



POSITION STATEMENT ON THE USE OF GENERAL ANAESTHESIA (GA) IN PAEDIATRIC DENTISTRY

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This position statement has been developed by the Arabian Academy of Paediatric Dentistry's Clinical affairs committee to guide paediatric dentists and dental professionals, working in the Arabian region, on the appropriate use of General Anaesthesia (GA) in Paediatric Dentistry. This position statement should be used in conjunction with other Arabian Academy of Paediatric Dentistry's guidance documents.

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Introduction:

The Arabian Academy of Paediatric Dentistry (ArAPD) has developed a position statement and clinical practice recommendations regarding the use of General Anaesthesia (GA) in paediatric dentistry in order to guide dental practitioners in the delivery of safe and effective dental treatment under GA. A summary of recommendations is produced based on the best available evidence and is intended to act alongside other ArAPDs' guidance documents.

The aim of paediatric dentistry is to provide high-quality dental care for both healthy and special needs children and create an encouraging attitude towards dental treatment (AAPD, 2020a).

Delivering safe, effective pain control methods is a key factor enabling the dental practitioner to perform the dental work efficiently. This comprises four overlapping categories:

- Non-Pharmacological Behavioural Management Techniques (NPBMTs).
- Local Anaesthesia (LA).
- Conscious Sedation (CS)/ Moderate Sedation (MS).
- General Anaesthesia (GA).

(ASA, 2002; Davies et al., 2008)

Conscious sedation/moderate sedation or general anaesthesia are alternatives that can be used when non-pharmacological behaviour management techniques fail to control the child's behaviour (AlKaraawi, 2019)

Literature review:

1. Indications for the use of GA in children

Several factors can affect the decision to consider dental treatment under GA in paediatric dentistry. These include:

- The child's cooperation and anxiety levels.
- The complexity and the difficulty of the dental procedure.
- The child's medical condition.

Some of the scenarios that suggest the need for treatment under GA would include the following:

- Dental conditions requiring immediate and urgent intervention whereby treatment under local analgesia or sedation is deemed not possible (for example, dental trauma/severe dental infection).
- Patients unable to cooperate with treatment under local analgesia or conscious sedation (due to high anxiety levels, very young age, or dental/medical/mental condition).
- Patients experiencing acute infection, anatomical differences, or allergic reaction, rendering local anaesthesia ineffective (for example, LA allergy).
- Complex surgical or traumatic procedures (including complex/multiple extractions).

- The need for extensive dental treatment in more than one quadrant.
- Medical conditions dictating treatment under controlled environments such as GA.

(Abdo et al., 2022; AAPD, 2020a; Davies et al., 2008; Ba'akdah et al., 2008; Jamjoom et al., 2001).

2. Benefits of GA

General anaesthesia is a helpful method in carrying out the dental treatment that cannot be achieved in the dental office for very young, anxious, and special health care needs patients. It can also enhance the child's positive behaviour in the dental office; there is some evidence that treatment under GA before the age of three leads to more positive behaviour in future routine office visits. Improving the child's quality of life was also an evident outcome (AAPD, 2020a; Farsi et al., 2018; Knapp et al., 2017; Acs et al., 2001).

Moreover, many parents viewed dental GA as an acceptable and satisfactory method of treatment to address their child's oral health needs, as all the treatment can be carried out in a single session (Goodwin et al., 2015). Comprehensive dental care under GA is often more efficient and cost-effective than repeated dental visits for restorative care utilizing other sedation methods (Lee et al., 2001). Moreover, restorations done under GA were reported to be of higher quality than those performed under sedation (Al-Eheideb and Herman, 2003; Eidelman et al., 2000).

Governmental services and charity organizations should be efficiently able to provide free or subsidised treatment under GA for underprivileged, dentally affected children or children with special health care needs.

3. Medically compromised children

When treating medically compromised children, collaborative care should be provided by both the paediatric dentist and the paediatrician. The paediatrician's prescription should be written and cover all pre-operative, intra-operative, and post-operative orders and care procedures (Landes and Clayton-Smith, 1996; Harrison and Roberts, 1998). A child with a severe underlying medical condition in categories ASA III or ASA IV should be admitted to a paediatric ward, and clinical care should be shared with a paediatric team (Davies et al., 2008).

4. Risks of GA

According to the latest updates in the Food and Drug Administration (FDA) statement 2017 and the FDA partnership with the International Anaesthesia Research Society (IARS) called Strategies for Mitigating Anaesthesia-Related neuroToxicity in Tots (SMARTTots) and the most recent research published in 2019, it was confirmed that there was no observed cognitive change in children who had undergone GA or regional anaesthesia in surgical procedures that lasted less than one hour (McCann et al., 2019).

However, the FDA stated that lengthy or multiple GA procedures might negatively impact the brain development of children younger than three years of age. Accordingly, comprehensive

treatment under GA should be performed in the least possible time frame to avoid adverse effects on the child (FDA, 2017; Davidson and Sun, 2018).

5. Clinical setting and staffing standards

The GA session should be carried out in a hospital setting (Davies et al., 2008). All personnel involved in the full mouth rehabilitation case should be highly qualified to perform medical, dental, and post-operative care. They should be able to do so with the highest standards of care in the least possible time in a synchronised teamwork performance (Malhotra, 2008).

