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LETTERS

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INCOME ANALYSIS

Dr. Marko Vujicic and colleagues' May JADA cover story, "An Analysis of Dentists' In-

comes, 1996-2009" (Vujicic M, Lazar V, Wall TP, Munson B. *JADA* 2012;143[5]:452-460), proved to be focused and timely. The article mentioned many great points and did a great job in bringing the data into constant dollars.

The one area that needs to be more prominent and dealt with head-on is the lack of incorporation of insurance preferred provider organization (PPO) adjustments, maximum plan allowance discounts and the tens of thousands of dollars of pro bono care we all provide.

Those items will, or at least should, be a part of gross billings. In order to know the true impact of these adjustments, one must track them. The adjustments are made in normal accounting methods, and then the practitioner knows what is reality, the net charges.

Starting out of the blocks with "net income defined as gross billings minus total practice expenses" misses what goes on in the dental practice trenches during the present era. A false perception and, worse, inflated numbers result from this approach.

For example, a new dentist starts from scratch and has gross billings of \$425,000 within a few years. However, after having to incorporate Medicaid, state children's health plans and all the deeply discounted PPOs in order for

him or her to survive, this results in an adjustment of \$135,000. Are those numbers going to give a "real" net income, regardless of the office expenses? Unfortunately, this is an all-too-common and true example from the discussions I have had with new colleagues.

I realize some locations around our country may not have to deal with such a dramatic impact of the PPO adjustment numbers or pro bono care, but the focus needs to be on gross collections that are possible. The impact is real, especially during an economic downturn that we are still navigating through.

I feel we need to tighten up this analysis for it to become more relevant, especially for the new dentists. The two simple concepts we might reflect on as a profession and as small businesses are "dollars in" and "dollars out," and if you continually get paid less than what you have to expense and spend to provide that service or treatment, you cannot make it up in volume.

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CDA Council on Membership
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Authors' response: We thank Dr. Utke for his comments regarding our article on

the net incomes of owner general practitioners. We agree that preferred provider organization adjustments have an impact on gross billings and should be studied.

As mentioned in the article, reliable data on reimbursement levels by various third-party entities are not readily available. With respect to pro bono services provided by dentists, the value of these services may not necessarily be computed in gross billings, as gross billings reflect the fees charged for procedures and bad debt, such as a patient being charged and not making payments.

While these issues are relevant and worth investigating we would like to point out that our analysis was based on self-reported net incomes of general practitioners. In the Survey of Dental Practice (the source of the income data used in the analysis), dentists are asked to report their net income "after practice expenses and business taxes." These data have consistently been collected for more than 40 years and are available to members at www.ada.org/freereports. Using these self-reported data, our analysis indicates that the mean, inflation-adjusted (real) net income of owner general practitioners in 2009 was at the same level as that a decade earlier.¹

While the recent economic downturn has played a role in driving this decline, our analysis demonstrated that a broader set of factors also played a key role in the decline—such as a steady decrease in utilization of dental care that began before the start of the recession. We are currently analyzing patterns of utilization among various population groups.

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1. American Dental Association, Survey Center. 2009 Survey of Dental Practice: Income From the Private Practice of Dentistry. Chicago: American Dental Association; 2010.

WHAT IS AVERAGE?

Some basic statistics are glaringly missing from Dr. Marko Vujicic and colleagues' May JADA article, "An Analysis of Dentists' Incomes, 1996-2009" (Vujicic M, Lazar V, Wall TP, Munson B. JADA 2012;143[5]:452-460). Also, it appears to be written for academics, not for general practitioners themselves.

The authors repeatedly talk about "average" income for general dentists, but they do not clearly analyze mean, median and mode. Table 1 on page 455 gives the standard error of the mean. The authors trimmed the outlying 2.5 percent at the top and at the bottom, but a reader first has to get past some eye-glazing parameters, intercepts and regressions. Values such as "Age, Squared" (parameter estimate = -106) and "Female Sex" (parameter estimate = -34,060) are indecipherable.

In college, I took the most basic course on statistics, and they drilled this into us from day one: "average" is nearly meaningless by itself. One needs to clearly identify mean, median and mode. Beyond that, one can get into range, variance, standard deviation and normal distributions (bell curves).

In this article, "average" is the mean, but what about this example? Six dentists are polled. One makes \$1 million; the other five make \$100,000. They "average" \$250,000. One could falsely state that most dentists make \$250,000. Wrong. The median is \$100,000 and so is the mode. The million-

dollar-earner is an outlier, but we don't know that if we don't look at the distribution that makes up the "average."

