


Evidence-based prosthodontics


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We Were in the Neighborhood of Truth...

1. *"Then It Went Condo"*: Perception of truth may be based on something besides research
2. *"It subdivided"*: Perception of truth, once analyzed in detail, may not hold up
3. *"The Climate Changed"*: Perception of truth can change as the profession changes
4. *"The Relatives Moved in - truth, relative truth and damn lies"*

ICP Biennial Conference, Fukuoka, Sept 8, 2007




HARD FACTS

DANGEROUS HALF-TRUTHS & TOTAL NONSENSE
PROFITING FROM EVIDENCE-BASED MANAGEMENT


Jeffrey Pfeffer
Robert I. Sutton

HARVARD BUSINESS SCHOOL PRESS

 **We Were in the Neighborhood of Truth...**

1. "Then It Went Condo": based on something beside research
2. "It subdivided": ...may not hold up detailed scrutiny
3. "The Climate Changed": change as the profession changes
4. "The Relatives Moved in - truth, relative truth and damn lies"
5. Have we ever been in the neighborhood of truth? Who says so and how can they say?

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 **We Were in the Neighborhood of Truth...**

Have we ever been in the neighborhood of truth? Who says so? How can they say?!

I.e. A reflection of the three basic questions posed in Philosophy:

1. What is there? (ontology)
2. How do we know? (epistemology)
3. Why should I? (ethical decisions)

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We Were in the Neighborhood of Truth...

Have we ever been in the neighborhood of truth? Who says so? How can they say?!

1. What is there in prosthodontics? (ontology)
2. How do we know? (epistemology)
3. Why should I? (ethical treatment decisions)

Why do the theories and practices taught in different school undergraduate & prosthodontic graduate programs differ so much?

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Scientific studies can be graded according to the theoretical possibility of an incorrect conclusion.

This is reflected by the design of the study.

... we will never know exact answers in science....

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Appropriate Study Designs to address implementation of interventions

	Qualitative research	Survey	Case Control	Cohort	RCT	Non-experimental	Systematic review
Effectiveness: Does it work?				☆	☆☆	☆	☆☆☆
Process of intervention/delivery: How does it work?	☆☆	☆				☆	☆☆☆
Salience: Does it matter?	☆☆	☆☆					☆☆☆
Safety: Will it do more good than harm?	☆		☆	☆	☆☆	☆	☆☆☆
Acceptability: Will the patient accept the intervention?	☆☆	☆			☆	☆	☆☆☆
Cost effectiveness: Is it worth paying for the intervention?					☆☆		☆☆☆
Appropriateness: Is this the right intervention for this patient?	☆☆	☆☆					☆☆
Satisfaction with the intervention: Are users, providers and other stakeholders satisfied?	☆☆	☆☆	☆	☆			☆


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Levels of Evidence and Grades of Recommendations - Matricop

Global Centre for Evidence based Medicine Levels of Evidence (May 2011)

