

ORIGINAL REPORT: HEALTH SERVICES RESEARCH

Assessment of the Quality of Current American Dental Association Clinical Practice Guidelines

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Abstract: Introduction: The American Dental Association (ADA) defines evidence-based dentistry (EBD) as “an approach to oral healthcare that requires the judicious integration of systematic assessments of clinically relevant scientific evidence, relating to the oral and medical condition and history, with the dentist’s clinical expertise and the patient’s treatment needs and preferences.” Clinical practice guidelines (CPGs) are statements that include recommendations intended to optimize patient care that are informed by a systematic review of evidence and an assessment of the benefits and harms of alternative care options. Therefore, ADA CPGs are the most rigorous examples of EBD to inform clinical practice. CPGs should be of the highest level of quality to ensure the appropriateness and timeliness of clinical recommendations.

Objectives: The aim of this study was to measure the methodological rigor and transparency of the ADA CPGs.

Methods: Each ADA CPG was appraised by 4 independent assessors using the Appraisal of Guidelines for Research and Evaluation (AGREE II) instrument. Quantitative quality scores were obtained for 6 domains and overall quality. In addition, assessors provided a qualitative analysis by providing comments for each item and an appraisal of the full recommendation.

Results: A quality score of 75% was used as the threshold for high-quality guidelines. Using this metric, 6 of the current 10 ADA CPGs were considered to be of high quality, 1 was slightly below the quality threshold, and 3 were considered marginal. Even among those evaluated to be high quality in overall assessment, certain domains did not reach the quality threshold of 75%.

Conclusion: Overall, the ADA CPGs collectively provide high-quality guidance for the clinician. While the AGREE appraisal guidelines have been

used in CPG development since 2016, there is still room for improvement in certain domains (i.e., stakeholder involvement, rigor of development, applicability, and editorial independence).

Knowledge Transfer Statement:

The results of this study summarize the methodological rigor and transparency of the 10 current ADA clinical practice guidelines. Since adoption of AGREE standards (2016), CPGs have been uniformly of high quality. The quality of older CPGs was somewhat lower but overall deemed acceptable. Thus, ADA CPGs may be used with confidence to inform practitioners of treatment options supported by rigorous evidence-based dentistry standards. However, there is still room for improvement in methodological quality.

Keywords: evidence-based dentistry/health care, risk factor(s), conflict of interest, practice guidelines as topic, practice patterns, quality assurance

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Introduction

The American Dental Association (ADA) defines evidence-based dentistry (EBD) as “an approach to oral healthcare 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” (ADA 2021a). As defined by the National Academy of Medicine (NAM), formerly called the Institute of Medicine (IOM), clinical practice guidelines (CPGs) are “statements that include recommendations intended to optimize patient care that are informed by a systematic review of evidence and an assessment of the benefits and harms of alternative care options” (IOM 2011). In a 2018 commentary in the *Journal of the American Dental Association* focusing on dental caries, the authors stated that “ADA members have called on the ADA to provide updated, evidence-based guidelines on the management of . . . caries” and, furthermore, that “clinicians should not carry the burden of searching for, critically appraising, and incorporating research findings into their everyday practice” (Fontana et al. 2018). Consequently, CPGs developed by the ADA should represent the most rigorous example of EBD put into practice to provide dental practitioners with state-of-the-art assessments on critical clinical issues dentists face in their daily practice. Thus, CPGs should be of the highest level of quality to ensure the appropriateness and timeliness of clinical recommendations.

