Evidence-Based Dentistry

Hope Saltmarsh
Jane Gillette
Julie Frantsve-Hawley
What does EBD mean?
What is EVIDENCE-BASED DENTISTRY?

According to the ADA...

Evidence-based dentistry (EBD) is an approach to oral health care that requires the judicious integration of systematic assessments of clinically relevant scientific evidence, relating to the patient’s oral and medical condition and history, with the dentist’s clinical expertise and the patient’s treatment needs and preferences.
Three Components of EBD

- Is an approach to oral health care
- Is a method to acquire, understand and apply the most current science
Evidence-Based Dentistry Is NOT….

- Cookbook dentistry
- A standard of care
- A mandate of what must be done
- A substitute for clinical judgment
The Value of *Evidence-Based Practice*
What is evidence?
What are the levels of evidence?

**Strong**

- Systematic Reviews
- RCT’s
- Cohort study
- Case control study
- Case series

**Weak**

- Case report
- Expert opinion
- Animal research
- Bench-top research
How much is enough?

Do we need an RCT to answer this question:

Will using a parachute save lives?

Group 1: Jump with parachutes

Group 2: Jump without parachutes?
Use your judgment

What is the **Level** of evidence

What is the **Quality** of this evidence

Does this apply to **my patient**?

How strongly should I recommend this to my patient?
You and your patient make the final decision

Patient

Can it apply to the patient?

Treatment decisions

Critical appraisal of evidence

Clinician

Complaint
Signs
Symptoms

Answerable question

Search for best evidence

You and your patient make the final decision
Is this different from what I am doing now?

2008 PPR Reader Survey

When selecting dental products, how valuable do you find each of the sources of information below?

- Expert opinions: 42%
- Input from peers: 40%
- Published clinical studies: 35%
- Laboratory data on key attributes: 34%
- Hands-on workshops: 26%
- CE courses: 21%
- Comparative pricing data: 16%
- Experience in dental school: 9%
- Manufacturers’ claims: 1%

% indicate the “very valuable” only
How does EBD work?
The EBD Process

**Ask** answerable questions

**Access** the best evidence

**Appraise** the evidence

**Apply** evidence to patient care

**Assess/evaluate** treatment outcomes
## Acknowledging the difference

<table>
<thead>
<tr>
<th>Evidence-Based Practice</th>
<th>Traditional Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uses best evidence</td>
<td>Unknown basis of evidence</td>
</tr>
<tr>
<td>Systematic appraisal of quality of evidence</td>
<td>Limited/incomplete appraisal of quality of evidence</td>
</tr>
<tr>
<td>Objective, transparent, less biased</td>
<td>Subjective, opaque, potentially biased</td>
</tr>
<tr>
<td>Acceptance of levels of uncertainty</td>
<td>Black and white conclusions</td>
</tr>
</tbody>
</table>
Let’s adapt -- It’s a paradigm shift!

A change of perspective on a subject

It’s true!

SCIENCE Changes!!

EBD is a way to keep up with this change
Is what we learned in school still true?
Medical Publishing

Annually:
20,000 journals
17,000 new books

MEDLINE:
4,000 journals
6 million references
400,000 new entries yearly
Barriers to change

• Time
• Access
• Complexity of information
Did you know…

…that fluoride varnish is effective in caries prevention?¹

…that sealants placed on a non-cavitated lesion reduce caries progression?²

Try and you can climb that wall!

Formulate your question

Search the secondary sources

Search the primary sources

Use it in your treatment decision
Where can I find evidence?
ADA Center for Evidence-Based Dentistry

- Providing the tools you need
WELCOME TO A WEBSITE FOR EVIDENCE-BASED DENTISTRY

A practical resource for scientific evidence
Looking for answers? We provide systematically assessed evidence as tools and resources to support your clinical decisions: A practical approach to integrating evidence into your patient care!

About EBD
Topic Index for Database of Systematic Reviews

- Anesthesia, Oral Sedation and Pain Control
- Cariology and Caries Management
- Community Oral Health and Health Policy
- Dental Materials and Biomaterials
- Endodontics
- Esthetic Dentistry
- Geriatric Dentistry
- Implantology
- Occlusion
- Oral and Maxillofacial Surgery
- Oral and Systemic Health Relationship
- Oral Health Communication and Literacy
- Oral Pathology
- Oral Radiology, Imaging and Photography
- Oral, Head, and Neck Cancer
- Orthodontics
- Osteoporosis and Bone Health
- Other
- Pediatric Dentistry
- Periodontics
- Pharmacology and Therapeutics
- Preventive Dentistry
- Prosthodontics
- Restorative Dentistry
- Special Care Dentistry
- TMJ and TMD
- Tobacco Use and Smoking Cessation
- Tooth Restorations

