The Value of Consensus Conferences: Peer review by 50 key opinion leaders!

Richard Bengt PRICE
BDS, DDS, MS. PhD
FDS RCS (Edin), FRCD(C), Professor

Jean-François ROULET
DDS, Habil, Prof hc, Dr hc, Professor
Editor-in-Chief

Dear readers,

Fifty years ago, for the most part, all the dentist had to know about direct restorative materials was how to use dental amalgam and silicate cement. The preparation design for amalgams was well understood, and mechanical retention was a fundamental requirement. Reliable adhesion to both dentin and enamel was utopian, metal free ceramics were not durable, and light-cured resins had yet to be developed. Today, we have a multitude of materials and techniques that enable the dentist to produce direct and indirect restorations that are practically undetectable for both the dentist and the patient. However, there are tremendous consequences from having so many restorative materials and techniques available, and it has become more and more difficult for both practitioners and university professors to find their way through what is now considered a restorative jungle. On the one side, the internet offers in milliseconds a vast amount of information, which often sounds interesting and authoritative but, unfortunately, it is not always correct. Most dental schools claim to teach evidence-based dentistry and focus on providing treatment recommendations that are free from bias and based on prospective randomized double-blinded clinical trials. This approach should ascertain the truth, but has some severe disadvantages. Firstly, it requires a long time for valid results to be produced; secondly, patients cannot be standardized; thirdly, there is often an element of bias in that the exclusion criteria for the very studies that we rely on often eliminate some significant parts of populations that are candidates for the treatment being evaluated. Finally, ethical considerations often limit the questions that can be asked from a prospective randomized, double-blinded clinical trial. This is further compounded by the fact that it has been estimated that more than 95% of recent prosthodontic and implant review articles failed to use search strategies that were systematic, thus undermining the conclusions upon which treatment decisions are based[1].

One solution to the problems described above is a consensus conference. The principle is the following: experts, key opinion leaders, who represent the profession and industry come prepared to discuss a well-defined topic. Based on all their combined scientific, clinical and epidemiologic knowledge, together with presentations, a structured discussion occurs, in which proven, accepted information is sorted out from less valid information. In essence, this is now peer review by some 50 key opinion leaders instead of peer review by 2 or 3 selected reviewers for a 'peer reviewed' journal publication. At the end of such a conference, a draft consensus paper is formulated, which is subsequently reviewed, edited and approved by those key opinion leaders.

The Northern Light conferences at Dalhousie University in Halifax (Canada) have produced such recommendations for the light curing of direct restorations (2014) [2-4], dental light-curing units (2015) [5], bulk-fill restorations (2016) [6], and light-curing adhesives (2017) [7,8]. In July 2018, 50 dentists, scientists, clinicians, teachers, manufacturers, editors, and key opinion leaders met in Oslo for 3 days to discuss two topics, the light curing of indirect restorations and what exactly is

meant by the term 'bioactive' in the context of restorative materials. The complexity of the latter topic made for spirited discussions, however, after several rounds of refinement, we are proud to present the following consensus statements as part of this editorial. We hope that this information will help dentists provide restorations that exhibit excellent longevity. The information will also help the reader understand what a bioactive restorative material should do.

Sincerely yours,
R.B. Price and J-F Roulet

References

1. Layton D. A critical review of search strategies used in recent systematic reviews published in selected prosthodontic and implant-related journals: are systematic reviews actually systematic? Int J Prosthodont. 2017;30(1):13-21. doi: 10.11607/ijp.5193.
[PubMed] Google Scholar(5) Scopus(5)
2. Roulet JF, Price R. Light curing - guidelines for practitioners - a consensus statement from the 2014 symposium on light curing in dentistry held at Dalhousie University, Halifax, Canada. J Adhes Dent. 2014;16(4):303-304. doi: 10.3290/j.jad.a32610.
[Full text links] [PubMed] Google Scholar(13) Scopus(6)
3. Watts DC. Let there be More Light! Dent Mater. 2015;31(4):315-316. doi: 10.1016/j.dental.2015.03.001.
[Pub Med] Google Scholar(4) Scopus(2)
4. Platt JA, Price RB. Light curing explored in Halifax. Oper Dent. 2014;39(6):561-563. doi: 10.2341/1559-2863-39.6.561.
[Full text links] [PubMed] Google Scholar(7) Scopus(4)
5. Strassler H, Oxman J, Rueggeberg F. What should you look for in a curing light? CDA Essentials. 2016;3(6):31-33. http://www.cda-adc.ca/en/services/essentials/2016/issue6/#1
6. Price R. Consensus statements on bulk fill composites. CDA Oasis, June 2017. http://oasisdiscussions.ca/2017/06/07/csbf/
7. Giannini M, Fronza BM, Price RB. Consenso em odontologia adesiva: diretrizes para obter sucesso clínico na adesão às estruturas dentais. Int J Esthet Dent. 2018;3(2):218-221. doi:10.20432/ijed218
8. Strassler HE, Alkhuabizi Q, Ganesh N. Reimaginng dental bonding: predictable restorations for patients. Compendium eBook, November 2018.

