

## Evidence based dentistry and bibliometry

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Dental Faculty  
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## Information Explosion in Dentistry

- Tremendous growth in scientific and biomedical publications
  - Estimates: number of papers doubling every 10 years
  - Increasing number of journals in a given field - 500 in dentistry
  - MEDLINE indexes ~4000 publications; a distinct minority
  - Related to numbers of physicians and scientists
    - volume of publications key to success

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## Hypothetical patient problems

- A 32 yo patient calls four hours after a wisdom tooth has been removed and complains about bleeding, pain and severe swelling. He demands immediately pain killers, antifebriles, antibiotics and an sick leave.
- A new employee in a public dental health district complain of high caries prevalence and neglect of oral hygiene in her district. A stragey for improving the situation is required.
- A 66 year old women comes to your clinic because she hasn't received any help from her former dentist for oral lichen planus. She wants to discuss the verious treatment options with you.
- One of your patient confess that she has almost stopped using tooth paste due to dentin hypersensitivity. Can you help her?
- ....

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### The “programmed” approaches when we’re uncertain

- The pathophysiologic approach: makes sense
- The expert/“how I trained” approach: I learned this didn't work
- The anecdotal approach: didn't work last time we tried
- The consult approach: maybe I can ask a few colleagues I work with
- The textbook approach: often outdated and no strong support
- Confess that you don't know - or - do something and pray...
- Or some combination of these...

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### The dentist’s situation:

- We need information, but most of our needs are never met:
  - Our textbooks are out of date.
  - Our journals are disorganised.
- Consequently, our knowledge and performance deteriorate.
- And traditional instructional CME doesn't improve our performance.

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### Levels of Information and Evidence

- |   |   |
|---|---|
| <ul style="list-style-type: none"><li>• Traditional route<ul style="list-style-type: none"><li>– training</li><li>– print original journals</li><li>– meetings and CME</li><li>– consultation</li></ul></li></ul> | <ul style="list-style-type: none"><li>• Faltering now<ul style="list-style-type: none"><li>– information overload<ul style="list-style-type: none"><li>• small fraction truly appropriate for direct application</li><li>• ill equipped to digest and synthesize</li></ul></li><li>– busier practices</li><li>– reimbursement pressures</li></ul></li></ul> |
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## The emerging approach

- First instinct: the programmed approach
- Find information
  - Do you have updated textbooks or articles?
    - Can you find them?
  - Can you go to a library?
  - Can you go to a workstation?
    - Search on the Internet

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## The emerging approach

- First instinct: same as 1990
- Find information
  - Go to library
  - Go to workstation:
    - Internet search
      - Medical databases

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### Using the Univ. Oslo OVID medical databases



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## The emerging approach

- First instinct: same as 1990
- Find information
  - Go to library
  - Go to workstation:
    - Internet search
      - Medical databases
        - » Medline

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## OVID search strategies difficult to remember

The screenshot shows the OVID Medline search interface. At the top, it says "Medline 1996 to November 1999 Week 1". Below that is a search history table:

#	Search History	Results	Display
1	Molar or Tooth extraction	2238	Display
2	Molar, third or Postoperative complications of Tooth extraction or Tooth, impacted	22675	Display
3	Tooth extraction and Tooth, impacted	103	Display
4	Molar, third and Pain, postoperative and Tooth extraction	44	Display

Below the table, there is a search bar with the text "Enter Keyword or phrase" and a "Perform Search" button. There are also options for "Full Text Available", "EEM Errors", "Human", "English", "Errors", "Abstracts", and "Latest Update". The search results section shows "Results of your search: Molar, third and Pain, postoperative and Tooth extraction" and "Citations available: 44".

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## NLM offers two windows to Medline

The screenshot shows the NLM website. The header says "NLM offers two windows to Medline". Below that is the "National Library of Medicine" logo. The main content is titled "Search MEDLINE: PubMed and Internet Grateful Med". It explains that NLM offers PubMed and Internet Grateful Med as two free systems to search MEDLINE. It lists several features:

- Provide an easy way to search the 11 million references and abstracts in the MEDLINE database.
- The PubMed retrieval engine links to about 400 journals for full text of articles (some publishers may require a subscription) and provide pre-computed sets of relevant MEDLINE articles.
- Offer NLM's Medical Subject Headings for searching, and
- Use Louvain Doc for document delivery services (there may be local charges).

