Economic Impact Analysis
Virginia Department of Planning and Budget

18 VAC 60-20 – Regulations Governing the Practice of Dentistry and Dental Hygiene
Department of Health Professions
July 12, 2006

Summary of the Proposed Amendments to Regulation

The Board of Dentistry (board) proposes to eliminate the requirement for a second person to be in the operatory with the dentist to monitor the patient during the administration of inhalation analgesia.

Result of Analysis

The benefits likely exceed the costs for all proposed changes.

Estimated Economic Impact

The current regulations require that "The treatment team for anxiolysis or inhalation analgesia shall consist of the dentist and a second person in the operatory with the patient to assist, monitor and observe the patient." Anxiolysis is defined as "the diminution or elimination of anxiety through the use of pharmacological agents in a dosage that does not cause depression of consciousness." *Inhalation analgesia* is defined as "the inhalation of nitrous oxide and oxygen to produce a state of reduced sensibility to pain without the loss of consciousness."

The board proposes to no longer require that a second person be in the operatory with the patient to assist, monitor and observe the patient for inhalation analgesia. The proposed regulations do continue to require that dentists who utilize inhalation analgesia ensure that there is continuous visual monitoring of the patient to determine the level of consciousness.

Prior to 2005 the board had not required that a second person be in the operatory to assist, monitor and observe the patient. According to the Department of Health Professions (department), this requirement became effective June 29, 2005 with the intent to provide an extra

measure of patient safety and to protect the dentist from charges of improper conduct while the patient was under the influence of nitrous oxide.

Subsequently dentists have overwhelmingly contended that an additional person in the operatory is not necessary for patient safety. Testimony to the board pointed out that nitrous oxide has been administered safely for decades without additional monitoring. The dentist or hygienist performing a dental procedure would be observing the patient throughout that procedure, and once the administration of nitrous oxide is discontinued, the patient can recover from its effects very quickly. Peer-reviewed research articles such as those by Kanagasundaram, Lane, Cavalletto, Keneally, and Cooper (2000), and Ekbom , Jakabsson, and Marcus (2005), and Frampton, Browne, Lam, Cooper, and Lane (2003) support the contention that the short-term administrating of nitrous oxide is a low-risk procedure for patients.

Yagiela (1991) points out that bone marrow depression has been found in patients administered nitrous oxide for extended periods of time and that retrospective surveys of dental and medical personnel have linked occupational exposure to nitrous oxide with a number of health problems. Yagiela's review of animal and human studies indicate that the toxic effects of nitrous oxide are concentration- and time-dependent. Thus, dental patients are unlikely to be at great risk. Dental staff should be wary of prolonged exposure, though.

According to the department, many dentists do not employ an assistant who could serve as a second person in the operatory with the patient to assist, monitor and observe the patient for inhalation analgesia. The cost of hiring someone for this purpose apparently is large enough to discourage the use of inhalation analgesia. Several dentists have stated to the board and department that the rule has caused them to quit offering their patients nitrous oxide; others may be continuing the practice without a second person to observe or using untrained office staff as monitors. Some potential dental patients could postpone or neglect their dental care or refuse to have a needed dental procedure if there is reduced access to nitrous oxide. Thus, eliminating the requirement that a second person be in the operatory with the patient to assist, monitor and observe the patient for inhalation analgesia will likely produce significant benefits. Dentists would incur lower costs, inhalation analgesia would be available more frequently, and an undetermined number of patients will be more likely to undergo procedures beneficial to their dental health.

Given the low risk of nitrous oxide administration and the apparent low incidence of problems with one individual monitoring the patient rather than two, the benefits of eliminating the requirement that a second person be in the operatory with the patient to assist, monitor and observe the patient for inhalation analgesia will likely exceed the costs of a minimal increase in health risks.

Businesses and Entities Affected

The proposed regulations affect the Commonwealth's 5,567 licensed dentists, their staff, and their patients.[1] All or most dental practices qualify as small businesses.

Localities Particularly Affected

The proposed regulations do not disproportionately affect particular Virginia localities.

Projected Impact on Employment

There may be a small reduction in employment due to the proposed elimination of the requirement that a second person in the operatory with the patient to assist, monitor and observe the patient for inhalation analgesia.

Effects on the Use and Value of Private Property

The proposed amendment will likely result in more frequent use of inhalation analgesia by dentists. The value of some practices may moderately rise.

Small Businesses: Costs and Other Effects

All or most dental practices likely qualify as small businesses. The proposed amendment will not increase costs.

Small Businesses: Alternative Method that Minimizes Adverse Impact

All or most dental practices likely qualify as small businesses. The proposed amendment will not increase costs.

References

Ekbom K, Jakabsson J, Marcus C. "Nitrous oxide inhalation is a safe and effective way to facilitate procedures in paediatric outpatient departments," *Archives of Disease in Childhood* 2005;90:1073-1076.

[1] Figure provided by the Department of Health Professions.

Frampton A, Browne GJ, Lam LT, Cooper MG, Lane LG. "Nurse administered relative analgesia using high concentration nitrous oxide to facilitate minor procedures in children in an emergency department," *Journal of Emergency Medicine*, Sep 2003; 20: 410 - 413.

Kanagasundaram, SA, Lane, LJ, Cavalletto, BP, Keneally, JP, Cooper, MG. "Efficacy and safety of nitrous oxide in alleviating pain and anxiety during painful procedures," *Archives of Disease in Childhood* 2001; 84: 492-495

Yagiela JA. "Health hazards and nitrous oxide: a time for reappraisal," *Anesthesia Progress* Jan-Feb 1991; 38 (1):1-11.

Legal Mandate

The Department of Planning and Budget (DPB) has analyzed the economic impact of this proposed regulation in accordance with Section 2.2-4007.H of the Administrative Process Act and Executive Order Number 21 (02). Section 2.2-4007.H requires that such economic impact analyses include, but need not be limited to, the projected number of businesses or other entities to whom the regulation would apply, the identity of any localities and types of businesses or other entities particularly affected, the projected number of persons and employment positions to be affected, the projected costs to affected businesses or entities to implement or comply with the regulation, and the impact on the use and value of private property. Further, if the proposed regulation has adverse effect on small businesses, Section 2.2-4007.H requires that such economic impact analyses include (i) an identification and estimate of the number of small businesses subject to the regulation; (ii) the projected reporting, recordkeeping, and other administrative costs required for small businesses to comply with the regulation, including the type of professional skills necessary for preparing required reports and other documents; (iii) a statement of the probable effect of the regulation on affected small businesses; and (iv) a description of any less intrusive or less costly alternative methods of achieving the purpose of the regulation. The analysis presented above represents DPB's best estimate of these economic impacts.