

Table 2. Estimates of Daily Fluoride Intake from Diet, Fluoride Supplements, Fluoride Toothpastes, and Total Intake Among 2-year-old Children

	Fluoride Intake, Mean (Range), mg F/kg bodyweight/d	
	Assuming 1 ppm F in Drinking Water	Assuming 0 ppm F in Drinking Water
Diet (including water and beverages)	0.046 (0.038-0.046)	0.023 (0.015-0.023)
Fluoride supplements		0.038*
Fluoride toothpaste 1,000 ppm	0.023 (0-0.154)	0.023 (0-0.154)
Total intake	0.069 (0.038-0.20)	0.084 (0.054-0.215)

*Range not given. Adapted from data by Pendrys and Stamm (1990). It is assumed that a 2-year-old weighs 13 kg. (Courtesy of Mejáre I: Current guidance for fluoride intake: Is it appropriate? *Adv Dent Res* 29:167-176, 2018.)

range from 0.01 to 0.04 mg/kg body weight/day, although the use of lower-fluoride-content or “children’s” toothpastes can complicate this finding.

The risk for fluorosis is estimated on the basis of the amount of fluoride consumed per kilogram of body weight per day, with exposure to fluoride from toothpastes estimated indirectly. The clinical relevance of these estimates is difficult to calculate. It is particularly challenging because the intake of fluoride is not followed immediately by the development of fluorosis or caries prevention. Instead, the passage of time tends to hide the true relationship between fluoride intake and fluorosis development.

NEED FOR CHANGES

The complexity of fluoride exposure and ingestion values along with the reality that individual variations can be considerable combine to make it difficult to make completely supported changes in fluoride recommendations. Early use of 1000-ppm fluoride toothpaste has been shown to rarely result in esthetically significant fluorosis. The recommendation that guidelines be age specific have been shown to be appropriate.

FUTURE RESEARCH

Future research to clarify the relationship between fluoride exposure at a young age and the development of fluorosis will require prospective cohort studies with representative and sufficiently large samples. Specific goals of this research include the measurement and/or estimation of total fluoride intake in children from birth to age 3 to 4 years who grew up with fluoridated versus non-fluoridated water. The effect of using low-fluoride versus high-fluoride content toothpaste must be estimated in children before age 24 to 30 months in relation to the risk of developing fluorosis and caries. In addition, the degree of tolerance the society has toward mild to moderate fluorosis must be ascertained, as well as the social opinion on the subject of fluorosis compared to the gains in dental health. The urinary fluoride levels should be monitored in randomly selected samples to determine if fluoride ingestion remains within limits, how fluorosis relates to measured urinary fluoride levels, and if urinary fluoride levels are linked to the severity of dental fluorosis that develops.

Clinical Significance

Current evidence is insufficient to support changing the current guidelines regarding fluoride exposure, which stand at 0.05 to 0.07 mg/kg body weight/day. Guidelines should take into account the age of the subject, with a lower upper limit considered for children age up to 2 years compared to those age 3 to 6 years. Esthetic issues regarding fluorosis are significant. Both the dental profession and the public should be involved in deciding whether the risk of fluorosis is worth the gain in dental caries prevention. This determination may vary depending on the specific population making the assessment.

Mejáre I: Current guidance for fluoride intake: Is it appropriate? *Adv Dent Res* 29:167-176, 2018

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OPIOIDS

Prescribing opioids and risk mitigation implementation



BACKGROUND

Opioids are not only responsible for thousands of deaths but also for tens of thousands of opioid-use disorders and unintentional overdoses. Many people who go on to develop opioid use disorders report that their early exposure to opioids was

through a legitimate prescription or one shared by family or friends. Adolescents and young adults, who are particularly at risk, also experience opioids first for a true medical need. Adolescents also engage in a combination of medical and nonmedical uses of opioids, which carries an increased risk of developing

substance use disorder symptoms in adulthood. Dentists prescribe an estimated 12% of the annual immediate-release opioid prescriptions. Most dental patients have unused medication left over from their dental experiences. Despite the risk for misuse and diversion of medication among dental patients, dentists and other health care providers other than those in addiction medicine and psychiatry seldom have sufficient training and systems in place to screen for and address patients with addiction seeking care from them. Data were collected from a national survey of practicing dentists focused on prescribing immediate-release opioids for acute pain and post-procedural care in dental practice situations.

