Changing dentists' knowledge, attitudes and behavior regarding domestic violence through an interactive multimedia tutorial

Nancy Kwon Hsieh, DDS, MS; Karen Herzig, PhD; Stuart A. Gansky, DrPH; Dale Danley, MPH; Barbara Gerbert, PhD

ABSTRACT

Background. Dentists have a unique opportunity to address the problem of domestic violence (DV). The authors tested the effectiveness of a tutorial designed to educate dentists in identifying and responding to DV.

Methods. The authors developed a brief interactive multimedia tutorial for dentists and recruited practicing dentists (N = 174) for a randomized, controlled trial. A 24-question instrument assessed participants' knowledge, attitudes and practice behaviors regarding DV at two time points. The control group took the tutorial before completing a posttest. The authors also administered a 20-question empathy scale.

Results. The experimental group demonstrated significantly greater improvement in scores on most items, including knowledge, attitudes and behaviors, relative to control subjects ($P < .01$). Empathy scores did not show significant correlation with change scores on the DV assessment instrument.

Conclusions. The tutorial is effective in helping dentists learn how to identify and help patients who are experiencing abuse.

Clinical Implications. Broad dissemination of the tutorial about DV would introduce dentists to simple strategies for responding to patients who experience DV.

Key Words. domestic violence; tutorial; empathy; teaching methods; computer-assisted instruction; attitudes of health care personnel; dental education.

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Domestic violence (DV) exacts an enormous human toll. It has been called a "silent epidemic" by the American Medical Association[1,2] and three U.S. surgeons general.[2,3] DV is defined as a pattern of control involving physical, sexual and/or psychological assaults against current or former intimate partners.[4] An estimated two to four million women are abused physically each year, and DV may occur each year in as many as one in four U.S. families.[2] Studies indicate that U.S. women are more likely to be assaulted, raped or killed by a current or former male partner than by all other types of assailants combined.[1]

DV AND DENTISTRY

One study reported that 94 percent of victims of DV have head, neck and facial injuries,[5] and a second study found that 88 percent of assaulted women have some facial injury, including lacerations, bruising and fractures.[6] Many dentists, however, are unaware of the relationship between head and neck injury and possible abuse.[7] In a 1994 survey of health care professionals in Oregon, only 6 percent of dentists commonly suspected physical abuse among their patients, compared with 23 percent of physicians and 53 percent of social workers.[8]

More than two-thirds of adults in

When this article was written, Dr. Hsieh was a pediatric dental resident, Department of Orofacial Sciences, Division of Pediatric Dentistry, School of Dentistry, University of California San Francisco. She now is in private practice in pediatric dentistry in Fremont, Calif.
When this article was written, Dr. Herzig was a research associate, Department of Preventive and Restorative Dental Sciences, Division of Behavioral Sciences, School of Dentistry, University of California San Francisco.
Dr. Gansky is an associate professor, Department of Preventive and Restorative Dental Sciences, Division of Oral Epidemiology and Dental Public Health, School of Dentistry, University of California San Francisco.
Mr. Danley is a research associate, Department of Preventive and Restorative Dental Sciences, Division of Behavioral Sciences, School of Dentistry, University of California San Francisco.
Dr. Gerbert is a professor and the chair, Division of Behavioral Sciences, School of Dentistry, University of California San Francisco, 350 Parnassus Ave., Suite 905, San Francisco, Calif. 94117, e-mail "barbara.gerbert@ucsf.edu". Address reprint requests to Dr. Gerbert.

the United States visit a dentist at least once a year.[9] Since dentists work predominantly in the head and neck region, they may be the first to identify any signs of abuse. Most patients have positive views of their dentists and trust them.[10] Dentists, thus, have a unique opportunity to open up dialogue with their patients about DV. Despite this opportunity, less than 10 percent of surveyed dentists and dental hygienists reported having received any DV-related training.[8] A national survey of dentists found that those who had received any education about DV were more likely to screen for DV and to intervene than those who had received none.[11] It appears that little has been done to identify effective approaches to educating or training dentists to assess or treat DV. While a previous study showed our tutorial to be effective for dental students,[12] DV training for dentists has not been addressed in any published report.[13]

It appears that little has been done to identify effective approaches to educating or training dentists to assess or treat domestic violence.