I suppose the authors didn't want to muddy their across-the-years analysis by delving into the side issue of analyzing mean, median and mode for each year. At the least, they should have done that for 2009, the most recent year.

Among their statistical gyrations, they needed to include the basics of mean, median and mode.

Stephen L. Kirkpatrick, DDS
Olympia, Wash.

Authors' response: We appreciate Dr. Kirkpatrick's comments regarding the various statistical measurements of data. He is absolutely correct that outliers can affect the mean (average) as described in his example.

The published reports containing the results of the Surveys of Dental Practice have detailed tables that list the means, first quartiles, medians, third quartiles and standard deviations of various variables (see, as an example, American Dental Association, Survey Center. 2010 Survey of Dental Practice: Income From the Private Practice of Dentistry. Chicago: American Dental Association; 2011). The downloadable versions of these reports are free to members at www.ada.org/freereports. Owing to the space constraints of an article, not every statistic can be shown.

Examining the median instead of the mean does not change any of the main results. Median real net income of owner general practitioners displays the same pattern over time as the mean. As for the regression results, the main point was to see whether the decreases from year to year were statistically significant.

The other variables in the regression, such as sex and age can have entire discussions devoted to them but, again, they were not the focus of this article. (Regarding age squared, in most occupations, including dentistry, income increases with age and then levels off. The squared term in the regression controls for the nonlinearity of income.)

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TOBACCO-USE CESSATION

I would like to commend Dr. Margaret Walsh and colleagues for their June JADA article, "The Effect of Training on the Use of Tobacco-Use Cessation Guidelines in the Dental Setting" (Walsh MM, Belek M, Prakash P. JADA 2012;143[6]:602-613). Their work helps reinforce that educating dentists on the effects of tobacco use on oral and overall health via either workshops or self-study will increase the likelihood of dentists working with tobacco-addicted patients to help them quit their tobacco dependence.

Just as most tobacco-using patients know the use of these products is deleterious to their health, most dental professionals also realize that the periodontal disease, caries and oral cancers they see in these patients correlate to their tobacco habit.¹ The dilemma for tobacco users is that they are addicted and, given the "re-wiring" of their brains to the nicotine molecule, among other issues, they face tremendous obstacles to quitting.

In order for dentists to work with these patients, dentists

must be taught not only the oral and systemic implications of tobacco use, but also about the addictive process in general terms, as well as how this process specifically relates to nicotine. In addition, learning more about motivational interviewing techniques will allow dentists to know how and when to discuss this addiction with their patients. There no longer will be a fear that patients will be turned off or feel threatened by these discussions. In actuality, practitioners will see that the efforts and concerns that dentists show their patients will become a practice builder and increase the referral base.

In the December 2008 issue of JADA,² a survey of oral and maxillofacial surgeons' tobacco-use-related knowledge, attitudes and intervention behaviors reiterated that the more oral surgeons learned about tobacco-related issues, the better they could address these with patients. This also was discussed in the March 2011 issue of Journal of Periodontology.³ The main conclusions in the latter article were that the perceived barriers to providing tobacco-use cessation information by periodontists were a low patient acceptance of treatment, a lack of time and a lack of training in this subject. The bottom line is that if dental professionals are adequately trained, their perception will no longer be of barriers to working with these patients, but of golden opportunities to educate them.

Over the past 15 years, I have given well over 800 lectures on tobacco-related issues, as well as having written an online course that presently is available for free at the American Dental Association Continuing Education Online Web site.⁴ My biggest frustration in working in this field is the lack

of support that is shown in sponsoring these programs.

Everyone agrees that the dental profession must work with tobacco-using patients on some level to help guide them in their efforts to quit. It would definitely "help the cause" if dental and medical insurance companies, foundations and other philanthropic organizations stepped up to help fund this education. It also has been shown that if cessation counseling, even if it lasts only 10 minutes, is given to patients, the increase in the likelihood of quit rates significantly goes up.^{5,6} If medical or dental insurance companies paid a modest fee for this counseling, many more practitioners would be more likely to provide this service.

I feel that it is safe to say that most everyone agrees that tobacco use is harmful and, given that it costs the U.S. economy more than \$193 billion dollars per year,⁷ we need to "put our money where our mouth is" in helping fund these educational opportunities and services.