There are also sections for "PubMed" and "Internet Grateful Med" with their respective features. The footer includes the address: "U.S. National Library of Medicine, 800 Rockville Pike, Bethesda, MD 20894".

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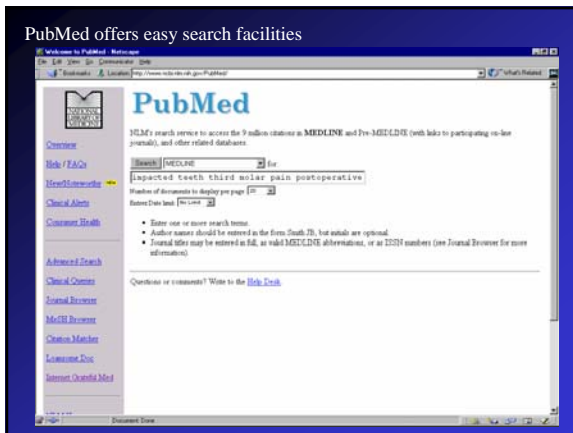
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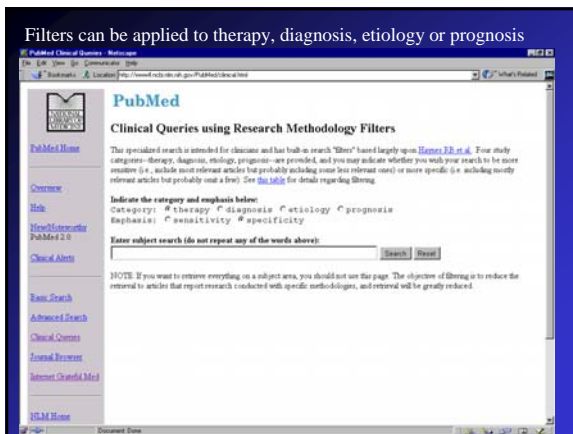
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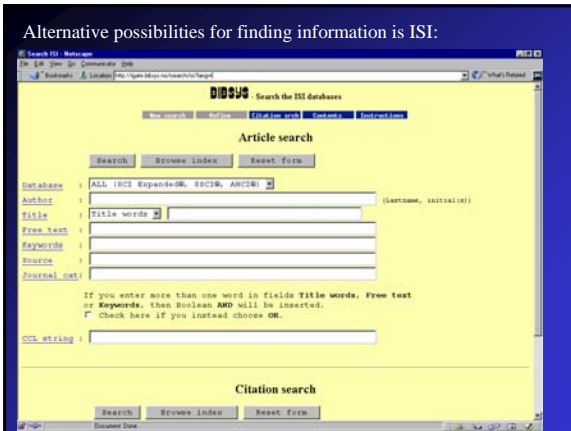
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Alternative possibilities for finding information is ISI:



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Several "windows" to Medline can be assessed:



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### Problems with Medline searches:

- First instinct: same as previously
- Go to workstation: Medline search
  - Can't remember how to search
  - Unable to retrieve original paper(s)
  - Not enough time anyway
- Try other solutions on workstation

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## The emerging approach

- First instinct: same as 1990
- Find information
  - Go to library
  - Go to workstation:
    - Internett search
      - Medical databases
        - » Medline
        - » ISI
      - Other databases

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## Other information sources are found on the university net



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## Medical information can be found many places on the net - but beware of quality!



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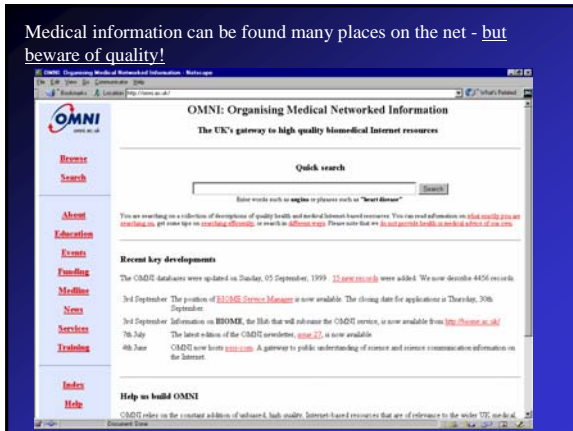
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Medical information can be found many places on the net - but beware of quality!