Asking, validating, documenting, referring: AVDR. We developed an approach that can simplify the dentist's role in addressing DV. This four-stage process, known as asking, validating, documenting and referring (AVDR), involves the following:

- asking patients about abuse;
- providing validating messages that acknowledge that battering is wrong while confirming the patient's worth;
- documenting signs, symptoms and disclosures in the patient's dental record in writing and with photographs;
- referring victims to DV specialists and resources in the community.

Dentists can use AVDR intervention even when abuse is suspected but not disclosed, and patients have reported that intervention has been helpful in that circumstance.[14,15] The objective of the AVDR approach is to help patients without imposing unreasonable expectations that dentists solve the problem of family violence.

In a study in which women who had experienced DV described their experiences with their health care providers, most of the women interviewed believed that their health care providers were "uninterested, uncaring, or uncomfortable" about the abuse.[16] One woman reported that the most helpful health care provider was a nurse practitioner who demonstrated empathy. We sought to investigate whether empathy is, indeed, related to dentists' attitudes, awareness and practices pertaining to DV or to the efficacy of our AVDR tutorial. Hojat and colleagues[17] developed the Jefferson Scale of Physician Empathy to measure empathy of medical students and physicians in relation to patient care. The researchers used factor analysis to identify three components of empathy:

- perspective taking (the core ingredient in empathy);
- compassionate care (emotions involved in care);
- "the ability to stand in the patient's shoes" (thinking like the patient).[18]

Sherman and Cramer[19] validated the Jefferson scale in a sample of dental students. We decided to use the Jefferson scale to explore the importance of dentists' empathy in a context of addressing DV in patients and modified it appropriately. We also sought to replicate the above-described factor analysis in our sample of dentists.

The specific aims of this study were

- to provide a brief multimedia tutorial to educate dentists to recognize and respond to DV;
- to determine the effectiveness of the tutorial in improving the knowledge, attitudes and behavior scores of dentists in an intervention group relative to a control condition;
- to examine the relationship of empathy scores with knowledge, attitude and behavior scores regarding DV.

SUBJECTS, METHODS AND MATERIALS

The institutional review board of the University of California San Francisco approved the study, for which we obtained informed consent from all participants.

Subject selection and recruitment. For inclusion in the study, dentists had to practice in the United States and be engaged in at least 20 hours of outpatient care per week. In September and October of 2003, we recruited a convenience sample of dentists from attendees at the 2003 annual session of the American Dental Association held in San Francisco, participants in continuing dental education courses of the University of the Pacific, San Francisco, and attendees at meet-

ings of the San Francisco Dental Society. At the ADA's annual session, we recruited participants at a booth and table clinic. We raffled off a liquid crystal display television to attract more participants. We also recruited residents in the dental clinics at University of California San Francisco.

The AVDR tutorial. We created an interactive multimedia computer-based tutorial tailored to dental professionals to present the AVDR approach. The tutorial begins with information on how dentists can identify signs of abuse. The program then presents different ways in which the dentist can ask a patient who shows signs of abuse about DV and provide validating messages, whether or not the patient discloses abuse. The tutorial also educates dentists on how to document DV in the dental record and to refer patients to local DV assistance resources when appropriate. Two skilled actors appear in the tutorial: one is a real dentist, and the second portrays a dental patient who presents with indicators of abuse (laceration on the gingivae and a loose tooth). Participants are asked to make a selection among different questions a dentist could ask the patient by choosing questions and statements to deliver. These inputs elicit a variety of reactions from the patient. The dentist follows with advice and guidance about the simulated dentist-patient interaction. The tutorial proceeds through the four stages of the AVDR lesson and takes approximately 15 minutes to complete.

Study design. In a two-group controlled trial, we examined the impact of the tutorial on practicing dentists. After providing informed consent, all participants completed our modified version of the Jefferson Scale of Physician Empathy.[19] The control group took a pretest and the posttest and then completed the tutorial. The experimental group took the pretest, completed the tutorial and then took the posttest. These components of the trial were delivered on laptop computers, which randomly assigned the participants to control and experimental groups, resulting in randomization with laptops as strata. Participants completed the tutorial—including the pretest, posttest and Jefferson scale—during the same encounter in which they were recruited and then received a small reimbursement.

