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The dentist's role in promoting community water fluoridation:

A call to action for dentists and educators

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Abstract

Background and Overview—Community water fluoridation is an important public health intervention that reduces oral health disparities and increases the health of the population. Promotion of its safety and effectiveness is critical to maintaining its widespread acceptance and ensuring its continued use. Dentists are a potentially important source of knowledge regarding the oral health benefits and safety of water fluoridation. However, few dentists regularly discuss fluorides, and water fluoridation in particular, with patients. The authors aim to describe and discuss the role and importance of dentists' promotion of public water fluoridation, barriers to dentists' involvement and some approaches that might influence dentists to promote water fluoridation more actively.

Conclusions and Practice Implications—Ongoing promotion of fluoridation by dentists is a key factor in ensuring sustained municipal water fluoridation. However, current undergraduate dental curricula do not adequately prepare dentists for this role, and continuing dental education may be insufficient to change clinical practice. Although smoking-cessation literature can shed some light on how to proceed, changing dentists' practice behavior remains a largely unstudied topic. Dental associations are a key resource for dentists, providing information that can assist them in becoming advocates for water fluoridation.

Keywords

Water fluoridation; advocacy; dental public health; community dentistry; public opinion

Fluoride plays an important role in the prevention of dental caries, with the topical application of fluoride regarded widely as the most effective caries-preventive practice available.¹ However, research findings also have demonstrated that preeruption and posteruption exposure to fluoride in water is associated with caries reduction.^{2,3} Along with vaccinations, motor vehicle safety and the control of infectious diseases, municipal water

fluoridation has been hailed by the U.S. Centers for Disease Control and Prevention, Atlanta, as one of the 10 great public health achievements of the 20th century.⁴

Many countries now have fluoridated water, and at least a dozen countries have greater than 40 percent population coverage.⁵ In 2008, fluoridated water in the United States reached an estimated 64 percent of the total population and approximately 72 percent of the population who had access to public water systems.⁶ The percentage of people receiving fluoridated water has doubled in the last 50 years.⁷ However, considerable variation exists across the United States in terms of coverage, ranging from 100 percent of residents in the District of Columbia to only 10.8 percent of residents in Hawaii.

THE PUBLIC'S KNOWLEDGE AND SUPPORT OF WATER FLUORIDATION

Public awareness of preventive oral health–related interventions, including water fluoridation, is a major multinational public health goal^{8–10} because of their widespread impact on individuals and communities, as well as their effect in reducing oral health disparities among children and poor or vulnerable adults.⁹ It may be that people with negative views toward fluorides, and water fluoridation in particular, could turn their backs on this beneficial health agent by not drinking fluoridated water or using fluoridated toothpaste, resulting in a negative effect on their oral health.¹⁰ At the community level, public knowledge of oral diseases has been shown to have a direct impact on the adoption of public health outcomes, such as water fluoridation.^{10,11}

In the United States, as in most other countries in which water fluoridation has been instituted widely, support for the measure has tended to be high. National polls conducted by the Gallup Organization in 1991¹² and the American Dental Association in 1998¹³ revealed that 78 and 70 percent, respectively, of American adults supported water fluoridation. Despite varying water fluoridation coverage across the United States, public support has been relatively consistent throughout the country.¹³ This level of support is consistent with that found in countries such as Australia¹⁴ that also have high levels of community water fluoridation, but slightly higher than that in Canada¹⁵ and New Zealand,¹⁶ where water fluoridation coverage is somewhat lower. In countries with low coverage of the population, such as England, canvassed support for water fluoridation in some areas may be considerably less than 50 percent.¹⁷

Despite water fluoridation's being used for more than one-half of a century to prevent dental caries, the results of studies from a number of countries have shown that a considerable degree of misunderstanding remains about its purpose and effects.^{10,18} The results of a 2009 national mailed survey of U.S. adults showed that only 48 percent of respondents knew the purpose of community water fluoridation.¹⁹ Researchers also have found that many adults have concerns about fluoridation.^{14–16} In addition, people often are unaware of the water fluoridation status of their place of residence. For example, despite widespread discussion in and around San Diego across a number of years regarding plans to fluoridate the water supply in 2011, a public opinion poll administered in 2006 found that 40 percent of respondents incorrectly believed that their local water supply was already fluoridated.²⁰

Misinformation and unsubstantiated concerns regarding water fluoridation are critical public health issues because the introduction of fluoridation frequently relies on the outcome of community consultation, or more directly on a public referendum or plebiscite. Between 1950 and 1967, more than 1,000 public referenda were held in the United States regarding whether or not to fluoridate the public water supply, with only 41 percent of outcomes in favor of its introduction.²¹ Between 1980 and 1988, 150 referenda were held, and the acceptance rate was only 36 percent.²¹ More recent results have been little better. In Nebraska in 2008, 61 communities held public referenda on water fluoridation introduction, and only 12 communities (20 percent) voted in favor.²² Furthermore, even where water fluoridation has been instituted, public referenda frequently are held to decide whether the practice should be discontinued.