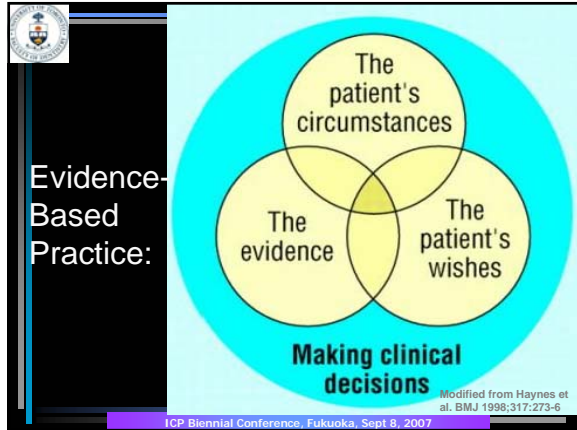
Level/Type/Population, Subpopulation	Prognosis	Diagnosis	Differential diagnosis/etymop prognostic study	Economic and decision analysis before studies
1a [SR (with homogeneity)* of RCTs]	SR (with homogeneity)* of comparative cohort studies (CCT) involving 2 or different populations	SR (with homogeneity)* of Level 1 diagnostic studies, CCRP with 10 studies from different clinical centres	SR (with homogeneity)* of prospective cohort studies	SR (with homogeneity)* of Level 1 economic studies
1b Individual RCT (with narrow Confidence Interval)	Individual prognostic cohort study with ≥ 30% follow-up, CCI is validated in a single population.	[Validating]** cohort study with CCRP tested within one clinical centre	Prospective cohort study with good follow-up****	Analysis based on clearly identifiable costs or alternatives, systematic review(s) of the evidence, and including multiple sensitivity analyses
1c All random	All or some case series	Absolute Sp/Se and 2[LR(+)]	All or some case series	Absolute before-value or meta-value analysis [3][4]
2a [SR (with homogeneity)* of cohort studies]	SR (with homogeneity)* of either retrospective cohort studies or validated cohort studies in RCTs	SR (with homogeneity)* of Level 2 diagnostic studies	SR (with homogeneity)* of 2b and better studies	SR (with homogeneity)* of Level 2 economic studies
2b Individual cohort study (including low quality RCT, e.g. ≥30% follow-up)	Retrospective cohort study or follow-up of validated cohort patients as an RCT. Description of CCI is validated on single sample[s] only	Exploratory** cohort study with good [reference standards, CCRP after discussion, or validated only on 10th sample [5]] or database	Retrospective cohort study, or poor follow-up	Analysis based on clearly identifiable costs or alternatives, limited present(s) of the evidence, or single studies, not including multiple sensitivity analyses
2c "Outcomes" Research, Biological studies	"Outcomes" Research		Biological studies	Audit or outcome research
2d [SR (with homogeneity)* of randomised case-control studies]		SR (with homogeneity)* of 2b and better studies	SR (with homogeneity)* of 2b and better studies	SR (with homogeneity)* of 2b and better studies
2e Individual Case-Control Study		Non-cohort study, or without consistently applied reference standards	Non-cohort study, or very limited population	Analysis based on limited alternatives or costs, poor quality evidence of data, but including sensitivity analyses incorporating likely realistic variations
3 Case series (and poor quality prognostic cohort and case-control studies [6])	Case series (and poor quality prognostic cohort studies)***	Case-control study, poor or non-independent reference standards	Case series or expanded reference standards	Analysis with no sensitivity analyses
4 Expert opinion without explicit internal appraisal, or based on physiology, bench research or "best practices"	Expert opinion without explicit internal appraisal, or based on physiology, bench research or "best practices"	Expert opinion without explicit internal appraisal, or based on physiology, bench research or "best practices"	Expert opinion without explicit internal appraisal, or based on physiology, bench research or "best practices"	Expert opinion without explicit internal appraisal, or based on economic theory or "best practices"

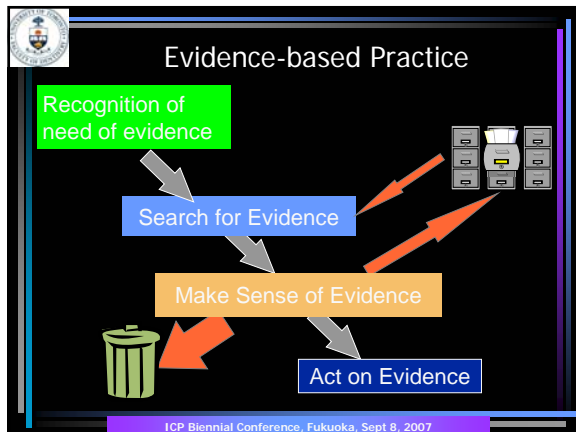
"Doubt is not a pleasant condition, but certainty is an absurd one"

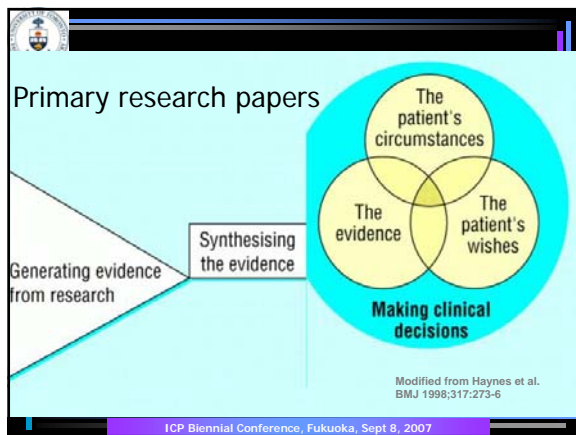


Voltaire (1694-1778)

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How many in the audience here can comfortably state that they were adequately trained to critically appraise primary research papers?

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The new graduate

Advertising
- producers
- colleagues

Head/ Staff/
Demonstrator
-filtered

“Curriculum”
“The Classic
literature”

**Publications
in prostho-
dontics**

Truth
Relative
Damn!