The production of evidence-based CPGs uses a systematic process that requires a dedicated group of experts, referred to as the guideline panel, to evaluate the evidence and make recommendations based on an assessment of the benefits and harms of alternative care options (Carrasco-Labra et al. 2015). The steps in the process include the following: 1) an institution/organization defines a

health care problem and initiates a call to develop guidelines to address the problem; 2) based on the scope of the problem and the target audience, the institution/organization identifies and selects a panel of experts that defines the questions the guideline will answer; 3) the panel (or its designees) undertakes a systematic review of the scientific literature to identify the highest quality of evidence, estimate benefits and harms, and assess the certainty or confidence of those estimates; 4) on the basis of the evidence, the panel formulates and grades the strength of the recommendation(s); and 5) after the guideline is written and published, the implementation should be monitored and the guideline should be updated when new evidence is identified (Carrasco-Labra et al. 2015) or after a predetermined period of time (typically 5 y).

The undertaking of the development of a CPG is not a trivial matter; a significant investment in time and finances is required to produce, publish, and evaluate the implementation of clinical practice guidelines. The NAM has reported that the average cost in the United States for the development of a single practice guideline is at least \$200,000 with an additional cost of up to \$200,000 for dissemination of the practice guideline (IOM 2011). However, these costs do not include an evaluation of guideline implementation, which may add significantly to the overall cost of the guideline over its lifetime. For example, in 2020, the Food and Drug Administration announced the award of a \$1.5 million grant to the ADA Science & Research Institute and the University of Pittsburgh to develop, disseminate, implement, and evaluate a clinical practice guideline for the management of acute pain in dentistry (Versaci 2020).

The NAM has identified 8 standards that should be met for a clinical practice guideline to be trustworthy, including 1) establishing transparency, 2) managing conflict of interest, 3) ensuring appropriate guideline development group composition, 4) formalizing the

clinical practice guideline–systematic review intersection, 5) establishing evidence foundations for and rating strength of recommendations, 6) articulating recommendations, 7) providing for external review, and 8) establishing conditions for updating (IOM 2011). The Appraisal of Guidelines for Research and Evaluation (AGREE) tool captures NAM’s standards in 6 domains for measuring the quality of CPGs.

The AGREE Collaboration was an international team established to develop a generic instrument providing a standardized method to assess the process of guideline development, provide quality metrics to evaluate and ensure the quality of clinical guidelines, and report clinical guidelines. A 23-item tool was developed in 2003 comprising 6 quality-related domains. An updated tool, AGREE II, was published in 2009. A 2014 publication marking its 10th anniversary reports that the instrument has been translated into 33 languages with over 600 publications referencing the AGREE tool for use in health care (Makarski and Brouwers 2014). Given the importance and perceived rigor of the ADA CPGs to the practice of dentistry, the aim of this study is to evaluate the quality of the current 10 CPGs developed by the ADA using the AGREE II process. The AGREE II tool provides “the most commonly applied and comprehensively validated guideline appraisal tool worldwide” (Hoffmann-Eßer et al. 2018; see also AGREE Collaboration 2003; Brouwers, Kho, Browman, Burgers, Cluzeau, Feder, Fervers, Graham, Grimshaw, et al. 2010; Brouwers, Kho, Browman, Burgers, Cluzeau, Feder, Fervers, Graham, Hanna, et al. 2010a, 2010b).

Materials and Methods

The ADA Center for Evidence-Based Dentistry maintains 10 current ADA CPGs (ADA 2021b):

1. Antibiotics Use for the Urgent Management of Dental Pain and Intra-Oral Swelling Clinical Practice Guideline (Lockhart et al. 2019)