Instruments administered. *DV assessment instrument.* The pretest and posttest each consisted of 24 questions; participants completed them on laptop computers. The questions covered the range of the AVDR intervention, as well as knowledge and attitudes about DV (Table, pages 600-1). All participants received the questions in the same order. The posttest repeated the 24 questions, in a different order and with some differences in wording.

Jefferson Scale of Physician Empathy. The Jefferson Scale of Physician Empathy includes 20 items answered on a seven-point Likert-type scale (from 1, "strongly disagree," to 7, "strongly agree").[18] To address dentists specifically, we obtained permission from the authors to modify some items (Box, page 601).

Methods of statistical analysis. We used logistic regression to assess baseline balance between the two study groups of demographic (age, sex, race), dental practice (specialty or general practice) and previous DV training (hours and location) characteristics, as well as the 24 pretest questions about DV.

We assessed the effect of the tutorial on the change in mean scores from pretest to posttest for all 24 test questions simultaneously, using resampling-based step-down bootstrap multiple testing (1 million resamples).[20] We tested interactions between the intervention and other factors, including specialty (general practitioner versus specialist), sex, race (white versus nonwhite), graduation year (before 1999 versus 1999 or later), DV training (0 hours versus > 0 hours) and total empathy score (< 117 [the median score] versus 117 or greater).

We conducted a principal components analysis with orthogonal rotation on the dentists' empathy scale scores. We also conducted *t* tests to look for significant differences in total empathy scores between men and women and between the intervention and control groups, as well as correlations to look for relationships between empathy scores and baseline, posttest and change scores on the DV assessment instrument.

RESULTS

We recruited 177 participants. We excluded three participants because of computer problems. Of the resulting 174 participants, 88 were in the control group, and 86 were in the experimental group; 60 percent were men; 2 percent were American Indian or Alaskan Native, 48 percent were non-Hispanic white, 6 percent were Hispanic, 40 percent were Asian/Pacific Islander, and 4 percent were of other or unknown racial descent.

We found no statistically significant differences

between the intervention and control groups in demographic, educational or dental practice characteristics. Nor did we find any statistically significant differences between the demographic groups on scores for any of the 24 baseline questions.

Effects of the AVDR DV tutorial. The table shows the baseline scores and mean change scores (and standard deviations [SDs]) for the experimental and control groups on each of the 24 questions asked in the DV assessment instrument.

For all 12 questions about intentions to practice AVDR and perceived knowledge of how to help patients affected by DV, the dentists who received the tutorial improved their scores, on average, significantly more than did the dentists in the control group (all $P < .005$). The tutorial had less effect on questions pertaining to beliefs or attitudes; members of the experimental group raised their scores significantly more than did those of the control group on four of 12 such questions (all $P < .01$).

Overall, the tutorial significantly improved scores on 16 of the 24 assessment items ($P = .01$ when we adjusted for multiple comparisons). We found no significant differences when testing for intervention effects by category of practice (specialty/general), sex, race, year of graduation, previous DV training or empathy.

Empathy scores. We failed to replicate the above-mentioned factorization of the empathy scale. We found no separate interpretable factors. Accordingly, we used the total empathy score in further analyses pertaining to empathy.

For the entire sample, the mean total empathy score was 115.5 (SD = 11.87); the range was 77 to 140 (possible range = 20-140). There was no difference between the intervention (mean = 115.18, SD = 12.29) and control (mean = 115.83, SD = 11.49) groups in mean baseline empathy score. Women's scores were higher than men's scores, but they were not statistically different (respective means: 117.28, SD = 11.02; 114.33, SD = 12.32).

Total empathy scores correlated significantly with total baseline (and posttest) scores on the DV assessment instrument (baseline Pearson product moment correlation $r = 0.34$, $P < .0001$; posttest $r = 0.40$, $P < .0001$). Empathy did not correlate with change scores (posttest minus pretest) for the complete assessment instrument ($r = 0.13$, $P = .092$). Looking at subscales of the assessment instrument, we found that empathy correlated with the baseline and posttest scores, but not with change scores for the intended behavior (AVDR practices) subscale (baseline $r = 0.19$, $P < .01$; posttest $r = 0.26$, $P < .001$) and for the subscale pertaining to beliefs/attitudes about helping patients who are DV victims (baseline $r = 0.41$, $P < .001$; posttest $r = 0.49$, $P < .0001$). Empathy scores did not correlate with perceived knowledge questions at baseline or perceived knowledge change scores (though they did correlate with perceived knowledge at posttest; $r = 0.19$, $P < .01$).

