CARE IN PEDIATRIC ONCOLOGY

Care in Pediatric Oncology

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Dental Care

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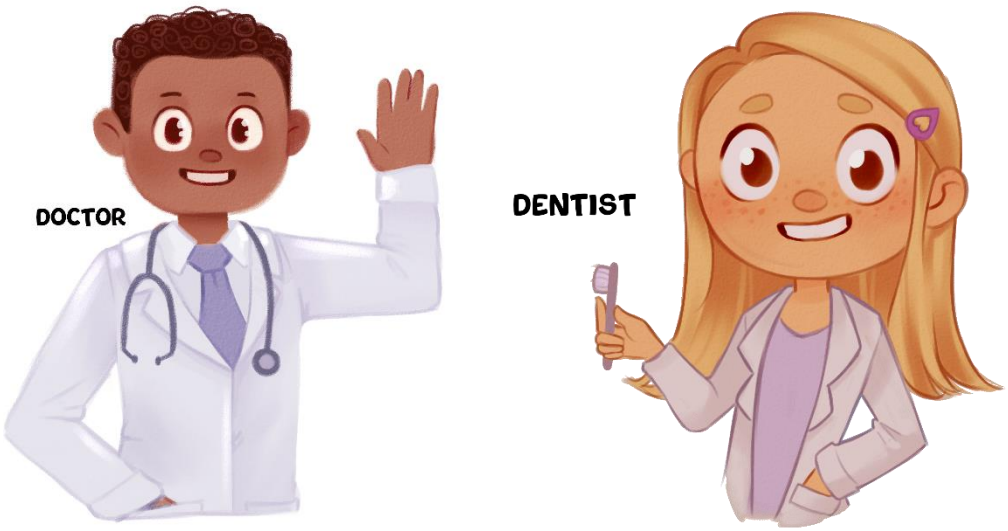
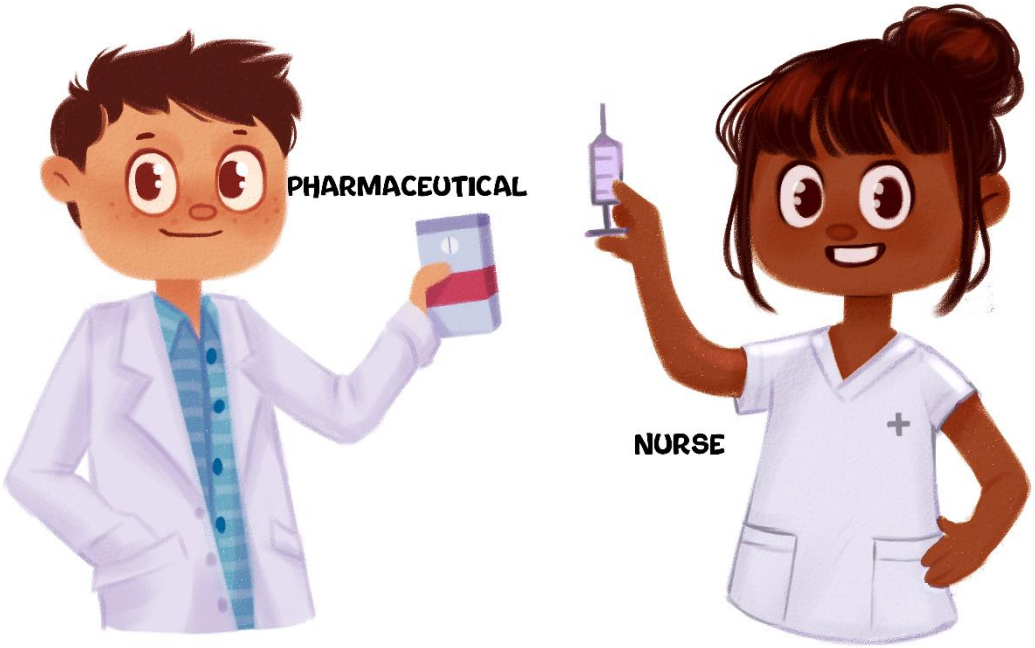
Taking care of the health of the mouth (oral health) is very important throughout our lives, from childhood to old age, whether we are healthy or ill. Children with cancer must be assisted by a dentist from the diagnosis, during and after the end of the medical treatment, to keep the mouth and teeth healthy and reduce the bad effects that the cancer treatment (chemotherapy, radiotherapy, transplant) may cause to the mouth (Souza, 2019; Kroetz; Czlusniak, 2003).

1 ASSESSMENT BY THE DENTIST BEFORE STARTING THE CANCER TREATMENT

As soon as the cancer is diagnosed, it is important that the child also be examined by other professionals: dentist, nutritionist, psychologist, social assistant, physical therapist, speech therapist, occupational therapist, pharmacist, and nurse (Instituto Nacional de Câncer; Instituto Ronald McDonald, 2011).





