Evidence-based Dental Practice
- A Global Revolution

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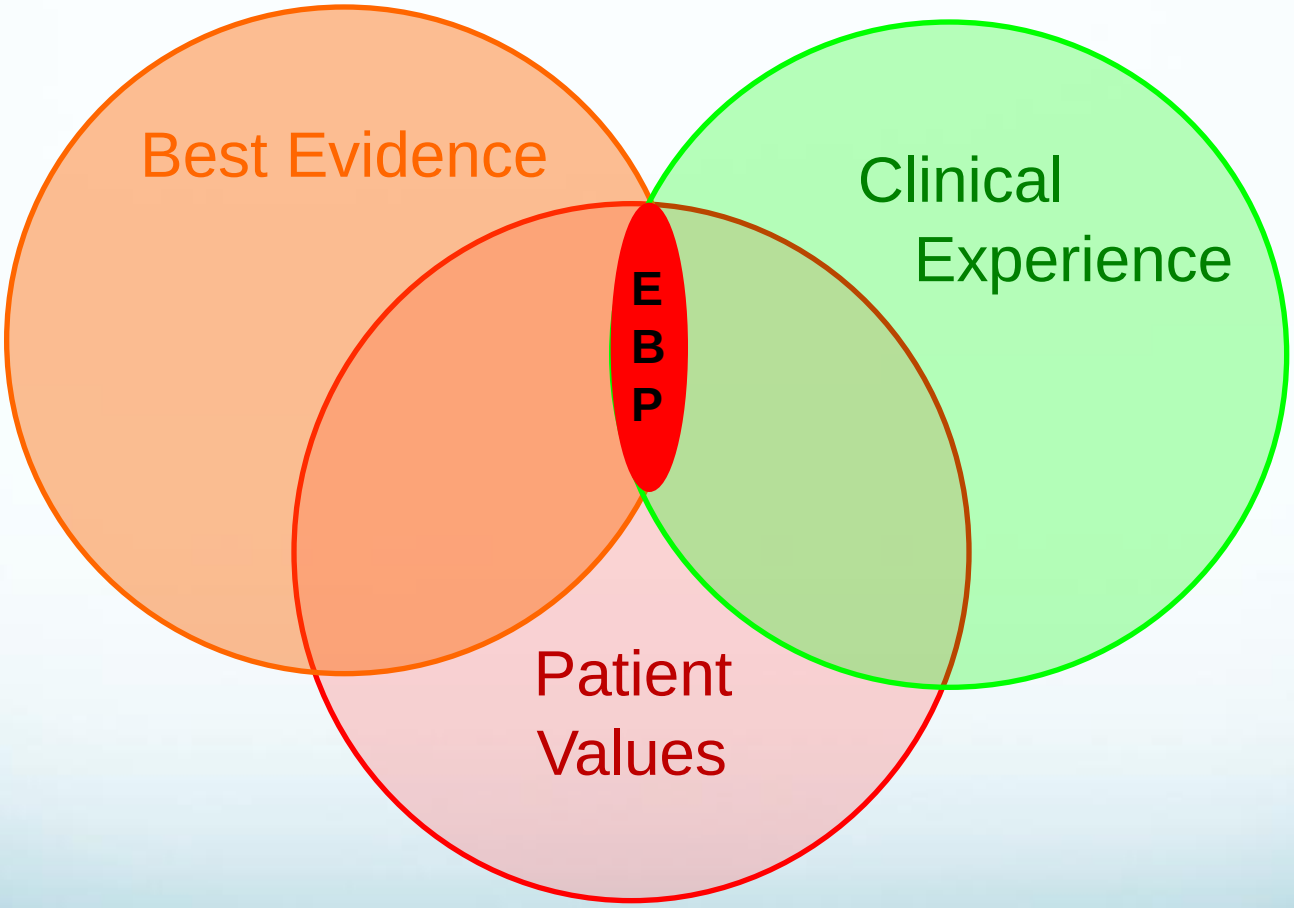
- This lecture will provide a brief outline of the development of EBD and address three main issues;
- Why we need it?
- What are its successes to date?
- What are the future challenges?

Evidence-based Dentistry

ADA Definition:

- 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

Evidence-based Practice



Why?

