyses, or systematic reviews.

(I-2) Based on a RCT.

(II-1) Based on a cohort study.

(II-2) Based on a case controlled study.

(II-3) Based on a dramatic uncontrolled experiment.

(III) respected authorities, expert committees (consensus)etc.

(IV) ...someone once told me

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"**

2. Hva er resultatene ?

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

3. Er resultatene relevante for mitt problem?

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

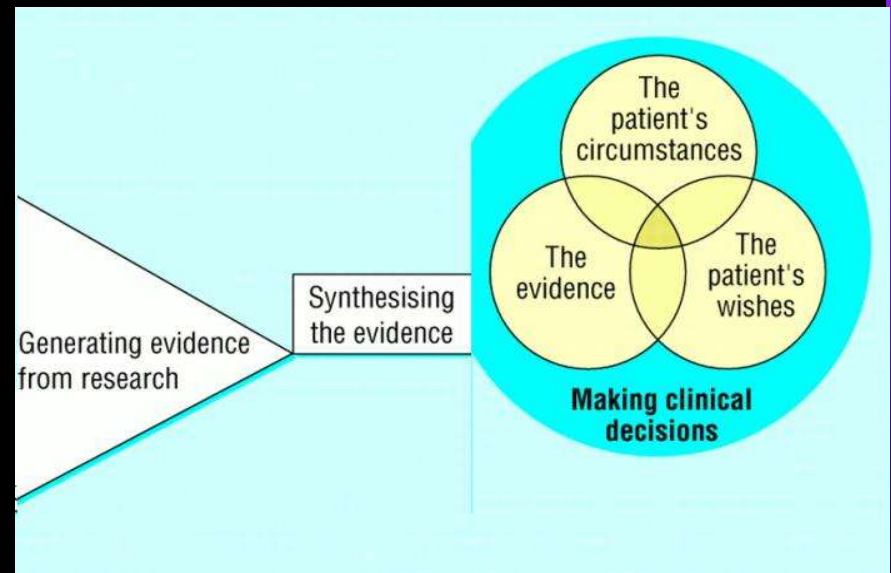
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3. Bedømme validitet, resultat og anvendelighet
4. Anvende best evidens i daglig praksis

Hvordan utøve evidens-basert praksis?

1. Lære selv hvordan evidens-basert odontologi utføres

- Bøker
- Seminarer
- Internett
 - Online link-lister
 - Online kurs
 - Online ressurser



Cochrane Oral Group Manchester - Microsoft Internet Explorer

Address: http://www.cochrane-oral-man.ac.uk/



Cochrane Oral Health Group


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Inicio | Introducción | Los Pasos | La Evidencia | Links | Contacto

Grupo de Odontología Basada en la Evidencia


Facultad de Odontología - Universidad de Valparaíso

Generado a la primera página en Español acerca de Odontología Basada en la Evidencia. Esta página está en permanente construcción y le invitamos a colaborar en ella y [unirse](#) al Grupo de Odontología Basada en la Evidencia.

La base de navegación superior le guiará dentro de cada sección y además, algunas páginas tienen un enlace al sistema interno de la página. Este sitio de ve mejor a una resolución de 800 x 600 en versiones de navegadores 4.0 o superiores y a un tamaño de letra mediana.

Asigne esta de lugar marcando esta página en sus bookmarks o favoritos.

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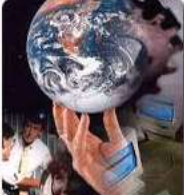
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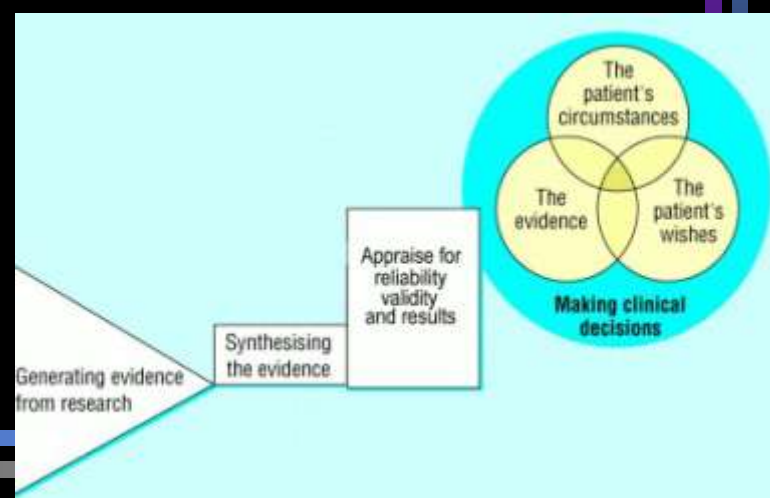
WHAT'S NEW-ANNOUNCEMENTS
-The First Annual Membership Meeting of the ISEBD will take place on November 6 and 7,



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





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Michael G. Newman, DDS, Cynthia L. Baudendistel

