



Dental hygienists first began administering local anesthesia 40 years ago in the state of Washington, yet there are still six states that prohibit dental hygienists from administering local anesthesia. Dental hygienists are well qualified to provide local anesthesia, which ensures patients can comfortably receive the level of care indicated without unnecessary pain.

The state regulations that govern the administration of local anesthesia can be confusing. A clear understanding of the types of local anesthetic injections used in dentistry is imperative to deciphering state practice acts. Table 1 provides definitions of the most commonly administered injections.<sup>1,2</sup>

## Safety Considerations



Some states limit dental hygienists to administering infiltration injections only. The argument is that infiltration injections are easier to perform and provide a higher level of safety than nerve block anesthesia. A recently published argument against dental hygienists performing nerve block anesthesia stated that intraoral block injections, because they involve injection into main neurovascular bundles of larger areas of the mouth, are far more complicated procedures. Therefore, this type of injection has a greater potential for causing serious problems such as hematoma, permanent or partial paresthesia, stroke, cardiac arrhythmia, and syncope.<sup>3</sup> There are no comparative studies, however, that show infiltration injections are less likely to cause adverse outcomes than nerve block anesthesia. In fact, reports demonstrate that the adverse occurrences following nerve block anesthesia can also happen during infiltration injections.<sup>4-6</sup>

Safety relates more to the overall preparedness and performance of the administrator than the type of injection being used. Numerous studies have assessed the safety of dental hygienists administering infiltration and nerve block anesthesia. Anderson<sup>7</sup> and Lobene<sup>8</sup> reported nominal rates of complications resulting from the administration of local anesthesia by dental hygienists. Lobene reported that out of 19,849 administrations by dental hygienists, only three cases resulted in adverse consequences. Anderson's survey reported that 88% of dental hygienists did not describe any complications when administering local anesthesia. The safety of local anesthesia administration by dental hygienists also has been validated through the lack of disciplinary action. Analyses conducted in 1990 and in 2005 found no complaints reported to state boards or the American Dental Hygienists' Association (ADHA) against dental hygienists for local anesthesia administration.<sup>9</sup>

## State Practice Acts

Forty-four states and the District of Columbia include local anesthesia in their dental hygiene practice acts. Alabama, Florida, Georgia, Mississippi, North Carolina, and Texas have practice acts prohibiting dental hygienists from administering local anesthesia.

Although local anesthesia is delivered worldwide to ensure comfortable patient care, there is a lack of standardized criteria regarding educational requirements, credentialing, and utilization by dental hygienists. Despite being educated and experienced in one state, dental hygienists may not easily be able to transport this training to other states due to varying state regulations.

Supervision of dental hygiene practice—either direct (dentist must be present on site) or general (the dentist need not be present on site)—varies based on location. Furthermore, direct supervision generally means that not only is the dentist present but also capable of responding should an emergency arise. Currently, 38 states require direct supervision of dental hygienists administering local anesthesia while five allow general supervision (Alaska, Colorado, Idaho, Minnesota, and Oregon). Nevada's state dental hygiene statutes do not make a distinction between direct and general supervision.<sup>10</sup>

Despite the overwhelming adoption of local anesthesia delivery by dental hygienists—and demonstrated safety of its use for more than 40 years—four states (Maryland, New York, South Carolina, and Virginia) restrict the use of nerve block anesthesia by dental hygienists. Virginia allows nerve block administration by dental hygienists only on patients 18 years and older.

The biggest obstacle to the portability of local anesthesia skills, as well as general practice licenses, is individual state credentialing policy. Credentialing by examination is required by 27 states, although the basis of this examination varies across the 44 states and can include: successful completion of a written and clinical regional exam, a written-only regional exam, or documented completion of a course provided within a Committee on Dental Accreditation (CODA)-accredited dental hygiene program. Additionally, these courses must be approved by individual state licensing agencies. For example, in order for a dental hygienist to be credentialed for local anesthesia in Maryland, he or she must complete a course with no less than 20 hours of lecture and 8 hours of lab/clinical practice. In Minnesota, the course must include no less than 15 hours of lecture and 14 hours of lab/clinical practice, while in other states, such as Washington, the hours of the course are determined by the educational programs themselves.