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Information highway = knowledge?

- First instinct: same as 1990
- Go to workstation: Medline search
  - Unable to retrieve original paper(s)
  - Not enough time anyway
- Go to Web browser on workstation
  - General searching non-specific
  - “Metasite” searching too “textbook”
- Is this as good as it gets?

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Perhaps this new thing EBM can help me?

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### What evidence-based medicine is:

Evidence-based medicine is the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients. Its philosophical base dates back to the sceptics of post-revolutionary Paris (Bichat, Louis, Magendie).

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### What evidence-based medicine is not:

- The term “evidence” in Evidence-based medicine must not be regarded as synonymeous with “science”.
- The whole principle of EBM is that all information about any medical/health topic is “evidence” and must be considered as such.
- However, just as evidence in a court is considered strong or weak, this also applies to the above information.
- Awareness of grading of evidence is important
- It is incorrect to dichotomise evidence as valid or not, in contrast to other data that can be categorized either as scientific or as unscientific.
- EBM must not be translated as Scientific-based medicine (In Norwegian as “Vitenskapelig-basert medisin”)

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### What evidence-based medicine is:

The practice of EBM requires the integration of

- individual clinical expertise  
with the
- best available external clinical evidence from systematic research.

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### What evidence-based medicine is:

- Good doctors use both individual clinical expertise and the best available external evidence, and neither alone is enough.
  - Without the former, practice risks becoming evidence-tyrannised, for even excellent external evidence may be inapplicable or inappropriate for an individual patient.
  - Without the latter, practice risks becoming rapidly out of date, to the detriment of patients and patient-care.

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### What evidence-based medicine is:

- **Individual clinical expertise:** the increasing proficiency and judgement that individual clinicians acquire through clinical experience and clinical practice.
  - reflected especially in more effective and efficient diagnosis, and
  - in the more thoughtful identification and compassionate utilisation of individual patient's predicaments, rights, and preferences in making clinical decisions about their care.

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### What evidence-based medicine is:

- **Best available external clinical evidence:**
  - clinically relevant research, often from the basic sciences of medicine, but especially from patient-centred research into the accuracy and precision of diagnostic tests (including the clinical examination), the power of prognostic markers, and the efficacy and safety of therapeutic, rehabilitative, and preventive regimens.
  - How and where do we find our information?

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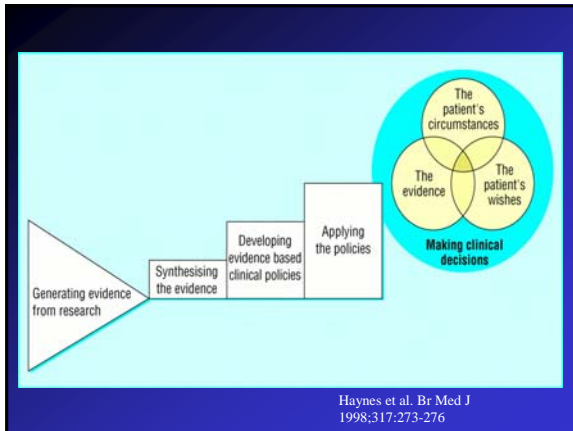
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### Bringing Evidence to our patient Care Is the Internet Helping?

- Clinical research evidence to practice
- Levels of evidence: original and “synthetic”
- Transmission of evidence
  - The biomedical journal - gold standard in trouble?
  - The Internet arrives
  - E-Publishing - time for a new paradigm?
- Internet research?
- The future

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### Practicing EBM

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 evidence in daily care

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## How can we apply EBM in our daily practice?

