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Pedodontics

1 - COVID 19: A TO Z MANUAL FOR A PEDIATRIC DENTIST - AN INFORMATIVE REVIEW

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ABSTRACT

The end of the pandemic shall mark the beginning of new methods of approach and management in Pediatric dentistry. It is precisely during the COVID-19 pandemic period that an adequate management of the oral health of children becomes a concern of crucial importance by implementing specific protocols relating to the pathologies of the oral cavity that normally do not represent an emergency and those clinical situations that fall within the category of Pediatric dental emergencies. Pediatric dentistry has a unique position in the coronavirus pandemic. The American Association of Pediatric Dentistry (AAPD) regularly updates about treatment protocol. Routine dentistry should be deferred so as to minimise the risk to patients, staff and the dentist whereas, any patient requesting urgent dental care should first be triaged on telephone. Opportunities to promote preventive dental behaviours should be considered.

Key words: COVID -19, Pediatric dentistry, infection control

INTRODUCTION

Recent outbreak of extreme acute respiratory syndrome coronavirus 2 (SARS-CoV-2) along with its related coronavirus disease has infected global population and has caused serious public health concerns.¹ Coronavirus is prevalent in nasopharyngeal passage and salivary secretions of affected patients. Spread is predominantly thought to be respiratory droplet/contact in nature.

It is precisely during this pandemic period that an adequate management of the oral health of children becomes crucially important by implementing specific protocols relating to pathologies of oral cavity that normally represent as non-emergency and those clinical situations that fall within the category of Pediatric dental emergencies. The main objective is to limit spread of infection and avoid onset of cross-infection.

Usually individuals between 25 and 89 years of age are affected with slight predilection for males; however, it cannot be generalized.¹ A lower incidence has been reported in children which might be due to the fact that children are cared for, which lowers the risk of exposure to infection. Other possible reasons can be immature ACE 2 (Angiotensin Converting Enzyme 2) receptors, presence of antibodies to different viruses especially in winter and a developing immune system which reacts differently to virus as postulated by Dong Y et al.²

As no definite treatment is available for COVID-19, it is highly recommended that preventive steps be taken to lower risk of transmission. Frequent hand washing for at least 20s with soap and water, use of hand sanitizers (with at least 60% alcohol), avoid touching mucosal surfaces (mouth, nose, eyes), practicing proper cough etiquette, wearing face mask (if symptomatic), limited exposure to affected people and maintaining safe distance of at least 2 m is suggested.³

Dental procedures involve close contact between the dentist and the patient, hence aerosols generated during procedure from body fluids of the patient like saliva and/or blood can cause potential risk of infection to dentist as well as assistant. An article in the New York Times reported that dentists are always at higher risk of SARS-CoV-2 infection.⁴ Therefore it becomes imperative that guidelines and protocols be formulated for effectively and efficiently handling patients and minimizing risk of transmissions.

Children may act as asymptomatic carriers of the virus. Various dental organizations have stated that only emergency dental procedures be performed^{5,6,7} and Pediatric dentistry stands no different. The American Association of Pediatric Dentistry (AAPD)⁸ regularly updates about treatment protocol. The AAPD has advised Pediatric dentists to postpone all elective procedures but continue emergency or urgent care. They have also suggested to postpone elective general anaesthesia cases.

Symptoms in children

Children present similar symptoms as adults but in milder form. The clinical symptoms of COVID-19 as reported and collated, include dry cough typically followed by fever, trouble breathing, fatigue.⁹

Because of prolonged incubation period (2 to 14 days)⁹ infants may be asymptomatic or have mild, non-specific symptoms. Consequently, every child and parent should be regarded as potential COVID-19 carriers unless otherwise proven.

Routes of Transmission

The two modes of transmission include (1) direct transmission (through coughing, sneezing, and inhalation of droplets), (2) contact transmission (through nasal, oral, and ocular mucosa).¹⁰ Conjunctival sample analysis revealed that ocular exposure is an effective method of transmission.¹¹ Further investigations are needed to confirm aerosol and faecal-oral transmission. Virus transmission is also likely via contact and fomites.¹⁰

In dental clinics the key concern is transmission of infection through droplets and aerosol. Dental handpieces that use high-speed gas to pump with flowing

screening questions includes: previous reference to a person with a confirmed or suspected COVID-19 diagnosis, recent history of travel to any region of elevated COVID-19 occurrence or any symptoms like respiratory illness, fever and/or cough.¹³

An affirmative response to any of the 3 questions should cause doubt, and elective dental treatment should be avoided for at least 2 weeks.