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Maxwell Anderson, DDS

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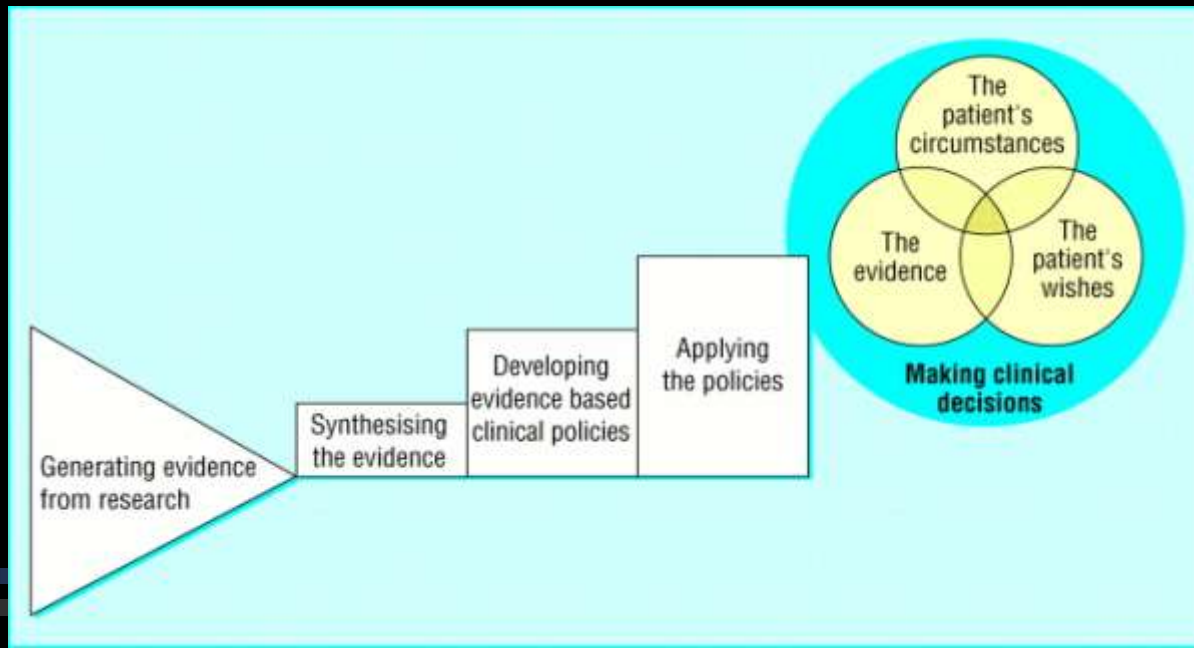
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Hvordan utøve evidens-basert praksis?

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





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Quality Research for Quality Healthcare

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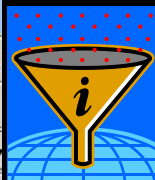
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8. Betydningen av tannforebyggende tiltak generelt?
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Skotland
USA

Populasjonsnivå?

Individnivå?



Caries Research

Caries Res 2004;38(suppl 1):16-23
DOI: 10.1159/000074358

Experts' Opinions on the Role of Diet in Caries Prevention

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Key Words

Opinions · Diet · Dental caries · Prevention

There was no agreement amongst experts on preventive dentistry in Europe on the contemporary validity of the paradigm: 'Sucrose is the arch criminal of dental caries.' Taking the variation in opinions into account and the fact



Consensus Statements

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Diagnosis and Management of Dental Caries Throughout Life

March 26-28, 2001
Vol. 18, No. 1

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Dental Caries Conference

The statement reflects the panel's assessment of medical



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Outcome measures

Studies that estimated the effect of fluoridation on caries investigated two main outcomes at baseline and at the final examination. These were decayed, missing, and filled primary/permanent teeth and the proportion of children without caries. The measure of effect used for the analysis was the difference of the change in prevalence of caries from baseline to the final examination in the fluoridated area compared with the control area in children of the same age.

To allow investigation of the effect of baseline levels of caries, we took the outcome measure from the first survey data for the meta-regressions of caries studies. The outcomes used were the data on effect size (mean

difference) for decayed, missing, and filled primary/permanent teeth and the data on difference in risk for the proportion of children without caries. This was done because correlation between the mean difference of the change in incidence of caries and baseline caries may lead to a spurious association. The median risk difference was used to calculate the number needed to treat for the proportion of children without caries.

Several indices are used to classify enamel caries, including fluorosis. Dental fluorosis was defined here as any score other than normal on each index used. As the importance of a fluorosis score at the lowest level of each index is debated, a second method was selected. This method describes the number of people who have dental fluorosis that may cause "aesthetic concern to the patient." The level at which fluorosis was judged to cause aesthetic concern was taken from a survey of 12 year old children in the United Kingdom²⁰ and corresponded to a tooth surface index of fluorosis score of two or more, a Thystrup and Fejerskov index score of three or more, or Dean's classification of "mild" or worse. Studies that used other indices could not be included in this analysis. Full details of indices can be found elsewhere.²

Analysis

Where the data were in a suitable format we plotted measures of effect and 95% confidence intervals. Heterogeneity was investigated by visual examination of plots and statistically with the I^2 statistic.²¹ If we found significant heterogeneity we conducted meta-regression. Random effects models were adopted throughout to combine study results.²² Meta-regression was used to explore the influence of study characteristics on outcome in an attempt to try to explain any heterogeneity between studies.²³ Stata version 6.0 (Stata Corporation, US) was used for this analysis.²⁴

