



Evidence-based
practice is here to
stay - it's time to
empower dentists to
implement the concept

Asbjørn Jokstad
Prosthodontics

Faculty of Dentistry, University of Toronto,



The graduate



Head/ Staff/
Demonstrator
-filtered

“Curriculum”

“The Classic
literature”

Publications
in
dentistry





The graduate

- Has been taught and can perform many basic procedures - not necessarily the most modern
- No hands-on experience with many procedures common in modern dental clinics





A rapidly
changing society



A rapidly changing society

1. There is an Information Explosion in all fields of Biomedicine



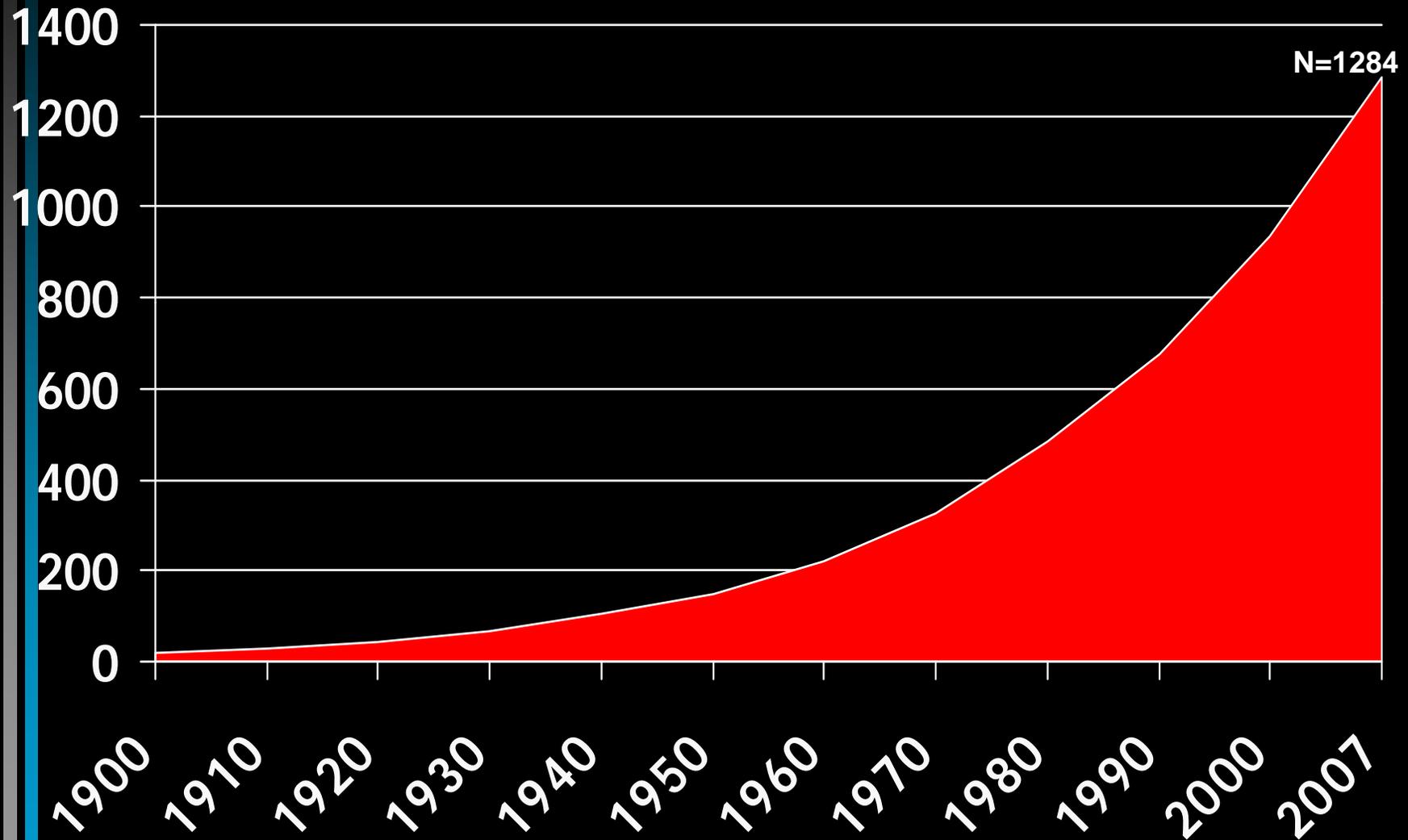
A rapidly changing society

The production of new knowledge in biomedicine is at maximum in historical context

- Tremendous growth in publications
- Related to numbers of physicians and scientists
- Infomercial publications



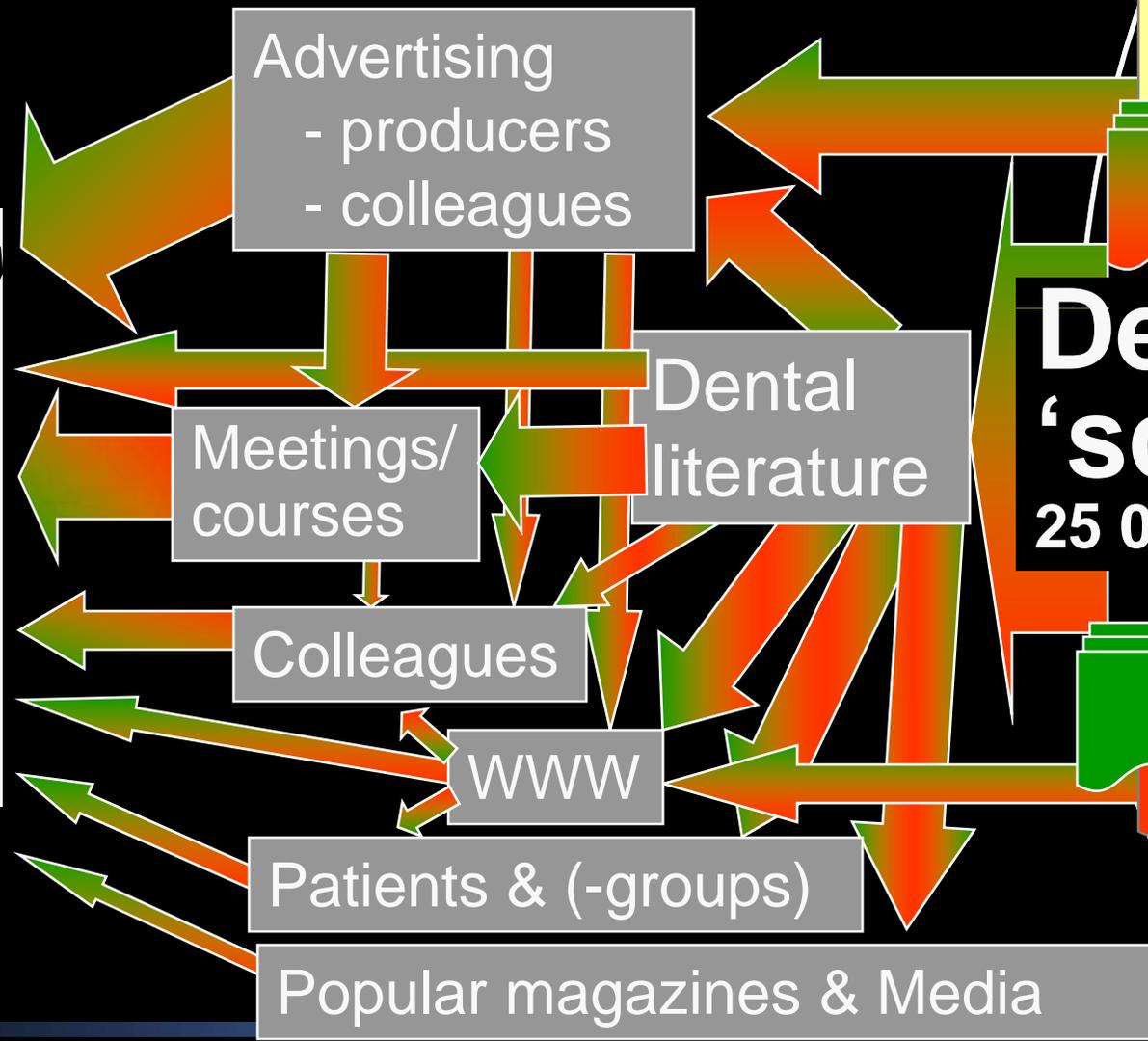
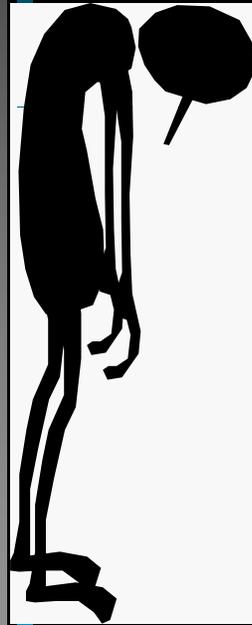
Dental journals in circulation



Source: Ulrich's International Periodicals Directory



The Information Overload



**Dental
'science'**
25 000 articles/yr





2. We need to consider not only the amount of information, but also the quality of this information



There is an Information Explosion
in all fields of Biomedicine

New knowledge in oral
sciences is today
generated by different
experts



Clinical practitioners

- Pragmatists: what works - what creates problems?
- Great diversity of experience, interest and capacity
- Reporting draw on a panoply of experience
- GPs/specialists; single/teams; secondary/tertiary care



Scientists



General sciences

Biological sciences

Oral sciences

Clinical

Laboratory

- Creates “scientific evidence”
- Formulation of ideas, hypotheses, study design, data collection
- Peer review, internal/external validity, debates within paradigms
- Findings are reported in probabilities, not absolutes



Critical appraisers

Epidemiologists

Statisticians

Social scientists

Health economists

Clinicians

- Appraise the evidence for clinical care and practice
- Collect, abstract and evaluate publications
- Debates about values and balance between consensus and evidence, rigour of data and application of statistics



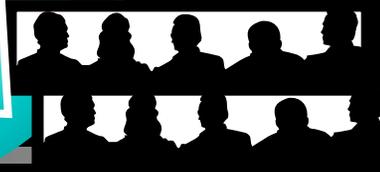
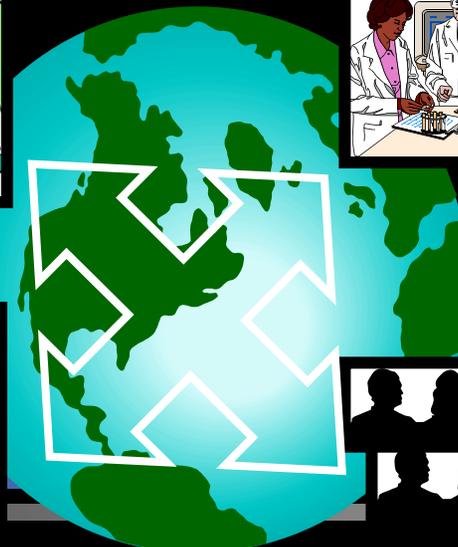
Guideline developers

- Creates guidelines, protocols and standards
- Local consensus, sometimes national guidelines; Delphi strategies versus AGREE approach
- Often clinical specialists seeking ways to influence peers



A rapidly changing society

1. The information production is at maximum in historical context
2. The quality of this information varies
3. Established ideas and concepts are constantly being replaced





A rapidly changing society

1. The production of new knowledge is at maximum in historical context
2. The quality of information varies
3. Incessant replacements of established ideas and concepts
4. Information technology has improved the potential for information transfer to everybody

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...e shades, tooth
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...luced veneers.