Patient screening for dental management

When the child arrives in the dental operator with parent, detailed medical history format, COVID-19 screening questionnaire and emergency questionnaire assessment has to be completed by the parent.

Child's body temperature should be measured with a noncontact thermal scanner/ camera with thermal infrared sensors. Both child and parent should be asked to wear operating mask and follow proper respiratory hygiene.¹⁴

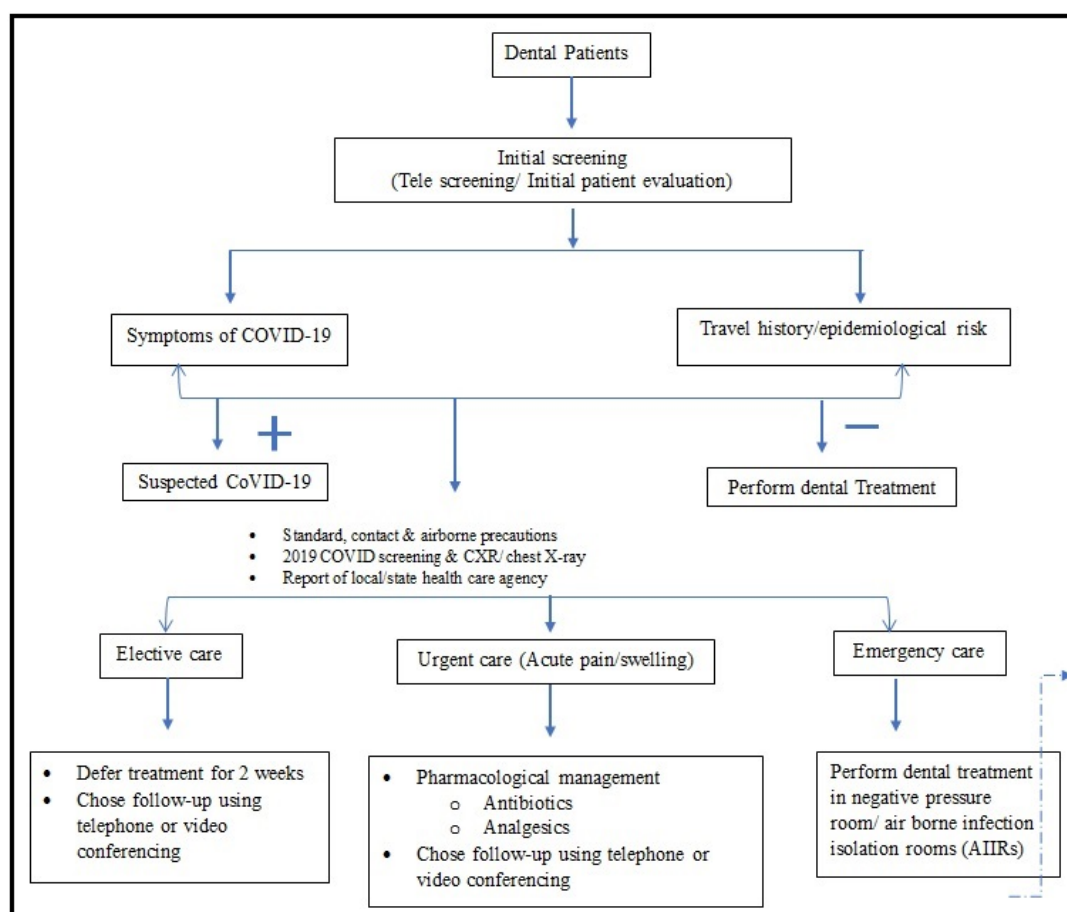


Figure 1: An overview of patient screening for COVID-19 for dental management

Specific dental treatment management

During the pandemic, no routine dentistry should be provided to children.¹⁵ Any patient requesting urgent dental care should be triaged first on telephone and send clinical images to dentist. Access to general anaesthesia for foreseeable future should be reduced significantly.

The conditions below require immediate Pediatric dental treatment:¹⁶

- A swelling prone to/ compromising swallowing and/or breathing, inducing trismus or spreading to eye, or severe oral/ facial swelling with associated pyrexia.
- Traumatic dental injury that can result in a complex permanent dentition injury (permanent tooth avulsion, severe luxation, crown root fracture, complicated crown fracture)
- Traumatic dental injury to primary dentition (exposure to pulp or severe luxation such that mobility of the tooth)
- Uncontrolled gingival bleeding, which failed to respond to self-care.
- Severe dental pain (irreversible pulpitis) that has not reacted to over the counter analgesics and causes difficulty in eating and sleeping

For immediate care under GA following children should be given priority in future¹⁶



- Children whose poor dental health is impacting on, or is expected to impact on, their medical health
- Children with special health care needs, where dental pain results in self-injurious or other disruptive or detrimental behaviors

Pediatric patients, in particular, may be exposed to increased risks of dental neglect during lockdown.