2. Antibiotic Prophylaxis for Prevention of Infective Endocarditis Clinical Practice Guideline (Wilson et al. 2008)
3. Antibiotic Prophylaxis for Prevention of Prosthetic Joint Infection Clinical Practice Guideline (Sollecito et al. 2015)
4. Caries Management Clinical Practice Guidelines (Fontana et al. 2018)
 - a. Nonrestorative Caries Treatment Guideline (Slayton et al. 2018)
 - b. Caries Prevention Guideline (*As of March 2022, the CPG on caries prevention is anticipated to be published in 2022*)
 - c. Restorative Caries Treatments Guideline (*anticipated to be published 2022*)
 - d. Caries Detection and Diagnosis Guideline (*anticipated to be published 2023*)
5. Fluoride Toothpaste for Young Children Clinical Practice Guideline (ADA 2014)
6. Nonfluoride Caries Preventive Agents Clinical Practice Guideline (Rethman et al. 2011)
7. Evaluation of Potentially Malignant Disorders in the Oral Cavity Clinical Practice Guideline (Lingen et al. 2017)
8. Nonsurgical Treatment of Chronic Periodontitis Clinical Practice Guideline (Smiley et al. 2015a)
9. Pit-and-Fissure Sealant Clinical Practice Guideline (Wright et al. 2016)
10. Professionally Applied and Prescription-Strength, Home-Use Topical Fluoride Agents for Caries Prevention Clinical Practice Guideline (Weyant et al. 2013)

The caries management clinical practice guidelines are intended to be a collection of 4 guidelines with recommendations to enhance clinical decision-making at each stage of the caries disease process (ADA 2021b). The nonrestorative caries treatment clinical practice guideline (Slayton et al. 2018) is the only guideline of this series published to date.

We used all available information from the ADA Center for Evidence-

Based Dentistry to evaluate each clinical guideline. Documents included the CPG as well as any available additional documentation that could include a related systematic review, a chairside guide(s), a summary, and/or a commentary. Table 1 details which documents were available for evaluating each of the 10 CPGs and the year the CPG was published (2008–2019).

Each of the 10 CPGs was evaluated by 4 assessors (SDL, SC, PF, and TI) using the AGREE II instrument. One of the 4 assessors (SDL) coordinated the group assessment on the My AGREE PLUS online platform (www.agreetrust.org). The 4 assessors were calibrated using the online AGREE II Training Tools tutorial and practice exercise (<https://www.agreetrust.org/resource-centre/agree-ii/agree-ii-training-tools/>). Each assessor completed the online AGREE II instrument, comprising 23 questions covering 6 domains plus an overall assessment and recommendation on each clinical practice guideline. Each item was ranked on a 7-point Likert scale with a score of 1 indicating *strongly disagree* to 7 indicating *strongly agree*. The user manual and online tool provide guidance on how to rate each item with 3 additional sections (“description,” “where to look,” and “how to rate”) in the user’s manual to further facilitate the user’s assessment (AGREE Next Steps Consortium 2017). In addition, assessors were encouraged by the coordinator to provide comments for each assessment step.

A quality score was calculated for each of the 6 domains (scope and purpose, stakeholder involvement, rigor of development, clarity of presentation, applicability, and editorial independence), in addition to an overall assessment score. Domain scores were calculated by summing up all the scores of each individual and scaling the total as a percentage of the maximum possible score for that particular domain.

The authors reached consensus that a score of 75% would be used as the threshold for high-quality guidelines because, as stated in the AGREE II user’s

manual, “at present there is no empirical data to link specific quality scores with specific implementation outcomes” (AGREE Next Steps Consortium 2017). All scores were aggregated for each CPG domain and overall quality, and the aggregated scores provided the basis for the interpretation of each CPG. Table 2 shows the resultant quality score if all evaluators scored an item similarly. Thus, all 1s result in a quality score of 0% and all 7s result in a quality score of 100%. The threshold quality score of 75% corresponds to a consensus score of 5.5. With a quality score of 7 indicating “exceptional” and a quality score of 4 representing “average,” a quality score of 5.5 was used as the threshold since it represents half the distance from “average” to “exceptional.”

The quality scores and overall recommendations for each of the 10 ADA clinical practice guidelines are presented in Tables 3 and 4. Four of the 10 CPGs were developed using AGREE or AGREE II criteria, and those are indicated in Tables 3 and 4 as well. Scores are reported for each domain, as are the overall quality score and the individual assessor’s recommendation for the use of the clinical practice guideline (recommended, recommended with modification, not recommended). The AGREE II instructions explicitly state that domain scores should not be combined. Domains ranged from 2 to 8 items each, and the overall quality score was 1 item per assessor. The individual assessor scores by item and domain are detailed in Appendices 1 to 7.