The dentist will talk to the parents and the child about the importance of oral health and daily care with dental hygiene; explain what may appear in the mouth after starting taking medications for cancer treatment (chemotherapeutic drugs), after radiotherapy and transplant; examine the child's whole mouth and identify teeth that need treatment, teeth with decay or inflamed gums; establish a follow-up throughout the cancer (oncologic) treatment, specific for each child, according to their needs (American Academy of Pediatric Dentistry, 2016; Farsi, 2016; Fonseca, 2004; Schubert et al., 1998).

Some children may have tooth decay when diagnosed with cancer, and the best time for the dentist to take care of their teeth is before the cancer treatment starts. However, sometimes, that is not possible because the treatment must start urgently. If that happens, the dentist will talk to the medical team to check the child's bloodwork and which medications they will be taking. Then, the doctors will decide when the child can do the treatment with the dentist (American Academy of Pediatric Dentistry, 2016; Farsi, 2016; Fonseca, 2004; Schubert et al., 1998).

Children using braces (orthodontic appliance) will be examined, and the team will discuss if there is a need to stop the orthodontic treatment and remove the appliance to avoid injuries in the mouth (American Academy of Pediatric Dentistry, 2016).

2 MOUTH HEALTH CARE DURING CANCER TREATMENT

During cancer (oncologic) treatment, the dentist will monitor the child to maintain mouth health, remind the patient of the importance of cleaning the teeth and tongue every day, and diagnose and treat the bad effects of the cancer medications that can affect the mouth (American Academy of Pediatric Dentistry, 2016).

2.1 Mucositis

The bad effects related to the cancer treatment depend, especially, on the location of the cancer, its severity, and the type of treatment that will be carried out.

Cancer treatment, whether it is chemotherapy or radiotherapy, does not attack cells with cancer only. It can also attack healthy cells. Thus, these bad effects can also affect the mouth, teeth, bones, and glands that produce saliva (Menezes et al., 2014; Santos et al., 2009).

The occurrence of wounds in the mouth (mucositis) is one of the significant bad effects of the therapy for cancer and directly impacts children's quality of life (Elad et al., 2020; Spezzia, 2020; Souza, 2019; Ritwik, 2018; Reolon et al., 2017; Ribeiro et al., 2017; Hanna et al., 2016; Elad et al. 2015; Cortes-Ramírez et al., 2014; Lalla et al., 2014; Menezes et al., 2014; Sasada et al., 2013; Epstein et al., 2012; Rampini et al., 2009; Rosenthal; Trotti, 2009; Santos et al., 2009; Cheng et al., 2008; Ribeiro et al., 2008; Vieira; Lopes, 2006; Barasch; Peterson, 2003; World Health Organization – WHO, 1979).

Mucositis is the consequence of a reaction caused by the drugs to treat cancer and by a type of radiation (radiotherapy) used as another form of therapy for cancer. Mucositis may appear in the mouth (mouth tissues), stomach and intestine (digestive tract) or where the child poops (anus) (Elad et al., 2020; Spezzia, 2020; Souza, 2019; Ritwik, 2018; Reolon et al., 2017; Ribeiro et al., 2017; Hanna et al., 2016; Elad et al. 2015; Cortes-Ramírez et al., 2014; Lalla et al., 2014; Menezes et al., 2014; Sasada et al., 2013; Epstein et al., 2012; Rampini et al., 2009; Rosenthal; Trotti, 2009; Santos et al., 2009; Cheng et al., 2008; Ribeiro et al., 2008; Vieira; Lopes, 2006; Barasch; Peterson, 2003; WHO, 1979).

The occurrence and the severity of the wounds in the mouth depend on various factors: the type of medication used to treat cancer, its doses, and the site of the therapy with radiation; if the mouth is well-cleaned; the food the child eats; and if the child drinks water, among other factors (Menezes et al., 2014; Sasada et al., 2013; Rosenthal; Trotti, 2009; Santos et al., 2009; Cheng et al., 2008; Barasch; Peterson, 2003).

Taking care of a child with mucositis is not easy. This care must be done by a team that includes a doctor, a dentist, a nurse, a nutritionist, a pharmacist, and a speech therapist. The dentist will identify if the child has mucositis and assess its severity. To identify if the child has mucositis, the dentist must carefully check the tongue, lips, cheeks, roof of the mouth, and throat.