DENTISTS AS SOURCES OF INFORMATION

Dentists are a valuable source of accurate public health information regarding water fluoridation because they already are an important source of preventive dental information for the general public.¹⁰ For example, Isman²³ found that 64 percent of an adult sample in Oregon obtained dental health information from their dentists, while investigators in Australia found that 65 percent of participants obtained preventive information from their private dental practitioners.¹⁰ Furthermore, dentists regularly encounter a high percentage of the population. In the United States, for example, almost 62 percent of adults visited the dentist during 2011.²⁴ Other Western countries have reported similar or higher rates of dental visits.^{25,26}

Unfortunately, researchers in several studies have indicated that the percentage of people who obtain information about water fluoridation from dentists is quite low.^{14,15} Investigators in a Canadian study reported that two-thirds of people read or heard about fluoridation in the media, whereas only 2 percent of adults obtained information about water fluoridation from their dentists.¹⁵ The results of a U.S. study conducted in 1980 revealed that only 20 percent of study participants obtained fluoridation information from their dentists.²³ However, in a study of dentists in Minnesota conducted almost two decades previously, Metz²⁷ reported that approximately one-half of the dentists surveyed stated they discussed fluoridation with many patients. The results of another study showed that although 90 percent of dentists reported discussing water fluoridation with at least a few patients, the majority of those dentists (68 percent) discussed water fluoridation with less than 20 percent of their patients.²⁸ Researchers in England reported that of 55 general dental practitioners responding to a survey, just less than one-half would actively advocate water fluoridation with a patient if the patient asked and expressed concern about fluoridation.²⁹

DENTISTS' EFFECTIVENESS IN PROMOTING WATER FLUORIDATION

Since the 1950s, only limited evidence has been available to support the assertion that dentists are effective at either educating their patients about water fluoridation or influencing political outcomes in water fluoridation campaigns at the individual level. The results of a recent study from Australia showed that people who obtained their information from a dentist or general medical practitioner were more likely to be strongly supportive of water

fluoridation (47 percent) than were people who obtained their information from newspapers (40 percent), television or the radio (36 percent) or the Internet (33 percent) or who did not receive any information about water fluoridation (22 percent).¹⁴ Because people's source of information is related to their level of support of or opposition to water fluoridation,^{14,30} provision of water fluoridation materials in dental offices may be effective because dentists are seen as credible and accurate sources of information.³¹ However, Isman³² found that people who cited a dentist as their primary source of water fluoridation information were not significantly more likely to vote for fluoridation, understand its purpose or be influenced by arguments for or against fluoridation. In addition, their rating of preventive dental care did not differ significantly from that of people who cited the media or other sources of information regarding water fluoridation.

The role of dentists in civic or organizational leadership positions has been more compelling in its effectiveness. Although some research has failed to show that dentists' leadership roles alone influence the outcome of referenda,³² there is evidence that dentists can play an important role in political campaign efforts. The results of an early review of social research in water fluoridation indicated that dentists appeared to have influenced the outcome of ballot measures in smaller communities.³³ More recently, dentists' promotion of water fluoridation was successfully carried out as part of a joint campaign effort with the public health department and the media in New South Wales, Australia; in that effort, one prominent local dentist engaged in grassroots efforts to help ensure the successful passage of a municipal water fluoridation plebiscite.¹¹ Such studies highlight the fact that dentists can and do play important roles during political campaigns by using their good reputations in the community and their ability to organize and lead campaign efforts to educate and persuade the public to vote in favor of water fluoridation. More information is needed to determine the role that dental organizations can and do play in promoting water fluoridation to the public.

