

Perspectives

AS PER MANUFACTURER'S INSTRUCTIONS

As per manufacturer's instructions must be one of the most oft-cited phrases in dental research articles. We've all seen it, usually in the "Methods and Materials" section. So what's wrong with that? Maybe nothing. Maybe a lot. The distinction goes to the essence of what research is. At its most basic, research is the search for truth. The fundamental principle that guides all research, not just dental research, is known as the scientific method. We as scientists have the tenets of the scientific method to guide us in determining the truth we seek. We make an observation that piques our interest. We devise a hypothesis that we think helps to explain that observation and use it to make predictions as to how future observations will occur. We then test our hypotheses through experimentation and modify our hypotheses as needed.

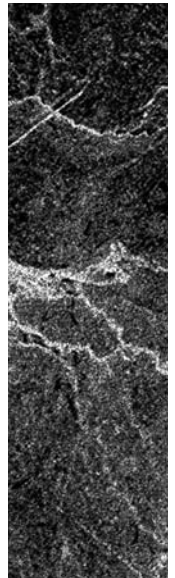
We all learned this as part of our research nurturing. But a final step of this process is often overlooked: for the results to be a valid confirmation of a hypothesis, they must be able to be replicated by independent, confirmatory testing. Too

often manuscripts fail to provide adequate detail for another researcher to be able to duplicate the work and either confirm or refute the hypothesis being tested.

We have the opportunity to serve on the editorial and review boards of a number of peer-reviewed dental journals. In the process of reviewing manuscripts, it is frustrating to note a lack of appropriate detail that would make it possible to fully assess the validity of the methods and materials used, let alone to duplicate the study. A common example is the statement that one has used or applied a material or technique *as per manufacturer's instructions*. Although this may be, and often is, an appropriate comment to have in the manuscript, it should be there to allow the reader to understand that the researchers did not deviate from the instructions provided with the product—it should not be a substitute for delineating what procedures were performed. In this day and age in which it is not unusual for 2 or 3 years to elapse from the time research is conducted until it is published, *as per manufacturer's*

instructions may very well be different from the reader's perspective than it was for the authors when the study was conducted.

Many readers may be asking what this has to do with them. They aren't engaged in research, nor do they write scientific articles for publication. The fact of the matter is, we all have a responsibility to uphold the scientific method. A term heard frequently these days is *evidence-based dentistry*. If this philosophy is to truly have meaning, then the accumulation of accurate evidence is critical. We must apply full scientific rigor to the research we perform, and this rigor must be accurately and fully explained in the publication of the research. It is the authors' responsibility to provide adequate detail in the manuscript so that another researcher can duplicate the study. It is the reviewers' responsibility to scruti-



nize and verify that this has been done appropriately and accurately. It is the editors' job to ensure the process is thoroughly and ethically accomplished. And it is the readers' responsibility to demand this level of accountability in the profession's peer-reviewed, scientific literature. It is the only way we can be true to our guiding principle of research,

the scientific method. If we all endeavor to do that, our profession and the patients we serve will be better for it.



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