

Mouth & Body

“A healthy mouth leads to a sound body.” *Topics* VOL.2

“Current information” about
medical-dental cooperative clinical
practices for cancer patients



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Cancer therapy is classified as “topical therapy” such as surgery, endoscopic therapy, and radiotherapy or as “systemic therapy,” for example, chemotherapy. With either therapy, the patient’s oral condition may affect the prognosis. Poor oral condition not only causes complications but also degrades the quality of life (QOL) for cancer patients. In this issue of Mouth & Body Topics Vol. 2, under the title of “Current information’ about medical-dental cooperative clinical practices for cancer patients”, Takashi Yurikusa, DDS PhD, Chief of Dentistry and Oral Surgery and Yasuhiro Tsubosa, MD, PhD, Chief of Esophageal Surgery, Shizuoka Cancer Center explain about the importance of oral management of patients undergoing cancer treatment and future tasks for medical-dental cooperation.

“Medical-dental Cooperation for Cancer Therapy’ – Current Trends and Future Issues”

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Importance of oral supportive care for cancer patients

In the 1980’s and 1990’s, cancer was becoming a “curable disease” or no longer “incurable” in Japan. The top priority of cancer therapy was to save the patient’s life, and no attention was paid to the QOL of cancer patients. From the 2000’s onwards, “Supportive Care for Cancer Patients” became more important, such as improving QOL of cancer patients and relieving the suffering of patients and their families. Oral supportive care is part of this supportive care for cancer patients. As we know now, the effects of supportive care not only improve the QOL of cancer patients but also extend life. In a clinical study of lung cancer patients, the group who added early palliative care to standard chemotherapy showed a higher survival rate than the control group.¹⁾

A number of oral complications are caused by cancer therapy. Oral mucositis (stomatitis) is one of the most common complications. Because oral mucositis occurs on the tongue and lips, pain makes it difficult for patients to eat and swallow. Furthermore, oral bacteria invade the circulatory system from oral ulcer lesions, followed by bacteremia, sepsis, and febrile neutropenia. Oral bacteria may also cause aspiration pneumonia, oral infection, and osteonecrosis of the jaw. As a result of various oral problems, cancer treatment may be interrupted or discontinued by the physician’s

decision or the patient’s request. If the treatment is not completed, the outcome will be worse. (Fig. 1).

Professional oral care was defined as oral care provided by a dentist or a dental hygienist, mainly with mechanically removing dental calculus and plaque on the gingival margin and polishing of the tooth surface. Professional oral care reduces oral bacteria, maintains oral health conditions, and prevents oral complications. Oral supportive care during cancer therapy is essential in order to complete cancer therapy and to relieve patients’ suffering from oral complications associated with cancer therapy.

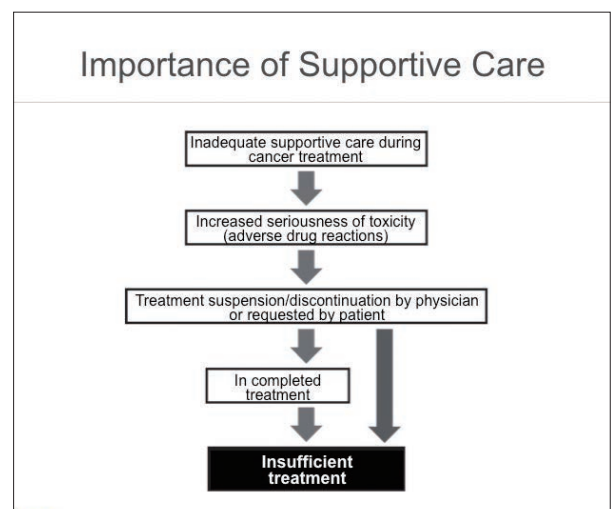


Figure 1. Importance of Supportive Care

Timely intervention for oral supportive care

When is the appropriate intervention time for oral supportive care? In the past, dental intervention was carried out only after oral problems occurred during cancer treatment. However, when oral complications occurred, most of the patients receiving cancer therapy are transiently in poor performance status and in a myelosuppressive phase. Therefore, these conditions limit applicable dental treatment options. Preventive oral intervention should be done before the onset of cancer treatment.

Shizuoka Cancer Center has recommended preventive oral intervention before cancer treatment begins. In our center, oral supportive care is introduced from when cancer is diagnosed and is continued to the start of treatment, thus helping to preventing oral complications before they occur. In particular, preventive oral intervention is strongly recommended for such therapies, as chemotherapy decreasing the absolute neutrophil count $\leq 1000/\mu\text{L}$, radiation therapy of head and neck cancer, and surgery for head and neck cancer or esophageal cancer. Preventive intervention has the potential to prevent the occurrence of oral problems, reduce medical costs, and improve patient's QOL.