The equivocal evidence pertaining to the effectiveness of dentists' advocacy for fluoridation does not support the position that dentists should give up on educating patients about the benefits of water fluoridation. As noted earlier, dentists are well-positioned to intervene on an ongoing basis with patients; to neglect this responsibility would be to lose an important opportunity to promote dental public health.^{29,32} Roberts-Thomson and Spencer¹⁰ asserted that dentists carry a major responsibility to convey the importance of fluorides to oral health and, in particular, the relative importance of fluoride use, including water fluoridation, compared with other preventive oral health measures. Evidence suggests that, in terms of the relative effect on individual and population oral health outcomes, dentists tend to overemphasize oral hygiene compared with use of fluorides.³⁴ Unfortunately, dentists exhibit varying levels of support for and knowledge and awareness of the safety and effectiveness of fluorides, and water fluoridation in particular.^{28,29} This may explain, at least in part, the relatively small impact they have had on educating patients about water fluoridation and, thus, their relatively limited influence on campaign outcomes.

BARRIERS TO DENTISTS' PROMOTION OF WATER FLUORIDATION

Awareness and support of water fluoridation as a public health issue

A prerequisite to dentists' promotion of water fluoridation is their awareness of it as an important public health issue. Investigators conducting a study of dentists' attitudes toward water fluoridation reported that one-fourth of respondents chose not to educate their patients about water fluoridation because they were not prompted to do so by their patients (a common response was "no one asks").²⁸ Another 12 percent of participants had not even considered discussing the topic with their patients. Generally, however, dentists do support water fluoridation as an effective practice, although the level of support varies across and within countries. Support tends to be high in countries such as the United States³⁵ and Australia,³⁶ but among some other Western countries in which water fluoridation coverage is lower, support has ranged from a high of 72 percent to a low of 58 percent.^{29,36,37} Cultural differences affecting dentists' attitudes may be significant factors in determining support for water fluoridation. For example, dentists in Japan are much less likely than those in Australia to believe that water fluoridation is the most effective way of preventing caries, is safe and should be carried out in their city of residence.³⁶ In Japan, where community water fluoridation is not carried out, less than one-half of children use fluoridated toothpaste, and the focus of dental education and practice is on restoration rather than on prevention. Investigators argue that these country-specific factors have a considerable impact on the attitudes of Japanese dentists regarding use of fluorides.³⁶

Knowledge, preparedness and self-efficacy

Studies of dentists' attitudes about water fluoridation suggest that a lack of knowledge and preparedness are barriers to discussing the topic with patients. The results of a survey showed that 58 percent of dentists strongly supported water fluoridation and 38 percent supported it with some reservations; however, more than one-half of the respondents believed they needed more information and training on the issue and 58 percent expressed a desire for training on how to advocate for it, particularly in challenging situations in which a dentist must respond to a patient's anti-fluoridation argument.²⁹ When dentists from this study were asked whether they would attempt to influence a parent who was unsure about whether to support water fluoridation, only 48 percent were prepared to take the matter forward.

In another study based on a county-level mailed survey of dentists in Portland, Ore., most surveyed dentists considered themselves to be fairly well educated about water fluoridation; however, "pockets of misinformation or doubt" appeared to decrease their willingness to engage in active promotion of water fluoridation.²⁸ Most dentists in this study also stated that discussing water fluoridation with patients was "not appropriate to their practice," though many of these respondents felt dentists should serve as a source of expert opinion (74 percent), resource persons (63 percent), endorsers (60 percent) and public speakers (48 percent) on behalf of water fluoridation.²⁸ Given dentists' widespread trepidation about discussing water fluoridation with patients, it is understandable why most dentists in the study conducted by Isman²⁸ assumed a passive role with regard to promotional efforts (that

is, they distributed literature in their practices) despite their feelings that dentists should be more active participants.

Dentists' lack of self-efficacy with respect to critically evaluating scientific literature may help to explain their reluctance to promote water fluoridation in their clinical practices. Scholars have identified weak critical and evaluative skills as a barrier to change in dental practice.³⁸ Garcia and Sohn³⁹ argued that evidence-based dentistry (EBD) equips dentists with the skills and impetus to become lifelong learners and consumers of scientific information. Practitioners skilled in EBD are well-positioned to critically evaluate the scientific literature and incorporate needed change into their clinical practices.^{39,40} Without such training in EBD, dentists may lack the self-efficacy necessary to promote controversial yet important public health interventions such as water fluoridation.³⁹

Financial and practice risk

Although little is known about how dentists perceive the financial and practice risk associated with promotion of water fluoridation in their practices, anecdotal evidence suggests they may perceive that dedicating time to a non-fee-producing service is not worth their efforts, or they simply may fear antagonizing their patients.²⁸ The results of an investigation of determinants of change among a sample of general dentists in England showed that the single most important factor influencing change was the financial risk associated with adopting a new practice.³⁸ Specifically, if practitioners perceived that a new practice behavior would have a negative financial impact on the practice, they weighed that cost against the perceived benefit of the desired change before implementing it. In a study about the adoption of preventive measures among clinicians, Rogers⁴¹ found that implementation of such measures is likely to occur at a slower rate than that of most innovations because there is a low relative advantage to changing practice behavior. Furthermore, adoption of health promotion measures, such as advocating water fluoridation, is likely to occur at a slower rate as clinicians may perceive it as being disruptive to their practices.⁴² This may be particularly relevant to dentists who fear antagonizing their patients.

