

Use of sedation and general anesthesia in pediatric dental care

English summary

Une production de l'Institut national
d'excellence en santé
et en services sociaux (INESSS)

Direction des services de santé et de l'évaluation
des technologies

SUMMARY

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Background

In certain situations, providing pediatric dental care may require the use of behaviour management techniques to maintain or establish communication with the child, reduce his or her anxiety and promote his or her cooperation, and thus enable the dentist to provide the required oral and dental care in a safe and effective manner. These techniques can be grouped into two categories: nonpharmacological techniques (e.g., positive reinforcement and distraction) and pharmacological techniques (e.g., nitrous oxide sedation).

In most cases, the use of basic nonpharmacological techniques (e.g., the "tell-show-do" technique) or nitrous oxide for sedation will be sufficient for achieving behaviour management. In other situations, more advanced behaviour management techniques, such as protective stabilization or general anesthesia, will be required. The appropriate techniques are chosen according to the child's needs after an assessment by the dentist, but also according to the dentist's expertise and skills.

In pediatric dentistry, minimal sedation, mainly by nitrous oxide inhalation, and general anesthesia are usually administered during caries treatment. Minimal sedation reduces the patient's anxiety without significantly altering his or her state of consciousness, while general anesthesia induces a state of unconsciousness. In Québec, dental treatment under minimal sedation is usually administered by general dentists and pediatric dentists in private practice, but sedation is not covered by the public plan. General anesthesia, which requires the presence of an anesthesiologist, is available in hospitals and in outpatient settings (private anesthesia clinics) and is generally covered by the public plan for children under 10 years of age (if the dental care is covered as well).

In recent years, some in Québec's health-care system have raised the possibility of an increased in-hospital use of general anesthesia for procedures such as pediatric dental care. Concerned about this issue, the Ministère de la Santé et des Services sociaux (MSSS) asked the Institut national d'excellence en santé et en services sociaux (INESSS) to provide a synthesis of the scientific knowledge and guidelines concerning the use of sedation and general anesthesia in pediatric dentistry. The MSSS also asked the INESSS to search medico-administrative databases in order to provide a brief description and verify certain issues that have been raised regarding the use of general anesthesia in pediatric dental care.

Methods

INESSS conducted a review of the scientific literature over the past 10 years regarding the indications/contraindications, the efficacy and risks associated with sedation (particularly minimal) and general anesthesia, and the impact of sedation and general anesthesia on the quality of life and the care experience of patients and their parents. A

synthesis of recommendations and guidelines on the requirements for the safe use of sedation and general anesthesia in pediatric dentistry was produced, based on practice guides found on relevant websites. Consultation with experts in this field provided a better understanding of the regulatory framework and practice context in which the use of the various behavioural management techniques in pediatric dentistry takes place. A brief description of the use of general anesthesia in pediatric dental care was prepared from data extracted from clinical and administrative databases for the period from 2010 to 2018 and from information gathered from institutions in Québec's health-care system.

Results

Few guidelines or other practice guides focus on the indications for and the efficacy of the various sedation modalities or general anesthesia in dentistry. The literature and the experts consulted agree that it is important to opt for the least invasive behavioural management technique for providing the required dental care, based on the needs and profile of the child being treated and guided by the dentist's clinical judgment and expertise. Therefore, when minimal sedation is indicated and the child shows the necessary cooperation, the dentist will choose nitrous oxide sedation. General anesthesia will only be considered when the needs are more complex, if sufficient patient cooperation cannot be obtained and if the other behavioural management modalities are not an option.

The risks associated with sedation, like those associated with general anesthesia, are variably reported in the literature, but they should be assessed by health professionals according to the magnitude of the desired effect. The literature does not permit a clear position to be taken regarding an association between general anesthesia and significant adverse effects (neurodevelopmental damage and death). All the potential risks can be adequately managed with appropriate supervision of the practice to ensure safe conditions for the use of the different modalities in the sedation-general anesthesia continuum. Apart from a complete patient assessment, these conditions, which are closely related, are as follows:

- up-to-date training for the dentist that is tailored to the technique used;
- up-to-date cardiopulmonary resuscitation training for the dentist and his or her team;
- patient monitoring appropriate for the technique used during and after the procedure;
- the implementation of clear clinical protocols, including for the management of complications and emergency situations;
- the presence of a well-trained team that is specifically capable of interdisciplinary collaborative practice;
- the creation of a reporting mechanism and a registry of adverse events that occurred during the use of the different sedation and general anesthesia modalities;
- the implementation of continuous quality improvement procedures.

In Québec, the use of sedation and general anesthesia is governed by statutes and various regulations.

As regards quality of life and the dental care experience under sedation or general anesthesia, the literature indicates that nitrous oxide or general anesthesia, when required, can be relatively well accepted and satisfactory to parents and their children, provided the appropriate support is available.

Lastly, the analysis of the provincial clinico-administrative data did not show a marked upward trend in the in-hospital use of general anesthesia for pediatric dental care. Although a number of Québec hospitals provide access, albeit limited, to operating rooms for dentists, many children under 10 years of age (whose health is generally not medically compromised) are treated in the few private general anesthesia clinics that offer this service on an outpatient basis.

Conclusion

The Canadian and international practice guidelines and other practice guides identified focus to a large extent on the conditions for an appropriate and safe use of sedation and general anesthesia. The Ordre des dentistes du Québec is currently working on several projects concerning the regulation of the use of sedation modalities by its members, including a discussion on continuing education and the creation of an adverse effects registry.

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