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The diagram shows a stick figure with a lightbulb idea on the left. A green arrow points from a box labeled 'Head/ Staff/ Demonstrator -filtered' and another labeled 'Advertising - producers - colleagues' towards the figure. A stack of colorful folders labeled 'Publications in prosthetics' is on the right, with an arrow pointing towards the figure. The text 'The Classic literature' and 'Curriculum' are also present.

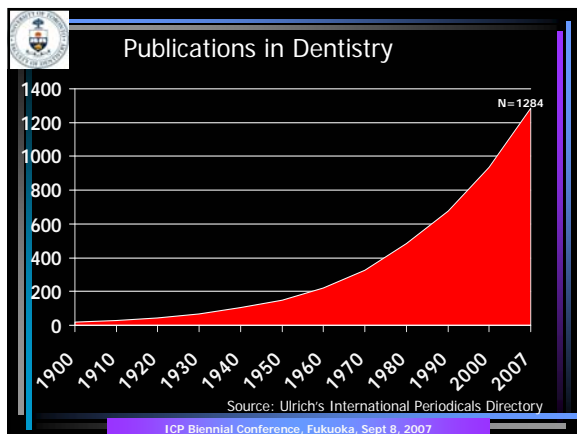
Cookbook dentistry?

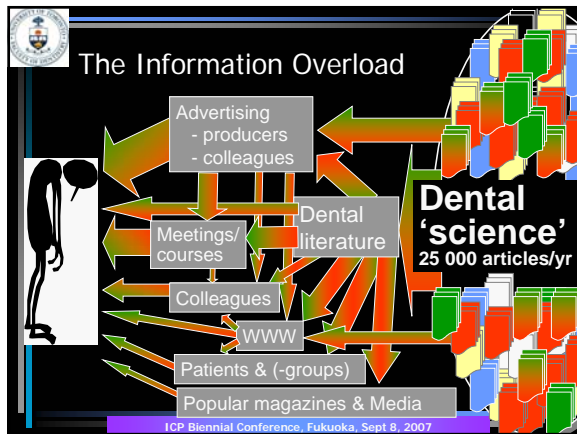
Decision Making in Dental Treatment Planning

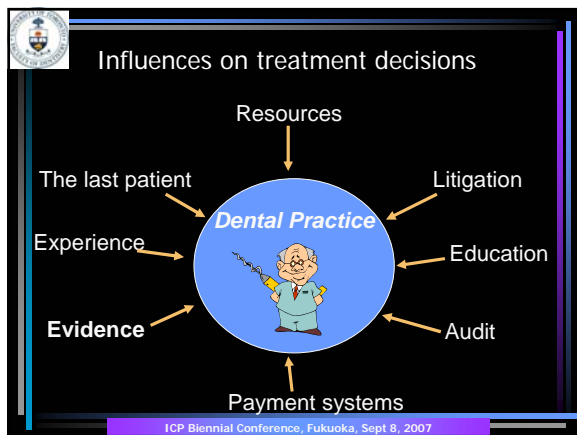
WELCH, H. BELL

For the patient with a **COMPLEX DENTAL PROBLEM** who is **SYMPTOMATIC** or in **ACUTE PAIN**

The diagram is a flowchart starting with 'Patient with a COMPLEX DENTAL PROBLEM who is SYMPTOMATIC or in ACUTE PAIN'. It branches into 'Diagnosis, including emergency?' and 'A. Acute inflammatory emergency' and 'B. Acute aetiological emergency'. It details various dental procedures like 'Extraction', 'Root canal', 'Crown', 'Fixed prosthesis', and 'Removable prosthesis'.