Whatever the determinants of behavioral change among dentists, a critical step in the process of increasing dentists' promotion of water fluoridation is to clearly identify barriers to such change.^{38,43,44} In this study, we have distilled information and presented some of the barriers to change that have been identified during a 70-year span. However, our understanding of this topic must be monitored and updated. Thus, an ongoing investigation of dentists' promotion of water fluoridation is warranted.

INJECTING CHANGE INTO CLINICAL DENTISTRY

Undergraduate dental education

The limited evidence available indicates most dentists are not prepared to talk about water fluoridation with their patients.^{23,29,32} Dental education researchers have questioned whether dental education is doing enough to ensure that future dentists are "fully conversant with the science underlying the effectiveness and safety of community water fluoridation"³⁹ or are "capable of countering the often specious arguments being made against community

water fluoridation.”³⁹ These research findings suggest that for dentists to be minimally prepared and motivated to promote water fluoridation, dental school graduates must possess the following:

- awareness of water fluoridation promotion as an important public health issue;
- sound scientific knowledge of fluorides and water fluoridation;
- experience in discussing fluorides and water fluoridation with patients;
- critical evaluative skills, so that they remain informed about the topic;
- a professional and moral incentive to act.

Researchers argue that such preparation must be supported by training during undergraduate dental school⁴⁵ and requires significant modifications to the undergraduate dental curricula.^{29,39,45}

Incorporating preventive dentistry (including promotion of water fluoridation) into clinical practice requires a paradigm shift in the dental curricula toward evidence-based preventive practice.³⁹ In 1995, the U.S. Institute of Medicine (IOM),⁴⁶ Washington, outlined the need for an evidence-based culture to promote preventive dentistry, recommending that all undergraduate dental curricula support effective and efficient oral health services capable of improving health at the individual and community levels. However, even after 78 years of advancement in the fields of public health, community dentistry and preventive dentistry, dental school curricula remain more or less unchanged, devoting less than 6 percent of class time to the hefty sphere of behavioral sciences, of which only a fraction is devoted to preventive dentistry or public health.⁴⁷

Continuing dental education

Teaching dentists advocacy skills through interventions such as continuing dental education (CDE) is a complex and daunting task. Gordon and Severson⁴⁸ argued that in some ways it is harder to change the dental health care professional’s behavior than it is to change the patient’s behavior. Although much attention has been paid to teaching dentists, information is limited about how they learn and the methods that are effective in changing their practice behaviors.⁴⁹ In fact, although most CDE affects practitioners’ sphere of knowledge and perhaps even their performance in some settings, rarely, if ever, does CDE cause a measurable change in patient outcomes.⁴⁹ Furthermore, although two-thirds of dentists surveyed by Isman²⁸ said they would be willing to read more to increase their knowledge about water fluoridation, only about one-half said they would be willing to take a CDE course on the topic. Furthermore, in their study of determinants of change in dental practices in England, Watt and colleagues³⁸ found that dentists’ low opinion of CDE in and of itself was a barrier to practice change.

Social factors

One basis for understanding how change occurs in dental practice is through the “diffusion of innovation theory,” which suggests that dentists learn and integrate new knowledge into clinical practice on the basis of a complex set of factors (for example, experience,

environment, personal aspirations) rather than according to a strictly intellectual process.^{38,42,43} The decision to integrate change into dental practice has not been well studied, but several sources indicate that change may occur most readily through collegial friendships and dental society meetings.^{38,42,50,51} Thus, dental societies may be effective in changing their members' practice behavior with respect to promotion of water fluoridation.

