



The Faculty of Dentistry Khon Kaen University

Presents this Certificate of Appreciation
To

Associate Professor dr.odont Asbjørn Jokstad

In Recognition of the Contributions as a Speaker
in

Evidence-Based Dentistry and Problem - Based Learning

October 11, 2001

Assistant Prof.Napa Sukjai

Chairman

(Assistant Prof.Niwut Juntavee)

Dean

Oral sciences in the rapidly changing society in an age of information

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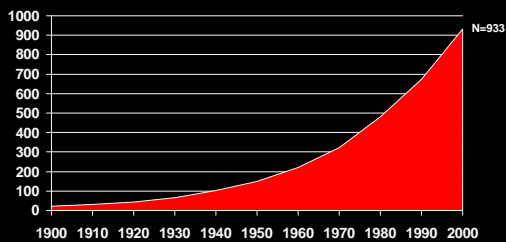
10.11.2001 <http://www.odont.uio.no/protetikkkhonnaen> 1

A rapidly changing society

- The production of new knowledge is at maximum in historical context
- Rapid changes of new ideas and paradigms
- The potential for information transfer to everyone has improved by the information technology
- Affects us all
 - Students and teachers
 - Patients
 - Researchers

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Dental journals in circulation



Source: Ulrich's International Periodicals Directory

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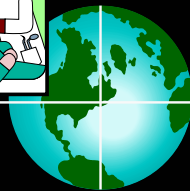
Who creates new knowledge in oral sciences?

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Clinical practitioners



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

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Researchers



- 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


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Critical appraisers



- Appraisal of the evidence for clinical practice
- Epidemiologists, health economists, statisticians, social scientists, and clinicians
- Collect, abstract and appraise publications on various issues
- Debates are 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
- Often clinical specialists seeking ways to influence peers

Advancement ↔ Good communication



Different educational backgrounds, evaluation of best practice
 Different pressures, priorities, terminologies, preoccupations
 BARRIERS: Ignorance Defensiveness Arrogance

How will this affect tomorrow's researchers ?

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GTR Attachment gain -traditional reviews

- Compared to open flap debridement = 2.7mm
Laurell L, Gottlow J, Zytby M, Persson R. Treatment of intrabony defects by different surgical procedures. A literature review. J Periodontology 1998;69:303-313

Incorporation of uncontrolled and unblinded studies

- Compared to open flap debridement = 1.6mm
Cortellini P, Tonetti M. Focus on intrabony defects: guided tissue regeneration. Periodontology 2000 2000;22:104-132.

Unclear selection criteria for studies

Inclusion of studies of short duration

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GTR Attachment gain - systematic reviews

- A small benefit is apparent
 - Results of clinical trials are not consistent
 - Technically demanding treatment
 - Local biological factors uncertain
 - e.g. "critical size", endotoxin remnants, etc.
- Jokstad. Norwegian Periodontal Society. Oslo, Nov 1999.
Needleman et al. Cochrane Library 2001;3.
- Compared to open flap debridement = 1.1mm
(Needleman et al. Cochrane Library 2001;3)

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Suggestion: Attention to methodological rigorousness of primary and secondary research

- CONSORT statement for RCT
- 75/318/EEC: Good Clinical Practice for trials
- ISO TC194: Biological evaluation of medical devices
- CEN TC055 / DIN: Clinical investigation standards
- Cochrane Collaboration Handbook

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Example 1: Diagnostics

Rapid developments of emerging technologies
–e.g. caries diagnosis

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Caries diagnosis

Traditional techniques

- Visual
- Tactile
- Radiological

Recently developed technologies

- Digital radiography - expert systems
- Laser fluorescence
- Electrical conductivity (EC)
- Fibre optic (FOTI)

Emerging technologies

- Quantitative laser-light induced fluorescence
- Ultrasonography
- Alternating current impedance spectroscopy

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Example 1: Diagnostics

- Rapid developments of emerging technologies
 - e.g. caries diagnosis
- Danger of blinding by technology
- Validation in appropriate settings and populations?