This study was exempt from National Institutes of Health institutional review board review.

Results

Our analysis revealed a wide range of overall quality scores for the 10 CPGs evaluated. However, only 1 CPG (dental sealants) received 4 “recommend” votes. This CPG also received the overall highest quality score (92%). An additional 4 CPGs received votes for “recommend” by 3 of the 4 evaluators,

Table 1.
Publications and Other Materials Available to Review for Each American Dental Association Clinical Practice Guideline.

Characteristic	Year CPG Published	Clinical Practice Guideline	Systematic Review	Chairside Guide	Summary	Commentary
Dental pain and swelling	2019	Lockhart et al. 2019	Tampi, Pilcher, Urquhart, Kennedy, et al. 2019	ADA 2019a, 2019b	Tampi, Pilcher, Urquhart, Pahlke, et al. 2019	—
Caries	2018	Slayton et al. 2018	Urquhart et al. 2019	ADA 2018a, 2018b	—	—
Oral cancer	2017	Lingen, Abt, et al. 2017	Lingen, Tampi, et al. 2017	ADA 2017	—	—
Sealants	2016	Wright, Crall, et al. 2016	Wright, Tampi, et al. 2016	ADA 2016	—	—
Periodontitis	2015	Smiley et al. 2015a	Smiley et al. 2015b	ADA 2015a	—	—
Prosthetic joint	2015	Sollecito et al. 2015	—	ADA 2015b	—	Meyer 2015
Fluoride toothpaste young children	2014	ADA 2014	Wright et al. 2014	—	—	—
Topical fluoride	2013	Weyant et al. 2013	—	ADA 2013	—	—
Nonfluoride caries preventative agents	2011	Rethman et al. 2011	—	ADA 2011	—	—
Infective endocarditis	2008	Wilson et al. 2008	—	—	—	—

ADA, American Dental Association; CPG, clinical practice guideline.

Table 2.
AGREE Assessor Evaluation Scale and Grading Criteria.

Likert Scale	1	2	3	4	5	6	7
Score	0% (-)	17% (-)	33% (-)	50% (-)	67% (-)	83% (+)	100% (+)
Grading criteria	0%–69% (-)			70%–74% (-/+)		≥75% (+)	

(-) marginal quality score; (-/+) slightly below threshold for high quality score; (+) threshold or above for high quality score.

including those on oral cancer (overall quality score: 88%), pain and swelling (overall quality score: 83%), caries (overall quality score: 83%), and periodontitis (overall quality score: 79%). The only other CPG to reach the threshold quality score of 75% was the CPG on topical fluoride, although this CPG was differentiated from the previous group by receiving 3 votes

for “recommend with modifications.” Three CPGs did not reach the threshold quality score of 75%, including infective endocarditis (overall quality score: 67%), and prosthetic joint (overall quality score: 63%) received 3 votes for “recommend with modifications.” The CPG on fluoride toothpaste for young children (overall quality score: 58%) received 4 votes for “recommend with modifications.” The

CPG on nonfluoride caries preventative agents was the only CPG to receive a vote of “do not recommend” (overall quality score: 71%). Our analysis of the 10 CPGs also revealed a range of quality scores at the individual domain level. Only 1 CPG (oral cancer) reached the threshold quality score of 75% for each of the 6 domains. One CPG (caries) reached

Table 3.

Domain Quality Summaries Using the AGREE II Assessment for Each of the American Dental Association Clinical Practice Guidelines.