We used multi-level regression analysis to combine studies and investigate the association of water fluoride concentration with the prevalence of dental fluorosis (the analysis was conducted separately for all fluorosis and fluorosis of aesthetic concern) and used a multilevel model to combine studies. Each area with a different fluoride concentration under observation within a study was included separately in the model. The log (odds) of having fluorosis was modelled as a function of fluoride concentration. The analysis was carried out with the MIXED procedure within SAS (SAS Institute, US). Full details of methods used in the analyses, including all factors investigated in meta-regressions can be found elsewhere.²

Results

We included 214 studies; none was of evidence level A (high quality bias unlikely). The study designs used included 45 controlled before-after studies, 102 cross sectional studies, 47 ecological studies, 15 cohort (prospective or retrospective) studies, and seven case-control studies. Summaries of individual study designs and full details on findings are available elsewhere.²

Positive effects

Twenty six studies of the effect of water fluoridation on dental caries met the inclusion criteria. All but three of the studies included were controlled before-after studies. Of the three remaining, two used prospective

cohort designs and the other a retrospective cohort design. The controlled before-after studies assessed different groups of children of the same age (12 years) at the baseline (before fluoridation) and final (after fluoridation) surveys. All studies were of evidence level B (moderate), and the mean validity score was 5 (range 3.5 to 6.8) out of 8.

Figures 1 and 2 show estimates of the effect of fluoridation on the change in decayed, missing, and filled teeth and on the change in children without caries compared with control children for studies in which fluoridation was initiated after the baseline survey.²⁵ Individual studies contributed more than one age group to the results. There was significant heterogeneity among the included studies ($P < 0.001$).

The range (median) of the mean difference in the proportion (%) of children without caries was -5.0% to 6.4% (1.66%); interquartile range 5.05-22.1%. In the fluoridated areas there was a significant increase in the proportion of children without caries in 19 of 30 analyses. Only one analysis found a significant decrease in the proportion of children without caries in the fluoridated area. We estimate that that a median of six people would need to receive fluoridated water for one extra person to be free from caries (interquartile range of the distribution of number needed to treat was 4 to 9 people).

Fifteen of 16 analyses found a significantly greater mean change in decayed, missing, and filled primary/permanent teeth in the fluoridated areas than the non-fluoridated areas (fig 2). The range (median) of mean change in decayed, missing, and filled primary/permanent teeth was 0.5-4.4 (2.25) teeth (interquartile range 1.28-3.63 teeth).

Meta-regression showed that the proportion of children without caries at baseline, the setting, and the validity score show a significant association with the difference in risk in the proportion of children without caries. A table of the results of the meta-regression can be found on the BMJ website. Baseline decayed, missing, and filled primary/permanent teeth, age, setting, and duration of study show a significant association with the mean difference in decayed, missing, and filled primary/permanent teeth.

Negative effects

A total of 175 included studies examined possible negative effects of water fluoridation.

Dental fluorosis

We included 88 studies of dental fluorosis. These were largely cross sectional designs, with only four controlled before-after designs. The mean (range) validity score for fluorosis was only 2.8 (1.3-5.8) out of 8. All of the studies were of evidence level C (lowest quality), except one level B study. A full list of citations is available elsewhere.²

Regression analysis showed a significant dose-response relation for both methods of measuring the prevalence of fluorosis (figs 3 and 4). From these models, the pooled estimate of the prevalence of fluorosis at a water fluoride concentration of 1.0 ppm was 49% (95% confidence interval 40% to 57%) and for fluorosis of aesthetic concern 12.9% (7.0% to 21.5%). There was, however, considerable heterogeneity between results of individual studies.

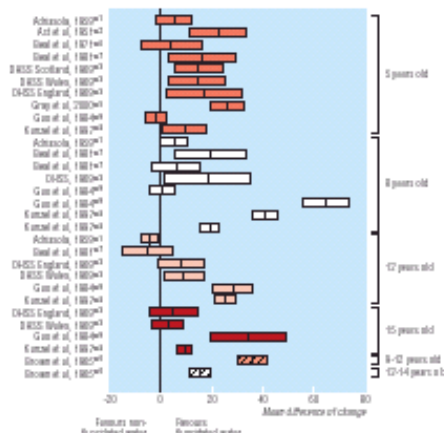


Fig 1 Change in proportion (%) of children without caries in fluoridated compared with non-fluoridated areas (mean difference and 95% confidence interval)

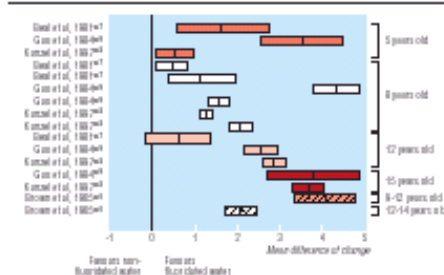


Fig 2 Change in decayed, missing, and filled teeth for primary/permanent teeth (mean difference and 95% confidence interval)

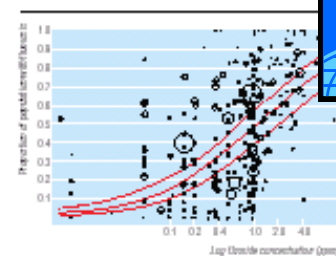


Fig 3 Proportion of population with dental fluorosis by water fluoride concentration (plotted on log scale because of linear association between the two) by study area. Each circle represents a study area in which the proportion of people with fluorosis is estimated—the larger the circle, the higher the precision of the estimate