Nevin Zablotsky, DMD
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1. Mecklenburg RE, National Cancer Institute (U.S.), National Cancer Institute (U.S.), Smoking and Tobacco Control Program, National Institute of Dental Research (U.S.), Epidemiology and Oral Disease Prevention Program. Tobacco effects in the mouth: a National Cancer Institute and National Institute of Dental Research guide for health professionals. Bethesda, Md.: National Cancer Institute; 2007.

2. Crews KM, Sheffer CE, Payne TJ, Applegate BW, Martin A, Sutton T. A survey of oral and maxillofacial surgeons' tobacco-use-related knowledge, attitudes and intervention behaviors. JADA 2008;139(12):1643-1651.

3. Patel AM, Blanchard SB, Christen AG, Bandy RW, Romito LM. A survey of United States periodontists' knowledge, attitudes, and behaviors related to tobacco cessation interventions (published ahead of print Sept. 1, 2010). J Periodontol 2011;82(3):367-376. doi 10.1902/jop.2010.100405.

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5. Hughes JR. New treatments for smoking

cessation. *CA Cancer J Clin* 2000;50(3):143-151.

6. Fiore MC, U.S. Tobacco Use and Dependence Guideline Panel. Rockville, Md.: U.S. Department of Health and Human Services, Public Health Service; 2000.

7. Centers for Disease Control and Prevention. Cigarette smoking among adults and trends in smoking cessation: United States, 2008. *MMWR Morb Mortal Wkly Rep* 2009;58(44):1227-1232. www.cdc.gov/mmwr/preview/mmwrhtml/mm5844a2.htm. Accessed July 18, 2012.

Authors' response: We thank Dr. Zablotsky for his comments regarding our article and commend him for his on-line course available for free at the American Dental Association (ADA) Continuing Education Online Web site.¹ Although dentistry has made great advancements in tobacco control education and many dental schools have added tobacco-use cessation content to the curriculum, there continues to be a need to enhance assistance and arrangement of follow-up at the point of care.

Consistent with our baseline findings in Prakash and colleagues² in 2012, Tong and colleagues³ surveyed 877 dentists in 2010 (response rate: 44.58 percent [391/877]). Their findings revealed that although 89.1 percent asked about tobacco use, 70.6 percent advised tobacco users to stop using tobacco and 49.6 percent assessed patients' willingness to quit, only 18.1 percent reported assisting with the quitting process and 5.1 percent arranged follow-up.

Moreover, Weaver and colleagues⁴ surveyed faculty members from 54 dental schools at the American Dental Education Association conference in 2001. In response to the question "Is there a need for faculty training on cessation techniques?", 93 percent (50/54) answered "yes," and 91 percent (49/54) said they needed faculty training on tobacco-use prevention techniques as well. Certainly, if tobacco-use cessation education became part of the dental curriculum, dentists would be

more likely to incorporate tobacco-use cessation counseling into their practice.

We wholeheartedly agree with Dr. Zablotsky's comment that "dentists must be taught not only the oral and systemic implications of tobacco use, but also about the addictive process ... as it relates to nicotine ... [and] ... about motivational interviewing techniques [which] will allow dentists to know how and when to discuss this addiction with their patients." Our findings, consistent with those of others, reported that although dentists who received any training had significantly more positive attitudes and behaviors related to tobacco-use cessation counseling than did dentists in the control group, it is important to note that "a significantly higher percentage of dentists in the workshop group had positive change scores for assessing and assisting behaviors and for feeling well prepared to intervene, quite effective intervening and confident about having sufficient knowledge about pharmacotherapy."^{5,6}

These latter attitudes significantly mediated positive behavior change among dentists in the workshop group. Workshop-trained dentists reported using such behaviors as assessing willingness to quit, helping set a quit date, recommending nicotine replacement therapy, providing self-help quit guides and referring to external and internal cessation programs significantly more often than the self-study group.

We suggest that the ADA consider encouraging dental licensing boards to require tobacco-use cessation counseling continuing education for license renewal. We also echo Dr Zablotsky's clarion call for insurers, foundations and philanthropies to "[step] up to help

fund this [tobacco prevention and cessation] education" for health care providers, including dental clinicians. West Virginia (WV) has used the tobacco settlement funds to support a WV Quitline, which provides nicotine replacement for anyone enrolled in Medicaid and a few other groups.