Diagnosis	Primary management	Secondary management
Symptomatic irreversible pulpitis Symptomatic apical periodontitis	Pain management <ul style="list-style-type: none"> • 1st line: Ibuprofen 600mg + Acetaminophen 325-500mg • 2nd line: Dexamethasone 0.07-0.09mg/kg Consideration for supplementation with long acting local anaesthetic- 0.5% Bupivacaine for immediate pain relief	Full pulpotomy
Avulsion/ Luxation	If tooth is replanted, follow pain management protocol: Pain management- dependent on age <ul style="list-style-type: none"> • 1st line: Ibuprofen 600mg + Acetaminophen 325-500mg 	If tooth is not replanted, replant and follow IADT guidelines as best as possible
Tooth fracture resulting in pain	Pain management: <ul style="list-style-type: none"> • 1st line: Ibuprofen 600mg + Acetaminophen 325-500mg 	Vital pulp therapy
Trauma involving facial bones	Refer to oral and maxillofacial surgery	

Figure 2: Recommendations for dental emergency management during COVID-19 pandemic (Adopted from: Ather A, Patel B, Ruparel NB, Diogenes A, Hargreaves KM. Coronavirus Disease 19 (COVID-19): Implications for Clinical Dental Care. J Endo. 2020;46(5):584-595)

Management of orodental pathologies that do not represent an emergency¹³

- Deciduous/permanent teeth affected by previous carious lesions, treated with temporary dressings- advice parents to keep cavity-free of food debris, avoid hot/cold foods that could trigger onset of painful symptoms
- Delayed exfoliation of deciduous teeth along with simultaneous eruption of corresponding permanent tooth- advice parents to encourage child to chew on hard foods such as raw fruit/vegetables
- Eruptive gingivitis of the permanent first molar- advice parents to use cleaning swabs that help to remove food debris between tooth and gum, rinsing with anti-inflammatory mouthwashes alternating during the day with local chlorhexidine antiseptic sprays or gels.

Management of children undergoing orthodontic treatment¹³

- Removable orthodontic appliance- advice parents to maintain hygiene measures before inserting appliance into oral cavity.
- Fixed orthodontic devices- it is advised to temporarily suspend activations in order to avoid carrying out incongruous maneuvers that can facilitate detachment of the appliance.
- Fixed multi-bracket therapy- if child reports a feeling of discomfort and puncture on gum, advise parents to manually reposition the arch by sliding it towards the teeth. If a bracket decements from the tooth surface, the parent can reposition it manually, postponing the re-cementation.

Standard precautions for Pediatric dentists

Standard primary protection	Disposable work cap; disposable surgical mask; work clothes with white coat; protective goggles or face shields and disposable latex or nitrile gloves
Secondary or advanced protection	Disposable cap, disposable surgical mask, protective goggles, face shield, white work coat with disposable or external surgical insulation clothing and disposable latex gloves
Tertiary or enhanced protection (while treating a suspected or confirmed patients with COVID-19 infection)	A patient with suspected or confirmed infection with should not be treated, in the unlikely that such event happens, a paediatric dentist cannot avoid close contact. Wear lab coat with an external disposable protective suit, disposable caps, protective goggles, face shields, disposable surgical masks, disposable latex gloves and waterproof shoe covers.

For extra-oral imaging such as orthopantomogram (OPG) radiography or cone-beam computed tomography (CBCT) may be used to prevent cough or gag reflexes that arise during intraoral imaging. During Pediatric restorative/endodontic treatment, rubber dam must be used. Surface sanitization should be performed with 62–71% ethanol, 0.5% hydrogen peroxide, or 0.1% (1 g / L) sodium hypochlorite for each patient's visit. A dry atmosphere should be maintained to minimize spread of the 2019-nCoV.^{17,18}

CONCLUSION

The end of pandemic shall mark the beginning of new methods of approach and management in Pediatric dentistry. Remote education of parents must be considered both as regards to the general preventive measure for oral health, and as home management of milder oral pathologies for which direct intervention of Pediatrics dentist is not necessary or can be postponed. It is important to identify incentives for improving healthy dental behaviours. Minimal invasive procedures should be used which reduce or eliminate emission of aerosols during the pandemic as well as in future when restrictions may ease.

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