- Not a new idea
- Information overload
- Focus on quality and consistency
- Avoid unnecessary treatment
- Questioning attitude to traditional beliefs
- Lifelong learning
- Patient empowerment
- Resources finite

Information overload

Search using term 'dental'

- Google - > 356 million hits
- Pubmed (Medline) - 458,163
- Cochrane library - 15567
  - Reviews - 179
  - DARE - 559
  - Central - 16412
  - HTA - 96
  - NHSEED - 102

Searches conducted 06-09-19

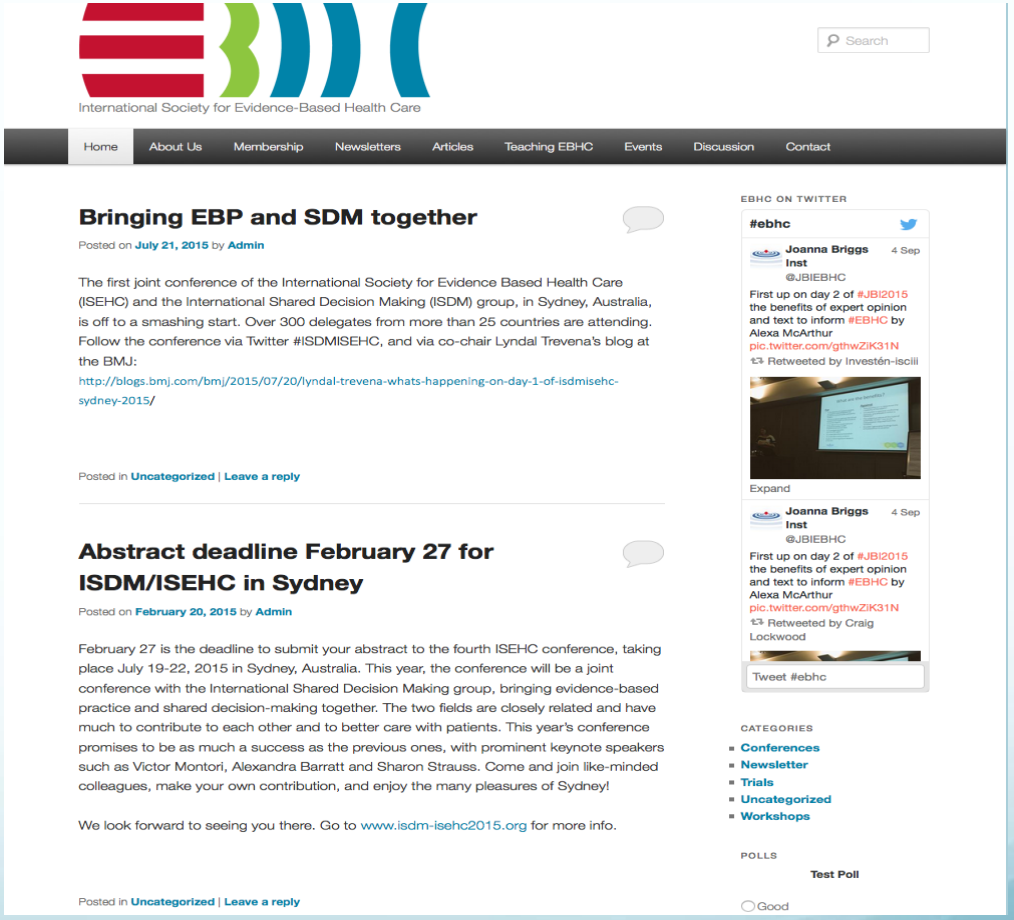
A brief history of Evidence-based Health Care

- 1990s
- Cochrane Collaboration
- Centre for Evidence-based Medicine
- Centre for Evidence-based Dentistry

http://ebm.jamanetwork.com/

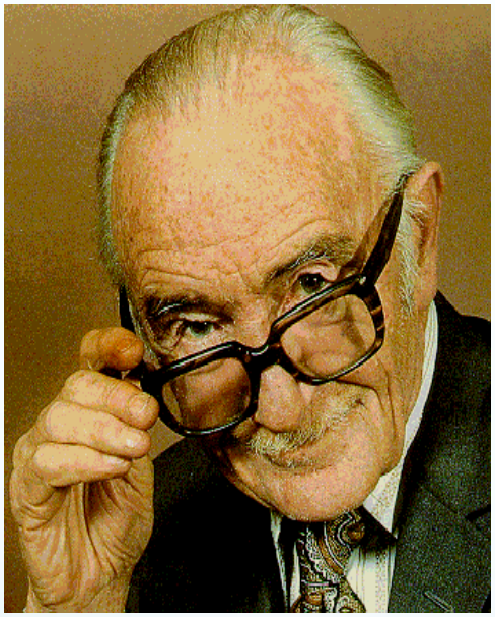
International Society for Evidence-based Health Care