Mucositis starts with a rash in the mouth, which may be in just one place or in the child's whole mouth. The child may feel their mouth more sensitive or sore. After that, there are wounds that look like a cold sore (ulcers), and they are very painful. The wounds can be a gateway for bacteria, fungi, or viruses (Elad et al., 2020; Souza, 2019; Ritwik, 2018; Ribeiro et al., 2017; Hanna et al., 2016; Elad et al. 2015; Cortes-Ramírez et al., 2014; Lalla et al., 2014; Menezes et al., 2014; Epstein et al., 2012; Santos et al., 2009; Ribeiro et al., 2008; Vieira; Lopes, 2006; WHO, 1979).

The dentist is also the professional in charge of preventing and treating mucositis. As prevention, the dentist will monitor the child from the beginning and during the treatment;

teach the child how to keep their mouth and teeth clean and their mouth hydrated. For some medications or for therapy that uses radiation in the head or neck, the dentist can use an appliance that has a light (laser), which helps reduce the occurrence of mucositis. Using the device that emits light to prevent mucositis does not hurt, and it is beneficial to the child. If children who undergo preventive laser therapy have mucositis, it will be milder (Elad et al., 2020; Spezzia, 2020; Souza, 2019; Ritwik, 2018; Reolon et al., 2017; Ribeiro et al., 2017; Hanna et al., 2016; Elad et al. 2015; Cortes-Ramírez et al., 2014; Lalla et al., 2014; Menezes et al., 2014; Sasada et al., 2013; Epstein et al., 2012; Rampini et al., 2009; Rosenthal; Trotti, 2009; Santos et al., 2009; Cheng et al., 2008; Ribeiro et al., 2008; Vieira; Lopes, 2006; Barasch; Peterson, 2003; WHO, 1979).

Moreover, the dentist can recommend therapy with ice (cryotherapy) to help prevent mucositis and refer the child to a nutritionist to adjust the diet. The child should avoid consuming acid food (orange, lime, pineapple), hard foods (popcorn), and dry foods; reduce the use of salt, and avoid ingesting strong condiments (spice, ketchup, mustard). Children with a healthy mouth and diet have lower chances of having mucositis (Elad et al., 2020; Spezzia, 2020; Souza, 2019; Ritwik, 2018; Reolon et al., 2017; Ribeiro et al., 2017; Hanna et al., 2016; Elad et al. 2015; Cortes-Ramírez et al., 2014; Lalla et al., 2014; Menezes et al., 2014; Sasada et al., 2013; Epstein et al., 2012; Rampini et al., 2009; Rosenthal; Trotti, 2009; Santos et al., 2009; Cheng et al., 2008; Ribeiro et al., 2008; Vieira; Lopes, 2006; Barasch; Peterson, 2003; WHO, 1979).

Mucositis usually starts between the 5th and 7th day after chemotherapy and in the second week after the beginning of radiotherapy. The treatment for mucositis is not a cookie-cutter approach- the child will be evaluated individually, and the treatment will be personalized. Each child responds differently to the treatment, and the clinical state of mucositis can take longer if their defense system is affected (neutropenia) (Elad et al., 2020; Spezzia, 2020; Souza, 2019; Ritwik, 2018; Reolon et al., 2017; Ribeiro et al., 2017; Hanna et al., 2016; Elad et al. 2015; Cortes-Ramírez et al., 2014; Lalla et al., 2014; Menezes et al., 2014; Sasada et al., 2013; Epstein et al., 2012; Rampini et al., 2009; Rosenthal; Trotti, 2009; Santos et al., 2009; Cheng et al., 2008; Ribeiro et al., 2008; Vieira; Lopes, 2006; Barasch; Peterson, 2003; WHO, 1979).

For children with an existing clinical state of mucositis, the dentist can prescribe medication to relieve the pain (painkillers), which will be defined individually. Besides, the dentist can use laser therapy, which is well-accepted by children because they notice the laser is not painful, but it is relieving, accelerates healing, and makes them better quickly. For some children, ice therapy (cryotherapy) can be used to bring relief (Elad et al., 2020; Spezzia, 2020; Souza, 2019; Ritwik, 2018; Reolon et al., 2017; Ribeiro et al., 2017; Hanna et al., 2016; Elad et al. 2015; Cortes-Ramírez et al., 2014; Lalla et al., 2014; Menezes et al., 2014; Sasada et al., 2013; Epstein et al., 2012; Rampini et al., 2009; Rosenthal; Trotti, 2009; Santos et al., 2009;

Cheng et al., 2008; Ribeiro et al., 2008; Vieira; Lopes, 2006; Barasch; Peterson, 2003; WHO, 1979).

2.2 Infections

Using drugs to treat cancer may reduce the capacity of the body to defend itself, and infections caused by bacteria, viruses, or fungi may occur. One of the most frequent infections by fungi is of the fungus Candida albicans, which causes an infection known as thrush (candidiasis). There are often white, raised, cottage cheese-like spots on the inner cheeks and the tongue. It may also occur at the corners of the mouth, causing a small wound or crack. In breastfed children, thrush may be present in the mouth of the toddler and the mother's breast. Candidiasis may cause pain and soreness (Neville, 2011).