SYSTEMATIC REVIEWS & SUMMARIES
<table>
<thead>
<tr>
<th>Title</th>
<th>Reference</th>
<th>Type</th>
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<tbody>
<tr>
<td>systematic review and meta-analysis</td>
<td>Science B. 2008; 18(12):928-7</td>
<td></td>
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<tr>
<td></td>
<td>79(2):380-6</td>
<td></td>
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<tr>
<td>Predictive value of tumor thickness for cervical lymph-node</td>
<td>Huang SH, Hwang D, Lockwood G, Goldstein DP, O'Sullivan B. Cancer. 2008;</td>
<td>Critical Summary</td>
</tr>
<tr>
<td>involvement in squamous cell carcinoma of the oral cavity: a</td>
<td>116(7):1489-97</td>
<td>Plain Language Summary</td>
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<tr>
<td>meta-analysis of reported studies</td>
<td></td>
<td></td>
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<tr>
<td>Dental arch space changes following premature loss of primary first</td>
<td>Tunison W, Flores-Mir C, ElBadrawy H, Nassar U, El-Bialy T. Pediatric</td>
<td>Critical Summary</td>
</tr>
<tr>
<td>extraction space: a systematic review</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immediate skeletal and dentoalveolar effects of the crown- or</td>
<td>Barnett GA, Higgins DW, Major PW, Flores-Mir C. Angle Orthod. 2008; 78(2):</td>
<td>Critical Summary</td>
</tr>
<tr>
<td>banded type Herbst appliance on Class II division 1 malocclusion</td>
<td>361-9</td>
<td></td>
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<tr>
<td>review</td>
<td>78(4):762-80</td>
<td></td>
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<tr>
<td>orthodontic patients</td>
<td>e1-14</td>
<td></td>
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</tbody>
</table>
Evidence indicates minimal short-term space loss after premature loss of primary first molars


Jacob DaBell, DDS; Greg J. Huang, DMD, MSD, MPH

Systematic review conclusion. The reported magnitude of space loss after premature loss of primary first molars—1.5 millimeters per arch side in the mandible and 1.0 mm per arch side in the maxilla—is not likely to be of clinical significance in most cases.

Critical summary assessment. The reviewers' conclusion was made on the basis of the results of only three studies, which included a total of 70 patients who were followed by investigators for up to eight months.

Evidence quality rating. Limited.
Space Loss Minimal after Premature Loss of First Molars

Plain Language Summary Prepared by: Greg Huang DMD, MSD, MPH; Jacob DaBell DDS

A Plain Language Summary of:
Dental arch space changes following premature loss of primary first molars: a systematic review


Background Information

Key terms:
- Dental arch: the way your teeth line up in a curved shape inside your mouth
- Primary: the first set of teeth that a person gets, sometimes called “baby” teeth
- Primary first molars: the molars closest in the arch to the front of your mouth

Primary teeth save space in the dental arch for permanent teeth. If a primary tooth is lost before the permanent tooth is comes in, the surrounding teeth may move to fill that space. This can result in insufficient space for the permanent tooth.
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A database of studies on dental and oral health topics along with concise, user-friendly summaries. Read more

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ADA CLINICAL RECOMMENDATIONS

Fluoride

Professionally applied topical fluoride: Evidence-based clinical recommendations

Executive Summary: Professionally applied topical fluoride: Evidence-based clinical recommendations

Chairside Guide: Topical Fluoride

Infective Endocarditis

Prevention of infective endocarditis: Guidelines from the American Heart Association

Sealants

Evidence-Based Clinical Recommendations for the Use of Pit-and-Fissure Sealants

Executive Summary: Evidence-Based Clinical Recommendations for the Use of Pit-and-Fissure Sealants

Chairside Guide: Sealants

Tobacco

Treating Tobacco Use and Dependence: Clinical Practice Guidelines from the US Department of Health and Human Services

Screening for Oral Cancer

Evidence-Based Clinical Recommendations Regarding Screening for Oral Squamous Cell Carcinomas

Chairside Guide: Screening for Oral Cancer
# Professionally Applied Topical Fluoride: Evidence-based Clinical Recommendations

**Assess**

<table>
<thead>
<tr>
<th>Caries Risk (see box for risk factors)</th>
<th>Risk Group/Age</th>
<th>&lt; 6 years</th>
<th>6–18 years</th>
<th>18+ years</th>
<th>Decide</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Low</td>
<td>Low</td>
<td>Patient may not receive any additional benefit*</td>
<td>Patient may not receive any additional benefit*</td>
<td>Patient may not receive any additional benefit*</td>
<td>- whether to apply fluoride</td>
</tr>
<tr>
<td>- Moderate</td>
<td>Moderate</td>
<td>Varnish every 6 months</td>
<td>Varnish or Fluoride gel every 6 months</td>
<td>Varnish or Fluoride gel every 6 months</td>
<td>- type of fluoride</td>
</tr>
<tr>
<td>- High</td>
<td>High</td>
<td>Varnish every 6 or 3 months</td>
<td>Varnish every 6 or 3 months or Fluoride gel every 6 or 3 months</td>
<td>Varnish or Fluoride gel every 6 or 3 months</td>
<td>- frequency of application</td>
</tr>
<tr>
<td>&amp; Patient Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- how often to re-evaluate</td>
</tr>
</tbody>
</table>