## Statute VS Rule



The nature of the authority governing dental hygiene practice is generally statute or regulation. Statutes and regulations are formally written legislation that have governance authority and are issued as legislative law. Statutes declare policy by commanding or prohibiting something. Dental hygiene practice may also be governed by state rules. Rules differ from statutes in that they can be adopted and drafted by a government agency in response to an Administrative Procedure Act or to exercise and delegate authority to a board. These rules have the force of law and impose new duties on the regulated parties but they are not incorporated into legislated definitions of the professional practice act and may be more easily modified by a supervisory agency.

Of the states authorizing the use of local anesthesia by dental hygienists, 27 have professional statutes and 17 have rules. There is no established relationship between the nature of practice authority and the requirement of examination. Portability of licensure is influenced most by hours of education, the range of injection techniques an individual is trained to administer, and previous examination. For state-specific information, see the Local Administration by Dental Hygienists State Chart at [www.adha.org](http://www.adha.org).<sup>10</sup>

## Administration Patterns

Regional and state variation is not limited to regulation, but also by how dental hygienists administer local anesthesia. Dental hygienists practicing in the Western United States report the most frequent use of local anesthesia injections and they are most likely to administer for the entire dental office.<sup>11,12</sup> Review of the data reveals a true West Coast to East Coast phenomenon, in which the regularity of dental hygienists administering local anesthesia decreases from west to east. In addition, dental hygienists practicing within the Western half of the country are more likely to administer nerve block injections than their colleagues in the East. This pattern is likely influenced by the fact that Western states have permitted local anesthesia injection by dental hygienists for the longest period of time; the oldest dates of introduction correspond to the highest utilizations.<sup>11</sup>

A recent study conducted at the University of Pittsburgh found that the type of practice in which a dental hygienist is employed dictates local anesthetic administration utilization (Table 2).<sup>12</sup> The study showed that dental hygienists who worked in periodontal offices administered a greater number of injections than their colleagues in other types of practices. Those working in academic settings provided more field block injections than others surveyed. The study also determined that dental hygienists employed in pediatric dental practices were the least likely to administer local anesthetic injections.

Additional research also demonstrated the variation in anesthetic administration by practice type. In a survey of Minnesota dental hygienists, Anderson found that 47.6% of dental hygienists working in periodontal offices reported administering local anesthesia for three to six patients each week, while 63% of dental hygienists working in general practice administered local anesthesia for one to two patients each



work. These findings are not unexpected because the types of procedures performed, along with the severity of disease encountered by periodontal specialists, usually require more frequent pain control. It is interesting to note that dental hygienists working in the academic environment were the most likely to perform field block injections. This may be attributable either to the need for educators to provide students with a well-rounded injection portfolio or to help students better appreciate the differences between field block injections and infiltration injections.

Using data collected by investigators at the University of Pittsburgh, a new analysis was completed to determine differences in practice type and the administration of local anesthetic to patients being treated exclusively by the dentist (Table 3).<sup>11</sup> In the original report, 58.4% of the respondents who reported administering injections delivered local anesthesia for the procedures in which the dentist was to perform total care.<sup>11</sup> The new evaluation revealed that dental hygienists working in a periodontal setting were the most likely to administer local anesthetic for the dentist's patients followed by public health, general dentistry, academia, and pediatric dentistry. These findings are similar to the frequency of injection type and most likely are a result of patient and practice need.

## Conclusion

The practice of local anesthetic administration by dental hygienists is limited by statutes or rules that apply only to those practicing in that state. Included in these statutes and rules are supervisory authority and injection categories that often differ between states. Limitations on dental hygiene local anesthesia scope of practice may reflect fears of potential injury in the hands of dental hygienists, however, there is no published evidence of an increased incidence of adverse events, regardless of the varying scope of practice in the United States.



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