Although our study was specifically designed to answer whether, as Dr. Zablotsky commented, given "a modest fee for this [tobacco-use cessation] counseling, many more practitioners would be more likely to provide [tobacco-use cessation] service," in fact our study does not provide any evidence that the hypothesis is true. The effect of reimbursement needs further study.

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(responding on behalf of the scientists who contributed to this article)

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1. American Dental Association. Tobacco addiction: what you can do for your patients (online continuing education course). www.adaceonline.org/index.aspx?sec=olce&sub=main&ce_id=1262. Accessed July 16, 2012.

2. Prakash P, Belek MG, Grimes B, et al. Dentists' attitudes, behaviors, and barriers related to tobacco-use cessation in the dental setting. *J Pub Health Dent*. In press.

3. Tong EK, Strouse R, Hall J, Kovac M, Schroeder SA. National survey of U.S. health professionals' smoking prevalence, cessation practices, and beliefs. *Nicotine Tob Res* 2010; 12(7):724-733.

4. Weaver RG, Whittaker L, Valachovic RW, Broom A. Tobacco control and prevention effort in dental education. *J Dent Educ* 2002; 66(3):426-429.

5. Albert D, Anluwalia K, Ward A, Sadowsky D. The use of 'academic detailing' to promote tobacco-use cessation counseling in dental offices. *JADA* 2004;135(12):1700-1706.

6. Gordon J, Severson H. Tobacco cessation through dental office settings. *J Dent Educ* 2001;65(4):354-363.

ENDODONTIC OUTCOMES

I would like to comment on Dr. Susan Bernstein and colleagues' May JADA article, "Outcomes of

Endodontic Therapy in General Practice: A Study by the Practitioners Engaged in Applied Research and Learning Network" (Bernstein SD, Horowitz AJ, Man M, et al. *JADA* 2012; 143[5]:478-487).

First of all, I was surprised to read that irreversible pulpitis with periapical pathosis (PP) was mentioned in Table 3 on page 483 of the article. The authors mentioned that one failure criterion of PP is having a periapical lesion with a periapical index score of 3 or higher. Unless the lesion of such size is unrelated to pulp, it is not possible to have irreversible pulpitis, a vital (non-necrotic) tooth diagnosis.

Perhaps there have been some cases mistakenly diagnosed as vital. Here is a very common example. There is a tooth that hurts a lot on touch. When cold is applied to this tooth to test vitality, the patient says that it hurts. But it is not the cold but rather the actual touching of the tooth that causes the pain. This results in a misdiagnosis of tooth vitality as "irreversible pulpitis with PP" instead of a necrotic pulpal diagnosis and appropriate periapical diagnosis.

Second, in Table 1 on page 482, pain on percussion should not be considered and portrayed as endodontic failure because it may have nothing to do with endodontic treatment whatsoever. The percussion could be due to a fractured/overhung restoration, hyperocclusion or periodontal or even psychological reasons. Finally, periapical pathosis was determined in a single reading of nonoriginal radiographs by just two observers, only one of whom is an endodontist. This reading is very inadequate because studies show that there is a need for a larger number of experienced observers¹⁻³ and

that "interpreting the radiograph or digital image continues to be more of a subjective exercise than an objective one."¹

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1. Tewary S, Luzzo J, Hartwell G. Endodontic radiography: who is reading the digital radiograph (published online ahead of print April 9, 2011)? *J Endod* 2011;37(7): 919-921.

2. Goldman M, Pearson AH, Darzenta N. Endodontic radiography: who's reading the radiograph? *Oral Surg Oral Med Oral Pathol* 1972;33(3):432-437. doi:10.1016/j.joen.2011.02.027.

3. Goldman M, Pearson AH, Darzenta N. Reliability of radiographic interpretations. *Oral Surg Oral Med Oral Pathol* 1974;38(2): 287-293.

Authors' response: We welcome the opportunity to respond to the questions raised by Dr. Moline concerning our article.

Table 3 on page 483 presents univariate associations between factors present before or during endodontic therapy and the three- to five-year outcome. One of the categories listed under the heading "Initial Diagnosis and Periapical Pathosis" was irreversible pulpitis with periapical pathosis. Dr. Moline questions whether a tooth can exhibit both irreversible pulpitis and periapical pathosis and whether some teeth, based on patient response to cold, could be misdiagnosed as vital.