Characteristic	Domain 1: Scope and Purpose, %	Domain 2: Stakeholder Involvement, %	Domain 3: Rigor of Development, %	Domain 4: Clarity of Presentation, %	Domain 5: Applicability, %	Domain 6: Editorial Independence, %
Dental pain and swelling ^a	92% (+)	90% (+)	90% (+)	88% (+)	71% (-/+)	65% (-)
Caries ^a	96% (+)	86% (+)	89% (+)	92% (+)	70% (-/+)	73% (-/+)
Oral cancer ^a	90% (+)	93% (+)	94% (+)	96% (+)	77% (+)	79% (+)
Sealants ^b	90% (+)	72% (-/+)	85% (+)	92% (+)	67% (-)	81% (+)
Periodontitis	90% (+)	72% (-/+)	90% (+)	89% (+)	55% (-)	73% (-/+)
Prosthetic joint	79% (+)	43% (-)	59% (-)	64% (-)	43% (-)	40% (-)
Fluoride toothpaste young children	82% (+)	42% (-)	55% (-)	67% (-)	33% (-)	29% (-)
Topical fluoride	88% (+)	50% (-)	75% (+)	85% (+)	60% (-)	75% (+)
Nonfluoride caries preventative agents	71% (-/+)	56% (-)	55% (-)	75% (+)	38% (-)	71% (-/+)
Infective endocarditis	85% (+)	56% (-)	53% (-)	65% (-)	57% (-)	58% (-)

^aClinical practice guideline was developed using Appraisal of Guidelines for Research and Evaluation (AGREE) II guidelines.^bClinical practice guideline was developed using AGREE guidelines.

(-) marginal quality score; (-/+) slightly below threshold for high quality score; (+) threshold or above for high quality score.

Table 4.

Overall Quality Summary and Recommendations Using the AGREE II Assessment for Each of the American Dental Association Clinical Practice Guidelines.

Characteristic	Overall Quality, %	Recommend, <i>n</i>	Recommend with Modifications, <i>n</i>	Do Not Recommend, <i>n</i>
Dental pain and swelling ^a	83% (+)	3	1	0
Caries ^a	83% (+)	3	1	0
Oral cancer ^a	88% (+)	3	1	0
Sealants ^b	92% (+)	4	0	0
Periodontitis	79% (+)	3	1	0
Prosthetic joint	63% (-)	1	3	0
Fluoride toothpaste young children	58% (-)	0	4	0
Topical fluoride	75% (+)	1	3	0
Nonfluoride caries preventative agents	71% (-/+)	1	2	1
Infective endocarditis	67% (-)	1	3	0

^aClinical practice guideline was developed using Appraisal of Guidelines for Research and Evaluation (AGREE) II guidelines.^bClinical practice guideline was developed using AGREE guidelines.

(-) marginal quality score; (-/+) slightly below threshold for high quality score; (+) threshold or above for high quality score.

the threshold quality score of 75% for 5 domains. Three CPGs reached the threshold quality score of 75% for 4 domains. From this group, 2 CPGs received 1 quality score slightly below the quality threshold and 1 marginal quality score (dental pain and swelling and sealants). One received 2 marginal quality scores from this group (topical fluoride). One CPG reached the threshold quality score of 75% in 3 domains (periodontitis). The remaining CPGs reached the threshold quality score of 75% in only 1 domain (prosthetic joint, fluoride toothpaste for the young child, and nonfluoride caries preventative agents).

The year a CPG was published generally had a strong influence on quality scoring, with CPGs published later receiving higher-quality scores in some domains. The domains that improved the most over time were applicability, stakeholder involvement, and rigor of development. However, with the exception of scope and purpose, all domains produced since 2008 demonstrated an improvement since 2008.

Discussion

We reviewed the ADA's 10 active clinical practice guidelines, and the overall mean (SD) quality score for the 10 CPGs was 76.4% (11.5%). In comparison, the overall mean (SD) quality score for 162 dental clinical practice guidelines appraised by AGREE II guidelines and identified from an international literature search (not limited by specialty) was 51.9% (13.3%) (Mubeen et al. 2017). Thus, as a group, the 10 ADA clinical practice guidelines met the consensus threshold of 75% for high-quality clinical practice guidelines. This contrasts with a large group of international clinical practice guidelines in dentistry that would be considered marginal by our consensus criteria. To the best of our knowledge, the ADA clinical practice guidelines have not as yet been examined at the level of granularity presented here using AGREE II criteria.