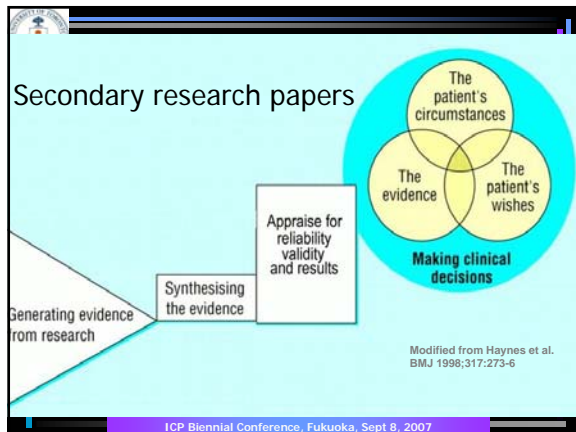


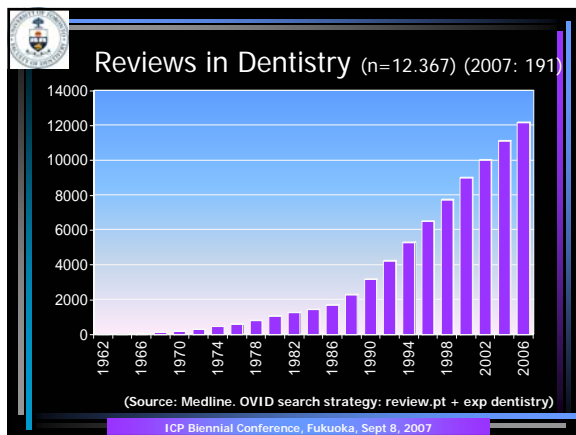


Because of the volume and time constraint....

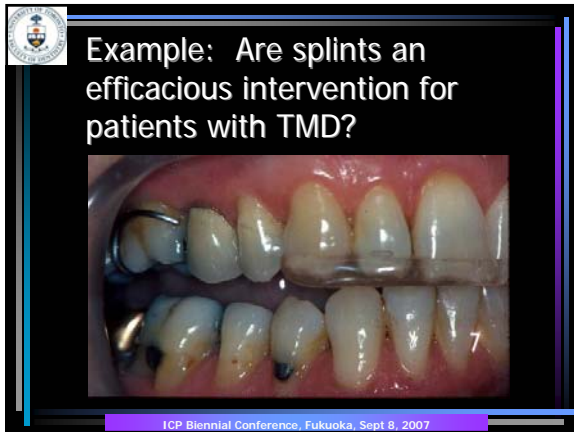
Perhaps we can stick to read only review papers?

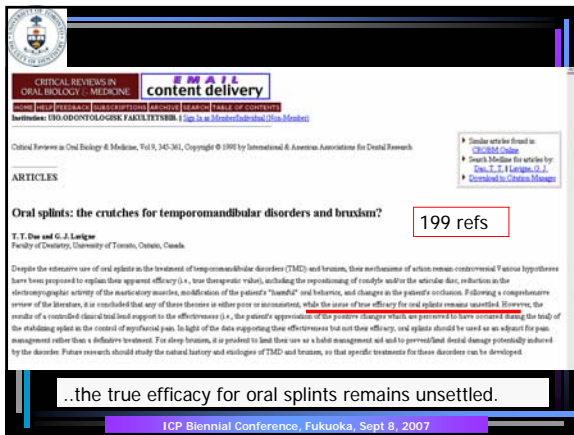
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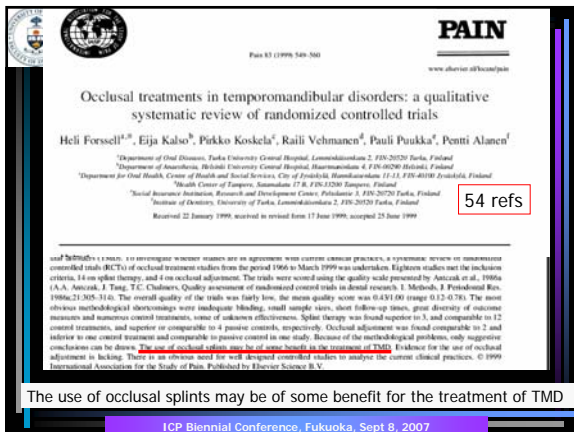




- ### Reviews - problems
- Usually:
- written by a single topic expert
 - based on their understanding of the literature
 - no methodology is given
 - a broad based subject is addressed
 - the conclusions and advises differ
- ICP Biennial Conference, Fukuoka, Sept 8, 2007