In our study, the endodontic diagnosis was retrieved from the treating clinician's records. On opening the tooth for endodontic access, the clinician would be able to determine whether the pulp was vital or not by direct inspection. Also, it is not uncommon in multi-rooted teeth to have one or several canals remain vital while others are necrotic with or without radiographic evidence of periapical pathosis.

Dr. Moline also questioned whether pain on percussion three to five years after the completion of primary endodontic therapy should be included as a criterion for failure as listed in

Table 1 on page 482. We agree with Dr. Moline that pain on percussion need not be due to endodontic causes and, indeed, several prior endodontic outcomes studies have not included pain on percussion as a criterion for adverse outcome. But, as described in the Methods section of our article, we included pain on percussion as an adverse outcome as it may signal the presence of periapical inflammation not detectable on conventional periapical radiographs.

Also, and perhaps more importantly, pain on percussion is a patient-centered outcome and, from a practice management point of view, we felt it important that the patient be satisfied with the outcome of treatment, especially when several treatment options exist. We felt patient satisfaction was an important treatment planning consideration for the clinician and, consequently, all clinical studies conducted by the PEARL Network have included an assessment of patient-centered outcomes.

The third question raised by Dr. Moline is the need for a larger number of experienced observers to determine whether periapical pathosis was present on follow-up periapical radiographs. This was indeed a concern in reading more than 1,300 follow-up radiographs. Since periapical radiolucencies present a continuum, from very large to merely suggestive, we decided to dichotomize these data as being present or not using the periapical index (PAI) described by Ørstavik and colleagues.¹

Only those radiolucencies with a PAI of three or higher, a very apparent radiolucency, even to a periodontist, were considered as such with the agreement of both examiners. Since we only had a single radiograph taken three to five

years after completion of root canal therapy, we were unable to determine whether a periapical radiolucency was resolving over time. Therefore, it is possible that some of the treated teeth classified as having periapical pathosis may have been healing, as described in the Discussion section of our article.

We hope we have been responsive to Dr. Moline's questions.

Ronald G. Craig, DMD, PhD
(responding on behalf
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1. Ørstavik D, Kerekes K, Eriksen HM. The periapical index: a scoring system for radiographic assessment of apical periodontitis. *Endod Dent Traumatol* 1986;2(1):20-34.

MORE ABOUT OUTCOMES

The May 2012 JADA article "Outcomes of Endodontic Therapy in General Practice: A Study by the Practitioners Engaged in Applied Research and Learning Network" (Bernstein SD, Horowitz AJ, Man M, et al. *JADA* 2012;143[5]:478-487) aimed to "determine the outcomes of primary endodontic therapy." The authors conclude that the "failure rates for endodontic therapy are higher than previously reported ... based on dental insurance claims data." While clinical outcomes research is needed to provide current evidence, the validity of this particular conclusion is undermined by sev-

eral methodological and reporting issues.

The strengths of the study include the large cohort recruited in multiple centers, and the three- to five-year follow-up period. Nevertheless, the level of evidence is diminished by the retrospective cohort design and by lack of required information, such as the specific procedures performed, how data entries by the multiple centers were controlled for accuracy and why 11 teeth that were left unrestored were included. The reported occurrence of a higher failure rate in one center underlines the risks in a multicenter retrospective study, which must be controlled to avoid distortion of the results.

The validity of the study's conclusions is weakened by the assessment of outcomes. There is no mention of technique calibration of the two examiners who assessed radiographic outcomes, such as is required for use of the Periapical Index, and for adequate level of evidence. Moreover, the criteria used to define "failures" needs closer scrutiny:

■ extraction: 43/1,311 teeth (3.3 percent). Reasons included endodontic failure and root fracture both potentially related to endodontic treatment, but also periodontitis, caries and others, which reflect on poor case selection or management but are not endodontic failures;

■ retreatment: 29/1,311 teeth (2.2 percent). Although this is a low rate, reasons for retreatment were not specified. Teeth that were retreated for reasons other than persistent lesions or symptoms are not endodontic failures;

■ pain on percussion: 45/1,265 teeth (3.6 percent). Use of this criterion is misleading, because mechanical allodynia can result from restorative, periodontal and function-related factors. It

can be a sign of endodontic disease primarily when accompanied by another sign or symptom. Teeth presenting with this sole sign are not necessarily endodontic failures;

■ periapical pathosis: 134/1,265 teeth (10.6 percent). Periapical Index scoring is invalidated by the lack of examiner calibration and by the researchers' comment that periapical pathoses may have been resolving lesions. Healing after endodontic treatment may continue beyond three to five years, even into the third decade after treatment as shown for more than 6 percent of cases.¹ Teeth with reduced lesions and no other clinical manifestations are not endodontic failures.