- 1 by learning how to practice evidence-based medicine ourselves.
  - Books
  - Internett
    - On line courses
    - On line articles
    - Link banks
    - Journals

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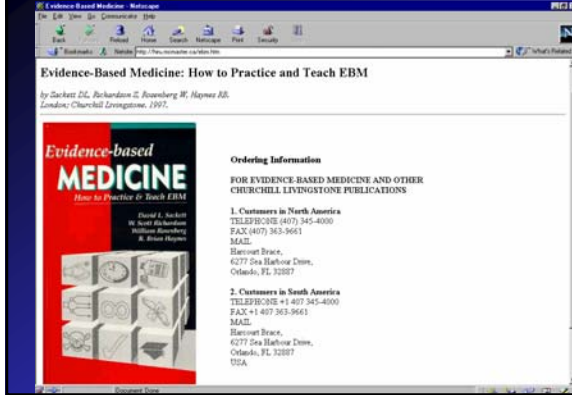
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### How to learn about EBM - textbook:



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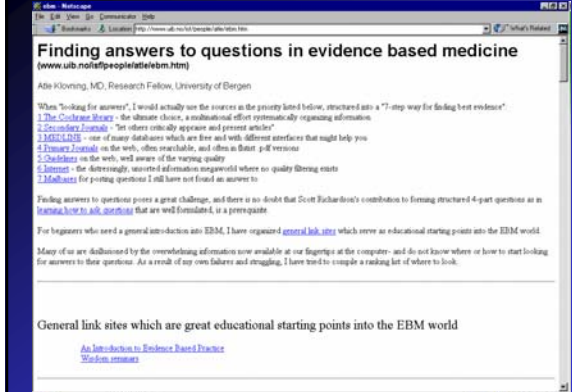
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### How to learn about EBM - Internet:



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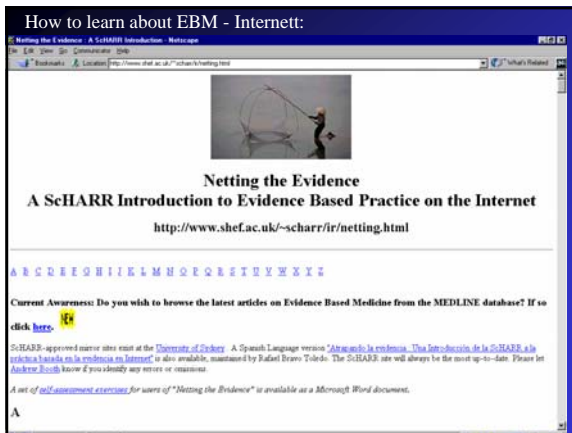
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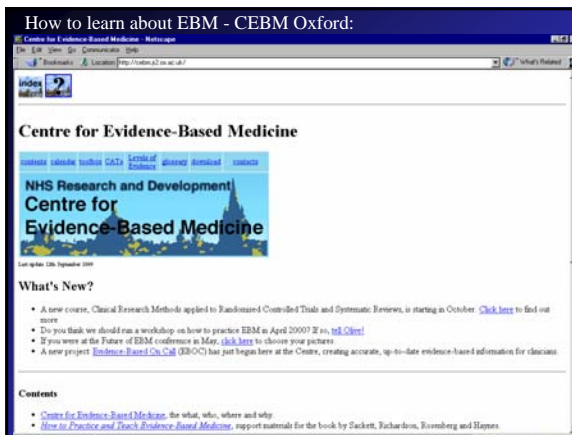
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**How can we apply EBM in our daily practice?**

- 1 by learning how to practice evidence-based medicine ourselves.
- 2 by seeking and applying evidence-based medical summaries generated by others.
  - Journals that critically appraise primary studies