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<input type="checkbox"/> AMUZIAN AA	J PEDIODONTAL RES	21	305	<input type="checkbox"/> ALLEN JD	ORAL DRUG INT	2	312
<input type="checkbox"/> AMUZIAN AA	J PEDIODONTAL RES	21	315	<input type="checkbox"/> ANDERSON GC	J PROSTHET DENT	53	392
<input type="checkbox"/> AMUZIAN/DOUGHERTY A	PROG PAIN RES MANAG	4	237	<input type="checkbox"/> ARNDTDAHL T	LANCET	1	411
<input type="checkbox"/> AMUZIAN/DOUGHERTY AA	J ORAL PAIN	9	216	<input type="checkbox"/> AMUZIAN/DOUGHERTY A	TERMINOLOGY/STYL 10		227
<input type="checkbox"/> BRIDGE BC	ADV PAIN RES TECH	909		<input type="checkbox"/> ARMSTRONG AE	INT J ADULT DENTID 0	3	273
<input type="checkbox"/> CHALMERS TC	HEFT RES J	303		<input type="checkbox"/> BAILEY JD	J DENT RES	59	317
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<input type="checkbox"/> HALL TTT	PAIN	16	35	<input type="checkbox"/> BROUSSER BT	ORAL DRUG ORAL MED 0	53	505
<input type="checkbox"/> SHROVEN SF	CLIN J PAIN	4	89	<input type="checkbox"/> BURSE JC	ORAL DRUG	14	88
<input type="checkbox"/> SHROVEN SF	J CHANDRANON DENTOR	6	302	<input type="checkbox"/> CARLSON R	J PROSTHET DENT	72	33
<input type="checkbox"/> SHROVEN SF	OROPALITAL PAIN TEMPO	15		<input type="checkbox"/> CARWARD JJ	J PROSTHET DENT	48	563
<input type="checkbox"/> SHROVEN SF	ACTA ODONTOL SCAND	16	122	<input type="checkbox"/> CRAWFORD JR	CAN J OTOLIT PROBOR	52	704
<input type="checkbox"/> SLONE JI	ORAL DRUG PROCTURES	257		<input type="checkbox"/> CROOKETT SF	ACUTE DENT J	66	381
<input type="checkbox"/> FORBELL B	ACTA ODONTOL SCAND	44	43	<input type="checkbox"/> CROOKETT SF	ORAL DRUG ORAL MED 0	70	201

SRs can show:

A review being published in a highly reputable journal does not necessarily mean it can't be biased

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Therefore, the reviews should be
"Systematic"

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NCBI PubMed National Library of Medicine NLM

Search PubMed for "systematic review" OR meta-analysis

11566-Capizzano JO, Capistrano WF Jr, Szymanski JS. Borderline and schizophrenic patients: A comparative study. *Am J Psychiatry*. 1972 Dec;128(12):1257-64. PMID: 1320169 (PubMed - indexed for MEDLINE)

11567-Miller EH, Schneider HJ, Rossini JL, McLellan D. A new consideration in athletic injuries: The classical ballet dancer. *Clin Orthop*. 1973 Sep;(113):181-93. PMID: 125636 (PubMed - indexed for MEDLINE)

11568-Cubichola J. A systematic review of the genus *Pleurozone* (Acetiflorae, Myxobolales). *Acetiflorae*. 1973 Nov;15(2):245-55. No abstract available. PMID: 4804191 (PubMed - indexed for MEDLINE)

11569-Lacey J. Autokinetic illusion: a systematic review of theories, measures, and independent variables. *Psychol Bull*. 1972 Dec;78(6):471-74. Review. No abstract available. PMID: 456603 (PubMed - indexed for MEDLINE)

11570-Rieder SW, Conrad HC, Basser O. Screening for macronutrients (cystic fibrosis-CF). Systematic review and results. *Monographs Epidemiol*. 1971 Dec;19(12):553-7. German. No abstract available. PMID: 413016 (PubMed - indexed for MEDLINE)

"Systematic reviews" appearing 1971, 1972, 1973?

"Systematic" review?

Is just a word!

Learn how to recognize one...

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How many in the audience here can comfortably state that they were adequately trained to critically appraise secondary research papers?

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Information
is not synonymous
to knowledge
and even less so to
clinical competence

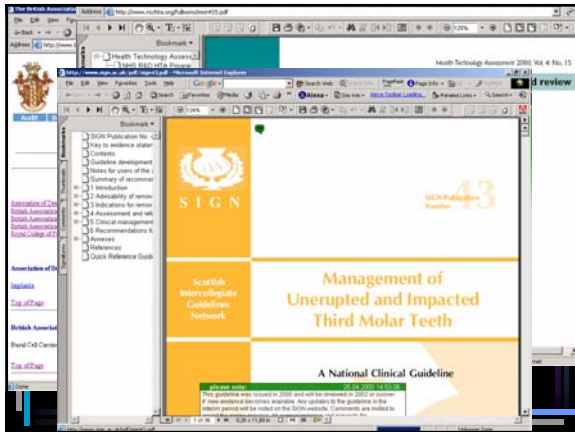
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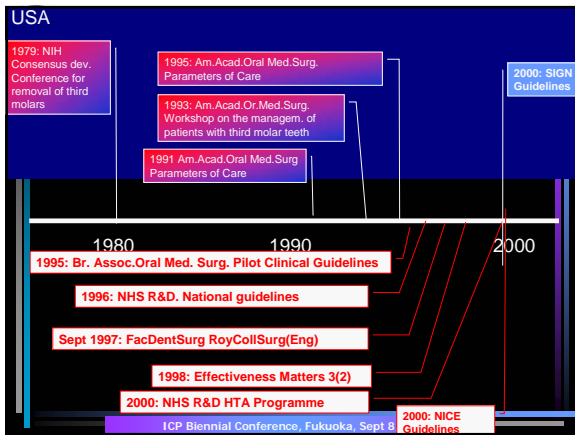
How quickly do dentists adopt to new research information?