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Before veneer



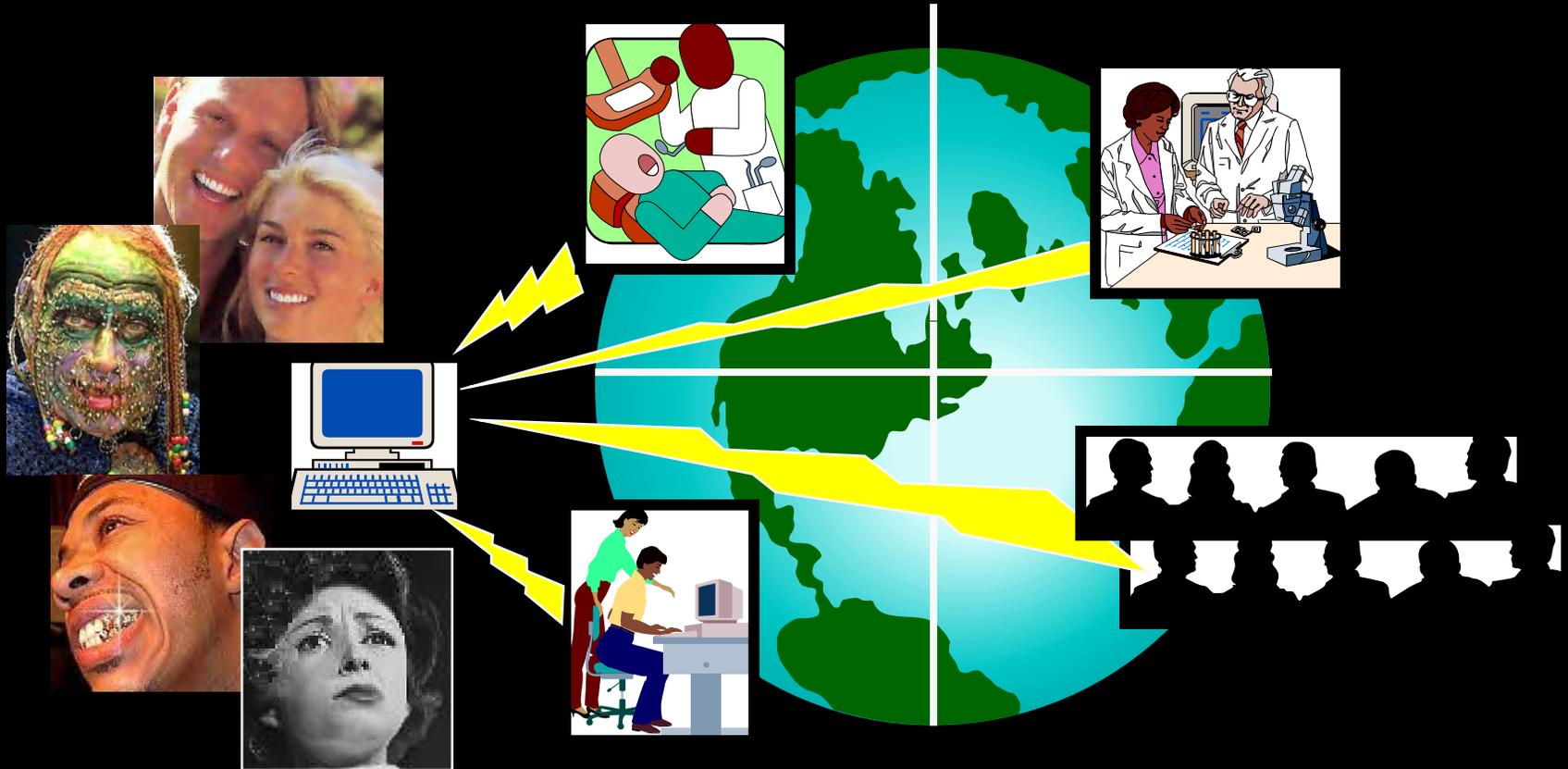
After SYNERGY® Super White veneer

New patients?





Patient access to Information



- ✓ Wish to remain sound, look healthy, different?.... young!!!
- ✓ Competitive health providers and information sources
- ✓ **Patient information and communication**



5. General practitioners
need new knowledge
to
meet the expectations
of educated patients in
this information age



Are their
needs met?



What would your answer be if ...
a 66 year old woman comes to your
clinic because she feels she hasn't
received any help from her former
dentist about oral lichen planus. She
wants to confer with you about a new
Herbal Tea treatment described in
the latest issue of
'Health & Fitness'





What to do when professionally uncertain?

Apply:

- A patho-physiological approach:
this makes sense...



What to do when professionally uncertain?

Apply:

- A patho-physiological approach: this makes sense..
- An expert / “how I was trained” approach: I learned this worked / didn't work...



What to do when professionally uncertain?

Apply:

- A patho-physiological approach: this makes sense
- An expert / “how I was trained” approach: I learned this worked / didn't work...
- An anecdotal approach.: this didn't work last time..



What to do when professionally uncertain?

- Can I consult a colleague?
- Are my journals and textbooks organised and updated?
- Is a relevant library nearby?
- Can I find the answers on the Internet?

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"oral lichen planus" **FIND**

Find: Photos Graphics Buttons/Banners

Color: All Colors Sources: All Sources Sizes: All Sizes

48 links

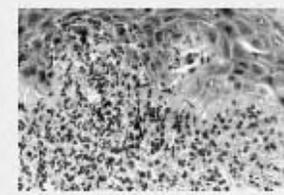
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Search box containing "oral lichen planus" and search options like "the web" and "pages from Canada".

Web Results 1 - 10 of about 139,000 for "oral lichen planus". (0.22 seconds)

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Moms Lichen Planus Cure Mother discovers product to heal lichen planus in 48 hours. Amazing www.frederm.com

Refine results for "oral lichen planus": Treatment Tests/diagnosis For patients From medical authorities Symptoms Causes/risk factors For health professionals Alternative medicine

Oral lichen planus - MayoClinic.com Lichen planus — Comprehensive overview covers causes, symptoms and treatments. Includes picture. www.mayoclinic.com/health/oral-lichen-planus/DS00784 - 26k - Cached - Similar pages

eMedicine - Oral Lichen Planus : Article by Philip Sugerman, MDSc ... Oral Lichen Planus - Oral lichen planus (OLP) is a chronic inflammatory disease that causes bilateral white striations, papules, or plaques on the buccal ... www.emedicine.com/derm/topic663.htm - 112k - Cached - Similar pages

MedlinePlus Medical Encyclopedia: Lichen planus Call for an appointment with your health care provider if oral lichen planus persists or worsens despite treatment, or if your dentist recommends adjustment ... www.nlm.nih.gov/medlineplus/ency/article/000867.htm - 26k - Cached - Similar pages

International Lichen Planus Self Help Web Site Welcome to the Oral Lichen Planus Support Web site at Baylor College of Dentistry, a component of The Texas A&M University System Health Science Center. ... www.tamcd.edu/lichen/ - 35k - Cached - Similar pages

Lichen planus - Wikipedia, the free encyclopedia Oral lichen planus may present in one of three forms. The reticular form is the most

139 000 links!

Medline webmedisin

1357 articles
179 Reviews

- Items 1 - 20 of 1357 Page 1 of 68 Next
- 1: [Ali AA, Suresh CS.](#) Related Articles, Links
 Oral lichen planus in relation to transaminase levels and hepatitis C virus.
 J Oral Pathol Med. 2007 Nov;36(10):604-8.
 PMID: 17944753 [PubMed - in process]
 - 2: [Yan SK, Wei BJ, Lin ZY, Yang Y, Zhou ZT, Zhang WD.](#) Related Articles, Links
 A metabonomic approach to the diagnosis of oral squamous cell carcinoma, oral lichen planus and oral leukoplakia.
 Oral Oncol. 2007 Oct 11; [Epub ahead of print]
 PMID: 17936673 [PubMed - as supplied by publisher]
 - 3: [Ebrahimi M, Boldrup L, Wahlin YB, Coates PJ, Nylander K.](#) Related Articles, Links
 Decreased expression of the p63 related proteins beta-catenin, E-cadherin and EGFR in oral lichen planus.
 Oral Oncol. 2007 Oct 11; [Epub ahead of print]
 PMID: 17936670 [PubMed - as supplied by publisher]
 - 4: [Srinivasan M, Kodumudi KN, Zunt SL.](#) Related Articles, Links
 Soluble CD14 and toll-like receptor-2 are potential salivary biomarkers for oral lichen planus and burning mouth syndrome.
 Clin Immunol. 2007 Oct 2; [Epub ahead of print]
 PMID: 17916440 [PubMed - as supplied by publisher]
 - 5: [Nagao Y, Myoken Y, Katayama K, Tanaka J, Yoshizawa H, Sata M.](#) Related Articles, Links

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Dentists'

6. A paradigm

In spite of an information

..... only a small fraction is truly
appropriate for direct application

..... and we are ill equipped to digest
and synthesize this information

Popular magazines & Media

busy practice
+
reimbursement
pressure

ital
ence
ournals:
articles/y



1. Information explosion
2. Quality of information
3. No theories are constant
4. Educated patients with access to information
5. Daily information needs
6. Paradox



The situation for many dentists today



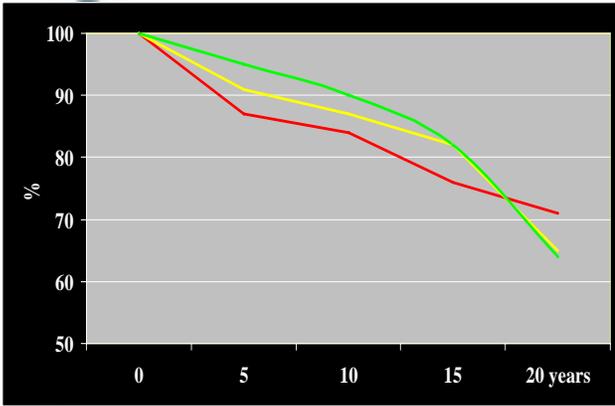
1. We need new information every day, but most of our needs are never met



2. consequently, our clinical knowledge and performance in the clinic deteriorates



3. and traditional instructional continuing education courses does not improve our performance.