METHODS

A total of 1428 dentists in the National Dental Practice-Based Research Network were randomly selected for inclusion in the survey, which was administered online. Eight hundred twenty-two (58% of those invited) completed the survey. Participants were significantly younger than nonparticipating dentists, more likely to be general practitioners than specialists, and predominantly white men in non-rural general practice where they were either an owner or an employee.

RESULTS

Pain Management Strategies and Risk Mitigation Implementation

Fifteen respondents indicated they never had or had allowed to lapse their Drug Enforcement Administration (DEA) license to prescribe controlled substances. Only dentists with an active DEA license answered the remaining questions about opioid prescribing practices and risk mitigation implementation, for a total of 807 responders.

Ninety-four percent of the dentists included an assessment of current tobacco use, 75% asked about current alcohol use, and 69% surveyed their patients' current illicit drug use. In addition, many assessed patients' history of mental health treatment (72%), history of or current chronic pain status (70%), and history of substance abuse (63%). Just 52% asked about current prescription drug abuse and history of substance abuse treatment. Only 51% of the dentists reported even accessing their state prescription drug monitoring program (PDMP).

Opioid Prescribing and Risk Mitigation Implementation

Specialists were significantly more likely to prescribe only opioids for pain management, particularly those who had oral maxillofacial surgery (OMFS) specialty training, who saw a higher proportion of patients who wanted single visit care, and who saw a higher proportion of patients seeking care only occasionally or for an emergency or problem visit. Alternatively, a higher frequency of prescribing opioids combined with recommendation of nonsteroidal anti-inflammatory drugs (NSAIDs) or acetaminophen for pain management was significantly associated with being a specialist; having endodontist, prosthodontist, or OMFS specialty training;

and having a higher proportion of patients who seek single-visit care or care only occasionally or for an emergency or problem.

When asked about assessing for substance abuse or misuse in the medical history, significant associations were seen with a higher frequency of prescribing an opioid only, an opioid plus recommendation for NSAID or acetaminophen, and OMFS specialty training. The provision of patient education was significantly associated with prescribing opioids only or opioids combined with a recommendation for NSAIDs or acetaminophen less frequently. The use of PDMP use before opioid prescribing was significantly associated with less frequent prescribing of an opioid only, less frequent prescribing of an opioid combined with a recommendation for an NSAID or acetaminophen, and a lower proportion of practice patients seeking care occasionally or for only emergency or problem visits.

DISCUSSION

Most dentists either rarely or seldom prescribe opioids, but a substantial minority of dentists prescribe opioids only or opioids combined with a recommendation for NSAIDs or acetaminophen for at least half of their patients. The characteristics of the practices these dentists are in include specialist situations and having higher volumes of patients at high risk. Most were for immediate-release opioids, including hydrocodone and oxycodone products, which have a high potential for abuse and diversion. In addition, the overall use of the PDMP was low.

Clinical Significance

The most recent statement by the American Dental Association concerning the use of opioids in the treatment of dental pain includes the recommendation to use NSAIDs as the first line of therapy to manage pain and the need for risk mitigation strategies to be implemented consistently when prescribing opioids. Important parts of this process are the gathering of a thorough medical history, consistently assessing the patient and family history of addiction, querying a PDMP database, and counseling patients about their role in preventing the misuse and abuse of these substances. Dentists who prescribe higher volumes of opioids to their patients who are at additional risk are less likely to implement the recommended risk mitigation strategies consistently. Greater efforts are needed to encourage risk mitigation implementation to be practiced more widely.

McCauley JL, Leite RS, Gordan VV, et al: Opioid prescribing and risk mitigation implementation in the management of acute pain. *J AM Dent Assoc* 149:353-362, 2018

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