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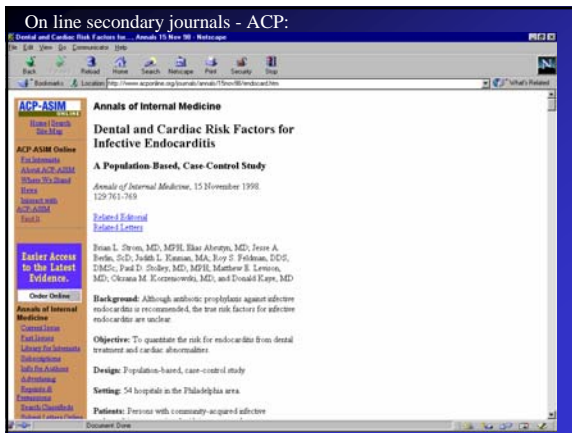
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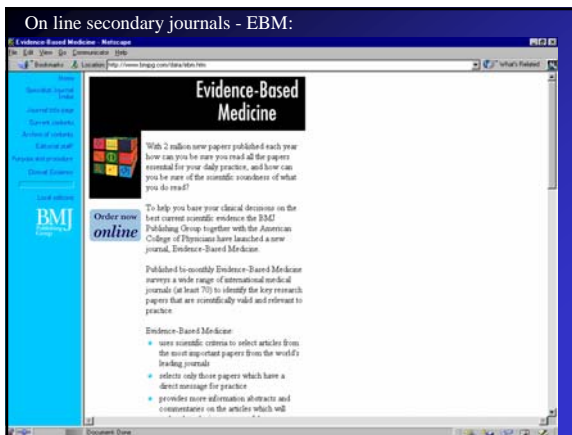
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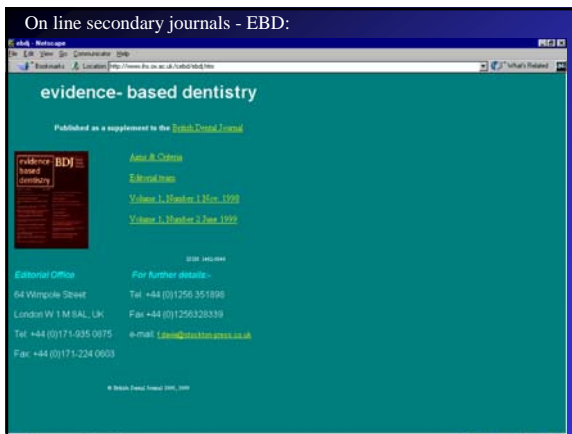
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## How can we apply EBM in our daily practice?

- 1 by learning how to practice evidence-based medicine ourselves.
- 2 by seeking and applying evidence-based medical summaries generated by others.
  - Journals that critically appraise primary studies
  - Systematic reviews: Cochrane Collaboration

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## What are Systematic Reviews

- Clear statement of purpose and scope
- Comprehensive search and retrieval of the relevant research
- Explicit selection criteria
- Critical appraisal of the primary studies
- Reproducible decisions regarding relevance, selection, and methodologic rigor of the primary research
- When quantitative methodology applied -> meta-analysis

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**How can we apply EBM in our daily practice?**

- 1 by learning how to practice evidence-based medicine ourselves.
- 2 by seeking and applying evidence-based medical summaries generated by others.
- 3 by accepting evidence-based practice protocols developed by our colleagues.

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## Information and Evidence: Translation into Practice

- New venues: Synthetic Research
  - Journals that critically appraise primary studies
  - Systematic reviews: Cochrane Collaboration
- Formulation of Evidence-Based Practice Guidelines
  - Critical analysis of primary evidence
  - Promise of consistency and optimal care
  - Source, methodology, accessibility

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## National Guideline Clearinghouse (USA)

- The NGC Web site will:
  - contain standardized information for thousands of guidelines such as title, sponsoring organization, author(s), and methodology used;
  - provide guideline abstracts, and where possible the full text of guidelines;
  - compare and contrast the recommendations of guidelines on similar topics, with summaries covering major areas of agreement and disagreement;
  - have topic-specific electronic mailing lists to enable registered users to communicate with one another on guideline development, dissemination, implementation, and use.

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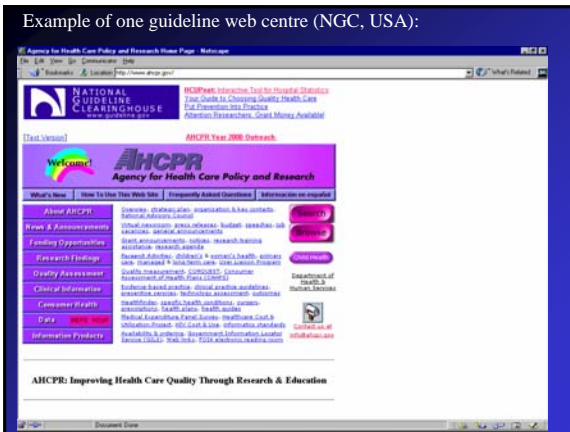
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Example of one guideline web centre (NGC, USA):