- Impacted wisdom teeth?
- TMD management?
- Need for restoration replacement?
- Caries and remineralization potential
-


Why does the science transfer to dentists seem to be ineffective?

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Are dentists worse or better than other health professions?

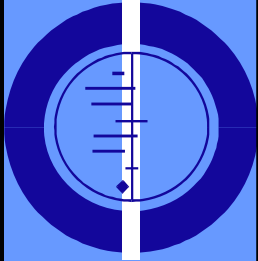
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The Cochrane Collaboration

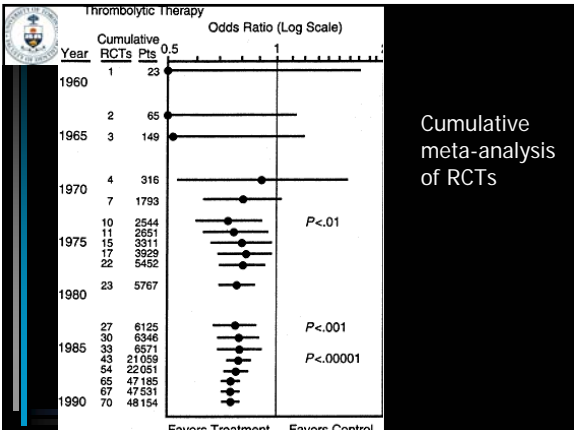
- 1972: 1st trial
- 1972-1987: +6 trials
- 1989: 1st SR

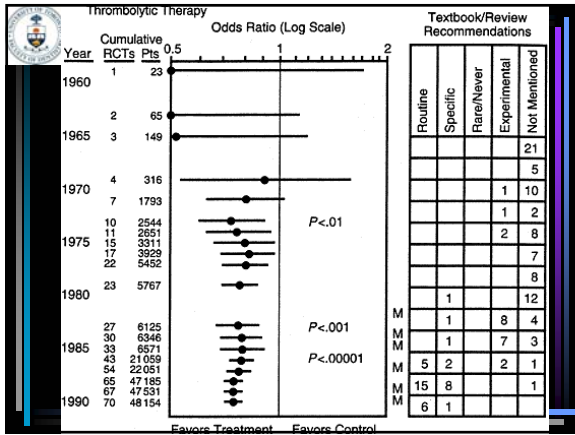
From 1992



Logo


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*"Guerir quelquefois,
soulager souvent,
consoler toujours"*

*"Cure occasionally,
relieve often,
console always"*



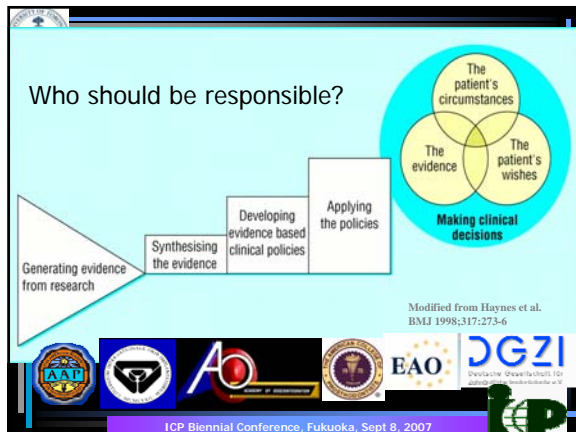
Ambroise Paré
(1510 –1590)

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Even if we have new research

1. This is not necessarily known amongst the dental clinical practitioners
2. Have our educators adequately prepared students to change in light of new knowledge?
3. Who's responsibility should it be to disseminate (new) research results that impacts directly on patient care?

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Who should be responsible?:
The state of research on oral implants

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you for
your
kind
attention

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