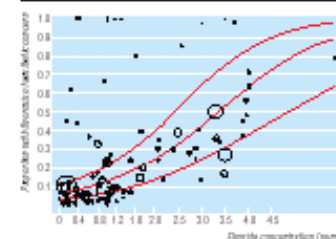
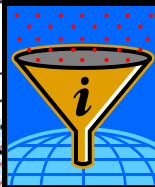
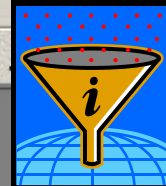
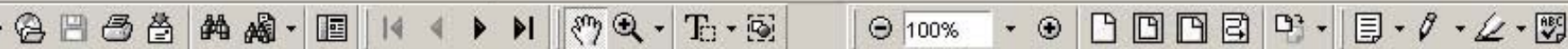


Fig 4 Proportion of population with fluorosis of aesthetic concern by water fluoride concentration (plotted on a transformed scale because of linear association between the two and log (odds) of "aesthetic fluorosis"). Each circle represents a study area in which the proportion of people with fluorosis is estimated—the larger the circle, the higher the precision of the estimate

These results show a strong association between water fluoride concentration and the proportion of the population with dental fluorosis. We estimate that six people (95% confidence interval 4 to 21) would have to be exposed to water fluoride concentrations of 1.0 ppm for one additional person to develop fluorosis of any degree, compared with a theoretical low fluoride concentration of 0.4 ppm. Of these, about one quarter will have fluorosis of aesthetic concern (number needed to treat 22, 95% confidence interval 13.6 to ∞). These estimates apply only to the comparison of 1.0 ppm with 0.4 ppm. The model may not fit data at the extreme ends (low or high concentrations) well because of the small numbers of data points at these concentrations. Though many areas in Britain may have water fluoride concentrations lower than 0.4 ppm, this concentration was chosen as the comparison (low fluoride) to ensure that the results were as reliable as possible.





The effect of non-cariogenic sweeteners on the prevention of dental caries: A review of the evidence

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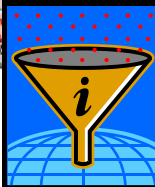
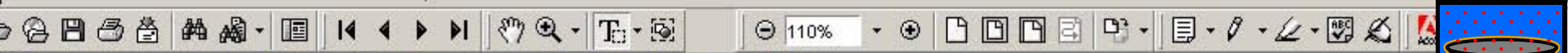
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The complete version of this paper can be viewed at:

<http://www.nidcr.nih.gov/news/consensus.asp>



Sammanfattning och slutsatser

Att förebygga karies

En systematisk litteraturoversikt



SBU – Statens beredning för medicinsk utvärdering
The Swedish Council on Technology Assessment in Health Care

Sammanfattning av SBU:s rapport om:

Att förebygga karies

En systematisk litteraturoversikt

Oktober 2002

Rapporten har utarbetats av:

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Rapport: Att förebygga karies • Typ: En systematisk litteraturoversikt
ISBN: 91-87890-81-X • Rapportnr: 161 • Utgivningsår: 2002







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Number **47**

**Scottish
Intercollegiate
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Network**

Preventing Dental Caries in Children at High Caries Risk

Targeted prevention of dental caries in the permanent
teeth of 6-16 year olds presenting for dental care



December 2000

please note: 06.03.2001 15:00:22

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 noted on the SIGN website. Comments are invited to assist the review process. All correspondence and requests for background information regarding the guideline should be sent to: SIGN Executive, Royal College of Physicians, 9 Queen Street, Edinburgh EH2 1JQ. Tel: 0131 225 7324, Fax: 0131 225 1769, e-mail: sign@rcpe.ac.uk, www.sign.ac.uk



A Comparison of Selected Evidence Reviews and Recommendations on Interventions to Prevent Dental Caries, Oral and Pharyngeal Cancers, and Sports-Related Craniofacial Injuries

Barbara F. Gooch, DMD, MPH, Benedict I. Truman, MD, MPH, Susan O. Griffin, PhD, William G. Kohn, DDS, Iddrisu Sulemana, MPH, MA, Helen C. Gift, PhD, Alice M. Horowitz, PhD, Caswell A. Evans, Jr, DDS, MPH

Medical Subject Headings (MeSH): cariostatic agents, community dentistry, community health planning, community health services, decision making, dental caries, evidence-based medicine, facial injuries, fluoridation, intervention studies, meta-analysis, 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

Introduction

The reports in this supplement^{1,2} represent the work of the Task Force on Community Preventive Services (the Task Force), an independent, nonfederal group of national, regional, and local public health and prevention services experts supported by public and private partners. This report is one in a series of topics published as part of the *Guide to Community Preventive Services* (the *Community Guide*). Previously published topics include vaccine-preventable diseases, tobacco use and control, reducing injuries to motor vehicle occupants, diabetes, and physical activity. A full listing of published articles can be found at the website (www.thecommunityguide.org).

In addition to expanding the *Community Guide*, the reviews and evidence-based recommendations in this

tion and guidance to personnel in state and local health departments, purchasers of health care, people responsible for funding public health programs, policy-makers, third-party payers, and others who have an interest in or responsibility for improving oral and related general health in all segments of the population. This article presents a summary of selected guidelines and evidence reviews available as of August 2001, and provides an accessible review of the current evidence of effectiveness of interventions related to those evaluated by the Task Force. These interventions address the prevention of dental caries (through community water fluoridation, school-based or school-linked pit and fissure sealant delivery programs, and statewide and community-wide sealant promotion programs), oral and pharyngeal cancers, and sports-related cranio-

KARIES -

Etiologi

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- Drikke?