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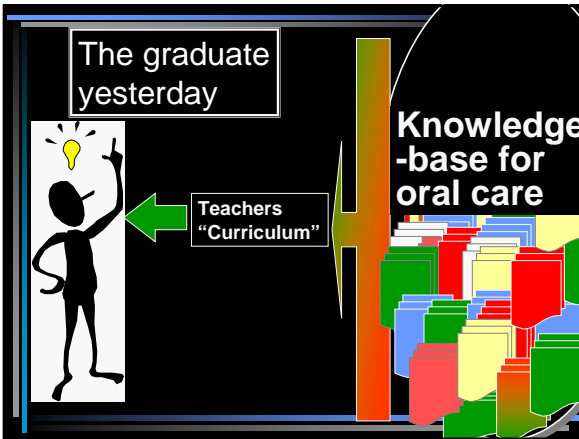
Example 2: Therapy

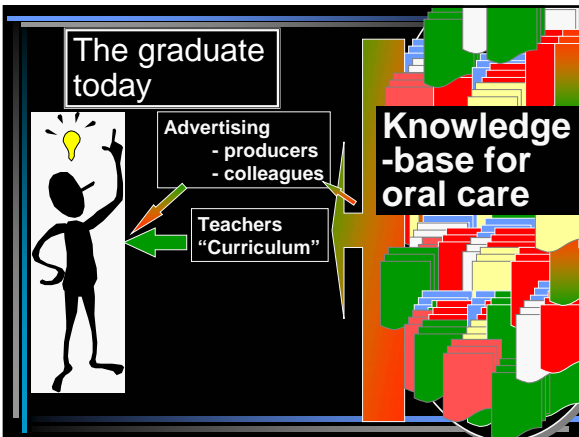
- Only small improvements can be anticipated
- Adequate study design, sample sizes and settings
- Need for RCTs, power calculations, international cooperation and multi-centre studies

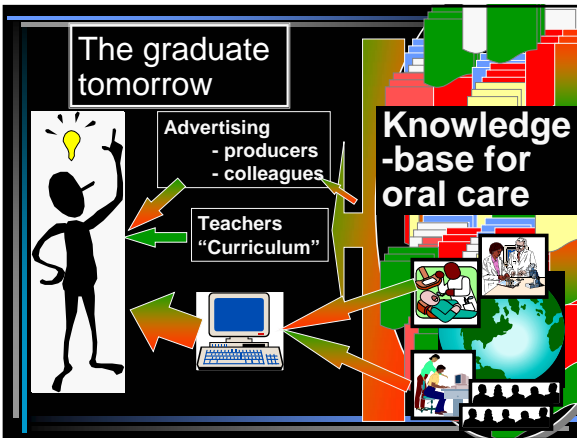
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How will this affect tomorrow's teaching of dental students?

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- The graduate today and tomorrow**
- Has been taught and can perform many basic clinical procedures - not necessarily the most modern
 - No hands-on experience with many procedures common in modern dental clinics
 - How and from where should further professional training be obtained?
 - Theoretic knowledge at zenith, from now on less time for reading / question of priorities
 - Already from day 1 the oral sciences advances further - how to stay updated? 23

- Suggestion: Educational strategy**
- Premise: Politically difficult to expand curriculum and length of study
- Problem based learning - PBL
 - Focus on "why"s instead of "how to"s
 - Motivate on need for life-long learning
 - Teach critical appraisal of new information
 - Prepare how to meet tomorrow's knowledgeable patients' needs and requests
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PBL- Problem based learning and teaching dentistry

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I hear and I forget;
I see and I remember;
I do and I understand

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Schools of Dentistry applying a PBL approach

- U. Liverpool, England; U. Malmö, Sweden; U. Oslo, Norway; Trinity U., Dublin, Ireland
- Hong Kong U.; National U. Singapore; U Thammasat, Thailand;
- U. of Adelaide, Queensland U.
- U. California, Colorado, Columbia, Harvard School of Dental Medicine, Indiana, Pennsylvania , U. Southern California, U. Southern Illinois,

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MEETINGS

1st. International Symposium on Problem-Based Learning in Dental Education. Lake Arrowhead, USA, April 1998. *J Dental Education* 1998; 62: 629-732.

2nd. Int. Symposium on Problem-Based Learning in Dental Education. Malmö, Sweden, September 2000

Asian-Pacific Conference on PBL

South-East Asian Assoc for Dental Education

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WEB-RESOURCES:

<http://www.usc.edu/hsc/dental/ccmb>

<http://meds.queensu.ca/medicine/pbl/PBLTitles.htm>

<http://www.samford.edu/pbl/how2.html>

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Barriers

- Resources required
- First line teachers are instructors = GPs!
- Compartmentalisation
- Clinical disciplines versus basic sciences
- Clinical discipline

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DLP – Dental learning package

g.g. University of Adelaide:
Keith's teeth


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Formulating answerable
problems – e.g. clinical
questions

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Problems? ...

a 32 y patient calls four hours
after a wisdom tooth has
been removed and complain
about bleeding, pain and
severe swelling.