The most frequent virus is called Herpes Simplex. When it occurs, there are wounds (lesions) on the tongue, lips, and gums, which can be augmented, very red, and painful. Because of that, the child can be very irritated, unwell, weak, and have difficulty eating (Neville, 2011).

The chances of developing diseases in the mouth caused by bacteria, viruses, or fungi increase if the child shares spoons, forks, knives, and cups with the caregiver or other children. The caregivers must avoid blowing food and kissing children in the mouth. If the child uses a pacifier or a bottle, they should be sanitized and well-stored. Remember that toddlers usually take objects to their mouth, so take care when sanitizing toys and other objects that the child usually plays with, especially teethers (Ministério da Saúde, 2019; Food Safety Authority of Ireland, 2012; Agência Nacional de Vigilância Sanitária, 2011; WHO, 2009, 2007).

Any disease in the mouth will be treated and followed up by the dentist, who will teach how to clean the mouth and the teeth and do a treatment with an appliance that has a light (laser). This treatment helps with faster healing and relieves the pain the child is feeling.

2.3 Altered sense of taste, hyposalivation, and dry mouth sensation

Remédios usados durante o tratamento do câncer (quimioterapia) ou a radioterapia podem provocar mudanças na capacidade de perceber o sabor dos alimentos (alteração do paladar), podem diminuir a quantidade de saliva na boca (hipossalivação) e, também, iniciar a sensação de boca seca (xerostomia) (Mosel et al., 2011; Hovan et al., 2010; Diaz-Arnold; Marek, 2002).

Para diminuir essas complicações é muito importante beber mais líquidos, inclusive durante as refeições; mastigar devagar para sentir mais o sabor dos alimentos e aumentar a quantidade de saliva; escovar os dentes todos os dias; usar enxaguantes bucais apenas se o dentista prescrever, porque ele irá escolher o mais indicado para a criança e também irá ensinar sobre os cuidados e a forma de usar; utilizar substitutos de saliva (saliva artificial), que podem ser prescritos pelo dentista; e pedir ajuda ao nutricionista para mudar a dieta (Mosel et al., 2011; Hovan et al., 2010; Diaz-Arnold; Marek, 2002).

2.4 Problemas que podem ocorrer na gengiva: gengiva inflamada ou saindo sangue

When tooth brushing is incorrect, residues of bacteria and food get stuck on the teeth and can inflame the gums. Caregivers can notice this when they brush or floss the child's teeth because the gums can be redder and bleed. This can be upsetting, cause pain, foul breath, and, if it gets worse, inflame the bone around the teeth. When the bloodwork is abnormal (a reduction in the platelets), there can be bleeding in the gums, which may or not be an inflammation (Guedes-Pinto, 2010; Kroetz; Czlusniak, 2003; Toledo, 1996).

2.5 Dry lips

Children with cancer can have drier lips, which can upset the child and lead to cuts (cracks) on the lips, bleeding, and wounds (Elad *et al*., 2020; Souza, 2019; Lalla *et al*., 2014).

It is fundamental to keep lips well hydrated with some lip moisturizer, which should be used many times during the day. It is helpful if the moisturizer has dexpanthenol or lanolin (this information can be found on the label). However, if the child has an allergy to any of

these products, the dentist must be communicated immediately. Colored lipsticks and cocoa butter do not have moisturizing properties. To avoid contamination, it is recommended to keep the lip moisturizer private, even with family members (Elad *et al*., 2020; Souza, 2019; Lalla *et al*., 2014).

2.6 Pain caused by some medications for treating cancer

Em alguns tipos de câncer o médico irá receitar medicações que se chamam vincristina e vimblastina. Algumas crianças, depois de tomarem esses remédios, podem sentir uma dor forte nos dentes, osso da boca e ao mastigar, mesmo se não tiverem cárie ou mucosite. Esta dor é passageira (transitória) e diminui ou desaparece depois que terminar o uso do remédio (American Academy of Pediatric Dentistry, 2016).

3 TAKING CARE OF THE HEALTH OF THE MOUTH (ORAL HEALTH)

Tooth brushing should start as soon as the first milk tooth appears, always using a toothbrush and toothpaste containing fluorine. Dental floss must be used every day and can start right after the second milk tooth appears. To keep the mouth and teeth healthy, brushing the teeth after each meal and before bed is fundamental. It is important to brush the teeth every day, even for children who do not eat through the mouth but through a tube dias (Jagher et al., 2016; Guedes-Pinto, 2010; Toledo, 1996).