While the mean quality score for the 10 ADA clinical practice guideless met the consensus threshold for high-quality clinical practice guidelines, there was significant variation in individual overall quality scores. AGREE/AGREE II criteria were used by the ADA starting in 2016 (Tables 3 and 4). This coincided with an improvement in the overall quality score as well as fewer domains being scored marginal as compared to clinical practice guidelines published before 2016. For the clinical practice guidelines developed with AGREE/AGREE II criteria, the overall quality score was between 83% and 92%, well above the threshold criteria of 75%. In addition, only 2 domains received marginal scores for CPGs developed with AGREE/AGREE II criteria (editorial independence for the dental pain and swelling CPG and applicability for the sealants CPG). Slightly below-quality threshold scores were obtained for editorial independence for the caries CPG, applicability for the dental pain and swelling CPG, and stakeholder involvement for the sealants CPG. In contrast to the clinical practice guidelines developed using AGREE/AGREE II criteria, those developed earlier received lower overall quality scores and had more domains that did not reach the quality threshold score of 75%. Because of the improvement in the overall quality score for ADA clinical practice guidelines developed using AGREE/AGREE II criteria since 2016, the continued use of these criteria in clinical guideline development should ensure that the clinical practice guidelines currently under development will be of high quality.

The following domains were generally assigned lower scores:

1. Item 5 (stakeholder involvement):

The views and preferences of the target population (patients, public, etc.) have been sought.

Examples of lack of clarity in this item were in the clinical practice guidelines for periodontitis (Smiley et al. 2015a) and topical fluoride (Weyant et al. 2013),

where no evidence of participation by the target population was found.

2. Item 13 (rigor of development):

The guideline has been externally reviewed by experts prior to its publication.

There was a lack of clarity on this item on 2 levels. First, since all the clinical practice guidelines were published in the *Journal of the American Dental Association*, it is assumed that the final publications underwent peer review. However, this was not explicitly stated in any of the clinical practice guidelines we reviewed. Second, whether there was a peer-review process *prior* to submission for publication was also not clear. Each clinical practice guideline typically acknowledges a large group of individuals, but how these individuals were chosen or why they were acknowledged was not specified in any of the clinical practice guidelines published since 2016 (when AGREE/AGREE II criteria were used in the guideline development process). In contrast, explicit acknowledgments for participation in the peer-review process were specified in several earlier clinical practice guidelines. Thus, we can conclude that a peer-review process was in place for the more recent clinical practice guidelines as a component of the guideline development process, but this should be explicitly stated in any future clinical practice guideline publication.

3. Item 22 (editorial independence):

The views of the funding body have not influenced the content of the guideline.

This is another item for which "how" the funding body (in this case, the ADA) did not influence the content was not clear. We found that there was typically a disclosure statement that funding was provided by the ADA. In some cases, funding was also obtained from an additional source. With the exception of the clinical practice guideline on

infective endocarditis (Wilson et al. 2008), which was developed by the American Heart Association, each of the clinical practice guidelines was commissioned and directly supported by the ADA. Frequently, the bulk of the guideline development process, including the systematic review, was managed and performed by ADA staff members. Thus, a statement addressing this issue is critical so that each clinical practice guideline can maintain maximum transparency and minimal influence by the funding agency.