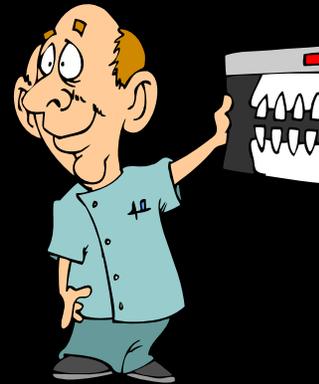
Independent variables	Bi-variate odds ratios	Bivariate significance	95% Confidence intervals bivariate odds ratios	Multi-variate odds ratios	Multivariate significance	95% Confidence intervals for multivariate odds ratios
Age group						
20-30	-	-	-	-	-	-
30-40	2.32	**	1.15 - 3.13	2.52	**	1.35 - 3.33
+40	2.63	***	1.43 - 3.08	2.63	***	1.83 - 3.8
Gender						
Male	-	-	-	-	-	-
Female	2.42	**	1.61 - 2.79	2.12	**	1.91 - 2.9
Material						
Amalgam	-	-	-	-	-	-
Composites	1.12	NS	0.13 - 1.56	1.42	NS	1.13 - 1.96
Glass ionom.	3.12	***	2.52 - 4.34	5.65	**	4.67 - 7.23
Dentists						
#1	-	-	-	-	-	-
#2	1.34	NS	0.35 - 1.61	1.04	NS	1.35 - 2.01
Location						
Mandible	-	-	-	-	-	-
Maxilla	1.55	*	1.17 - 2.04	1.15	*	1.57 - 2.14



Longevity



Risk factors

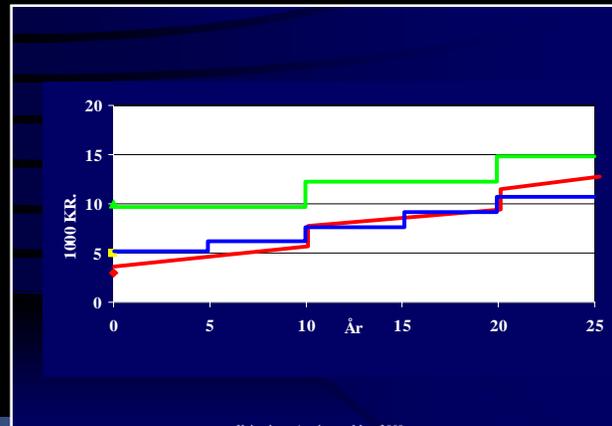


Outcomes probabilities

Coming to a correct treatment decision



QOL



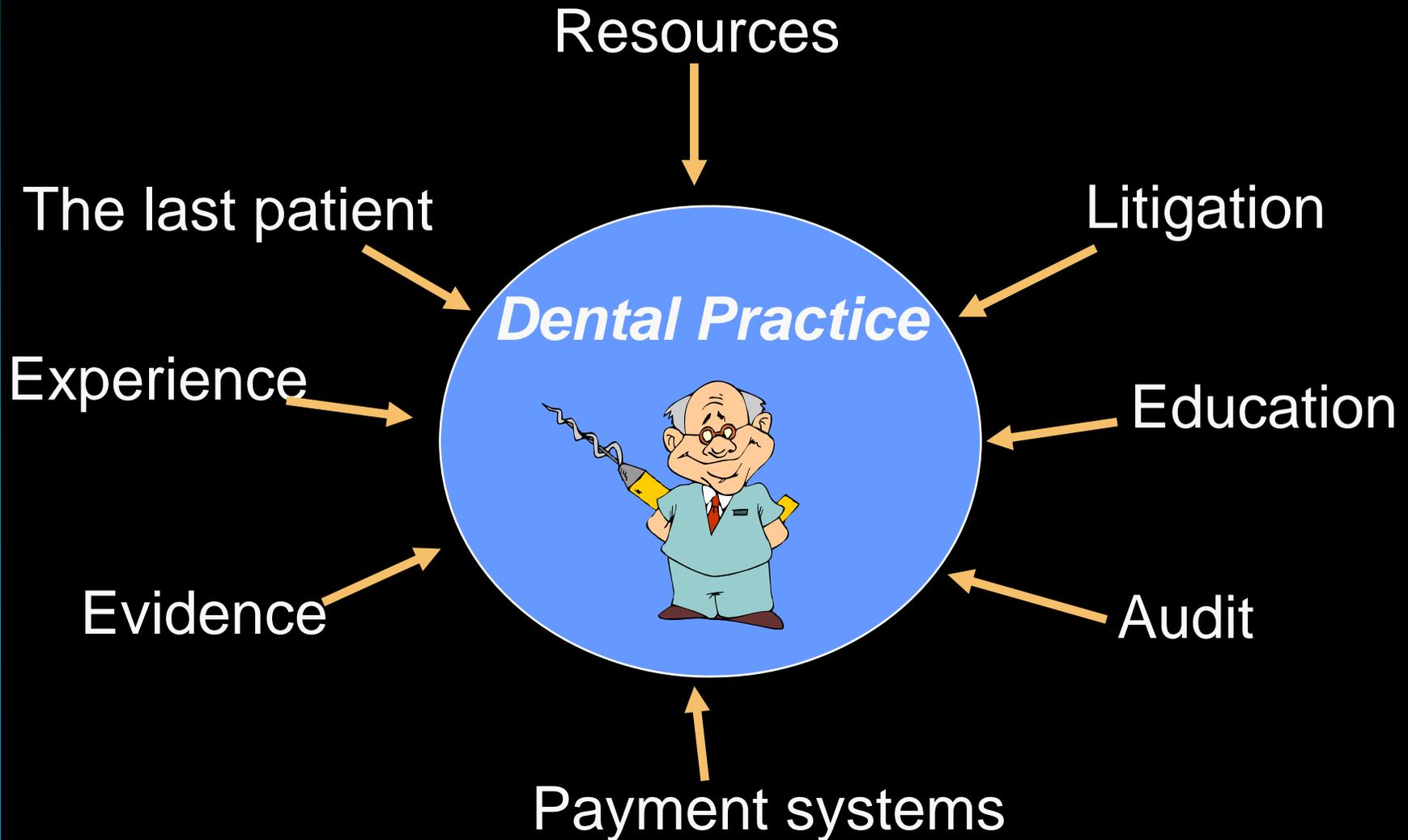
Incremental Cost



Worst Case Scenario



Influences on our treatment decisions





☞ Can future clinicians be taught a strategy for how to cope with changes ?

Evidence-Based Medicine

JAMA 1992

A New Approach to Teaching the Practice of Medicine

Evidence-Based Medicine Working Group

A NEW paradigm for medical practice is emerging. Evidence-based medicine de-emphasizes intuition, unsystematic clinical experience, and pathophysiological rationale as sufficient grounds for clinical decision making and stresses the examination of evidence from clinical research. Evidence-based medicine requires new skills of the physician, including efficient literature searching and the application of formal rules of evidence evaluating the clinical literature.

An important goal of our medical residency program is to educate physicians in the practice of evidence-based medicine. Strategies include a weekly, formal academic half-day for residents, devoted to learning the necessary skills; recruitment into teaching roles of physicians who practice evidence-based medicine; sharing among faculty of ap-

dose of phenytoin intravenously and the drug is continued orally. A computed tomographic head scan is completely normal, and an electroencephalogram shows only nonspecific findings. The patient is very concerned about his risk of seizure recurrence. How might the resident proceed?

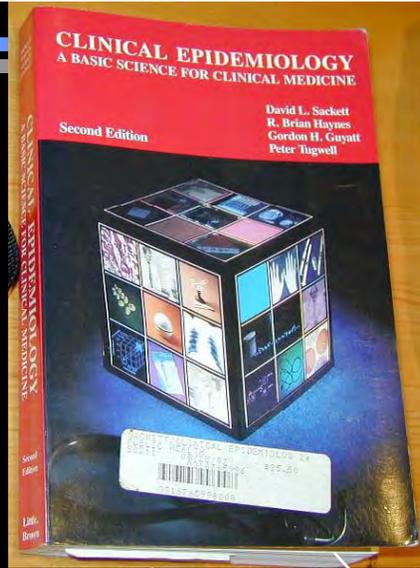
The Way of the Past

Faced with this situation as a clinical clerk, the resident was told by her senior resident (who was supported in his view by the attending physician) that the risk of seizure recurrence is high (though he could not put an exact number on it) and that was the information that should be conveyed to the patient. She now follows this path, emphasizing to the patient not to drive, to continue his medication, and to see his family

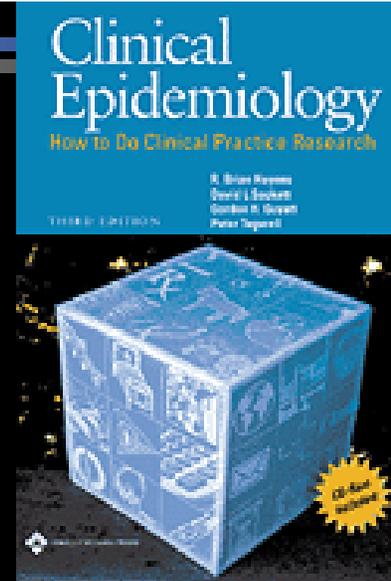
year is between 43% and 51%, and at 3 years the risk is between 51% and 60%. After a seizure-free period of 18 months his risk of recurrence would likely be less than 20%. She conveys this information to the patient, along with a recommendation that he take his medication, see his family doctor regularly, and have a review of his need for medication if he remains seizure-free for 18 months. The patient leaves with a clear idea of his likely prognosis.