- **THE FOUNDING BOARD MEMBERS** are:
- Kameshwar Prasad (India),
- Gordon Guyatt (Canada),
- Paul Glasziou (Australia),
- Carl Heneghan (UK),
- Ken Kuo (Taiwan),
- Nino Cartabellotta (Italy),
- Jose Emparanza (Spain),
- Hilda Bastian (Germany),
- Lubna A. Al-Ansary (Saudi Arabia),
- Dave Davis (Canada),
- Sally Green (Australia),
- Regina Kunz (Switzerland),
- Peter Tugwell (Canada),
- Mahmoud El Barbary (Saudi Arabia),
- Victor Montori (USA).



http://www.isehc.net/

Archie Cochrane



- 1972 – “people who want to make more informed decisions about health care do not have ready access to reliable reviews of the available evidence.”

- 1979 "It is surely a great criticism of our profession that we have not organised a critical summary, by specialty or subspecialty, adapted periodically, of all relevant randomized controlled trials".

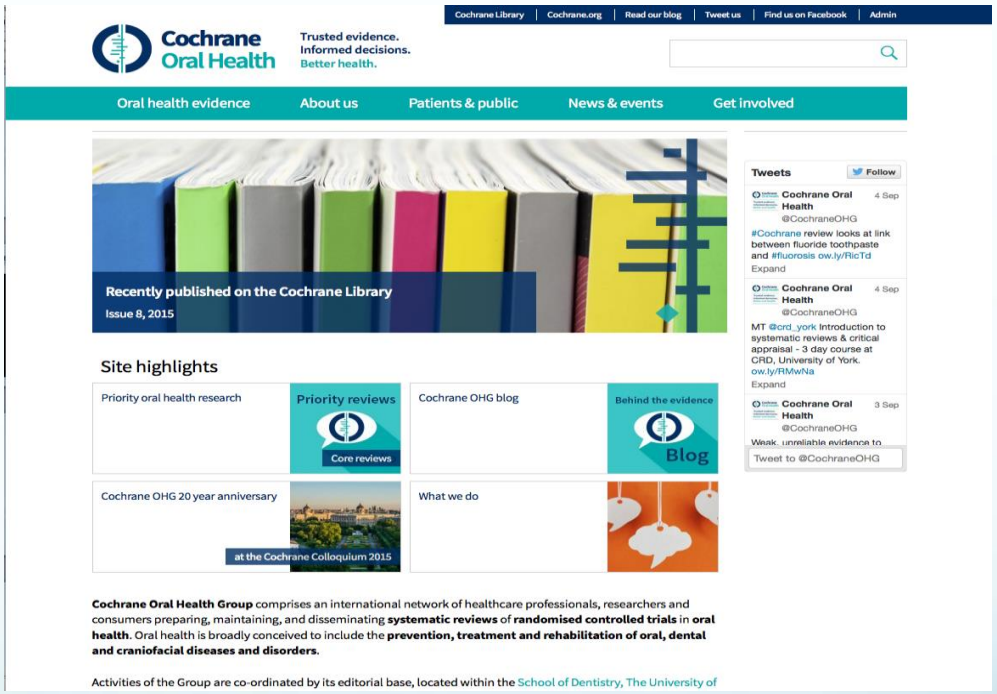
Cochrane Collaboration

- Cochrane has representatives in more than 43 countries
- **Europe**
  - Chief Executive Officer's Office
  - Dutch Cochrane Centre
  - French Cochrane Centre
  - German Cochrane Centre
  - Iberoamerican Cochrane Centre
  - Italian Cochrane Centre
  - Nordic Cochrane Centre
  - UK Cochrane Centre
- **Asia-Pacific**
  - Australasian Cochrane Centre
  - Chinese Cochrane Centre
  - South Asian Cochrane Centre
- **North and South America**
  - Brazilian Cochrane Centre
  - Canadian Cochrane Centre
  - US Cochrane Center
- **Africa and the Middle East**
  - South African Cochrane Centre

www. cochrane.org/contact/centres

Cochrane Oral Health Group

- Established in 1993
- One of over 50 review groups
- 1500 members
- 40 different countries
- 157 reviews
- 49 protocols



http://ohg.cochrane.org/

Centre for Evidence-based Dentistry

- Established following a workshop in Oxford December 1994
- To promote the teaching, learning, practise and evaluation of Evidence-based Dentistry
- www.cebd.org

Evidence-based health care: a new approach to teaching the practice of health care. Evidence-Based Medicine Working Group. J Dent Educ. 1994 Aug;58(8):648-53
Richards D, Lawrence A. Evidence-based dentistry. Br Dent J. 1995 Oct 7;179(7):270-3.