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## Information and Evidence: Translation into Practice

- New venues: Synthetic Research
  - Journals that critically appraise primary studies
  - Systematic reviews: Cochrane Collaboration
- Formulation of Evidence-Based Practice Guidelines
  - Critical analysis of primary evidence
  - Promise of consistency and optimal care
  - Source, methodology, accessibility
- User's Guide to interpret literature

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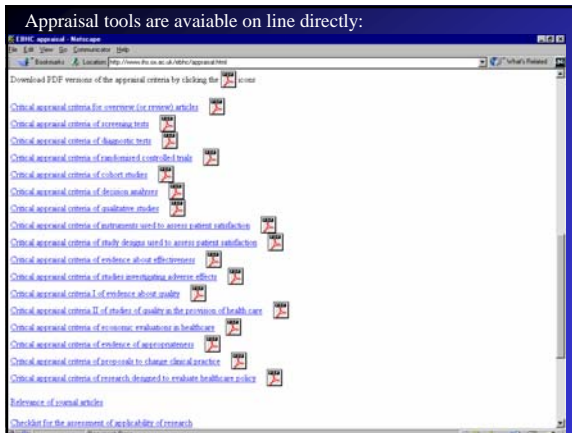
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Appraisal tools are available on line directly:



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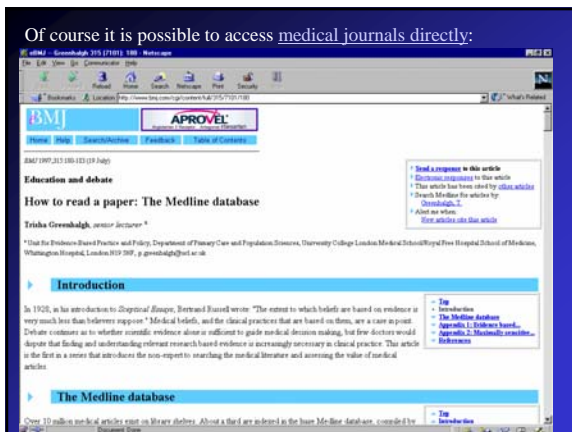
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Of course it is possible to access medical journals directly:



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# Can evidence-based dentistry be practiced today?

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Dental journals available : Am J Orthodont Dentofac Orthoped



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Dental journals available through Science direct: Archives Oral



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Dental journals available: British Dental Journal

BDJ  
BRITISH DENTAL JOURNAL  
CURRENT ISSUE  
VOLUME 187, NO. 5, SEPTEMBER 11, 1999

**OPINION**

**leader**  
Investors in People 231  
[ GDE ]

**interview**  
Mike Grace interviews QDA winner John Ewart Lamb 232  
[ GDE ]

**letters**  
The benefits of the Eusevalent Food Industry in crisis over Murching issue/Explanation of trends on opinion/Evidence of poor oral health in ethnic minorities/urses worked in fight against pain/Dental problems for nuclear workers 237  
[ GDE ]

**PRACTICE**  
the psychology of dental patient care  
Communicating effectively: some practical suggestions 240  
[ GDE ]

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Dental journals available : British J Orthodontics (Oxford U Press)

British Journal of Orthodontics Online - Table of Contents (26:3) - Welcome  
Orthodontics  
Receive this page by email each issue: [Sign up for eTOC!](#)

Contents: Volume 26, Number 3, September 1999 [Index by Author](#)

- Clinical Section
- Scientific Section
- Features Section
- Orthodontic Products Update
- Reviews and Abstracts
- Practice Management Forum

Other Issues:  
Find articles in this issue containing these words:

To see an article, click on [Full Text] link. To review many abstracts, check the boxes to the left of the titles you want, and click the 'Get All Checked Abstracts()' button. To see one abstract at a time, click on [Abstract] link.