DISCUSSION

This study tested the efficacy of an educational and behavioral change intervention designed to help dentists overcome their reluctance to identify and treat victims of DV and to effect positive changes in dentists' knowledge, attitudes and behaviors with respect to caring for patients who experience DV. The ultimate goal is to help prevent further DV and associated oral trauma in patients seeking dental care. To reach this goal, a better understanding of educating dentists in this area is necessary.

Results suggest that the intervention effectively improved dentists' intentions to practice ADVR intervention; it also improved dentists' perceived knowledge both of DV and of how to help its victims. For example, after taking the tutorial, dentists reported that they would be more likely to inquire about a patient's safety after recognizing injuries to the head or neck. This one change in practice could increase greatly the number of victims who are not only identified, but also helped, at dental visits. The first step, asking about abuse, often is the hardest for any health care provider.[21] Dentists in our study reported that after the tutorial they felt empowered to get through this first step and open the door for their patients. In our previous research, patients reported that it often was a health care provider who first made them think about their abusive situations, a realization that eventually helped them change those situations.[22]

The tutorial was less effective in changing dentists' beliefs and attitudes regarding DV. However, even though dentists may not believe that they can help those who experience abuse, they are willing to try. A 15-minute computer-based intervention may not change dentists' core beliefs and attitudes, but it may lead them to adopt a

TABLE

Domestic violence assessment instrument findings.

ITEMS MEASURING DENTISTS' PRACTICES, PERCEIVED KNOWLEDGE, BELIEFS AND ATTITUDES ABOUT DOMESTIC VIOLENCE (DV)	CONTROL GROUP (N = 88)		EXPERIMENTAL GROUP (N = 86)		*P* VALUES (COMPARING CHANGE SCORES)
	Mean Baseline Scores (SD*)	Mean Change Scores (SD)	Mean Baseline Scores (SD)	Mean Change Scores (SD)	
Intended Asking-Validating-Documenting-Referring Practices†					
If I recognized injuries to the head or neck, I would ask the patient something such as, "Are you safe at home?"	2.8 (0.1)	0.2 (1.0)	2.5 (0.1)	1.3 (1.2)	< .0001
If a patient did not disclose DV, but I suspected it, I would tell her something such as, "No one deserves to be abused."	2.6 (0.1)	0.2 (0.8)	2.4 (0.1)	1.6 (1.3)	< .0001
If I identified a patient as being abused, I would document the abuse in the patient's chart.	4.2 (0.1)	–0.1 (0.9)	4.0 (0.1)	0.5 (1.3)	.0018
If I suspected a patient was being abused, I would offer referral sources for domestic violence.	3.8 (0.1)	–0.2 (0.7)	3.5 (0.1)	0.7 (1.1)	< .0001
Perceived Knowledge of DV‡					
How much do you feel you know about the prevalence of domestic violence in dental settings?	2.2 (0.1)	0.0 (0.5)	2.1 (0.1)	0.8 (0.8)	< .0001
... common indicators of abuse?	2.5 (0.1)	–0.1 (0.6)	2.4 (0.1)	0.6 (0.8)	< .0001
... your role in recognizing and helping domestic violence victims?	2.4 (0.1)	0.0 (0.6)	2.4 (0.1)	0.7 (0.8)	< .0001
... how to ask patients about abuse?	2.2 (0.1)	0.0 (0.5)	2.0 (0.1)	1.1 (0.8)	< .0001
... how to give patients the message that no one deserves to be abused?	2.2 (0.1)	0.1 (0.6)	2.1 (0.1)	1.1 (0.9)	< .0001
... how to help suspected victims of abuse when they do not disclose having been abused?	2.0 (0.1)	0.2 (0 .7)	1.9 (0.1)	1.2 (0.9)	< .0001
... how to document abuse in the dental chart?	2.3 (0.1)	0.1 (0.5)	2.3 (0.1)	1.2 (0.9)	< .0001
... how to refer victims to resources for assistance?	2.2 (0.1)	0.1 (0.6)	2.1 (0.1)	1.0 (0.9)	< .0001
Beliefs About DV and Dentists§					
If a victim does not disclose the abuse, there is nothing I can do to help.	2.3 (0.1)	1.5 (1.3)	2.2 (0.1)	1.7 (1.5)	.5370
Dentists should not be responsible for identifying cases of domestic violence.	1.9 (0.1)	1.9 (1.6)	2.0 (0.1)	2.0 (1.7)	.8257
Dentists have an important role in addressing domestic violence.	4.0 (0.1)	–0.2 (1.1)	4.1 (0.1)	0.2 (1.1)	.1445
There are specific things I can do to help a patient who is a victim of domestic violence.	3.9 (0.1)	0.4 (.8)	4.0 (0.1)	0.4 (1.0)	.8257
I believe I can recognize and help victims of domestic violence.	3.8 (0.1)	0.2 (0.8)	3.6 (0.1)	0.7 (1.0)	.0058
Helping victims of domestic violence is impossible to do.	1.8 (0.1)	2.4 (1.3)	1.7 (0.1)	2.7 (1.3)	.4609
Intervening with victims of domestic violence is a thankless and ungratifying job.	2.2 (0.1)	1.9 (1.6)	2.1 (0.1)	2.3 (1.3)	.3746
I am committed to helping victims of domestic violence.	4.0 (0.1)	0.0 (0.9)	3.8 (0.1)	0.4 (1.2)	.1476

