Evidence based dentistry and bibliometry

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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

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 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 strategy for improving the situation is required.
• A 66 year old woman comes to your clinic because she hasn’t received any help from her former dentist for oral lichen planus. She wants to discuss the various treatment options with you.
• One of your patient confess that she has almost stopped using toothpaste due to dentin hypersensitivity. Can you help her?
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- The textbook approach: often outdated and no strong support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...

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  - Our textbooks are out of date.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.

Levels of Information and Evidence

- Traditional route
  - training
  - print original journals
  - meetings and CME
  - consultation
- Faltering now
  - information overload
    - small fraction truly appropriate for direct application
    - ill equipped to digest and synthesize
  - busier practices
  - reimbursement pressures
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

The emerging approach

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

Using the Univ. Oslo OVID medical databases
The emerging approach

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

OVID search strategies difficult to remember

NLM offers two windows to Medline
PubMed offers easy search facilities. Useful details are the “see related articles” & “clinical queries” possibility. Filters can be applied to therapy, diagnosis, etiology or prognosis.
Alternative possibilities for finding information is ISI:

Several “windows” to Medline can be assessed:

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
The emerging approach

• First instinct: same as 1990
• Find information
  – Go to library
  – Go to workstation:
    • Internet search
      – Medical databases
        » Medline
        » ISI
      – Other databases

Other information sources are found on the university net

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

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?

Perhaps this new thing EBM can help me?
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).

What evidence-based medicine is not:

- The term “evidence” in Evidence-based medicine must not be regarded as synonymous 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”)

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.
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.

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.

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?
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

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
How can we apply EBM in our daily practice?

1. by learning how to practice evidence-based medicine ourselves.
   - Books
   - Internet
     - Online courses
     - Online articles
     - Link banks
     - Journals

How to learn about EBM - textbook:

How to learn about EBM - Internet:
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
How can we apply EBM in our daily practice?

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   – Systematic reviews: Cochrane Collaboration

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

The Cochrane Collaboration
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.
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

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.

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

Appraisal tools are available online directly:

Of course it is possible to access medical journals directly:
Can evidence-based dentistry be practiced today?

Dental journals available: Am J Orthodont Dentofac Orthoped

Dental journals available through Science direct: Archives Oral Biology
Dental journals available: Journal of Craniomandibular Practice

Dental journals available through Science direct: J Dentistry

Dental journals available: J Oral Rehabilitation (Blackwell)
Dental journals available through Science Direct: Oral Oncology
Dental journals available from through OVID: Munksgaard

- Clin Oral Implant Res
- J Oral Pathol Med
- Int J Oral Maxillofac Surg
- J Periodontal Res

Dental books available: Frontiers of Oral Biology