Light Transmission through Indirect Restorative Materials

a)There is an exponential decline in the amount of light that reaches the bottom of the restoration as its thickness increases.
b)There are considerable differences in the amount of light that is transmitted through the various types and shades of restorative material.
c)The shorter wavelengths (violet, ~ 410 nm) do not pass through materials as well as longer wavelengths (blue, ~ 460 nm) of light.
d)Future studies should account for external and internal reflection, refraction, and absorption due to variation in the surface finish and the incident angle of the light.
At the meeting, it was agreed that, when luting indirect restorations, dentists should:
• use the recommended adhesive - cement combinations, particularly when using self-etching universal adhesives together with dual-cure" resin cements;
• recognize that resins that are solely light-cured must receive sufficient light, check the thickness of the restoration, and stay within the cement manufacturer's instructions for use;
• recognize that most "dual curing" resin materials benefit from receiving additional light exposure;
• recognize that doubling the exposure time will not compensate for the reduction in transmitted light if the thickness of the restorative material thickness has doubled (e.g., from 1.0 to 2.0 mm);
• use "self-curing" or "dark-curing" resin cement systems that do not require any additional light when they are concerned that insufficient light will be delivered to the resin cement.

Bioactive Restorative Materials (filling materials, adhesives, and cements)

"Bioactivity" applied to a dental restorative material should describe an active beneficial biological process. It is suggested that dental restorative materials may be called "bioactive" if, in addition to their primary function of restoring or replacing missing tooth structure, they actively stimulate or direct specific cellular or tissue responses, or both, or they can control interactions with microbiological species. Such effects should be characterized by the field of application, the effect, and how the effect was scientifically proven.

The term "bioactive" may also be found in a wider sense to describe restorative materials that have one or more of the following:

- a character that causes the formation of reparative tissue;
- component(s) that dissolve that can be identified with normal physiological species that are involved in a biological process;
- component(s) that dissolve and happen to have antimicrobial activity (this includes high-pH materials);
- a surface conducive to cell attachment;
- a surface that may nucleate the formation of biological-like calcium phosphates, including bioapatite-like material, when in contact with saliva or tissue fluids;
- component(s) that dissolve and thereby cause local precipitation of biological-like calcium phosphates, including bioapatite-like materials, in a purely passive chemical process.

The Northern Light conferences at Dalhousie University in Halifax (Canada) have produced such recommendations for the light curing of direct restorations (2014) [2-4], dental light-curing units (2015) [5], bulk-fill restorations

References

1. Hench LL. Bioactive ceramics. Ann N Y Acad Sci. 1988;523(1):54-71. PMID: 2837945
[PubMed] Google Scholar(554) Scopus(265)
2. Hench LL. The story of Bioglass. J Mater Sci Mater Med. 2006;17(11):967-978 doi: 10.1007/s10856-006-0432-z
[PubMed] Google Scholar(1479) Scopus(1031)
3. ADA. ACE Panel Report Bioactive Materials. ADA; 2018.
https://www.ada.org/~/media/ADA/Science%20and%20Research/Files/ACE_Panel_Report_Bioactive_Materials_Q2_2018.pdf?la=en
4. Vallittu PK, Boccaccini AR, Hupa L, Watts DC. Bioactive dental materials-Do they exist and what does bioactivity mean? Dent Mater. 2018;34(5):693-694.doi: 10.1016/j.dental.2018.03.001. [PubMed] Google Scholar(6) Scopus(4)
5. ISO 23317. Implants for surgery - In vitro evaluation for apatite-forming ability of implant materials. Geneva: International Organization for Standardization; 2014.
6. Goldberg M, Schmalz G. Toward a strategic plan for pulp healing: from repair to regeneration. Clin Oral Investig. 2011;15(1):1-2.
doi: 10.1007/s00784-010-0503-x. [PubMed] Google Scholar(8) Scopus(5)

DOI: https://doi.org/10.25241/stomaeduj.2018.5(4).edit.1