Evidence- based Dental Centres

- Cochrane Oral Health Group Manchester
- Dundee – formerly Oxford
- London UCL – ICEBOH
- New York – formerly Boston
- ADA–Chicago
- Egypt – Cairo University

Education and Dissemination

- Raising awareness of EBD
- Teaching appraisal skills
- Evidence synthesis
  - Guideline development
  - Journal
  - Online

Evidence-based Dentistry Journals

- EBD First published as supplement to BDJ - Nov. 1998
- Becomes stand alone in 2000
- Evidence-based Dental Practice launches 2001

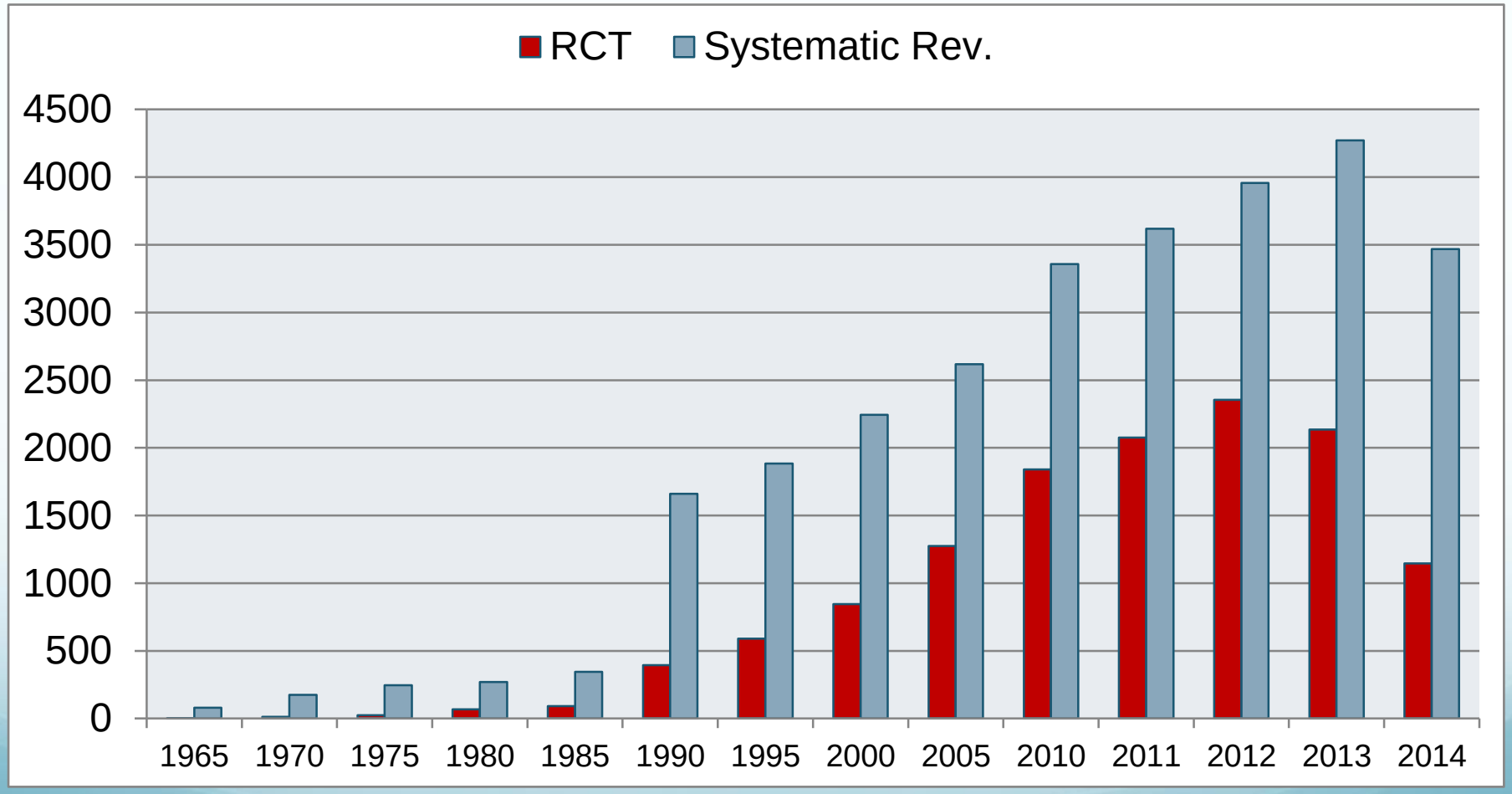
The Dental Elf Service

- www.thedentalelf.net
- One of suite of blogs
  - Mental Health
  - Learning disability
  - Diabetes
  - Child
  - Commissioning
  - Education
  - Lifestyle
  - Musculoskeletal
  - Social Care
  - Stroke
- Highlighting good evidence
- http://www.nationalelfservice.net/

EBD in Dental Education

- GDC includes EBD in curriculum requirements
- Critical Appraisal incorporated into UK Dental postgraduate exams
- Council on Dental Accreditation's (CODA) requirement that oral health educational programs integrate evidence-based dentistry
- Included in many undergraduate curricula

Increase in dental trials and reviews 1965- 2014



Searches conducted 20-02-15

Challenges

- Quality of primary research
- Quality of secondary research
- Implementation

Systematic Reviews in Dentistry

	Number	Percentage
Caries	7	11
Fluorosis	1	2
Oral & Maxillofacial surgery	5	8
Oral Health Promotion	3	5
Oral Medicine	7	11
Orthodontics	3	5
Pain	20	31
Periodontology	6	9
Restorative Dentistry	4	6
Sleep apnoea	2	3
Temporomandibular disorders	5	8
Other	2	3
	65	

Glenny, A. M.; Esposito, M.; Coulthard, P.; Worthington, H. V. The assessment of systematic reviews in dentistry European Journal of Oral Sciences Volume 111(2) April 2003 p 85–92

Weakness of the reviews

- Search strategies not always adequate.
- Only 12 reviews (19%) attempted to identify all relevant studies.
- Problems with:-
  - screening and quality assessment of primary studies