The objective of tooth brushing is not only to remove residues of food that get stuck on the teeth after a meal and make the breath fresher but also to remove bacteria that feed from the residues of food that get stuck in the tooth and may cause problems such as decay, inflammation of the gums (gingivitis), and pain (Guedes-Pinto, 2010; Toledo, 1996).

Children cannot brush their own teeth before they are eight years old, so tooth brushing for them must be done by an adult. After they are eight years old, the child can start brushing their teeth on their own, but it is essential that there is an adult to supervise them, especially at night, and help them if there is any difficulty (Guedes-Pinto, 2010; Toledo, 1996).

Some very young children demonstrate some resistance to tooth brushing and express it by crying and taking the brush out of their mouth. They do not understand the importance of brushing their teeth and show their emotions through crying. Despite this difficulty, it is fundamental that the parents stay firm and insist on brushing, embrace the child, and try to make this moment fun. Tooth brushing is the better and primary way of keeping the teeth healthy (Guedes-Pinto, 2010; Toledo, 1996).

Children understand something better when they see their parents doing it; thus, it is helpful that children see their parents brushing their teeth and flossing so they will slowly feel like imitating them (Guedes-Pinto, 2010; Toledo, 1996).

Toothbrushing time can be fun. Take this moment to sing, tell stories, and let the child brush the teeth of a toy they really like to get used to brushing their own teeth (Guedes-Pinto, 2010; Toledo, 1996).

3.1 The toothbrush

For the brushing to be done correctly, each person in the family must have their own toothbrush. The child's toothbrush must be small with soft or extra-soft bristles (this information can be found on the top of the brush packaging) (Guedes-Pinto, 2010; Toledo, 1996).

After each brushing, the toothbrush must be softly washed with clean water. After washing it, it must be put in an open container with the handle down. The bristles of the brush should not be covered because the air must dry them (American Dental Association, 2011; Toledo, 1996).

Since the child with cancer may have low defense capacity (low immunity), their toothbrush must be stored in a separate container from the others in the home, to avoid contamination. The container must be kept away from the toilet (American Dental Association, 2011; Toledo, 1996).

The toothbrush must be changed every three months, at least. If the child gets sick or the toothbrush bristles are worn out or deformed, it must be thrown away (American Dental Association, 2011; Toledo, 1996).

3.2 The toothpaste

The toothpaste must contain fluorine in its formulation. Fluorine is vital to make teeth stronger and avoid the occurrence of stains and holes in the teeth, which we call cavities. Cavity is the main oral disease that affects children and can result in serious consequences such as pain and loss of the tooth (Jagher et al., 2016; Chaves; Vieira-da-Silva, 2002; Cury, 2002, 1989).

Even if the child has temporary teeth, which are called milk teeth, they must be very carefully taken care of because they are important to the growth of the child's mouth, to save space for adult teeth (permanent), and to guarantee a beautiful smile (Guedes-Pinto, 2010; Toledo, 1996).

The recommended amount of fluorine in the toothpaste is at least 1,100 parts per million of fluorine (1,100 ppm of fluorine) (this information can be found on the paste tube). Pastes without fluorine or less than 1,100 ppm of fluorine must not be used (Jagher et al., 2016; Chaves; Vieira-da-Silva, 2002; Cury, 2002, 1989).

Spreading the paste on the toothbrush must always be done by an adult, in a very small amount recommended by the dentist. The recommended amount of toothpaste for each age is in the table below (Jagher et al., 2016; Chaves; Vieira-da-Silva, 2002; Cury, 2002, 1989):

Children from 0 to 2 years old	Amount: ½ grain of uncooked rice
Children from 2 to 5 years old	Amount: 1 grain of uncooked rice
Children over 6, teenagers and adults	Amount: one pea
Never	Fill the whole brush

There is a substance in some kinds of toothpaste that can give it a burning sensation and irritate more sensitive mouths. The name of this substance is Sodium Lauryl Sulfate, which is a detergent that cleans the teeth. It is better to buy toothpaste without this substance (this information can be found on the paste tube) (Kroetz; Czlusniak, 2003).

3.3 Dental floss

Dental floss cleans parts of the teeth the brush cannot reach, i.e., between the teeth. It must be used every day, once a day, especially before going to bed. All teeth must always be carefully flossed before brushing. Dental floss can be regular (tread or tape) or with a plastic handle, which makes it easier for the parents to hold when flossing their child's teeth. Floss that has already been used must be discarded after use (Guedes-Pinto, 2010; Toledo, 1996).

Older children cannot floss on their own, so they need training. Older children must always floss in front of a mirror, where they can better see their teeth. The toothpick does not substitute dental floss and should not be used because it may hurt the gums, causing pain and bleeding (Guedes-Pinto, 2010; Toledo, 1996).