She demands immediately some
analgetics, some antifebriles
and perhaps also antibiotics? ..

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Problems? ...

A 66 year old woman comes to your clinic due to oral lichen planus. She wants to confer with you about a new treatment option described in the latest issue of 'Health & Fitness'



Problems? ...

Tooth coloured materials are acceptable alternatives for amalgam.



Where do clinical questions arise from?

1. Clinical findings - Gather and interpret findings
2. Etiology - Identify causes for disease
3. Differential diagnosis - Causes of patients' problem
4. Diagnostic tests - Select and interpret diagnostic tests
5. Prognosis - estimate clinical course and complications
6. Therapy- treatments that do more good than harm
7. Prevention - reduce the chance of disease
8. Self-improvement - keep up to date, improve skills

Why train students to form clearly formulated questions

1. Train to focus scarce learning time on evidence that is directly relevant to our patients' clinical needs
2. Focus scarce learning time on evidence that directly addresses our particular knowledge needs
3. Suggest high-yield search strategies
4. Suggest the forms that useful answers might take

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Why train students to form clearly formulated questions

5. Can help us to communicate clearly when referring a patient (e.g. presenting patient situations)
6. Can help students to better understand the content of what we teach, while also modelling adaptive processes for lifelong learning.
7. When we answer our questions, our curiosity is reinforced, our cognitive resonance is restored.

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Example: Problem / hypothesis

“Tooth coloured materials are acceptable alternatives for amalgam in the posterior teeth”

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What is being discussed?

- Caries / Replacement ?
 - primary/secondary?
 - large/small?
 - proximal / gingival / occlusal?
- Intraoral location:
 - premolars /molars?
- Patient:
 - adults/children
 - » deciduous/permanent?

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"Tooth coloured materials "

- Composite resin (macrofill, microfill, hybrid, "flowables" ?)
- Composite resin with glassionomer addition?
- Composite resin, cemented inlay (clinic, laboratory?)
- Ceramic, cemented inlay (sintered, cast, grinded?)
- Glassionomer (metal-reinforced, conventional?)
- Glassionomer with resin?
- "Polyglass", "ceromer", "crystal polymer", "polymer ceramic"?
- Ormocer? - "The flowable ceramic"
- Doxadent? - "The ceramic restoration that can be formed directly in the tooth"

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For **adults** with **large primary caries** cavities in **the occlusal surface of molars** is
xxxxxxxxxxxx an acceptable alternative for amalgam

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Example: Problem / hypothesis

“Tooth coloured materials are acceptable alternatives for amalgam in the posterior teeth”

- 1. Patient or problem that is addressed?
- 2. Intervention considered?
- 3. Comparable intervention considered?
- 4. The clinical outcome of interest

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Tooth coloured materials are acceptable alternatives for amalgam in the posterior teeth.



For adults with small primary caries cavities in the approximal surface of premolars are (hybrid) composite resins acceptable alternatives for amalgam

- 1. Patient or problem that is addressed
- 2. Intervention considered
- 3. Comparable intervention considered

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Tooth coloured materials are acceptable alternatives for amalgam in the posterior teeth.



For adults with small primary caries cavities in the approximal surface of premolars are (hybrid) composite resins acceptable alternatives for amalgam

What is meant by “acceptable”?

Patient criteria?

Dentist criteria? / caries? / longevity? / fracture risk? / prognosis? / etc.

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Tooth coloured materials are acceptable alternatives for amalgam in the posterior teeth.

↓

For adults with small primary caries cavities in the approximal surface of premolars are (hybrid) composite resins acceptable alternatives for amalgam

↓

For adults with small primary caries cavities in the approximal surface of premolars do (hybrid) composite resins show comparable longevity to amalgam

1. Patient or problem that is addressed 2. Intervention considered
 3. Comparable intervention considered 4. The clinical outcome of interest

Formulating questions

1. Patient or problem that is addressed
2. Intervention considered
3. Comparable intervention
4. The outcome of interest

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Problem-solving clinical experience ≠/≠ problem based learning

- Goal is to arrive at an effective solution to a problem
- Learning process in which the answer or solution to the problem is largely irrelevant and the problem is used solely to provide the stimulus for self-motivating learning

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How will this affect tomorrow's clinical practitioners ?

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More knowledgeable patients:

Realistic, white shades for special cosmetic needs

- ✓ Wish to stay sound, look healthyyoung
- ✓ Competitive health professions

✓ Patient communication!