Beyond the critique of this study, the authors' implication that general dentists perform endodontic treatment in "real-life practice" at a lower standard does disservice to our profession. Nothing could be further from the truth. The same issue of JADA featured a guest editorial by Niederman and colleagues,² "The Changing Standard of Care," discussing legal standards moving to more evidence-based criteria, applicable to all practitioners.

The researchers' focus on "applicability to general practice" seems ill-placed considering that one-third of their cohort was treated by specialists (who treated a significantly higher proportion of multi-rooted teeth). In "real life," patients are referred to specialists for treatment of more complex cases, return to their primary providers for restoration and experience excellent outcomes. Thus, with proper case selection, both groups contribute to quality patient care.

Though this article contributes little new information about endodontic treatment outcomes, it does underline the

critical importance of partnerships between general dentists and their specialist colleagues to facilitate optimal outcomes, a relationship the American Association of Endodontists consistently encourages and supports.

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1. Fristad I, Molven O, Halse A. Nonsurgically retreated root filled teeth: radiographic findings after 20-27 years. *Int Endod J* 2004; 37(1):12-18.

2. Niederman R, Richards D, Brands W. The changing standard of care. *JADA* 2012; 143(5):434-437.

Authors' response: The authors welcome the opportunity to respond to Dr. Kulild's comments regarding our article. First, we would like to reaffirm the intent of our study and significance of its results. The study was conducted to determine the outcome of primary endodontic therapy in a general practice-based research network (PBRN) and to determine the factors associated with success and failure in that setting. This is in contrast to prior outcome studies that were conducted in specialist or academic settings or used insurance data bases, the results of which may not be applicable to general practice for reasons detailed in our article.¹⁻³

The study's goal was to provide an evidence base for endodontic outcomes and risk factors derived from actual practice to help clinicians when deciding on the most appropriate course of therapy for endodontically-involved teeth. The effectiveness of endodontic therapy was not the central question in this study; rather, the central question was, "When is endodontic therapy the preferable therapeutic option?"

In response to Dr. Kulild's concerns, data regarding the

types of endodontic therapy, including techniques and materials used, and whether antibiotics were prescribed were obtained from 64 practices using a formal data capture and quality assurance protocol detailed in our article. Access to the dataset was denied until study completion, including formal site closeout.

PBRNs' effectiveness studies characteristically collect data from a large number of practices to better generalize results. In our study, this included one practice that had a higher rate of failure. In response to Dr. Kulild's concern regarding this practice, to not include this practice would defeat the purpose of the study. With regards to data integrity, the disposition of all data was reported in our study, including the 11 teeth planned for restoration.

We used "strict criteria"⁴ to define success and included the absence of pain on percussion. We agree with Dr. Kulild that not all adverse outcomes are due to endodontic failure, as stated in our article. However, consideration of all outcomes of primary endodontic therapy are of importance to the clinician when treatment planning. Pain on percussion was included since it may indicate periapical pathology not evident radiographically but, more importantly, because patients should be satisfied and comfortable with a treatment outcome, especially if other treatment options exist.

Faced with reading more than 1,300 postoperative radiographs and the continuum of periapical pathoses present, we chose to dichotomize these data into present or not using a PAI of three or higher. A PAI three or higher is highly evident, and both examiners had to agree with the interpretation.⁵ Whether periapical pathosis is truly

inflammation or resolution can only be determined by biopsy, and concerns have been raised regarding the usefulness of conventional periapical radiography for this purpose.⁶ Hence, we only included very evident lesions as adverse outcomes.

Finally, we would like to respond to Dr. Kulild's comment that "the authors' implication that general dentists perform endodontic treatment in 'real-life practice' at a lower standard does disservice to our profession." In our study, 32 percent of the teeth were treated by specialists, and no difference in endodontic outcome was found between teeth treated by general dentists or specialists, as stated in our article. We, therefore, do not understand the basis for Dr. Kulild's statement.

The fact that private practitioners would join a PBRN and objectively report the outcomes of therapy provided in their practices underscores their desire to contribute to an evidence base to help determine the most effective, predictable and cost-efficient means to provide dental care to their family of patients. Such practitioners are a credit to the dental profession.

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