Continued on next page

TABLE (CONTINUED)

Domestic violence assessment instrument findings.

ITEMS MEASURING DENTISTS' PRACTICES, PERCEIVED KNOWLEDGE, BELIEFS AND ATTITUDES ABOUT DOMESTIC VIOLENCE (DV)	CONTROL GROUP (N = 88)		EXPERIMENTAL GROUP (N = 86)		*P* VALUES (COMPARING CHANGE SCORES)
	Mean Baseline Scores (SD*)	Mean Change Scores (SD)	Mean Baseline Scores (SD)	Mean Change Scores (SD)	
Attitudes About DV and Dentists¶					
How much do you feel it is within dentists' role to ask patients about their personal lives, such as their abusive relationships, when they identify signs of abuse?	5.1 (0.2)	0.0 (1.0)	4.9 (0.1)	1.0 (1.4)	< .0001
What is your attitude toward helping patients who are victims of domestic violence in terms of importance?	5.8 (0.1)	–0.1 (0.8)	5.6 (0.1)	0.5 (1.3)	.0047
... in terms of difficulty?	2.8 (0.2)	0.3 (1.5)	2.4 (0.2)	1.5 (1.9)	.0001
... in terms of your time and rewards associated with it?	5.5 (0.2)	0.1 (0.6)	5.6 (0.1)	0.5 (1.2)	.0531

* SD: Standard deviation.
† Possible responses ranged from 1 to 5 (never, seldom, sometimes, frequently, always).
‡ Possible responses ranged from 1 to 4 (none, some, a little, a lot).
§ Possible responses ranged from 1 to 5 (strongly disagree, disagree, not sure, agree, strongly agree).
¶ Possible responses ranged from 1 to 7, with various endpoints as appropriate for item and improvement represented by higher scores.

BOX

The Jefferson Scale of Physician Empathy, modified to measure dentist empathy.*

Instructions: Please indicate the extent of your agreement or disagreement with each of the following statements by writing the appropriate rating number on the underlined space provided before each statement. Please use the following seven-point scale (a higher number on the scale indicates more agreement):