  - the pooling of data
  - examination of heterogeneity
  - the interpretation of findings.

Glenny, A. M.; Esposito, M.; Coulthard, P.; Worthington, H. V.The assessment of systematic reviews in dentistry European Journal of Oral Sciences Volume 111(2) April 2003 p 85–92

Are dental reviews improving?

- 157 - Orthodontic systematic reviews identified
- Gradual increase in number over time
- 27% involved a meta-analysis
- Average number of trials = 4 (2-52)
- Overall quality of evidence using GRADE criteria; low to very low

Koletsi D, Fleming PS, Eliades T, Pandis N. The evidence from systematic reviews and meta-analyses published in orthodontic literature. Where do we stand? Eur J Orthod. 2015 Feb 8. pii: cju087. [Epub ahead of print]

Orthodontic trials in the last 10 years

- Assessed 309 trials published in last 10 years
- Reporting quality has improved significantly
  - Identifying trial as randomised
  - Sample size
  - Blinding
  - Randomisation
  - A few items report well – majority poorly
- Need to more closely follow CONSORT guidelines

Sandhu SS, Sandhu J, Kaur H. Reporting quality of randomized controlled trials in orthodontics-what affects it and did it improve over the last 10 years? Eur J Orthod. 2014 Sep 6. pii: cju050. [Epub ahead of print]

Equator Network

www.equator-network.org/

Evidence-based Guidelines

- SIGN
- NICE
- SDCEP (Scottish Dental Clinical Effectiveness Programme)
- American Dental Association

Implementation

- Delivery of preventive interventions poor despite previous guidelines and prevention programmes
  - SIGN 47, 83 & 138
  - DBOH toolkit
  - SDCEP – Prevention and management of caries in Children
  - Childsmile

Criticisms of EBM

- Criticism has ranged from evidence based medicine being old hat to it being a dangerous innovation, perpetrated by the arrogant to serve cost cutters and suppress clinical freedom.

Sackett DL et al. Evidence based medicine: what it is and what it isn't. BMJ. 1996 Jan 13;312(7023):71-2.