3.4 Brushing technique

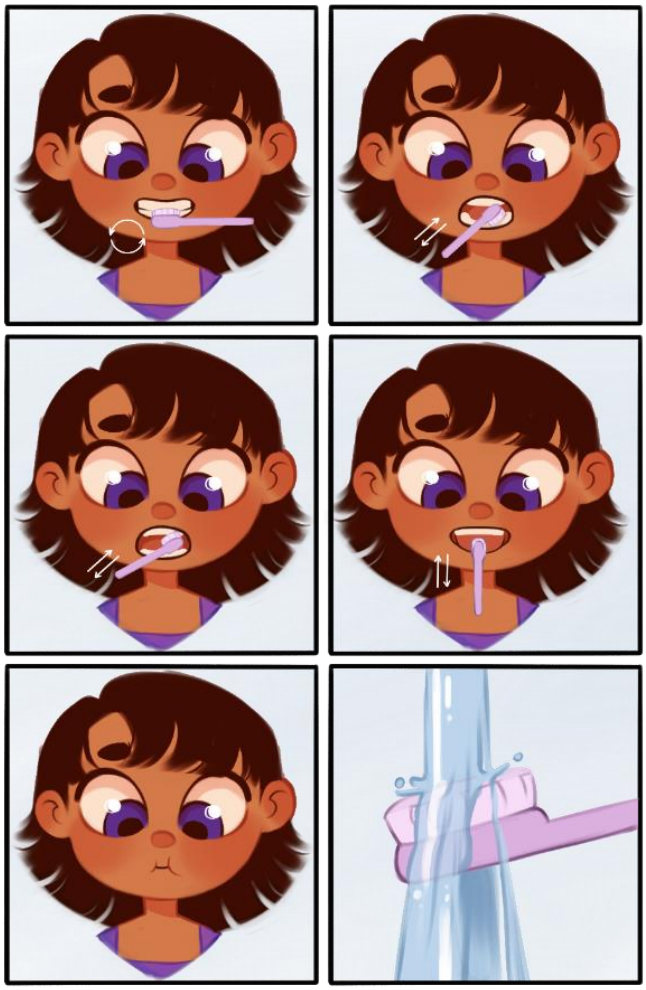
There are many ways of correctly brushing your teeth. The best way is the one the family and the child adapt to. Very young children are better positioned when lying down, but it is essential to keep the head slightly elevated in relation to the body to avoid choking. Brushing is easier with the help of two adults: one helps with the child's position while the other does the brushing (Guedes-Pinto, 2010; Toledo, 1996).

Depending on how comfortable the child and the family feel, older children can be positioned sitting or lying down (always elevating the head) (Guedes-Pinto, 2010; Toledo, 1996).

For children who can already brush their teeth on their own and under the supervision of an adult, it is fundamental to be in front of a mirror to see their mouth and teeth better (Guedes-Pinto, 2010; Toledo, 1996).

When the child is well positioned, the adult will put the paste on the toothbrush and brush the child's teeth or give them the toothbrush to brush their teeth on their own. In tooth brushing, all teeth must be brushed, giving special attention to each part of the tooth, making ball (circular), train (back-and-forth), and broom movements, sweeping the dust out of the teeth. It is also fundamental to brush the tongue (Guedes-Pinto, 2010; Toledo, 1996).

1. Ball: begin brushing by making smooth circular movements in the front and the back side of all teeth, in both the upper and lower parts of the mouth.
2. Train: make smooth movements back-and-forth in the back teeth, up and down in the mouth.
3. Broom: make smooth sweeping movements in the front and back of the teeth, from the top to the bottom.
4. Brush the tongue with a back-and-forth movement.
5. Rinse the mouth, wash the brush in running water, and keep the brush with the handle down in an open container.



REFERENCES

Agência Nacional de Vigilância Sanitária. Resolução - RDC nº 44, de 19 de setembro de 2011. Regulamento técnico para fórmulas infantis de seguimento para lactentes e crianças de primeira infância. Brasília 2011 [cited 2023 Sep 12]. Available from: https://bvsms.saude.gov.br/bvs/saudelegis/anvisa/2011/res0044_19_09_2011.html

American Academy of Pediatric Dentistry. Guideline on Dental Management of Pediatric Patients Receiving Chemotherapy, Hematopoietic Cell Transplantation, and/or Radiation Therapy. Pediatr Dent. 2016 Oct;38(6):334-342.