TOBACCO-USE CESSATION AS A GUIDE TO UNDERSTANDING BEHAVIORAL CHANGE IN DENTISTS

Dentists' provision of tobacco-use-cessation counseling is an example of a public health intervention that mimics promotion of water fluoridation. Although the health effects related to smoking and tobacco use are a major public health concern, and tobacco-use-cessation interventions are a professional obligation, most dentists do not intervene.^{52,53} Estimates from U.S. surveys indicate that only about 30 to 50 percent of dentists counsel their patients regarding tobacco-use cessation.^{52,53} For example, investigators in one study found that general dentists routinely counseled only 26 percent of patients who used tobacco to quit "at every or almost every visit," and only one-half of those dentists used a specific tobacco-use-cessation strategy in their discussions with patients.⁵³

Across tobacco-use-cessation studies conducted internationally, researchers found that the single most important barrier to intervention cited by dentists was a lack of training in delivering antismoking messages to patients.^{48,53-56} As with water fluoridation, many dentists do not intervene with regard to tobacco-use cessation because they do not feel prepared to do so, and they lack the confidence to approach their patients with advice.^{48,43-55} Sixty percent of dentists surveyed in Texas agreed or strongly agreed that they needed more training to talk with patients about ceasing tobacco use.⁵⁶ In two other U.S. surveys, dentists who were confident about their smoking-cessation knowledge were found to advise patients to quit more frequently.^{53,54} Other barriers to smoking-cessation advocacy include a lack of time, reimbursement, educational materials and referral resources.^{48,54-56} Less frequently, dentists have expressed concern about patients' resistance and the effectiveness of the intervention.^{54,56} The social, cultural and economic barriers to providing tobacco-use-cessation counseling are numerous and complex and must be addressed before dentists' lack of skill is addressed.⁴⁸

As with water fluoridation promotion, the tobacco-use-cessation literature suggests the need for mandatory undergraduate dental training in tobacco-use intervention.^{48,52,54} In addition, patient education materials need to be more readily available, because the presence of educational materials in the dental office has been found to be associated with a dentist's knowledge of and confidence in his or her ability to help patients quit tobacco use.^{48,54,55} Gordon and Severson⁴⁸ and Albert and colleagues⁵⁴ suggested the use of CDE; however, some methods, such as workshops, were found to be more effective than self-study materials in teaching tobacco-use-cessation intervention.⁴⁸ Despite these alternative methods of changing practice behavior, however, Gordon and Severson⁴⁸ suggested that educational programs for tobacco-use intervention are best suited for undergraduate dental curricula.

ADVOCACY BY MEDICAL PRACTITIONERS

As with traditional dental training, traditional medical training does not prepare physicians to change the underlying conditions in populations that create poor health outcomes.⁵⁷ Not surprisingly, medical school graduates exhibit little interest in civic engagement and public health promotion.⁵⁷ Some members of the medical profession have argued that political advocacy is a civic and not a professional duty, and that it is not the place of universities or medical schools to forsake objectivity for moral and political causes that may be seen as advocacy.⁵⁸ However, professional advocacy is one of nine commitments forming the American Medical Association's Declaration of Professional Responsibility.⁵⁹

Researchers have advanced several reasons why physicians have not embraced an advocacy role more fully, and these may be comparable to those faced by dental practitioners.^{57,60} Identified reasons include the following:

- attitudes contrary to advocacy;
- selection of medical students primarily on the basis of academic success rather than service orientation;
- isolation of students from the community during their training;
- scarcity of time;
- desire to keep personal opinions and preferences out of the clinical encounter;
- fear of political fallout;
- conflicting priorities between an advocacy agenda and those of the institutions to which physicians are responsible.⁶⁰

Nonetheless, educators and professional organizations have developed programs to help train medical students in advocacy roles.⁵⁷ Although the long-term success of these courses has yet to be evaluated, researchers and educators generally believe that fostering advocacy roles will involve some changes to both undergraduate and graduate medical education, as well as the development of training goals and opportunities for physicians.⁶⁰

RECOMMENDATIONS FOR CHANGE

Role of educators

Because dental educators recruit our future dentists and help shape their professional aspirations, undergraduate dental education is at the heart of change for dental practice behavior. The goal for educators should be to convey to dental students in a strong, clear and consistent manner their dual role as clinicians and public health advocates. This requires a paradigm shift in the current undergraduate dental curricula from a restorative approach to a preventive, evidence-based approach in which dentists function as part of an interdisciplinary health care team. Educators can implement this shift by following calls to action by the IOM to revise their curricula in favor of evidence-based learning. Both didactic and practical training are needed for students to develop public health advocacy skills, such as those needed to promote water fluoridation.⁵⁷ Through coursework, internships, seminars

and mentorships, educators should weave the water fluoridation message into the undergraduate dental curricula.⁵⁷ At this time, the dental profession cannot make a paradigm shift through other educational avenues, such as CDE.