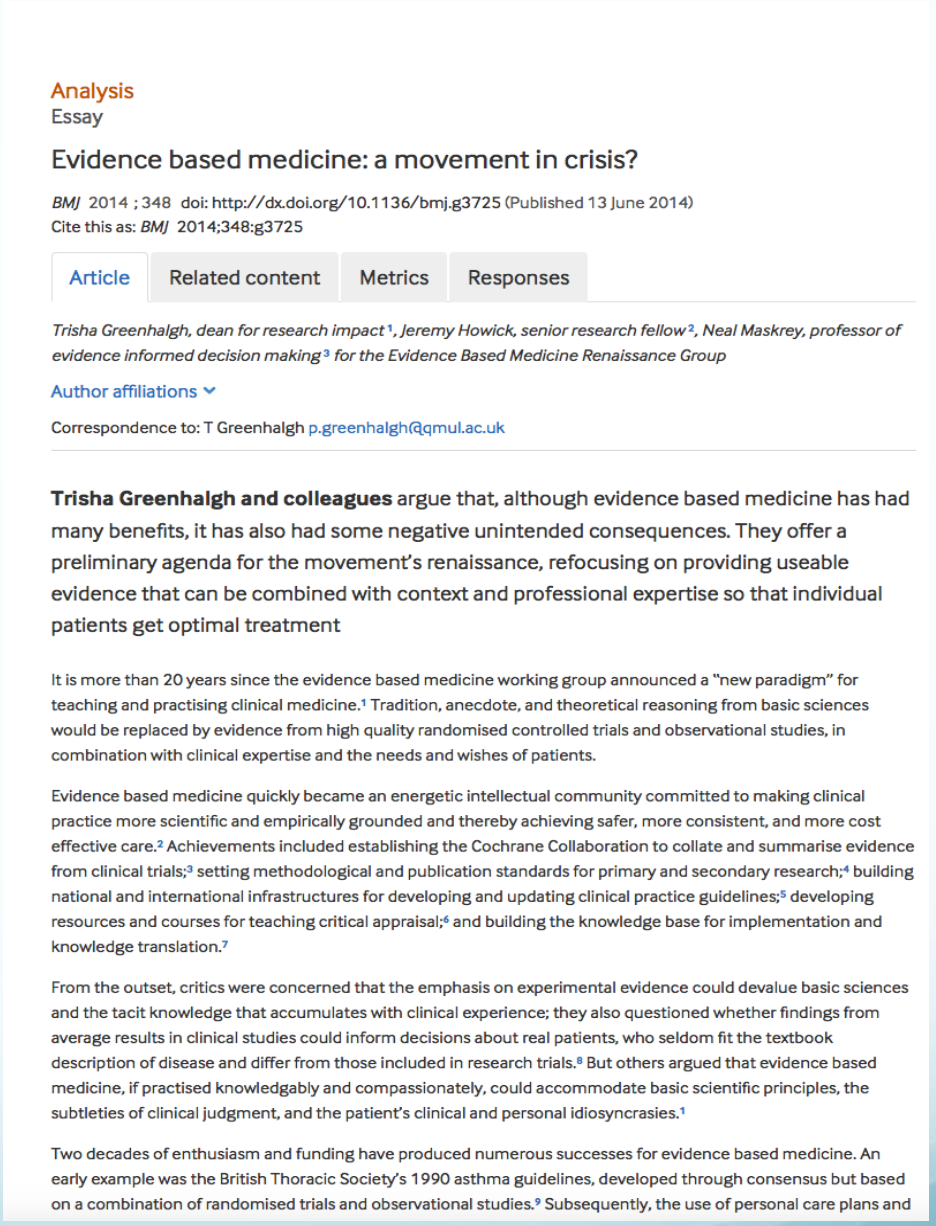
Criticisms of EBM-

- Evidence based medicine is not "cookbook" medicine. Because it requires a bottom up approach that integrates the best external evidence with individual clinical expertise and patients'

Sackett DL et al. Evidence based medicine: what it is and what it isn't. BMJ. 1996 Jan 13;312(7023):71-2.

Criticisms of EBM-

- The evidence based “quality mark” has been misappropriated by vested interests
- The volume of evidence, especially clinical guidelines, has become unmanageable
- Statistically significant benefits may be marginal in clinical practice
- Inflexible rules and technology driven prompts may produce care that is management driven rather than patient centred
- Evidence based guidelines often map poorly to complex multimorbidity



Analysis
Essay

Evidence based medicine: a movement in crisis?