A PARADIGM SHIFT

Thomas Kuhn has described scientific paradigms as ways of looking at the world that define both the problems that can legitimately be addressed and the range of admissible evidence that may bear on their solution.⁴ When defects in an existing paradigm accumulate to the



1985: 1st
1991: 2nd



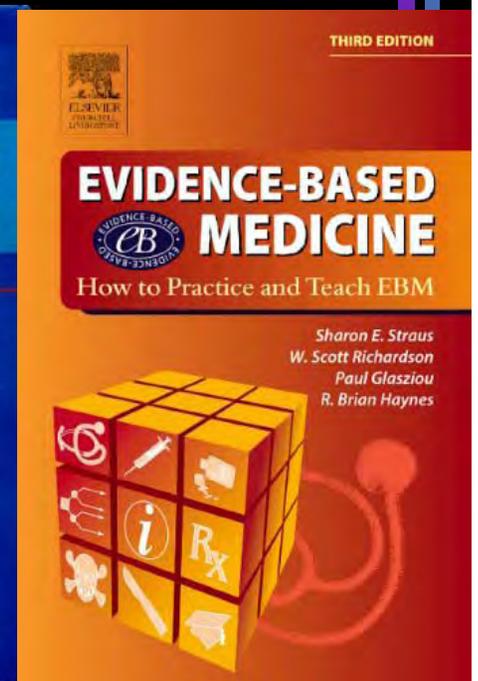
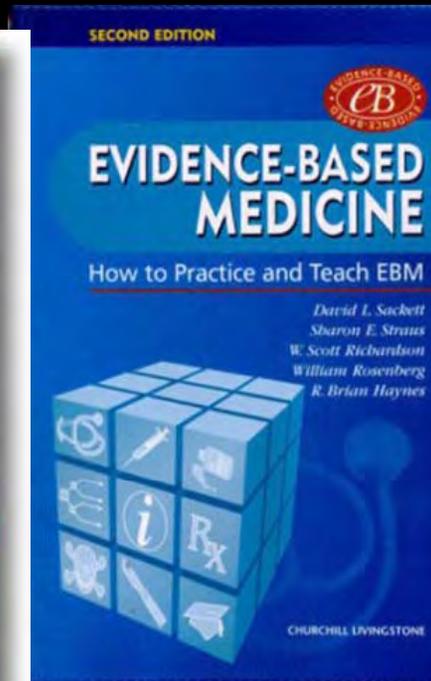
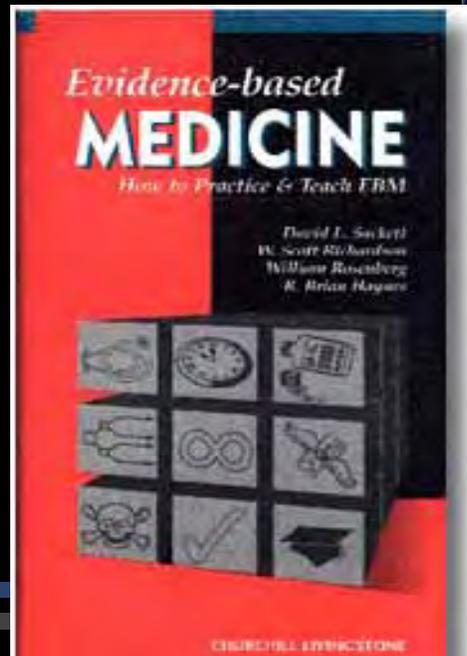
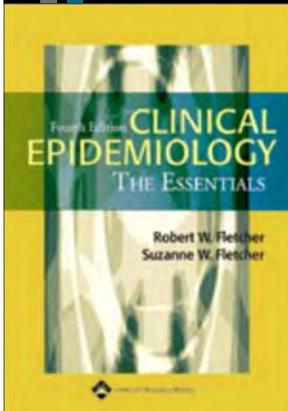
2005: 3rd

1982:
1st

1997: 1st

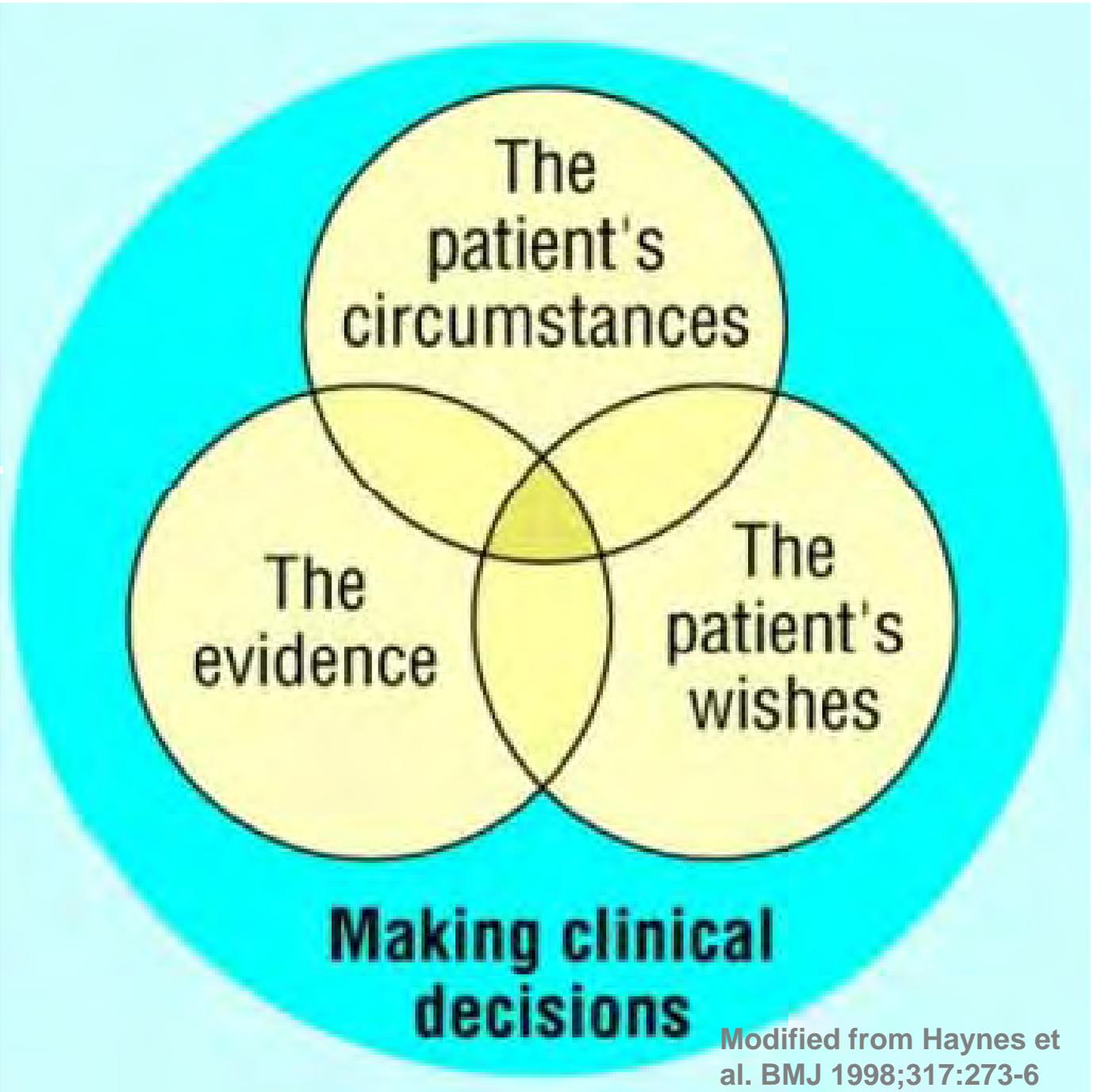
2000: 2nd

2005: 3rd





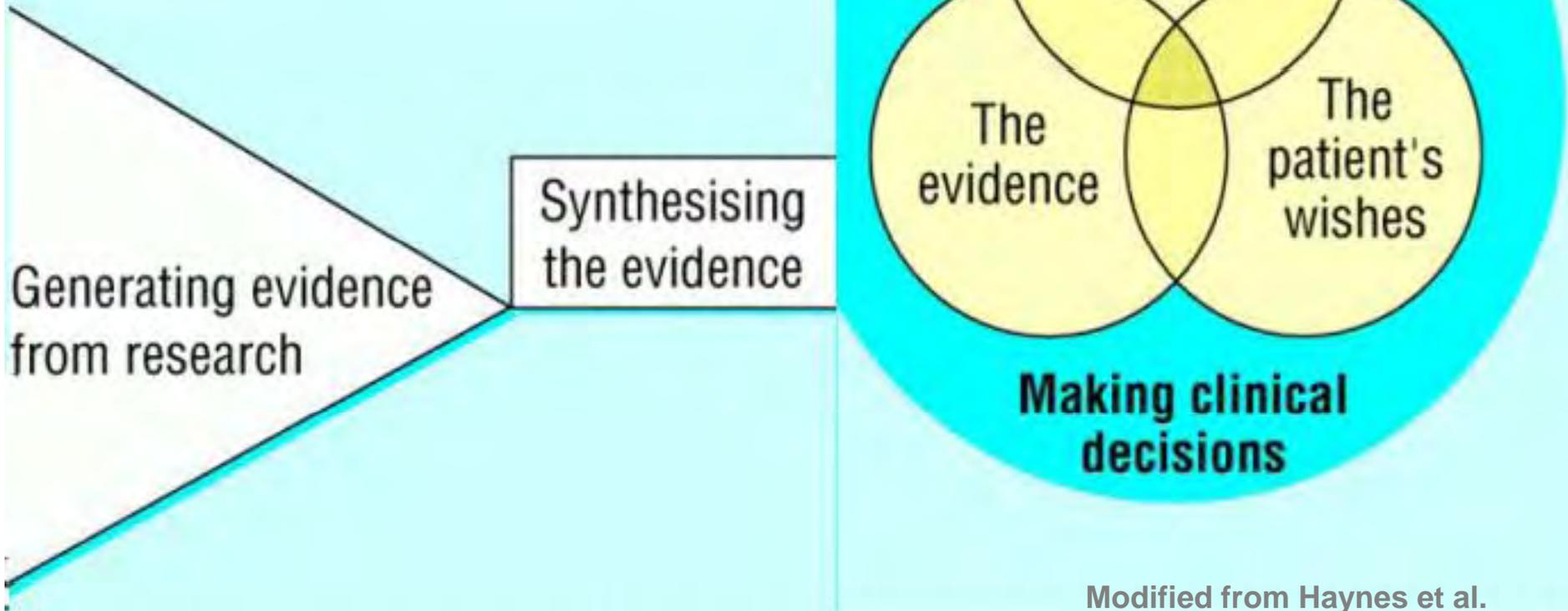
Evidence-Based Practice:



Modified from Haynes et al. BMJ 1998;317:273-6



Primary research papers

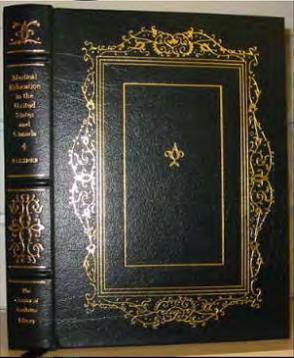


Modified from Haynes et al.
BMJ 1998;317:273-6



How many in the audience here can comfortably state that they were adequately trained to critically appraise research papers?

Flexner Report, 1910



MEDICAL EDUCATION
IN THE
UNITED STATES AND CANADA
A REPORT TO
THE CARNEGIE FOUNDATION
FOR THE ADVANCEMENT OF TEACHING
BY
ABRAHAM FLEXNER
WITH AN INTRODUCTION BY
HENRY S. PRITCHETT
PRESIDENT OF THE FOUNDATION

BULLETIN NUMBER FOUR

316 FIFTH AVENUE
NEW YORK CITY

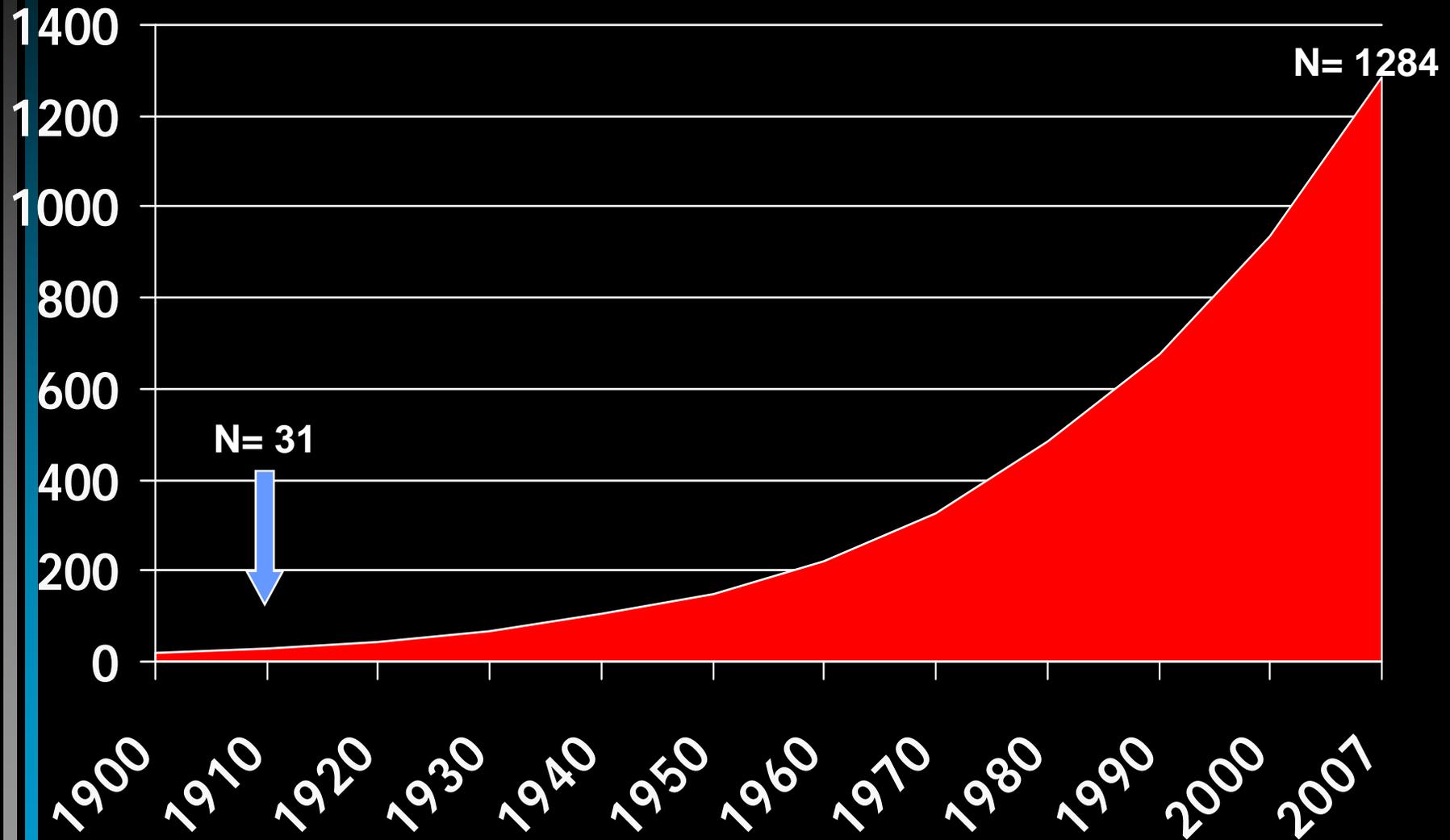
- Accounts of all medical schools throughout the US and Canada
- General plan for reconstruction
- Pathophysiological rationale
- Foundation for all medical and dental curriculums until recently



Abraham Flexner



Dental journals in circulation



Source: Ulrich's International Periodicals Directory

Cochrane Oral Group Manchester - Netscape

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Location: <http://www.cochrane-oral.man.ac.uk/>



Cochrane Oral Health Group

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Welcome to our web-site

The Cochrane Collaboration

The Cochrane Collaboration is an international organisation that aims to help people make well-informed decisions about healthcare by preparing, maintaining and promoting the accessibility of systematic reviews of the effects of healthcare interventions. The main work of the Collaboration is done by approximately fifty Collaborative Review Groups, within which Cochrane Reviews are prepared and maintained. The Cochrane Oral Health Review Group aims to produce systematic reviews which primarily include all randomised control trials (RCT's) of oral health. Oral health is broadly conceived to include the prevention, treatment and rehabilitation of oral, dental and craniofacial diseases and disorders.

Scope of the Group

The Cochrane Oral Health Group aims to produce systematic reviews which primarily include all randomised controlled trials (RCT's) of oral health. Oral health is broadly conceived to include the prevention, treatment and rehabilitation of oral, dental and craniofacial diseases and disorders.

What's New ?

- [Course on Evidence Based Practice in the Dental Specialties](#)

Address <http://www.ihc.ox.ac.uk/cebd/index.htm>



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Developing Evidence-based Dentistry

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The Centre for Evidence-based Dentistry is an independent body whose aim is to promote evidence-based dentistry world-wide. The Centre was formed in early 1995. Following a workshop on Evidence-based Dentistry held at Templeton College, Oxford in December 1994.

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Jan 2003 Boston Evidence-based

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CENTRE FOR Evidence-Based Dentistry And Informatics

CEBD Home

Best seen at 800x600 in IE

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Web site creator: [Dr. Shailesh Lela](#)
 Updated: 28-June-2001

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Grupo de Odontología Basada en la Evidencia

Facultad de Odontología - Universidad de Valparaíso

Bienvenido a la primera página en Español acerca de *Odontología Basada en la Evidencia*. Esta página está en permanente construcción y te invitamos a colaborar en ella y [unirte](#) al Grupo de Odontología Basada en la Evidencia.

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Address <http://www.isebd.com/index.html>



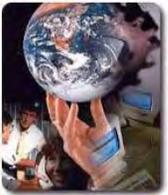
International Society of Evidence-Based Dentistry

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Welcome

Welcome to the official website for the International Society of Evidence-Based Dentistry!