Role of dentists

Civic leadership, such as that exhibited in political campaigns, is one way in which dentists can promote water fluoridation. Advocacy through dental societies, such as participation in lobbying efforts, also may be an effective way for dentists to promote water fluoridation. Dentists should recognize that their reputation with the public affords them a unique and important opportunity to deliver the water fluoridation message, and they should be prepared to underscore the importance of fluorides, including drinking fluoridated water, to patients during routine examinations. Dentists also can educate themselves and auxiliary staff members about the importance and safety of water fluoridation by accessing CDE, peer-reviewed journal articles or some of the many legitimate sources of water fluoridation information on the Internet. Finally, dentists can distribute water fluoridation information sheets and pamphlets to patients and provide links to Web sites for more in-depth material. Patient pamphlets and fluoridation information sheets are available from a number of organizations around the world.⁶¹

WATER FLUORIDATION MESSAGE

Evidence suggests that for communities to continue supporting water fluoridation they need consistent, accurate and timely advice.¹¹ Individual dentists and dental organizations (such as dental societies) can provide this assistance. They should emphasize the consistent research findings about the effectiveness of water fluoridation in preventing dental caries. Examples of key messages to convey to patients are summarized in the box.

BOX

Key messages for water fluoridation advocacy

EFFECTIVENESS MESSAGES

- Water fluoridation benefits both children and adults, providing benefits across the life span.
- Water fluoridation is effective above and beyond any other practice in which a person might engage to prevent dental caries.
- Water fluoridation helps reduce oral health disparities.
- Water fluoridation is effective at the community level.
- Water fluoridation is cost effective when compared with the cost of avoidable dental treatment.
- Water fluoridation can enhance the effectiveness of other dental preventive practices such as the use of fissure sealants for children.
- Water fluoridation can help mitigate the effect of some risk factors, such as a high-sugar diet or consumption of sweetened beverages.

SAFETY MESSAGES

- There are no known harmful effects from ingestion of water that has had fluoride added to it at or about 0.7–1.2 milligrams/liter. No systematic reviews of the literature have shown any negative health effects from ingestion of water fluoridated in or near this therapeutic range.
- Dental fluorosis observed in both fluoridated (at or about 0.7–1.2 mg/L) and nonfluoridated areas is, for the most part, not a cosmetic concern.
- Caries is a more important health problem than is dental fluorosis, but there always is a trade-off between the two conditions.
- Fluorosis is a concern for only a small number of people and rarely in areas with adjusted fluoride levels.

Although it is an ongoing task, dentists need to be aware of the common arguments used by the small number of vocal opponents of water fluoridation. Despite the fact that opponents misuse the scientific literature for their own agenda, owing to the nature of their message and the tactics they use, opponents almost always receive considerable media focus whenever fluoridation is mooted, persuading some voters to choose the option of not having fluoridated water. Dentists must be aware of such tactics to protect the reputation of the dental profession and the best interests of those concerned people who might be swayed by such anti-fluoridation rhetoric. Although it would be challenging to keep up with the litany of new and false claims, much of the rhetoric has been recycled across decades, and short responses to many of these unsubstantiated arguments are available.⁶²

CONCLUSIONS

Water fluoridation is known to be safe and effective in reducing caries. However, much confusion and misunderstanding remain among the public regarding its effectiveness and safety. The current approach in the United States and in many other countries regarding the implementation of water fluoridation is for decisions to be made by elected politicians or devolved to the public in the form of a referendum. The result is that, despite widespread public and professional support for fluoridation, media sensationalism and well-coordinated fear campaigns can effectively mobilize enough of the general public to vote against such measures. Dentists, as a credible source of dental public health information, can play an important advocacy role in clinical practice and through civic or organizational leadership by communicating the effectiveness and safety of community water fluoridation to the public. However, little evidence exists that dentists are actively involved in this advocacy role.

Identified barriers to dentists' serving as advocates include a lack of awareness of the water fluoridation issue, lack of knowledge or preparedness to discuss the issue with patients, and financial or practice risk. These barriers are best addressed through undergraduate dental education, for which a paradigm shift is needed to address dentists' lack of training in EBD and population oral health promotion. Other, less effective methods of changing practice

behavior, such as CDE and advocacy via dental societies, can complement changes in dental education curricula.

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ABBREVIATION KEY

CDE	Continuing dental education
EBD	Evidence-based dentistry
IOM	Institute of Medicine

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