BMJ 2014 ; 348 doi: http://dx.doi.org/10.1136/bmj.g3725 (Published 13 June 2014)
Cite this as: *BMJ* 2014;348:g3725

Article | Related content | Metrics | Responses

Trisha Greenhalgh, dean for research impact[1], *Jeremy Howick, senior research fellow*[2], *Neal Maskrey, professor of evidence informed decision making*[3] *for the Evidence Based Medicine Renaissance Group*

Author affiliations

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Trisha Greenhalgh and colleagues argue that, although evidence based medicine has had many benefits, it has also had some negative unintended consequences. They offer a preliminary agenda for the movement’s renaissance, refocusing on providing useable evidence that can be combined with context and professional expertise so that individual patients get optimal treatment

It is more than 20 years since the evidence based medicine working group announced a “new paradigm” for teaching and practising clinical medicine.[1] Tradition, anecdote, and theoretical reasoning from basic sciences would be replaced by evidence from high quality randomised controlled trials and observational studies, in combination with clinical expertise and the needs and wishes of patients.

Evidence based medicine quickly became an energetic intellectual community committed to making clinical practice more scientific and empirically grounded and thereby achieving safer, more consistent, and more cost effective care.[2] Achievements included establishing the Cochrane Collaboration to collate and summarise evidence from clinical trials;[3] setting methodological and publication standards for primary and secondary research;[4] building national and international infrastructures for developing and updating clinical practice guidelines;[5] developing resources and courses for teaching critical appraisal;[6] and building the knowledge base for implementation and knowledge translation.[7]

From the outset, critics were concerned that the emphasis on experimental evidence could devalue basic sciences and the tacit knowledge that accumulates with clinical experience; they also questioned whether findings from average results in clinical studies could inform decisions about real patients, who seldom fit the textbook description of disease and differ from those included in research trials.[8] But others argued that evidence based medicine, if practised knowledgably and compassionately, could accommodate basic scientific principles, the subtleties of clinical judgment, and the patient’s clinical and personal idiosyncrasies.[1]

Two decades of enthusiasm and funding have produced numerous successes for evidence based medicine. An early example was the British Thoracic Society’s 1990 asthma guidelines, developed through consensus but based on a combination of randomised trials and observational studies.[9] Subsequently, the use of personal care plans and

Greenhalgh T, Howick J, Maskrey N; Evidence Based Medicine Renaissance Group. Evidence based medicine: a movement in crisis? BMJ. 2014 Jun 13;348:g3725.

Actions to deliver real EBM

- Patients must demand better evidence, better presented, better explained, and applied in a more personalised way
- Clinical training must go beyond searching and critical appraisal to hone expert judgment and shared decision making skills
- Producers of evidence summaries, clinical guidelines, and decision support tools must take account of who will use them, for what purposes, and under what constraints
- Publishers must demand that studies meet usability standards as well as methodological ones
- Policy makers must resist the instrumental generation and use of “evidence” by vested interests
- Independent funders must increasingly shape the production, synthesis, and dissemination of high quality clinical and public health evidence
- The research agenda must become broader and more interdisciplinary, embracing the experience of illness, the psychology of evidence interpretation, the negotiation and sharing of evidence by clinicians and patients, and how to prevent harm from overdiagnosis

Greenhalgh T, Howick J, Maskrey N; Evidence Based Medicine Renaissance Group. Evidence based medicine: a movement in crisis? BMJ. 2014 Jun 13;348:g3725.

Real evidence based medicine

- Makes the ethical care of the patient its top priority
- Demands individualised evidence in a format that clinicians and patients can understand
- Is characterised by expert judgment rather than mechanical rule following
- Shares decisions with patients through meaningful conversations
- Builds on a strong clinician-patient relationship and the human aspects of care
- Applies these principles at community level for evidence based public health

Greenhalgh T, Howick J, Maskrey N; Evidence Based Medicine Renaissance Group. Evidence based medicine: a movement in crisis? BMJ. 2014 Jun 13;348:g3725.

In summary

- Increased
  - awareness of EBD
  - availability of EBD information
  - number trials, reviews and guidelines
- Methodological/reporting issues with dental research
- Challenges
  - Implementation
  - Education
  - Keeping ‘EBM real’

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