1 2 3 4 5 6 7
Strongly Disagree Strongly Agree

__ 1. My understanding of how my patients and their families feel does not influence dental or surgical treatment.
__ 2. My patients feel better when I understand their feelings.
__ 3. It is difficult for me to view things from my patients' perspectives.
__ 4. I consider understanding my patients' body language as important as verbal communication in caregiver-patient relationships.
__ 5. I have a good sense of humor that I think contributes to a better clinical outcome.
__ 6. Because people are different, it is difficult for me to see things from my patients' perspectives.
__ 7. I try not to pay attention to my patients' emotions in history taking or in asking about their physical and dental health.
__ 8. Attentiveness to my patients' personal experiences does not influence treatment outcomes.
__ 9. I try to imagine myself in my patients' shoes when providing care to them.
__ 10. My patients value my understanding of their feelings, which is therapeutic in its own right.
__ 11. Patients' illnesses can be cured only by medical or surgical treatment; therefore, emotional ties to my patients do not have a significant influence on medical or surgical outcomes.
__ 12. Asking patients about what is happening in their personal lives is not helpful in understanding their physical complaints.
__ 13. I try to understand what is going on in my patients' minds by paying attention to their nonverbal cues and body language.
__ 14. I believe that emotion has no place in the treatment of oral disease.
__ 15. Empathy is a therapeutic skill without which success in treatment is limited.
__ 16. An important component of the relationship with my patients is my understanding of their emotional status, as well as that of their families.
__ 17. I try to think like my patients in order to render better care.
__ 18. I do not allow myself to be influenced by strong personal bonds between my patients and their family members.
__ 19. I do not enjoy reading nondental literature or the arts.
__ 20. I believe that empathy is an important therapeutic factor in dental or surgical treatment.

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pragmatic approach to addressing DV.

The tutorial was tested with dental students,[12] and we found the same general pattern of results as in that research. For both dental students and dentists, the tutorial significantly improved knowledge and intended behaviors regarding DV. With beliefs and attitudes, however, dentists improved their scores on four of the 12 questions, whereas dental students showed no change. The tutorial appeared equally effective across demographic variables (age, sex and race) and practice variables (specialty, years of practice).

We expected that dentists with greater empathy would be more receptive to the issue of DV. Our results indicate that may be partly true: dentists who scored higher in empathy had higher baseline and posttest scores on measures of intended DV-related practices and beliefs and attitudes about the issue. However, empathy scores were unrelated to scores on perceived knowledge of DV or the effects of the ADVR tutorial. This last result is consistent with the idea that empathy is a stable trait, not easily influenced by the intervention. And the effectiveness of the tutorial (in increasing knowledge about DV and intentions to address it in clinical practice) is not dependent on the dentist's level of empathy.

Limitations. There are several limitations to this study. We recruited a convenience sample of dentists willing to take the tutorial for a small reimbursement, which introduces a potential bias. The posttest immediately followed the tutorial, so we did not assess long-term effects of the tutorial. We did not follow up with participants to see if the tutorial has helped them in their clinical practices. Yet our findings suggest that by improving intended behaviors and knowledge regarding DV, the multimedia tutorial can be an effective medium for preparing dentists to triage for DV.

We acknowledge the barriers to screening for DV in oral health care settings. Despite these, Love and colleagues[11] found that as little as one hour of education about DV increased the likelihood that dentists would screen patients for abuse. While the literature lacks models of intervention for dentists thus far, the AVDR tutorial provides one approach for dentists, demonstrating concrete intervention behaviors that can be applied within the scope of their practice.

Advances in technology have made the dissemination of multimedia educational programs highly efficient, and computer-assisted instruction has been shown to be an effective method of dental education in addition to the traditional classroom setting.[23] For example, a two-hour, case-based educational program for physicians delivered over the Internet improved physicians' confidence in and beliefs about treating patients who had experienced DV as effectively as a more intensive, classroom-based approach.[24] We have made the AVDR tutorial widely available to practicing dentists and instructors at dental schools. We believe that it is a great step forward in dental education about DV to offer this tutorial on the Internet or on digital video disc (DVD) to dentists and other oral health care professionals, and to integrate it into dental schools nationwide. **(Editor's note:** A note at the end of the article provides further information on this DVD.)

CONCLUSIONS

The AVDR tutorial is a quick and effective way to increase knowledge and awareness of DV among oral health care practitioners. It offers simple strategies for assessment and intervention with dental patients who may be experiencing abuse. ■

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This article is offered as a resource tool; it is not intended to set specific standards of care or to provide legal or other professional advice. The practices described in the article should be conducted in accordance with applicable law, including state law regarding scope of practice, reporting obligations and referral options.

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Readers interested in obtaining the domestic violence tutorial described in this article (on DVD) may e-mail inquiries to "chips@ucsf.edu".

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