* Fluoridated water and fluoride toothpastes may provide adequate caries prevention in this risk category.
* **Application time for fluoride gel and foam should be 4 minutes.**
* Due to limited evidence these recommendations have not been extrapolated to foams.
* There is limited evidence differentiating NaF and APF gels.
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### ORGANIZATIONS
- Association of State and Territorial Dental Directors: Guidelines, Recommendations and Evidence-based Practices Resource Links
- Centre for Evidence-Based Dentistry
- Cochrane Collaboration
- DSM-Forsyth Center for Evidence-Based Dentistry
- Evidence-Based Practice Centers—Agency for Healthcare Research and Quality
- International Centre for Evidence-Based Oral Health (UCL Eastman Dental Institute—London, UK)
- Oxford Centre for Evidence-Based Medicine
- University of York NHS Centre for Reviews and Dissemination: Database of Abstracts of Reviews of Effects (DARE)
- NIDCR Dental Practice-Based Research Networks (PBRNs)

### CRITICAL APPRAISAL AND EVIDENCE ANALYSIS
- **Study Designs and Levels of Evidence** (Centre for Evidence-Based Medicine, UK)
- **Study Designs and Clinical Decision-making** (Medical Journal of Australia)
- **Appraisal Tools—Critical Appraisal Skills Programme** (Public Health Resource Unit, UK)
- **AMSTAR** (Assessment of Multiple Systematic Reviews)
- **Grading of Recommendations, Assessment, Development and Evaluation (GRADE)** Working Group Publications
- **PRISMA Statement**
- **CONSORT Statement** (Consolidated Standards of Reporting Trials)
- **Critical Appraisal Tools** (Centre for Evidence-Based Medicine, UK)
- **Meta-analysis of Observational Studies in Epidemiology (MOOSE): A Proposal for Reporting**

### JOURNALS
- Bandolier
- Evidence-Based Dentistry
- Evidence-Based Medicine Online
- Journal of the American Dental Association
- Journal of Evidence-Based Dental Practice

### SYSTEMATIC REVIEWS
- Cochrane Oral Health Group
- PubMed systematic review search page
- EviDents Search Engine for EBD
- TRIP Database, Oral Health page

### CLINICAL RECOMMENDATIONS/GUIDELINES
- ADA Evidence-Based Clinical Recommendations
- National Guideline Clearinghouse
- PubMed Clinical Queries (National Library of Medicine)
- National Institute for Health and Clinical Excellence (NICE)
- CDC Division of Oral Health
- Scottish Intercollegiate Guidelines Network
- Royal College of Surgeons of England
- TRIP Database, Oral Health page
- Agency for Healthcare Research and Quality (AHRQ)
- SUMSearch
- Centre for Evidence-Based Dentistry (UK)

### TUTORIALS
- Introduction to Evidence-Based Dentistry (Boston University)
- Student's Guide to the Medical Literature (University of Colorado Health Sciences Center)
- Evidence-Based Clinical Practice Tutorial (Miner Library, University of Rochester Medical Center)
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PLAIN LANGUAGE SUMMARIES

A plain language summary is an easy-to-read, one-page write-up that summarizes the key points of a systematic review.

ADA.ORG

Resources from the American Dental Association, America’s Leading Advocate for Oral Health
Read more

PATIENT RESOURCES

Additional sources for oral health information and research.
Read more
TRANSITION TO JANE GILLETTE
“Thank you for the privilege and honor to participate in this meeting, one of the best I’ve attended and one that I believe will produce a lot of fruit in academia, education, research, and practice.”

“I really enjoyed this experience and initiation into being a champion for EBD. There are high expectations for me to disseminate this information in my dental school, component societies and study clubs. I feel this has been a good preparation for me to go home and start working on this.”

“Excellent program. The passion in the presenters has to be contagious!”
ADA/Forsyth Evidence-Based Dentistry Course

- 5 days
- Critical appraisal
- Research Designs
- Statistics
- Advanced searching techniques

Certificate: in Evidence-Based Dentistry from the Forsyth Institute
Other Educational Opportunities

 nature.com/ebd/journal

Forthcoming evidence-based courses and conferences

2010

25 June
Workshop on Evidence-based Practice
Oxford, UK
Further information is available at www.cebm.net/index.aspx?o=5319

8–10 July
Summer Institute on Evidence-Based Practice.
San Antonio, Texas
Further information is available at www.acestar.uthscsa.edu/institute/su10.html

4–6 August
Systematic Review and Meta-analysis of Direct, Indirect and Mixed Treatment Evidence
University of Glasgow, UK
Further information is available at www.gla.ac.uk/departments/healtheconomicappraisalsteam/

6–10 September
16th Oxford Workshop in Teaching Evidence-based Practice.
THANK YOU!

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