American Dental Association, Council on Scientific Affairs. Toothbrush care: cleaning, storing and replacement. November, 2011 [cited 2023 Sep 12]. Available from: https://www.expressions-dental.com/storage/app/media/toothbrush-care-article-for-website.pdf

Barasch A, Peterson DE. Risk factors for ulcerative oral mucositis in cancer patients: unanswered questions. Oral Oncol. 2003 Feb;39(2):91-100. doi: 10.1016/s1368-8375(02)00033-7

Chaves SCL, Vieira-da-Silva LM. A efetividade do dentifrício fluoretado no controle da cárie dental: uma meta-análise. Rev Saúde Pública. 2002;36(5):598-606. DOI: https://doi.org/10.1590/S0034-89102002000600009

Cheng KK, Goggins WB, Lee VW, Thompson DR. Risk factors for oral mucositis in children undergoing chemotherapy: a matched case-control study. Oral Oncol. 2008 Nov;44(11):1019-25. doi: 10.1016/j.oraloncology.2008.01.003.

Cortes-Ramírez J, Ayala C, Cortes J, Cortes R, Salazar L, Castelo O, de la Torre M. Oral alterations in children with cancer. Literature review. J Oral Res. 2014;3(4):262-268.

Cury JA. Dentifrícios fluoretados no Brasil. RGO (Porto Alegre). 1989;37(2):139-42.

Cury JA. Dentifrícios: como escolher e como indicar. In: Associação Paulista dos Cirurgiões-Dentistas. Odontologia. São Paulo: Artes Médicas – Divisão Odontológica; 2002 [cited 2023 Sep 12]. p. 281-295. Available from: https://edisciplinas.usp.br/pluginfile.php/3116118/mod_resource/content/1/Prevencao-CURY%20J_A_%20Dentifricios%20como%20escolher%20e%20como%20indicar.pdf

Diaz-Arnold AM, Marek CA. The impact of saliva on patient care: A literature review. J Prosthet Dent. 2002 Sep;88(3):337-43. doi: 10.1067/mpr.2002.128176.

Elad S, Cheng KKF, Lalla RV, Yarom N, Hong C, Logan RM, et al. MASCC/ISOO clinical practice guidelines for the management of mucositis secondary to cancer therapy. Cancer. 2020 Oct 1;126(19):4423-4431. doi: 10.1002/cncr.33100

Elad S, Raber-Durlacher JE, Brennan MT, Saunders DP, Mank AP, Zadik Y, et al. Basic oral care for hematology-oncology patients and hematopoietic stem cell transplantation recipients: a position paper from the joint task force of the Multinational Association of Supportive Care in Cancer/International Society of Oral Oncology (MASCC/ISOO) and the European Society for Blood and Marrow Transplantation (EBMT). Support Care Cancer. 2015 Jan;23(1):223-36. doi: 10.1007/s00520-014-2378-x

Epstein JB, Thariat J, Bensadoun RJ, Barasch A, Murphy BA, Kolnick L, Popplewell L, Maghami E. Oral complications of cancer and cancer therapy: from cancer treatment to survivorship. CA Cancer J Clin. 2012 Nov-Dec;62(6):400-22. doi: 10.3322/caac.21157.

Farsi DJ. Children undergoing chemotherapy: is it too late for dental rehabilitation? J Clin Pediatr Dent. 2016;40(6):503-505. doi: 10.17796/1053-4628-40.6.503

Fonseca MA. Dental care of the pediatric cancer patient. Pediatr Dent. 2004 Jan-Feb;26(1):53-7.

Food Safety Authority of Ireland. Guidance Note nº 22 information relevant to the development of guidance material for the safe feeding of reconstituted powdered infant formula (Revision 2). Dublin: FSAI; 2012.

Guedes-Pinto AC. Odontopediatria. São Paulo: Livraria Santos; 2010.

Hanna LMO, Botti MTSR, Araújo RJG, Damasceno JM, Mayhew ASB, Andrade Filho GG. Oral manifestations and salivary pH changes in children undergoing antineoplastic therapy. Pesqui

Bras Odontopediatria Clin Integr. 2016;16(1):403-410. DOI: http://dx.doi.org/10.4034/PBOCI.2016.161.42

Hovan AJ, Williams PM, Stevenson-Moore P, Wahlin YB, Ohrn KE, Elting LS, et al. A systematic review of dysgeusia induced by cancer therapies. Support Care Cancer. 2010 Aug;18(8):1081-7. doi: 10.1007/s00520-010-0902-1.

Instituto Nacional de Câncer (Brasil), Instituto Ronald McDonald. Diagnóstico precoce do câncer na criança e no adolescente. 2. ed. rev. ampl. Rio de Janeiro: Inca; 2011.