Screening/Diagnostikk

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- Kariesdiagnostikk
 - Rotkaries?
 - Diagnodent?

Prognose

- Kariesprediksjonsverdi
GC

Terapi

- Rotkaries
- Fyllingers holdbarhet
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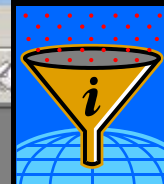
Ozon

Carisolv

Forebygging, Diagnose, Prognose & Terapi av:

Dentinsensitivitet
Tannvev & erosjon

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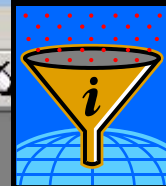


The clinical effectiveness and cost-effectiveness of routine dental checks: a systematic review and economic evaluation

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<i>Executive summary</i>	



The Diagnosis of Root Caries

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A presentation to the NIH Consensus Development Conference on
Diagnosis and Management of Dental Caries Throughout Life

Washington, D.C.

March 26-28, 2001

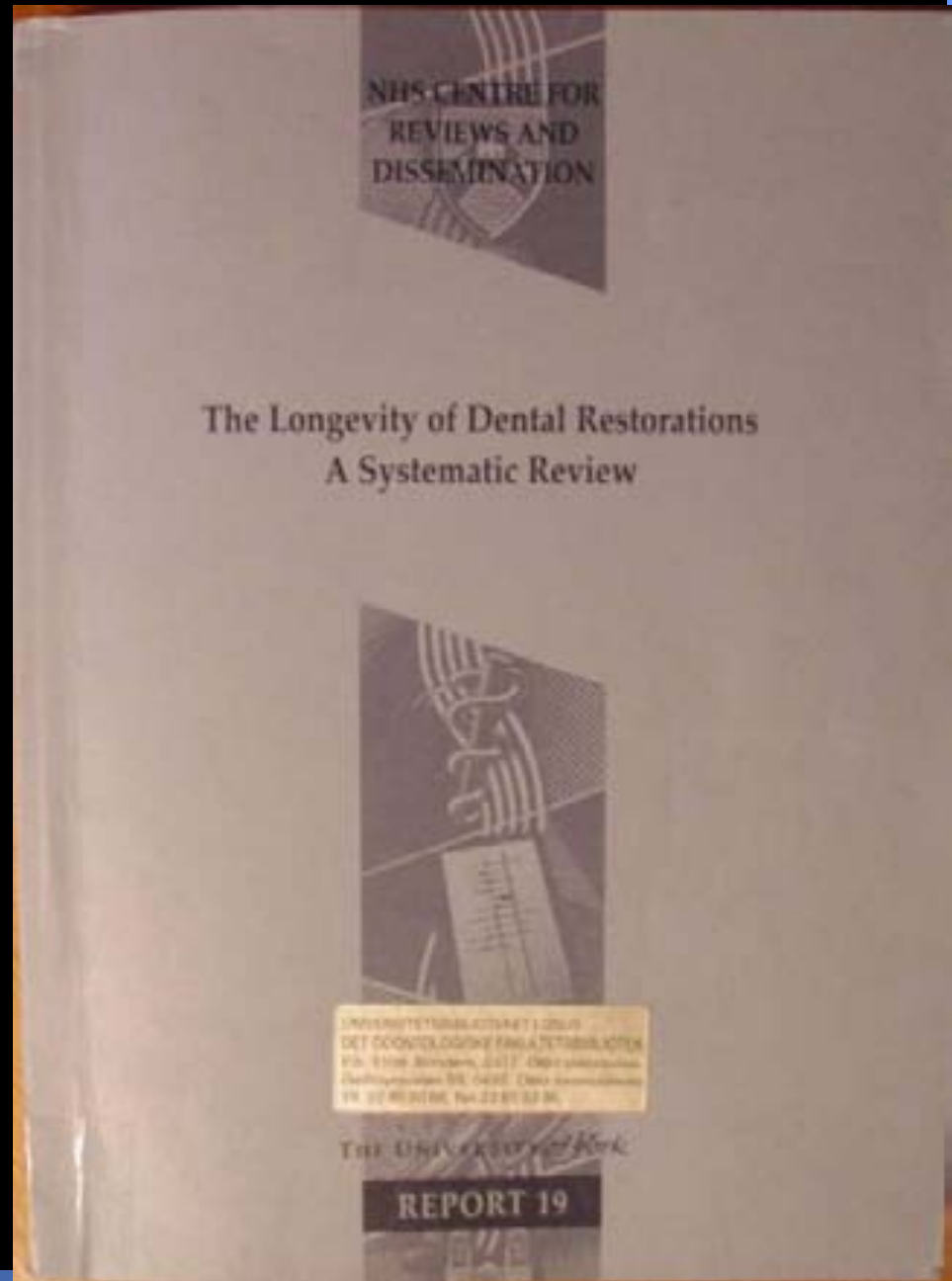
AIM:

Determine longevity
of different dental
restoration materials
&

address cost-
effectiveness

337 page report

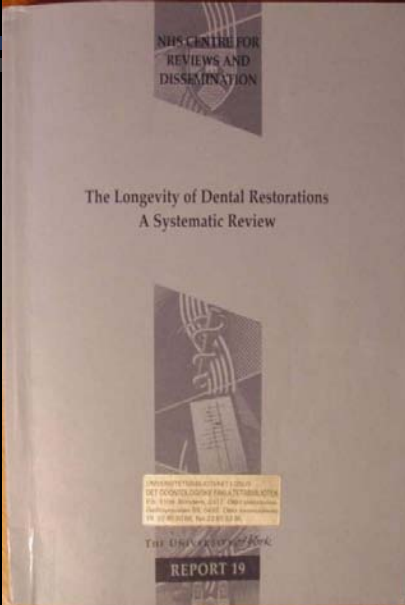
1999.



14000 papers -> 5675 studies

Weaker study design	Weaker outcome measures →		→ Stronger outcome measures				
	Outcome measure / Study design	Study design code number	Restoration replacement (subjective opinion)	Restoration replacement (use of criteria but no training)	Restoration replacement (use of any criteria, training and / or calibration, include USPHS where not two examiners etc)	Restoration replacement (valid outcome, criteria, training and calibration, include USPHS where properly used)	Restoration Failure (without previous intervention)
	Outcome measure code nos.		1	2	3	4	5
↓	Descriptive studies / Reports of expert studies / Reports of expert committees	1	X	X	X	X	X
↓	Case studies	1	X	X	X	X	X
↓	Retrospective case series	2	X	X	X	X	X
↓	Prospective case series	3	X	I	I	I	I
↓	Retrospective study with concurrent controls	4	X	I	I	I	I
↓	Prospective study with historical controls	5	X	I	I	I	I
↓	Prospective study with concurrent controls	6	X	I	I	I	I
↓	Other controlled trial	7	X	I	I	I	I
Stronger study design	Well designed randomised controlled trial	8	X	I	I	I	I

X indicates that studies so classified were excluded from the review
 I indicates that studies so classified were included in the review if it was possible to extract the necessary data



652 studies
 ↓
 253 studies
 ↓
 195 studies

Challenges with studies investigating longevity of dental restorations— a critique of a systematic review

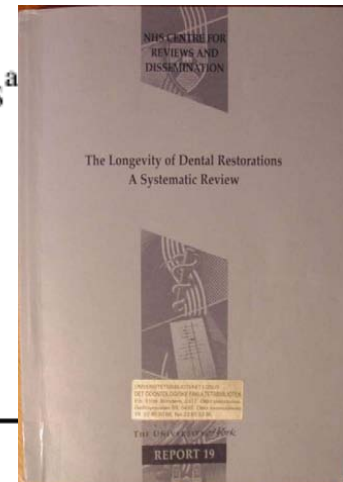
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Abstract

Objectives: A systematic review is a method of evaluating the published and unpublished literature relating to a specific area or topic. The objectives of this paper are to identify and discuss problems encountered in synthesising the available literature; and to make recommendations for the future conduct and reporting of clinical trials that aim to determine the longevity of dental restorations.

Data sources: Studies were identified by a wide search of published and unpublished material in any language using a large number of general and specialist data bases, hand searching of key dental journals and searching of abstracts from conference proceedings.

Study selection: Pre-defined inclusion criteria based on objective outcome measures of restoration longevity and study designs were applied to determine study selection.

Conclusions: A review of the longevity of dental restorations completed recently encountered substantial problems in designing an appropriate protocol to address this issue. The review found that many of the factors reported previously as affecting restoration longevity could not be confirmed using the agreed systematic review protocol that incorporated an objective study design. Further, the multiplicity of study designs, and reporting methods found in the literature made meta-analyses impossible. A proforma is proposed in order to aid the design of future research into the longevity of restorations. © 2001 Elsevier Science Ltd. All rights reserved.