Clinical Section:  
Albio Chianetti, Antonella Marini, and Raffaella A. Grillo  
Rapid Palatal Expansion in Treatment of Class II Malocclusions

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Dental journals available: Calcified Tissue International

Calcified Tissue International (65: 4 (1999)) - Welcome  
LINK  
Springer  
What's New Search Order Up

Calcified Tissue International  
Editor in Chief: [L. V. Avioli](#)

Volume 65 - Number 4, 1999

Clinical Investigations  
257-261  
F. Cimmar, J. Herve, D. Morgan, V. Slat, D. Sherwood, M. Farnes, R. Lindsay  
Parahydrogen Peroxide Response to EDTA Induced  
Changes in pH and Water Permeability in Women  
Article in PDF

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Dental journals available : Caries Research



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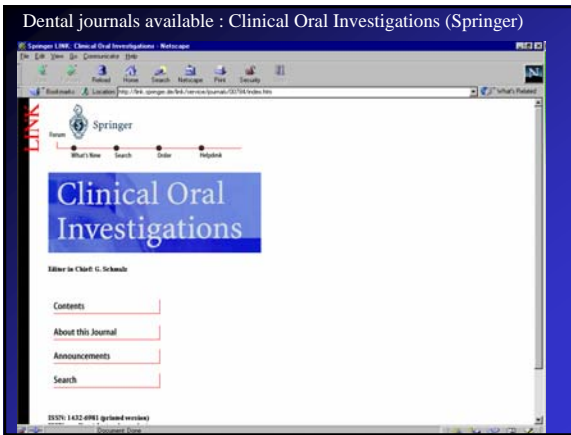
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Dental journals available : Clinical Oral Investigations (Springer)



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Dental journals available through Science direct: Dental Materials



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Dental journals available : Dentomaxillofacial Radiology



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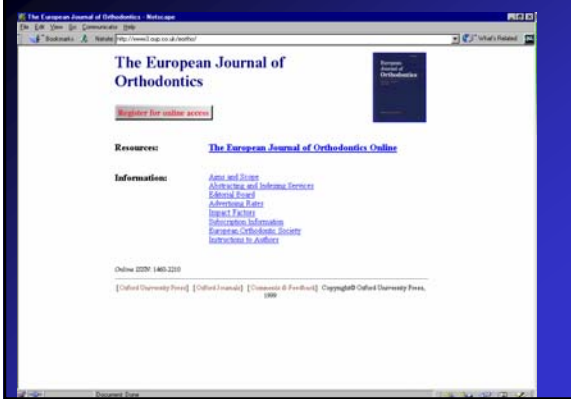
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Dental journals available : European J Orthodontics (Oxford U Press)



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Dental journals available : International Endodontic Journal



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Dental journals available : International Journal of Oral & Maxillofacial Surgery (Munksgaard)




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Dental journals available : Int J Paediatric Dentistry




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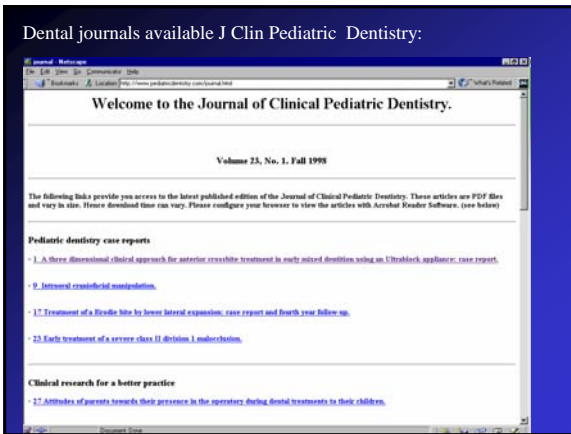
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Dental journals available J Clin Pediatric Dentistry:




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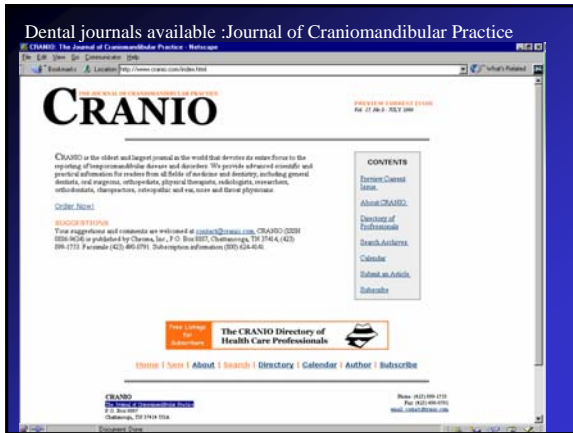
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