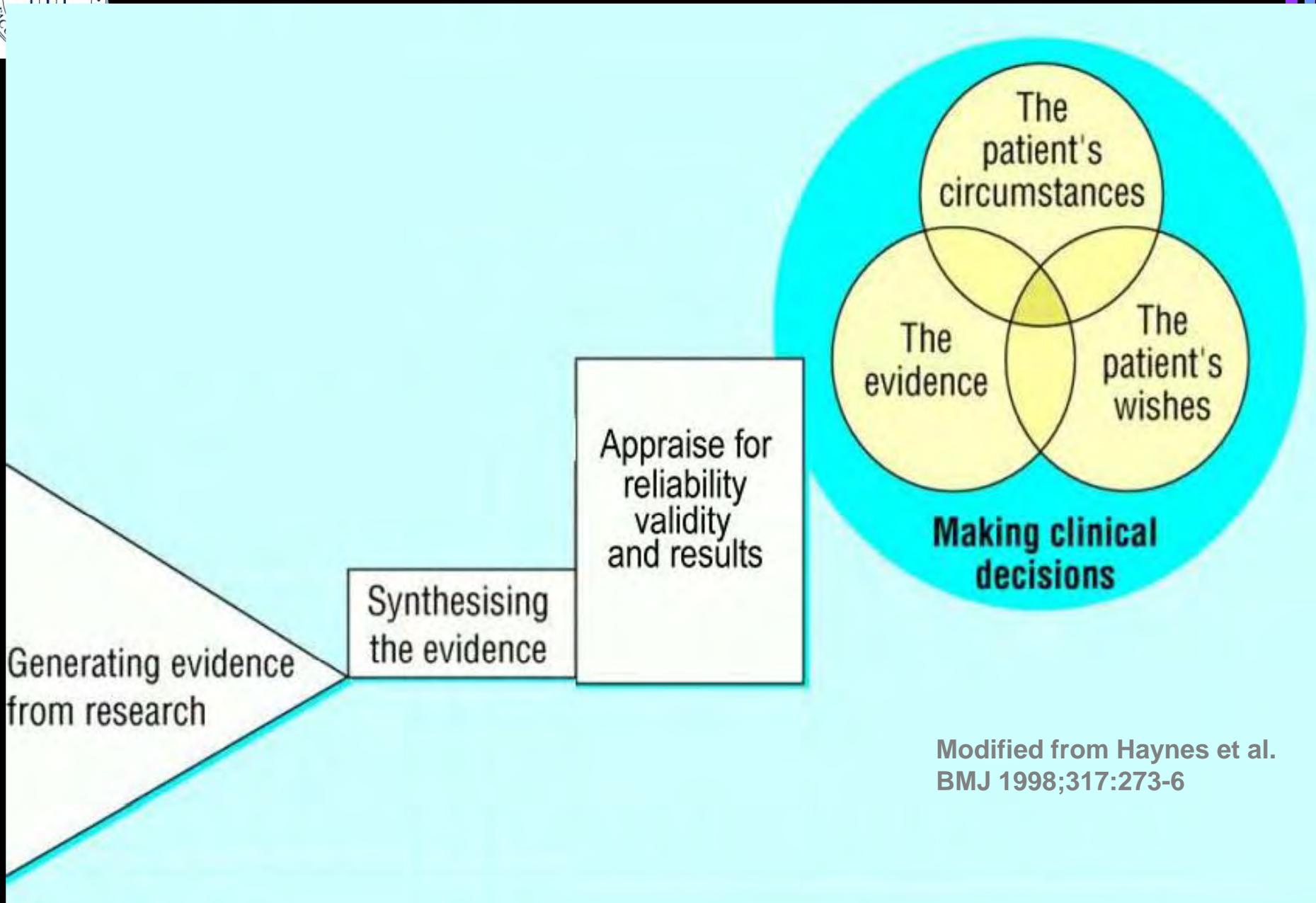
WHAT'S NEW-ANNOUNCEMENTS
 -The First Annual Membership Meeting of the ISEBD will take place on November 6 and 7, 2003 in Chicago, IL.





Because of the volume and time constraint....

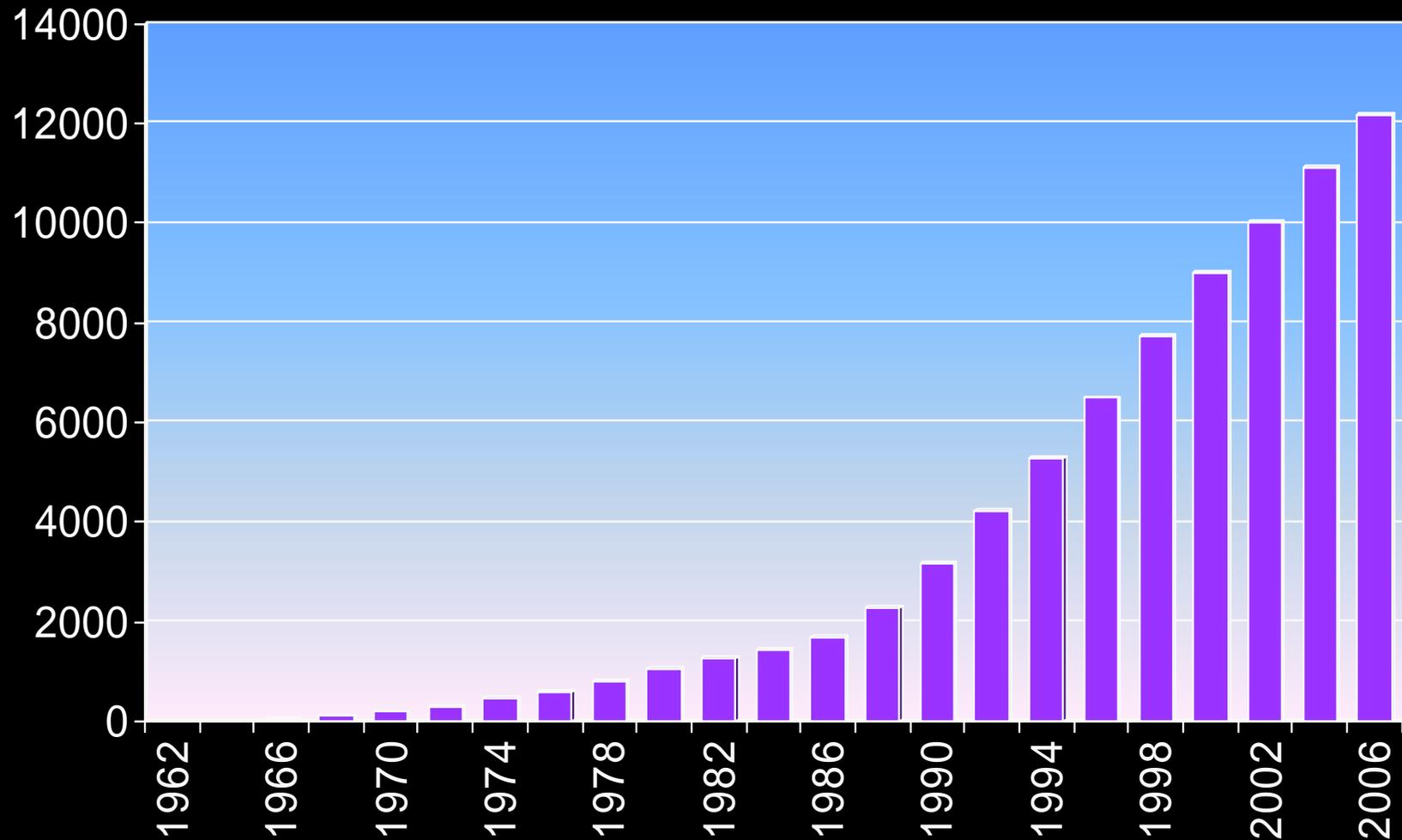
Perhaps we can stick to read only review papers?



Modified from Haynes et al.
BMJ 1998;317:273-6



Reviews in Dentistry (n=12.367) (2007: 191)



(Source: Medline. OVID search strategy: review.pt + exp dentistry)



Reviews - problems

Usually:

- written by a single topic expert
- based on their understanding of the literature
- no methodology is given
- a broad based subject is addressed
- the conclusions and advises differ



Example: Are splints an efficacious intervention for patients with TMD?





CRITICAL REVIEWS IN
ORAL BIOLOGY & MEDICINE

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Critical Reviews in Oral Biology & Medicine, Vol 9, 345-361, Copyright © 1998 by International & American Associations for Dental Research

ARTICLES

Oral splints: the crutches for temporomandibular disorders and bruxism?

199 refs

T. T. Dao and G. J. Lavigne

Faculty of Dentistry, University of Toronto, Ontario, Canada.

Despite the extensive use of oral splints in the treatment of temporomandibular disorders (TMD) and bruxism, their mechanisms of action remain controversial. Various hypotheses have been proposed to explain their apparent efficacy (i.e., true therapeutic value), including the repositioning of condyle and/or the articular disc, reduction in the electromyographic activity of the masticatory muscles, modification of the patient's "harmful" oral behavior, and changes in the patient's occlusion. Following a comprehensive review of the literature, it is concluded that any of these theories is either poor or inconsistent, while the issue of true efficacy for oral splints remains unsettled. However, the results of a controlled clinical trial lend support to the effectiveness (i.e., the patient's appreciation of the positive changes which are perceived to have occurred during the trial) of the stabilizing splint in the control of myofascial pain. In light of the data supporting their effectiveness but not their efficacy, oral splints should be used as an adjunct for pain management rather than a definitive treatment. For sleep bruxism, it is prudent to limit their use as a habit management aid and to prevent/limit dental damage potentially induced by the disorder. Future research should study the natural history and etiologies of TMD and bruxism, so that specific treatments for these disorders can be developed.

- ▶ Similar articles found in:
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[Dao, T. T.](#) || [Lavigne, G. J.](#)
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..the true efficacy for oral splints remains unsettled.



Pain 83 (1999) 549–560

PAIN

www.elsevier.nl/locate/pain

Occlusal treatments in temporomandibular disorders: a qualitative systematic review of randomized controlled trials

Heli Forssell^{a,*}, Eija Kalso^b, Pirkko Koskela^c, Raili Vehmanen^d, Pauli Puukka^e, Pentti Alanen^f

^aDepartment of Oral Diseases, Turku University Central Hospital, Lemminkäisenkatu 2, FIN-20520 Turku, Finland

^bDepartment of Anaesthesia, Helsinki University Central Hospital, Haartmaninkatu 4, FIN-00290 Helsinki, Finland

^cDepartment for Oral Health, Centre of Health and Social Services, City of Jyväskylä, Hannikaisenkatu 11-13, FIN-40100 Jyväskylä, Finland

^dHealth Center of Tampere, Satamakatu 17 B, FIN-33200 Tampere, Finland

^eSocial Insurance Institution, Research and Development Center, Peltolantie 3, FIN-20720 Turku, Finland

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Received 22 January 1999; received in revised form 17 June 1999; accepted 25 June 1999

54 refs

temporomandibular disorders (TMD). To investigate whether studies are in agreement with current clinical practices, a systematic review of randomized controlled trials (RCTs) of occlusal treatment studies from the period 1966 to March 1999 was undertaken. Eighteen studies met the inclusion criteria, 14 on splint therapy, and 4 on occlusal adjustment. The trials were scored using the quality scale presented by Antczak et al., 1986a (A.A. Antczak, J. Tang, T.C. Chalmers, Quality assessment of randomized control trials in dental research. I. Methods, J. Periodontal Res. 1986a;21:305–314). The overall quality of the trials was fairly low, the mean quality score was 0.43/1.00 (range 0.12–0.78). The most obvious methodological shortcomings were inadequate blinding, small sample sizes, short follow-up times, great diversity of outcome measures and numerous control treatments, some of unknown effectiveness. Splint therapy was found superior to 3, and comparable to 12 control treatments, and superior or comparable to 4 passive controls, respectively. Occlusal adjustment was found comparable to 2 and inferior to one control treatment and comparable to passive control in one study. Because of the methodological problems, only suggestive conclusions can be drawn. The use of occlusal splints may be of some benefit in the treatment of TMD. Evidence for the use of occlusal adjustment is lacking. There is an obvious need for well designed controlled studies to analyse the current clinical practices. © 1999 International Association for the Study of Pain. Published by Elsevier Science B.V.