The treating paediatric dentist should be qualified to perform full mouth rehabilitation under GA after finishing an accredited postgraduate training program or an equivalent local society well-structured program. An interdisciplinary team should be assembled and ready to deliver the best care for the patient in the GA session whenever needed (AAPD, 2020b).

On the other hand, the treating anaesthetist should be highly qualified and well-trained in nasotracheal intubation, especially for children with or without special healthcare needs (Hall and Shutt, 2003; Chauhan and Acharya, 2016). Effective communication between the dentist and the anaesthetist should be continuously maintained before, during, and after the procedure to ensure high-quality care (Davies et al., 2008).

6. Preoperative assessment and instructions

Patients considered for full mouth rehabilitation under GA should be thoroughly evaluated before hospital admission (ADA, 2016; Davies et al., 2008). This includes:

- Clinical and radiographic evaluation (when applicable).
- Discussion of the proposed treatment plan and alternatives with the guardians.
- Written informed consent to be filled in by legal guardians, signifying their awareness of the proposed plan and possible risks.
- Consultation with medical specialists as indicated.
- Preoperative laboratory tests and any other special tests in communication with the anaesthetist and relevant medical staff.
- Delivery of preoperative and postoperative instructions. (Coté and Wilson, 2019; Ramazani, 2016).

7. Premedication

Premedication was found to offer a smooth child-parent separation during patient transfer to the operating room. However, it can lead to prolonged recovery postoperatively. Therefore, a joint decision regarding the need for premedication should be made based on the patient's medical history, cooperation level, anxiety level, and treatment needs (Ba'akdah et al., 2008; Malhotra, 2008; Hutchinson, 2020).

8. Use of supplemental LA in conjunction with GA

It was established that LA as a supplement during the GA session would be of considerable value because it improved haemorrhage control and reduced postoperative pain ([Atan et al., 2004](#); [Needleman et al., 2008](#)). Also, when administered in communication with the anaesthetist, it was found that it improved the intraoperative physiologic parameters, decreasing the need for more doses of inhalation gases while maintaining a stable level of analgesia ([Townsend et al., 2014](#)).

9. Procedures and their quality

When planning for comprehensive dental treatment for uncooperative children under GA, the operator should consider using evidence-based treatment options, which are proven to result in higher levels of success, thus minimizing the need for future re-treatments.

10. Discharge

The dental practitioner, the anaesthetist, and the recovery staff should work in collaboration to permit the child's discharge. The child should be oriented, alert, and stable before being discharged. Upon discharge, the patient should be accompanied by a legally competent adult after thoroughly explaining postoperative instructions ([Malhotra, 2008](#)).

11. Repeated GA

Repeated GA needs to be avoided as it has undesirable side effects such as emotional effects on children, its own risks, and cost ([Davies et al., 2008](#)). Comprehensive treatment planning for children requiring dental treatment under GA is essential to avoid the need for repeated GA ([Kakaounaki et al., 2006](#); [Davies et al., 2008](#)). Children requiring treatment under GA need enhanced preventive advice and measures to prevent the development of new dental caries and the need for repeated treatment under GA ([Almeida et al., 2000](#); [Kakaounaki et al., 2006](#)). Recall appointments following the GA decrease the likelihood of developing new dental disease, thus needing further treatment ([Jamjoom et al., 2001](#); [König et al., 2020](#); [Abdo et al., 2022](#)).

Recommendations:

The ArAPD:

- Recognises GA as an acceptable treatment modality to carry out comprehensive dental treatment safely and effectively, when other modalities are inapplicable.
- Recommends the use of GA in paediatric dentistry, once indicated, depending on the child's medical condition, cooperation level, and anxiety level as well as the dental procedure's complexity and difficulty.
- Encourages governmental services to provide free or subsidised treatment under GA, particularly for children with special health care needs and those unable to afford such services.
- Emphasises that effective communication and collaborative care should be provided jointly by the medical and dental teams involved in the child's care.
- Emphasises on the essential need for carrying out the GA session in a hospital setting by a qualified medical and dental teams.
- Highlights the importance of thorough evaluation prior to treatment under GA by appropriately trained and qualified practitioners.
- Emphasises that pre-treatment examination should be performed by a well-trained and qualified dental practitioner. The practitioner should ideally be a paediatric dentist or a practitioner who underwent structured paediatric dental training with specific training on management of patients under GA.
- Advises that the legal guardian should be informed, in writing, of the proposed treatment plan, all possible alternatives, all associated risks, all benefits, and all pre and post operative instructions prior to treatment.
- Advises that written consent should be signed by a well-informed guardian according to local policies.
- Recognises that some children may require premedication prior to anaesthesia and that the decision to use premedication should be jointly made by the anaesthetist and dental practitioner.
- Emphasises the importance of carrying out all the necessary treatments under GA in the least possible time to reduce any unnecessary short- and long-term complications and the need for repeated dental GA sessions.
- Acknowledges that the use of LA in conjunction with GA can reduce haemorrhage and improve pain control.
- Advises that patient discharge is based on specific criteria and the child should be accompanied by a responsible adult who is fully aware of the post-operative instructions.
- Highlights the importance of providing enhanced preventive measures and arranging regular recall appointments following the GA to prevent future dental decay and the need for repeat GA treatment.

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