Citation and reference	Assessment criteria								
	A	B	C	D	E	F	G	H	I
Hamilton <i>et al.</i> (1983) ¹⁷	1	✓		✓	✓		✓		✓ (10)
Hendriks <i>et al.</i> (1985) ¹⁹	1	✓				✓	✓		
Wilson <i>et al.</i> (1996) ⁵⁷	1	✓		✓		✓			
Welbury <i>et al.</i> (1990) ⁵⁵	2			✓		✓			✓ (8)
Wilson & Norman (1991) ⁵⁶	2		✓	✓	✓	✓	✓		✓ (10)
Akerboom <i>et al.</i> (1993) ¹	3			✓	✓	✓	✓		
Davies (1984) ⁷	4	✓				✓			
Elderton (1983) ¹²	4	✓		✓	✓			✓	✓ (8)
Jokstad & Mjor (1991) ²¹	4	✓			✓	✓	✓	✓	✓ (8)
Mjor & Jokstad (1993) ³¹	4			✓	✓		✓		
Nordbo <i>et al.</i> (1998) ³⁸	4				✓		✓		
Osborne & Norman (1990) ⁴⁰	4	✓				✓	✓		
Osborne <i>et al.</i> (1991) ⁴¹	4	✓			✓	✓	✓		
Smales (1991) ⁵⁰	4			✓	✓	✓	✓	✓	✓ (9)
Van Dijken (1991) ⁵³	4			✓	✓	✓	✓		✓ (10)
Allan (1977) ²	5			✓	✓				✓ (8)
Bentley & Drake (1986) ³	5		✓	✓	✓	✓	✓	✓	✓ (8)
Bjertness & Sonju (1990) ⁴	5			✓	✓			✓	✓ (8)
Crabb (1981) ⁶	5			✓	✓				✓ (10)
Dawson & Smales (1992) ⁸	5			✓	✓	✓		✓	✓ (8)
Dawson & Smales (1992) ⁹	5			✓	✓	✓		✓	✓ (8)
Drake (1988) ¹⁰	5			✓	✓	✓	✓	✓	✓ (8)
Drake (1988) ¹¹	5			✓	✓	✓	✓	✓	✓ (8)
Gray (1976) ¹⁶	5			✓	✓		✓	✓	✓ (8)
Hawthorne & Smales (1997) ¹⁸	5	✓		✓	✓	✓		✓	✓ (8)
Hunter (1985) ²⁰	5			✓	✓	✓		✓	✓ (8)
Lavelle (1976) ²⁴	5			✓	✓				✓ (8)
Letzel <i>et al.</i> (1997) ²⁶	5	✓		✓	✓	✓		✓	✓ (10)
Letzel <i>et al.</i> (1989) ²⁵	5			✓	✓	✓	✓		✓ (10)
Mahmood & Smales (1994) ²⁷	5			✓	✓	✓		✓	✓ (8)
Mayhew (1995) ²⁸	5	✓			✓	✓		✓	✓ (8)
Paterson (1984) ⁴²	5			✓		✓		✓	✓ (8)
Robbins & Summit (1988) ⁴⁷	5	✓	✓	✓			✓	✓	✓ (8)
Robinson (1971) ⁴⁸	5			✓	✓				✓ (8)
Smales <i>et al.</i> (1991) ⁵¹	5			✓			✓	✓	✓ (8)
Smales (1991) ⁵²	5			✓		✓	✓	✓	✓ (9)
Walls <i>et al.</i> (1985) ⁵⁴	5			✓		✓		✓	✓ (8)
Meeuwissen (1985) ¹³⁰	5			✓		✓		✓	✓ (10)
Burke <i>et al.</i> (1998) ⁵	6				✓	✓	✓		✓ (8)
Friedl <i>et al.</i> (1994) ¹⁴	6				✓	✓	✓		✓ (8)
Friedl <i>et al.</i> (1995) ¹⁵	6				✓	✓	✓		✓ (8)

Table 1 Criteria of assessment of validity and quality of studies for inclusion in the review

- A Design type — hierarchical classification**
- Satisfactory investigations*
- 1 Randomised controlled trials
 - 2 Non-randomised controlled trials
 - 3 Longitudinal experimental clinical studies
 - 4 Longitudinal prospective studies
- Less satisfactory investigations*
- 5 Longitudinal retrospective studies
- Least satisfactory investigations*
- 6 Cross-sectional studies
 - 7 Reports consisting only of an abstract
- B Was the study described as randomised? Yes/no**
- C Were the examiners calibrated? (studies with one or more assessors) Yes/no**
- D Were the terms 'failure' and 'survival' of restorations clearly defined? Yes/no**
- E Were the criteria for replacement clearly defined? Yes/no**
- F Were effect modifiers considered? Yes/no**
- G Was the assessment based on clinical examinations? Yes/no**
- H Was the effect of censoring data considered? Yes/no**
- I Appropriate outcome measure used? Yes/no**
- 8 Median survival time (MST) or median longevity
 - 9 Cumulative survival rate
 - 10 Survival/failure rate

How long do routine dental restorations last? A systematic review

M. C. Downer,¹ N. A. Azil,² R. Bedi,³ D. R. Moles,⁴ and D. J. Setchell,⁵

Objective To conduct a systematic review of the literature on the longevity of routine dental restorations in permanent posterior teeth, and to identify and examine factors influencing its variability.

Method Accepted guidelines were followed. An advisory group oversaw the project. Simple Class I and Class II amalgam, composite resin, glass ionomer and cast gold restorations were covered. Comprehensive searching of electronic databases, hand searching, and location of 'grey' literature, generated 124 research reports. Those considered relevant were assessed for validity and quality according to agreed criteria. The analysis was descriptive.

Results Eight of 58 relevant research reports were categorised, according to agreed criteria, as being of satisfactory validity and quality. They suggested that 50% of all restorations last 10 to 20 years, although both higher and lower median survival times were reported. The findings were supported by the totality of studies reviewed. However, variability was substantial. Restoration type, materials, the patient, the operator, the practice environment and type of care system appeared to influence longevity.

Conclusions Many studies were imperfect in design. Those considered to be the most appropriate for analysis were too limited to undertake a formal statistical exploration. Therefore there remains a need for definitive randomised controlled trials of restoration longevity, of sound design and adequate power, employing standardised assessments and appropriate methods of analysis.

