

PEDIATRIC DENTIST'S ROLE IN THE MANAGEMENT OF ORAL IMPLICATIONS WITH CHEMOTHERAPY



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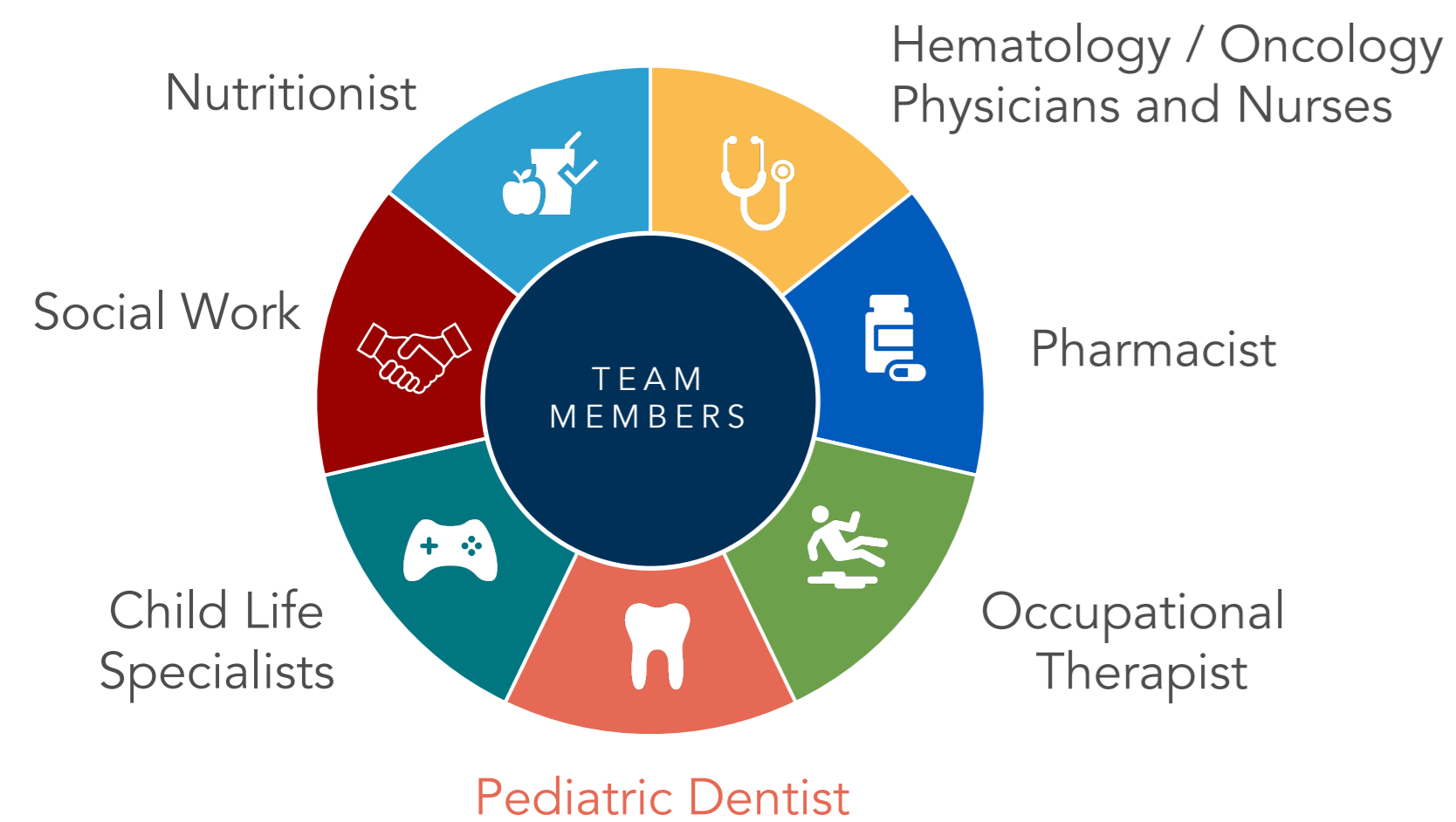
ABSTRACT

Chemotherapy and radiation therapy have decreased the mortality of patients undergoing such therapies. However, there are sequelae to cancer therapy that comes with many oral manifestations. These treatments can cause short- and long-term sequelae which can affect patients' overall quality of life. The necessary oral and dental care prior to initiation of immunosuppression and medically necessary treatment during and after immunosuppression will be discussed. An aim of this review is to isolate and describe the oral side effects arising from immunosuppressive therapy and focus on the pediatric dentist's contribution to patient care. Commonly associated acute and chronic oral complications of chemotherapy include mucositis, pain, xerostomia, opportunistic infection, dental caries, and intraoral hemorrhage. As pediatric dentists, we have a uniquely important opportunity to individualize care and incorporate a multidisciplinary approach to address these complications through improving oral health outcomes by working with physicians, social workers, dietitians, and occupational therapists.