Jagher AC, Ripplinger T, Pinto GS, Schardosim LR. Avaliação da utilização de dentifrício fluoretado em crianças. RFO UPF. 2016;21(1):37-42. DOI: https://doi.org/10.5335/rfo.v21i1.5464

Kroetz FM, Czlusniak GD. Alterações bucais e condutas terapêuticas em pacientes infanto-juvenis submetidos a tratamentos anti-neoplásicos. Publ UEPG Biol Health Sci. 2003;9(2):41-48. DOI: https://doi.org/10.5212/publicatio%20uepg.v9i2.363

Lalla RV, Bowen J, Barasch A, Elting L, Epstein J, Keefe DM, et al. MASCC/ISOO clinical practice guidelines for the management of mucositis secondary to cancer therapy. Cancer. 2014 May 15;120(10):1453-61. doi: 10.1002/cncr.28592. Erratum in: Cancer. 2015 Apr 15;121(8):1339.

Menezes ACS, Rosmaninho E, Raposo BS, Alencar MJS. Abordagem clínica e terapêutica da mucosite oral induzida por radioterapia e quimioterapia em pacientes com câncer. RBO. 2014;71(1):35-38.

Ministério da Saúde (BR), Secretaria de Atenção Primaria à Saúde, Departamento de Promoção da Saúde. Guia alimentar para crianças brasileiras menores de 2 anos. Brasília: Ministério da Saúde; 2019.

Mosel DD, Bauer RL, Lynch DP, Hwang ST. Oral complications in the treatment of cancer patients. Oral Dis. 2011 Sep;17(6):550-9. doi: 10.1111/j.1601-0825.2011.01788.x.

Neville B. Patologia oral e maxilofacial. Rio de Janeiro: Elsevier; 2011.

Rampini MP, Ferreira EMS, Ferreira CG, Antunes HS. Utilização da terapia com laser de baixa potência para prevenção de mucosite oral: revisão de literatura. Rev Bras Cancerol. [Internet]. 2009 [citado 2023 set. 12];55(1):59-68. Disponível em: https://rbc.inca.gov.br/index.php/revista/article/view/1679

Reolon LZ, Rigo L, Conto F, Cé LC. Impacto da laserterapia na qualidade de vida de pacientes oncológicos portadores de mucosite oral. Rev Odontol UNESP. 2017;46(1):19-27.

Ribeiro ILA, Limeira RRT, Dias de Castro R, Ferreti Bonan PR, Valença AMG. Oral Mucositis in Pediatric Patients in Treatment for Acute Lymphoblastic Leukemia. Int J Environ Res Public Health. 2017 Nov 28;14(12):1468. doi: 10.3390/ijerph14121468.

Ribeiro RA, Leitão RFC, Sant'ana RO, Moura JFB, Lima V, Medeiros RP, et al. Mucosite oral: patogênese e manuseio clínico. Rev Bras Oncol Clín. 2008;5(15):18-24.

Ritwik P. Dental care for patients with childhood cancers. Ochsner J. 2018 Winter;18(4):351-357. doi: 10.31486/toj.18.0061.

Rosenthal DI, Trotti A. Strategies for managing radiation-induced mucositis in head and neck cancer. Semin Radiat Oncol. 2009 Jan;19(1):29-34. doi: 10.1016/j.semradonc.2008.09.006.

Santos PSS, Messaggi AC, Mantesso A, Magalhães MHCG. Mucosite oral: perspectivas atuais na prevenção e tratamento. RGO. 2009;57(3):339-344.

Sasada INV, Munerato MC, Gregianin LJ. Mucosite oral em crianças com câncer-revisão de literatura. RFO (Passo Fundo). 2013;18(3):345-350. DOI: https://doi.org/10.5335/rfo.v18i3.3338

Schubert MM, Epstein JB, Peterson DE. Oral complications of cancer therapy. In: Yagiela JA, Neidle EA, Dowd FJ, editors. Pharmacology and Therapeutics for Dentistry. 4th ed. St. Louis: Mosby; 1998. p. 644-655.

Souza RCC. Odontologia especial pediátrica: correlação prática e evidências. São Paulo: Quintessence Editora; 2019.

Spezzia S. Mucosite oral em pacientes cancerosos submetidos a tratamento quimioterápico. Rev Ciênc Odontol. 2020;4(1):36-40.

Toledo OA. Odontopediatria: fundamentos para a prática clínica. São Paulo: Premier; 1996. 344 p.

Vieira ACF, Lopes FF. Mucosite oral: efeito adverso da terapia antineoplásica. 2006. Rev Ciênc Méd Biol. 2006;5(3):268-274. DOI: https://doi.org/10.9771/cmbio.v5i3.4135

World Health Organization. Handbook for reporting results of cancer treatment. Geneva: World Health Organization; 1979.

World Health Organization. WHO guidelines on hand hygiene in health care. Geneva: WHO; 2009.

World Health Organization; Food and Agriculture Organization of the United Nations. Safe preparation, storage and handling of powdered infant formula: guidelines. Geneva: World Health Organization; 2007.

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