Another issue that we identified during this study is that the ADA Clinical Practice Guidelines website (ADA 2021b) needs revision. In this regard, we recommend the following:

1. **All supporting items related to a particular clinical practice guideline should be available on the ADA Clinical Practice Guideline website.** At a minimum, the clinical practice guideline and the related systematic review should be posted as a downloadable PDF document. For example, the clinical practice guideline on nonfluoride caries-preventive agents refers to a systematic review of the literature in the method section (Rethman et al. 2011), which was said to be available via a web link that was provided in the publication. However, we were not able to access this document and were unable to find any published results of the systematic review. While we do not doubt that a systematic review was performed, this lack of documentation resulted in the only “do not recommend” vote for any of the clinical practice guidelines reviewed.
2. **Any relevant information made available after the publication of a clinical practice guideline should be available on the ADA Clinical Practice Guideline website.** For example, the clinical practice guideline on infective endocarditis, published in 2008 from the American Heart Association (Wilson et al. 2008), remains current and

appropriate since a recent scientific statement of the American Heart Association determined that on review of the evidence, there were no recommended changes to the infective endocarditis guideline (Wilson et al. 2021). This publication should be cited and available for download on the ADA Clinical Practice Guideline website. This recommendation relates to domain 3 (rigor of development), item 13: “a procedure for updating the guideline is provided.” We found that when updating of guidelines was addressed, a typical statement was “we will update this guideline every 5 years or when new evidence may affect the direction and strength of the recommendations,” as stated in the clinical practice guideline for dental pain and swelling (Lockhart et al. 2019). Thus, by these 5-y update criteria, only the clinical practice guidelines published since 2017 would be deemed “current.” The sealant clinical practice guideline should be updated this year, and the remainder should have been updated between 2016 and 2020. At a minimum, it is suggested that each clinical practice guideline beyond 5 y after publication contain a statement that, based on the current literature, the guideline remains valid and relevant to clinicians. Such a statement should be updated on a yearly basis. If new literature necessitates a revision, this should be stated with a target review date. The ADA should have a process in place to determine whether a clinical practice guideline should be retired while awaiting revision. Even if older guidelines remain valid and relevant, the ADA should consider whether their presentation and transparency might be improved by subjecting them to the AGREE process.

3. **Any unpublished methodology used in clinical practice guideline development should be available in PDF format at the ADA Clinical Practice Guideline website.** For

example, the systematic review for the periodontitis clinical practice guideline references details regarding methods specific to this review to an unabridged report (reference 6, Smiley et al. 2015b), which was said to be at the ADA Clinical Practice Guideline website, but this item can no longer be accessed.

4. **The ADA Clinical Practice Guideline website would be improved if the content for each clinical practice guideline was consistently presented.** In addition, a table summarizing all content for each clinical practice guideline along the lines of Table 1, with hyperlinks to content, would make accessing the information more straightforward.

In conclusion, we reviewed 10 active ADA clinical practice guidelines and observed a significant correlation with clinical practice guideline quality and the use of AGREE/AGREE II criteria during the clinical practice guideline development stage. Consequently, our findings strongly suggest that future development of dental CPGs should use the AGREE II criteria. A major objective for the development of AGREE II was to provide a framework for the preparation of new CPGs (Brouwers, Kho, Browman, Burgers, Cluzeau, Feder, Fervers, Graham, Grimshaw, et al. 2010). Overall, our review of the existing ADA CPGs collectively demonstrates a high level of quality and fidelity regarding methodology, reporting, and transparency. Nevertheless, some important domain areas received lower-quality scores for several CPGs, suggesting that some improvement is needed. Strictly following each AGREE II criterion for future clinical practice guideline development (including the 3 pending caries management guidelines and the recently announced guideline on management of acute pain in dentistry) and making all supporting materials available upon guideline publication should result in the consistent development of very high-quality and transparent clinical practice guidelines for the oral health profession.

Author Contributions

S.D. London, contributed to conception, design, data acquisition, analysis and interpretation, drafted and critically revised the manuscript; S. Chamut, T. Iafolla, contributed to data acquisition, analysis and interpretation, drafted the manuscript; P. Fontelo, contributed to data acquisition, analysis and interpretation, critically revised the manuscript; B.A. Dye, contributed to conception, design, data analysis and interpretation, critically revised the manuscript. All authors gave final approval and agree to be accountable for all aspects of the work.

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