The use of occlusal splints may be of some benefit for the treatment of TMD

Cited Refer
Occlusal treatments in temporomandibular disorders: a quality
 Forssell H, Kalso E, K
 PAIN
 83 (3): 549-560 D

55 refs

12 refs appear in both papers

Cited References
Oral splints: The crutches for temporomandibul
 Dao TTT, Lavigne GJ
 CRITICAL REVIEWS IN ORAL BIOL
 9 (3): 345-361 AUG 1998

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reviews should be
"*Systematic*"

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11566: [Gunderson JG, Carpenter WT Jr, Strauss JS.](#)

Borderline and schizophrenic patients: A comparative study.
 Am J Psychiatry. 1975 Dec;132(12):1257-64.
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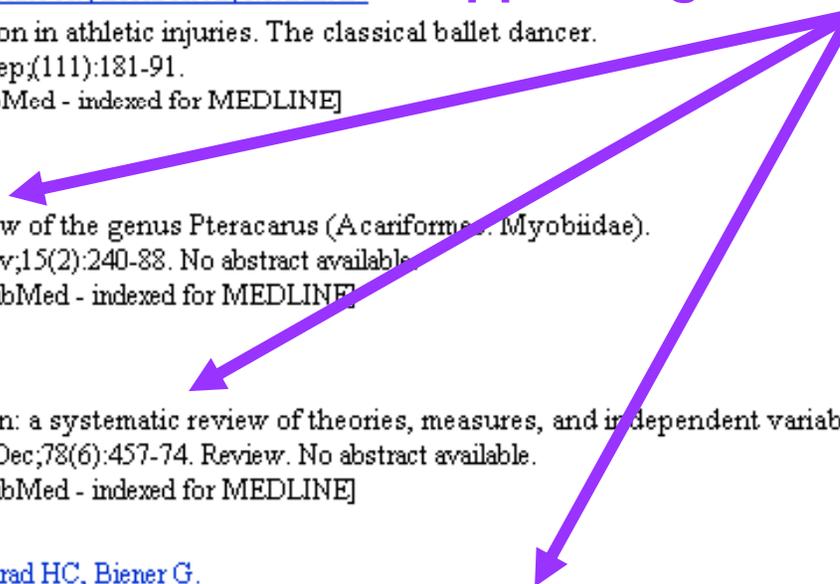
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"Systematic reviews"
appearing 1971, 1972, 1973?

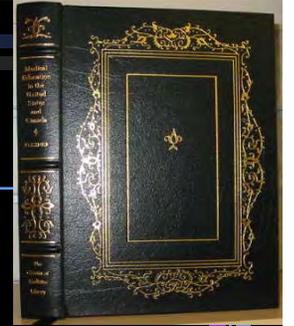




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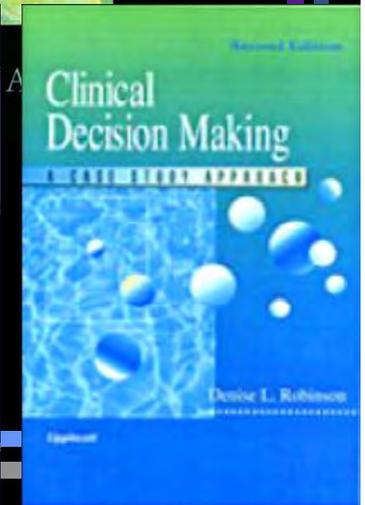
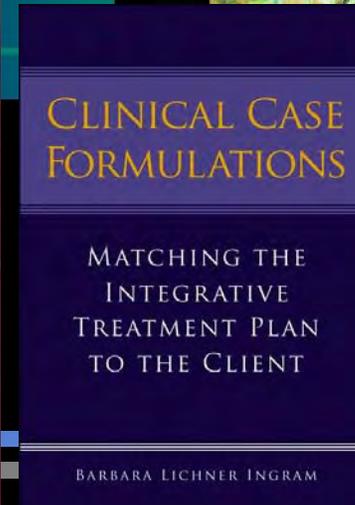
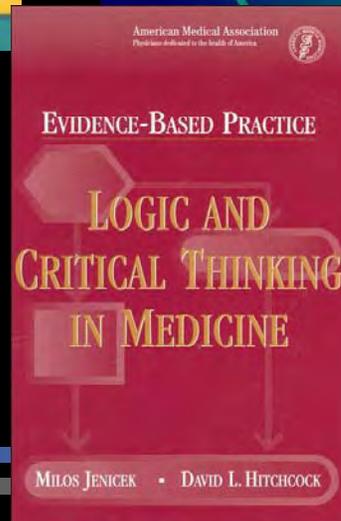
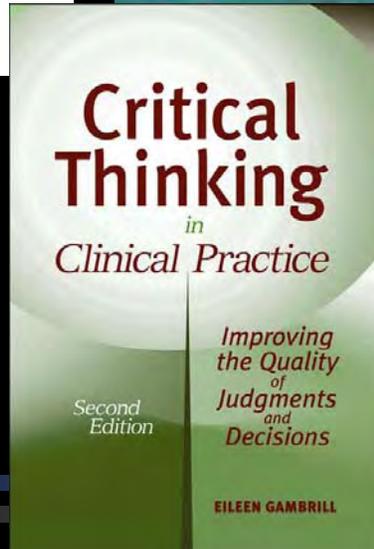
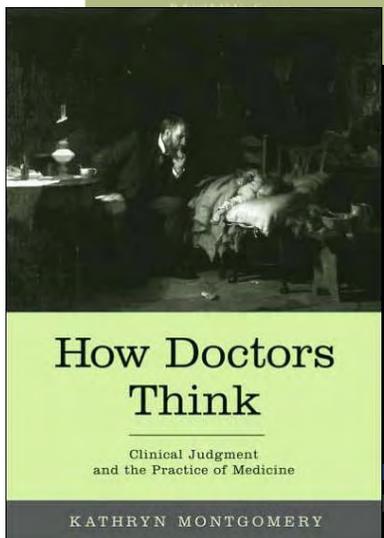
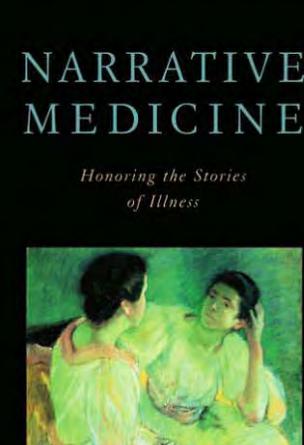
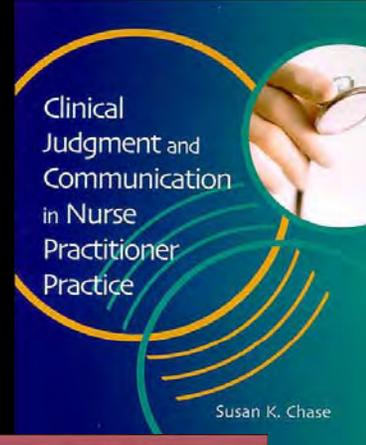
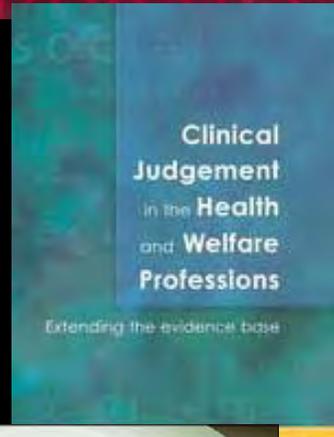
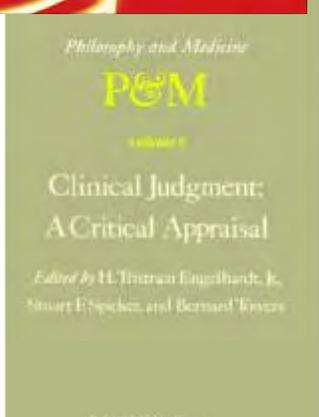
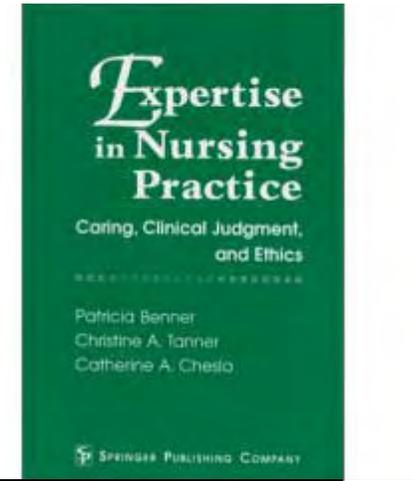
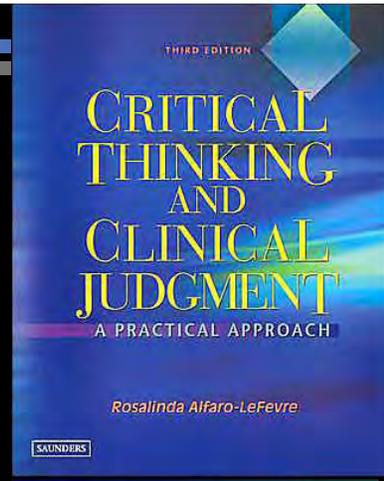
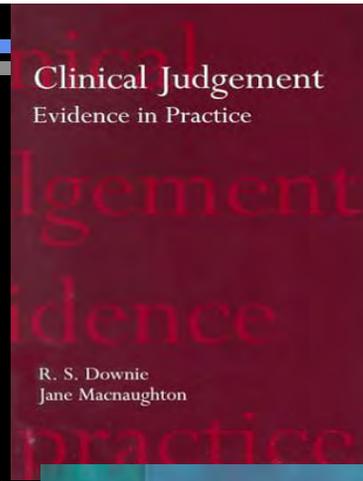
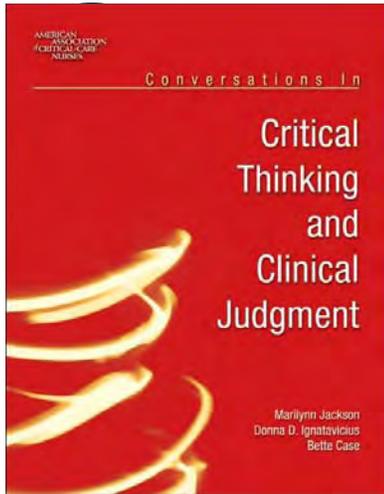
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Information
is not synonymous
to knowledge
and even less so to
clinical competence



How quickly do dentists adopt to new research information?