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Dentists' environment: An information overload

Advertising
- producers
- colleagues

Meetings/courses

Colleagues

WWW

Patients (& -groups)

Popular magazines & Media

Literature

Dental 'science'
700 journals:
25 000 articles/yr

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

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Suggestion: Integrate best evidence-based practice in the clinic

- A practical aspect
 - A strategy for solving clinical problems on a daily basis.
- An ethical aspect
 - A strategy for being reasonably certain that advises and treatment are the best available to patients.

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What would you answer be if ...

a 32 y patient calls four hours after a wisdom tooth has been removed and complain about bleeding, pain and severe swelling.



She demands immediately some analgetics, some antifebriles and perhaps also antibiotics?

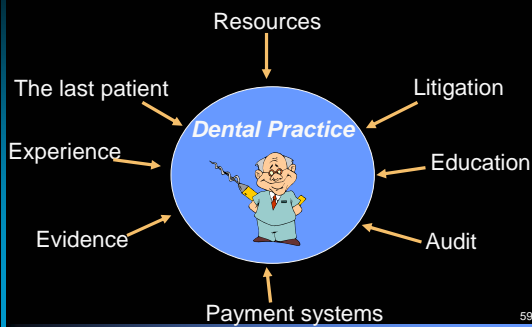
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..or if ...

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 treatment option described in the latest issue of 'Health & Fitness'



Influences on treatment decisions



Approaches when we're uncertain

- A patho-physiological appr.: this makes sense...
- An expert / "how I was trained" approach: I learned this worked / didn't work...
- An anecdotal appr.: this didn't work last time..
- A consultant approach: maybe I can ask a few colleagues I work with....
- A textbook approach: often outdated and no strong support.
- Confess that you don't know - or - do something and pray...
- or invent some combination of approaches

Where can I find relevant clinical information when I need it fast?

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

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Dentist

A part of a busy practice + reimbursement pressure

In spite of

... only a small amount appropriate for dental

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

Magazines & Media

The situation for many dentists today

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

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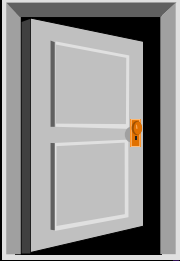
2. consequently, our clinical knowledge and performance in the clinic deteriorates

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

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Maybe this new thing EBM can be of any help?




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Evidence Based Dentistry?!

An increasingly fashionable tendency of a group of young, confident, and highly numerate medical academics to defame the performance of experienced clinicians by using a combination of epidemiological jargon and statistical manipulation.


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Evidence Based Dentistry?!

Arguments, usually presented with near evangelistic zeal, that no health related action should ever be taken by a doctor, a nurse, a purchaser of health services, or a politician unless and until the results of several large and expensive research trials have appeared in print and approved by a committee of experts

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 **Evidence Based Dentistry?!**

Replaces original findings with subjectively selected, arbitrarily summarised, laundered and biased conclusions of indeterminate validity or completeness.

It has been carried out by people of unknown ability, experience, and skills using methods whose opacity prevents assessment of the original data.

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Evidence Based Dentistry?!

- A strategy for how to cope with changes - not about knowing all the answers.

It is not so much what you have read in the past, but about how you go about identifying and meeting your ongoing learning needs, and applying the new knowledge appropriately and consistently in new clinical settings.

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Evidence Based Dentistry?!

The practice of a process of life-long, problem-based learning in which caring for our own patients creates the need for evidence about the cutting edge knowledge concerning diagnosis, prognosis, therapy, and other clinical and health care issues.

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Evidence Based Dentistry?!

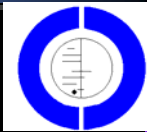
The aim of evidence-based medicine is to eliminate the use of ineffective, expensive, or even dangerous medical decision-making

(Rosenberg & Donald, BMJ, 1995)

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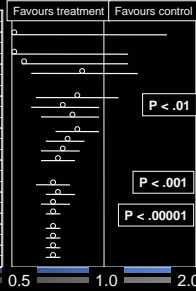
Ethical reasons?

COCHRANE: Corticosteroids and premature birth



Lau et al. Streptokinase and myocardial infarction
N Eng J Med, 1992.

Year	Cumulative RCTs	PTIs
1960	1	23
1965	2	65
1970	3	149
1975	4	316
1980	7	1793
1985	10	2544
1990	11	2651
1995	15	3311
2000	17	3929
2005	22	3492
2010	23	5767
2015	27	6125
2020	30	6346
2025	33	6571
2030	43	21059
2035	54	22051
2040	65	47185
2045	67	37593
2050	70	48154



Textbook / review recommendations			
Year	S	E	10
1960			21
1965			5
1970		1	10
1975		1	2
1980		2	5
1985		5	8
1990	1	8	12
1995	1	8	4
2000	1	7	3
2005	5	2	1
2010	15	8	1
2015	6	1	1

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How can evidence-based dentistry be integrated in daily clinical practice?