METHODS

Online medical databases were reviewed containing information regarding the dentist's role in management of patients undergoing chemotherapy.

INTERPROFESSIONAL CARE



* Our role as a pediatric dentist is to consult with your interprofessional medical team members to create an individualized patient care plan that addresses your patients needs.

PEDIATRIC DENTIST PROCESS

MEDICAL HISTORY

- Underlying disease including cancer: type, stage, treatment protocol, medications, prognosis
- Hematological status – CBC (complete blood count)
- Immunologic status
- Indwelling venous access line
- Coagulation status

DENTAL ASSESSMENT

- Past dental history
- Intraoral/extraoral examination and radiographic evaluation to be completed at least 1 month prior to the start of immunosuppressive treatment
- Oral hygiene assessment
- Prior to treatment recommendations, pediatric dentists need to communicate with the hematology/oncology team regarding patient's hematologic status and risks of transient bacteremia

HEMATOLOGICAL CONSIDERATIONS	Absolute Neutrophil Count	Platelet Count
	<ul style="list-style-type: none"> • > 2,000 mm³ : no need for antibiotic prophylaxis • 1,000 to 2,000/mm³ : clinical judgment based on patient's health status and planned procedures 	<ul style="list-style-type: none"> • <60,000/mm³ : Defer elective treatment and avoid invasive procedures when possible • When dental treatment is required, complete treatment in a hospital setting

PREVENTION STRATEGIES

TREATMENT PROTOCOLS

PULP THERAPY (PRIMARY TEETH) <ul style="list-style-type: none"> • Extract pulpally involved teeth • Clinically and radiographically asymptomatic pulpally treated teeth should be monitored (2) 	ENDODONTIC TREATMENT (PERMANENT TEETH) <ul style="list-style-type: none"> • Symptomatic nonvital permanent teeth should receive root canal treatment 1-week before immunosuppression • Asymptomatic nonvital permanent teeth can be delayed until the patient is stable
EXTRACTIONS <ul style="list-style-type: none"> • Extractions performed 3 weeks prior to immunosuppression • Extracted teeth with documented infection should have antibiotics administered for 1-week post-operatively (2) 	ORTHODONTIC APPLIANCES AND SPACE MAINTAINERS <ul style="list-style-type: none"> • Patients with poor oral hygiene, fixed appliances should be removed prior to immunosuppression • Patients with good oral hygiene, orthodontic appliances can be left if they are not irritating to the soft tissue (2)
EXFOLIATING TEETH <ul style="list-style-type: none"> • Primary teeth that are mobile due to exfoliation can be left to exfoliate naturally (2) 	

EFFECT ON ORAL HEALTH

SEQUELAE

- Microdontia
- Root disturbances (conical shaped roots, early apical closure)
- Crown disturbances (size, shape, enamel hypoplasia, pulp chamber abnormalities)
- Tooth agenesis
- Eruption of teeth can be delayed
- Impacted maxillary canines
- Reduced mandibular length, reduced alveolar process height, and reduced vertical growth of the face

* Craniofacial and dental development affect children most predominately when immunosuppressive treatment is started in children below age 6

SHORT TERM SEQUELAE

Effect On Oral Health Secondary To Chemotherapy	Treatment Strategies
Xerostomia	<ul style="list-style-type: none"> • Sugar-free chewing gum • Saliva substitutes • Drinking water frequently • Alcohol-free oral rinse • Placing a humidifier in the patient's bedroom
Dental Caries	<ul style="list-style-type: none"> • Low cariogenic diet • Advised about the high cariogenic potential of sucrose-sweetened medications
Mucositis	<ul style="list-style-type: none"> • Sodium bicarbonate mouth rinse • Cryotherapy • Palifermin • Photobiomodulation therapy • Magic mouthwash for pain management
Oral Bleeding	<ul style="list-style-type: none"> • Local measures: antifibrinolytic rinses or topical agents, gelatin sponges • Systemic measures: platelet transfusions, aminocaproic acid
Opportunistic Infections (Consult with Hematologist/Oncologist)	<p>BACTERIAL Infection:</p> <ul style="list-style-type: none"> • Oral rinses with 0.12% CHX mouth rinse • Plaque removal by adequate dental brushing and flossing <p>VIRAL Infection:</p> <ul style="list-style-type: none"> • Prophylactic acyclovir and valacyclovir for Herpes Simplex Virus <p>FUNGAL Infection:</p> <ul style="list-style-type: none"> • Topical oral antifungal agents such as nystatin rinse and clotrimazole troches • Systemic agents such as, systemic fluconazole, is used for persistent fungal infections in immunosuppressed patients

PEDIATRIC DENTIST GOALS

- Ensure that all pediatric cancer patients receive dental clearance **BEFORE** undergoing oncologic treatment
- Complete a comprehensive oral care plan that eliminates or stabilizes oral disease that may produce systemic infection in immunosuppressed patients
- Improve pediatric cancer patient's quality of life

REFERENCES

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