Impacted wisdom teeth?

TMD management?

Need for restoration replacement?

Caries and remineralization potential

....

Why does the science transfer to dentists seem to be ineffective?

The British Association
Address http://www.nchta.org/fullmono/mon415.pdf

Health Technology Assessment 2000; Vol. 4: No. 15

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d review

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USA

1979: NIH
Consensus dev.
Conference for
removal of third
molars

1995: Am.Acad.Oral Med.Surg.
Parameters of Care

1993: Am.Acad.Or.Med.Surg.
Workshop on the managem. of
patients with third molar teeth

1991 Am.Acad.Oral Med.Surg
Parameters of Care

2000: SIGN
Guidelines

1980

1990

2000

1995: Br. Assoc.Oral Med. Surg. Pilot Clinical Guidelines

1996: NHS R&D. National guidelines

Sept 1997: FacDentSurg RoyCollSurg(Eng)

1998: Effectiveness Matters 3(2)

2000: NHS R&D HTA Programme

2000: NICE
Guidelines

Dentists' decisions on prophylactic removal of mandibular third molars: a 10-year follow-up study

Kerstin Knutsson¹, Leif Lysell² and Madeleine Rohlin¹

¹Department of Oral Radiology, Faculty of Odontology, Malmö University, Malmö,
²Department of Oral Surgery, Central Hospital, Kristianstad, Sweden

Knutsson K, Lysell L, Rohlin M: Dentists' decisions on prophylactic removal of mandibular third molars: a 10-year follow-up study. Community Dent Oral Epidemiol 2001; 29: 308-14. © Munksgaard, 2001

Abstract – Objectives: In recent years, several critical outcome studies concerning the prophylactic removal of mandibular third molars have been published. These

“...studiesappear to motivate a more restrictive approach today compared with 10 years ago”



accepted 8 November 2000



Even if we have new research

This is not necessarily
known amongst the
dental clinical
practitioners



Are dentists worse or better than other health professions?

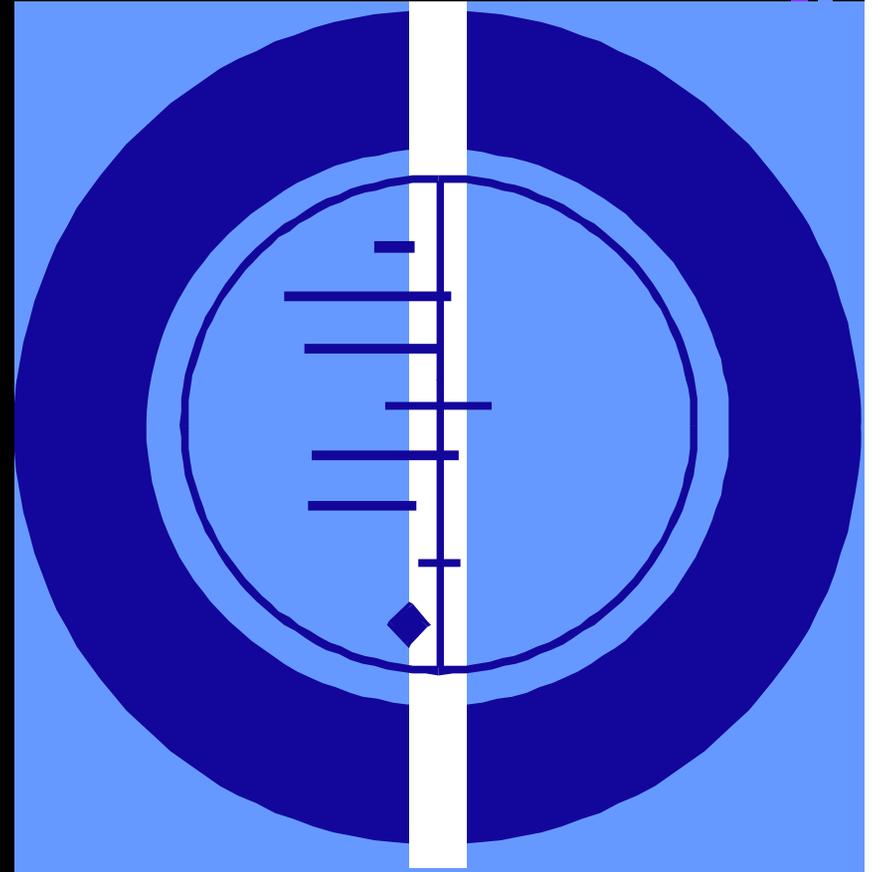


The Cochrane Collaboration

- 1972: 1st trial
- 1972-1987: +6 trials
- 1989: 1st SR

From 1992

1
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7



Logo



Even if we have new research

Who should be
responsibility for
disseminating (new)
research results that
impacts directly on patient
care?

Cutting edge research that will impact future oral health care

**A Jokstad, FDI Scientific Affairs Manager
Ferney-Voltaire, France**

Key words: Science, natural sciences, dentistry, oral medicine, stomatognathic diseases

This paper has been approved by the FDI Science Committee, comprising Professor LP Samaranayake (Chair) Professor Martin Tyas (Vice-Chair), Professor R Biffar, Professor J Clarkson (IADR), Dr PL Fan, Professor A Jokstad Professor H Magloire and Professor H Suda.

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One of the four missions of the FDI World Dental Federation is “to advance and promote the art, science and practice of dentistry”. Although FDI does not undertake any research on its own, the federation engages in the evaluation and synthesis of ongoing oral health research in order to present new and important findings to the practising dental community. The FDI has had a long working relationship with the International

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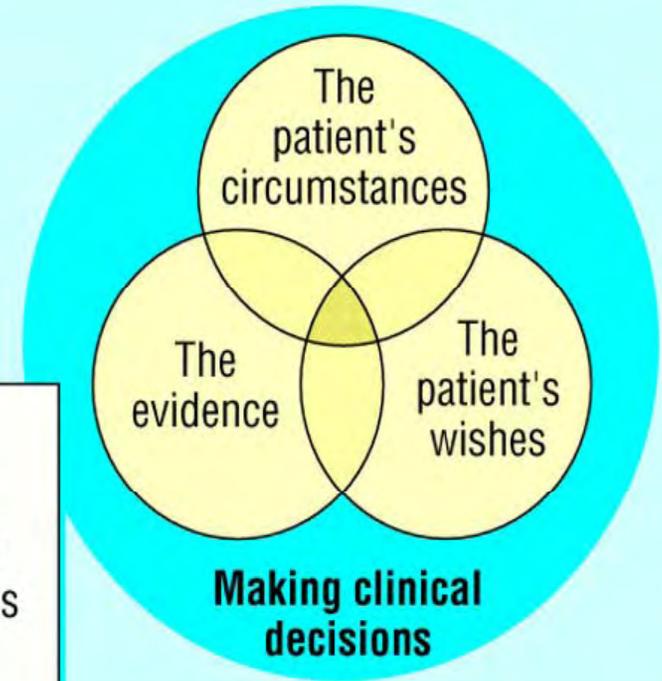
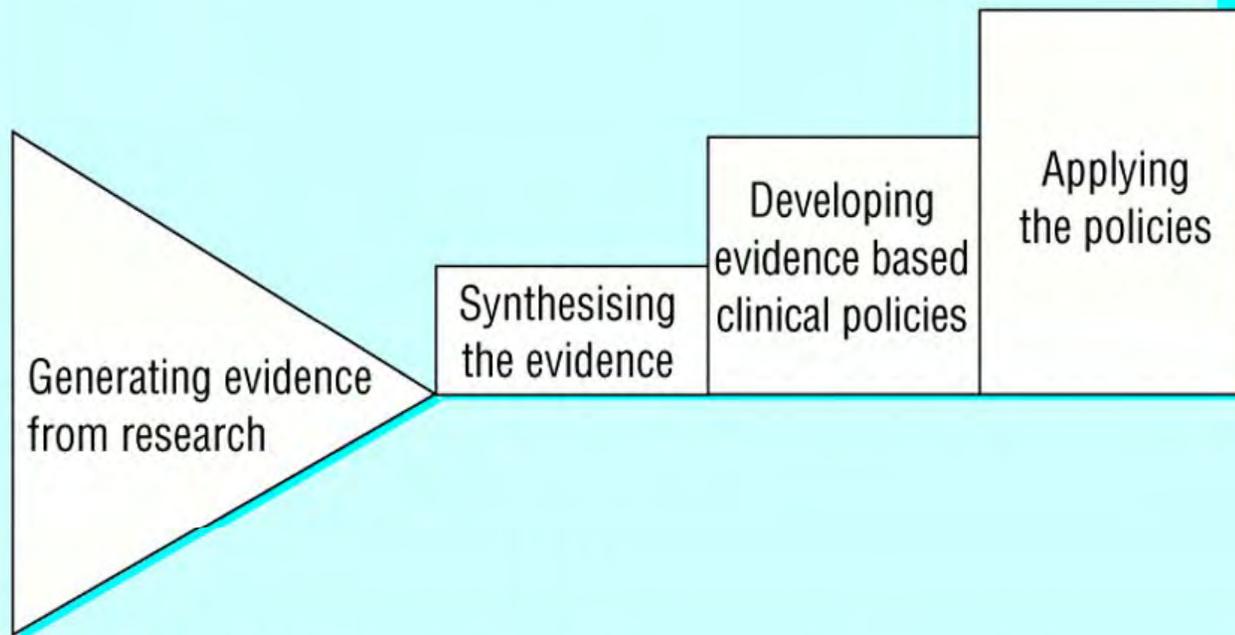
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Who should be responsible?



Modified from Haynes et al.
BMJ 1998;317:273-6



Who should be responsible?: The state of research on oral implants

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