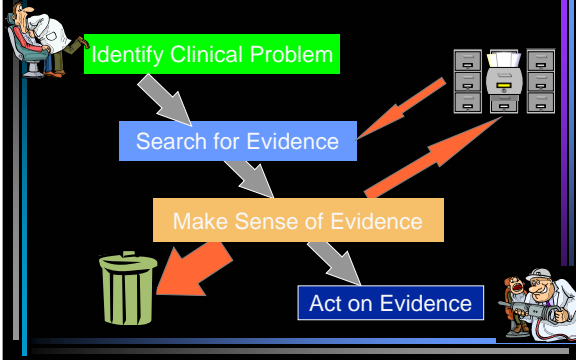
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How is EBD practiced?

1. Generate focused clinical questions
 - Questions for articles on therapy, diagnostic tests, prognosis, harm, etc.
2. Efficiently find the evidence
 - Database searching: tools and techniques
 - Locating appropriately focused clinical studies
3. Determine validity, results, applicability
 - [User's Guide to the Medical Literature](#)
4. Apply the results of appraisal in clinical practice / teaching
5. Evaluate performance

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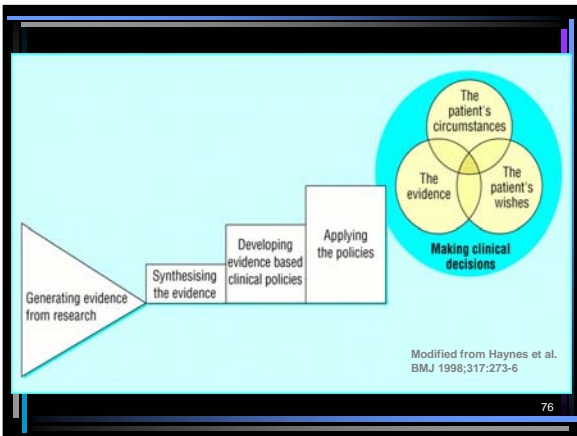
Practice of Evidence-based Dentistry



How can we apply EBD in our daily practice?

1. By accepting and applying practice protocols, policies and guidelines based on evidence-based principles

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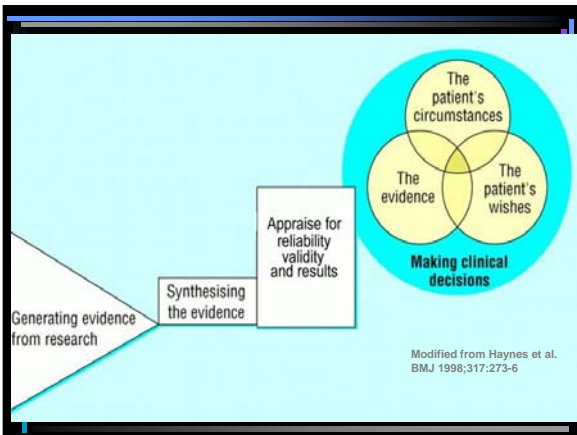


How can we apply EBD in our daily practice?

2. By seeking and applying evidence-based dentistry summaries generated by others

- Journals that critically appraise primary studies
- Systematic reviews

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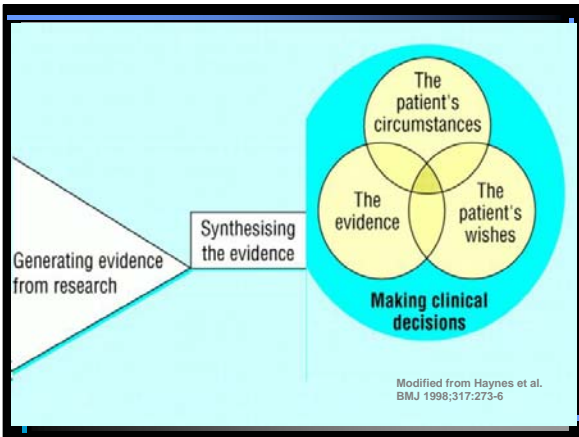


How can we apply EBD in our daily practice?

3. By learning how to practice evidence- based dentistry ourselves

- Books
- Seminars
- Internet
 - Courses
 - Articles
 - Link banks

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Where to look for best evidence-based practice?

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Thank you
for your
kind
attention

10.11.2001 <http://www.odont.uio.no/protetikk/khonkaen>

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