The durability, or longevity, of a dental restoration is clearly a salient factor in determining its effectiveness as a presumed long-term treatment for caries. Yet despite the very large number of fillings placed annually by the profession, how long a routine restoration can, or should, be expected to stay functionally intact remains a matter of uncertainty. In order to collate, assess and draw conclusions from the available evidence, it was evident that a systematic review of the literature on longevity should be undertaken, no previous exercise of this kind having been identified. A comprehensive search was therefore initiated which revealed a body of work that might be suitable for inclusion.¹⁻¹²⁴ This paper aims to provide a condensed, easily assimilable version of the final review.¹²⁵ The objectives of which were to establish from research reports of satisfactory quality the longevity of different types of routine dental restoration

in permanent posterior teeth, and its variability; and to identify and examine factors (referred to as effect modifiers) influencing the durability of restorations.

Method

Conduct of the review

The review was conducted in general accordance with guidelines promulgated by the NHS Centre for Reviews and Dissemination (CRD),¹²⁶ and the Cochrane Collaboration.¹²⁷ An advisory group was formed at the outset to assist the principal researcher (NAA) and act as consultants to the project. The group consisted of the remaining authors of the current report whose collective knowledge was considered to cover the areas of relevant expertise. Its task was to decide the scope of the review and the specific questions to be addressed; to approve and finalise the protocol; to monitor progress in identifying studies and deciding on their suitability for inclusion (assessment of validity); to discuss the proposals for analysis of the material and completion of the review and to agree the final report. A meeting of the group and principal researcher took place at each stage. In addition, advice and guidance was obtained from the Systematic Review Unit at the Institute of Child Health, University College London.

Inclusion and exclusion criteria

Resources were limited and it was necessary to place some constraints on the scope of the review. Evaluations of the clinical performance of Class I (occlusal) and Class II (mesial-occlusal, distal-occlusal, mesial-occlusal-distal) restorations in permanent teeth, the commonest type of conservative treatment, predominate in the literature. It was therefore determined that the review should be confined to an assessment of the longevity of simple amalgam, composite resin, glass ionomer and cast gold restorations of these two types. A simple restoration was defined as one not requiring any form of additional retention measures.

Search strategy

Through a comprehensive search, an attempt was made to identify all relevant studies irrespective of language. Available electronic databases, MEDLINE, EMBASE, CINAHL, DISSERTATION ABSTRACTS and ERIC were searched from their date of inception together with ISI[®] Conference proceedings were searched using the citation index SCI SEARCH. The subject headings or key components used included dental restoration, longevity, failure, durability, survival analysis and life table analysis. In addition, the Cochrane Controlled Trials Register (CCTR) in the Cochrane Library (1998 Issue 2) was scrutinised for any relevant trials and cross checked with those already retrieved.

Bibliographies of research reports identified through the search

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Conclusions Many studies were imperfect in design. Those considered to be the most appropriate for analysis were too limited to undertake a formal statistical exploration. Therefore there remains a need for definitive randomised controlled trials of restoration longevity, of sound design and adequate power, employing standardised assessments and appropriate methods of analysis.

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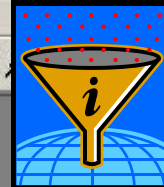
Evaluation of published clinical studies for reproducibility, comparability and adherence to evidence-based methods.

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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 1988-1997, using the key words "clinical study/evaluation/results/report, long-term, in vivo, posterior, Class I/II, 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.

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New and Emerging Technology Briefing

National
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HealOzone for tooth decay (primary carious lesions)

January 2003

Horizon Scanning Review



THE UNIVERSITY OF BIRMINGHAM

Early assessments of new or emerging technologies contain time-limited information and should be used with due caution.

Not to be used for commercial purposes

HealOzone for tooth decay (primary carious lesions)

Summary

HealOzone uses ozone to treat tooth decay (primary carious lesions). The only published study using HealOzone found a significant reduction in primary root carious lesions (PRCL) in ozone treated extracted teeth (ex-vivo) compared with the control group. Unpublished randomised trials of HealOzone in patients with dental decay report significant reductions in the progression of decay. An unpublished economic evaluation found that the time commitment and costs of conventional drilling and filling outweighed those of HealOzone.

Developer – Carozone, distributed by KaVo Dental Limited

Regulatory status – Launch in the UK expected Nov 2003. Available in a limited number of NHS and private dental practices.

Unit cost – Currently between £5 and £70 per treatment including cost of hygiene kit which lasts approximately one month. The cost of the unit is £11,000 (excluding VAT) with annual maintenance and safety costs expected to be between £160 and £630 per annum (excluding VAT).

- Impact on government policy and priorities – There are no relevant policies.
- Impact on patient care – HealOzone tackles primary carious lesions in a different way to conventional treatments and has the potential to reduce related morbidity and potentially can heal caries without the need for permanent fillings. HealOzone also preserves the substance of the tooth. Many patients will find this less invasive treatment appealing and demand could be high if available.
- Impact on service provision – Limited training is required for dentists. Using HealOzone could release staff time although some hygiene instruction is required post-treatment.
- Impact on NHS resources – The initial outlay and maintenance costs of HealOzone are significant. The cost per treatment is still uncertain but many trial practices are charging a similar price to a conventional filling.

Background

Tooth decay (primary carious lesions) is one of the most common diseases accounting for almost half of all tooth extractions¹. Collections of acid-living and acid producing bacteria accumulate on teeth, particularly in inaccessible areas, dissolving the calcium of the enamel. As the number of bacteria increases tooth decay takes place and a cavity develops. This decay can progress into the softer layer of the tooth (dentine) and finally into the third layer (pulp) if not treated. Tooth decay can cause considerable pain if left untreated.

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