Oral supportive care during treatment is also important, for instance, in maintaining oral health conditions during cancer therapy, in managing oral adverse events and oral problems after cancer treatment, and in supporting advanced

cancer patients in terminal phase. Furthermore, only dentists and dental hygienists can treat dental diseases such as dental caries, periodontitis, and ill-fitting dentures. The important role of the dental professionals during cancer therapy is to implement oral supportive care at any stage of cancer, from the pre-treatment stage to the last attendance, and thereby prevent and mitigate oral complications (Fig. 2). In recent years, every physicians and nurses treating cancer recognize the importance of oral supportive care during cancer therapy and expect positive dental intervention.

Cooperation with local general practice dentists

Currently in Japan, the hospitalization period for cancer therapy has been shortened, and outpatient treatment is increasing. New drugs and therapies have been developed, and the treatment effect has improved. At the same time, the incidence of oral complications has increased. In this situation, a system to support cancer patients outside the hospital is necessary. It is important to cooperate with local general practice dentists. Our center has established a cooperative system in oral supportive care with support from the Shizuoka Dental Association since 2006. In 2014, more than 30% of the approximately 1,700 dentists who belong to the Shizuoka Dental Association are registered as cooperative dentists (Fig. 3). Furthermore, this project was designated as a commissioned project "Medical-Dental Cooperation Project for Cancer Patients" by the Ministry of Health, Labor

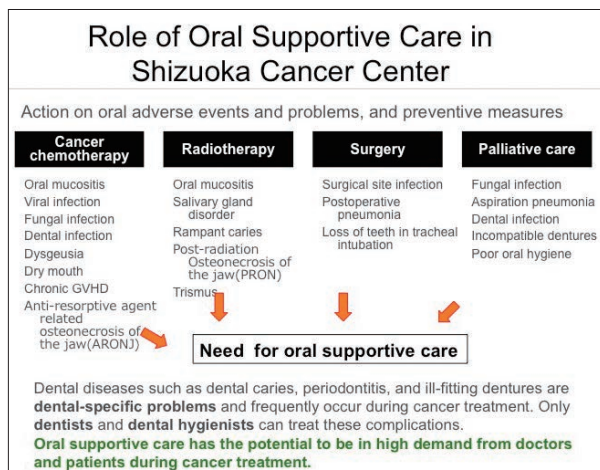


Figure 2. Role of Oral Supportive care in Shizuoka Cancer Center

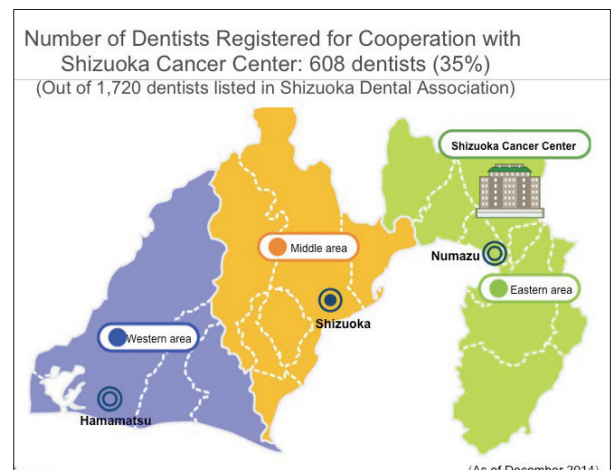


Figure 3. Number of dentists registered for cooperation with Shizuoka Cancer Center

and Welfare in 2012 and is expanding nationwide. Currently, the scope of this cooperative relationship is spreading throughout Japan.

Oral management for prevention of cancer therapy-related oral complications does not require a special dental treatment system. The daily practice provided in a general dental office such as dental caries, periodontitis, denture care, and oral hygiene instruction is sufficient. If patients do not know how to deal with oral complications, the complications will often worsen. By visiting a dental office, patients can receive correct advice, and as a result, the symptoms of oral complications are alleviated. Therefore, we recognize the importance of developing cooperative relationships with local general practice dentists.

Issues to be solved in the future

As of the end of 2014, approximately 12,000 dentists had attended seminars by the Medical-Dental Cooperation Project for Cancer Therapy and registered as cooperative dentists in Japan. The cooperation system with local general practice dentists has been expanding nationwide. Although dental specialists are preparing to accept cancer patients, the recognition of such a cooperative relationship among medical doctors and patients is still low. We are working on awareness-raising activities to inform the public about the establishment of the medical-dental cooperation system during cancer therapy.

The aging of cancer patients is another factor for recommending medical-dental cooperation during cancer therapy. There were rare cases of surgery for patients over 80 years old in our hospital in 2006. However, now it is not uncommon for surgery for patients over 80 years old. In Japan, the number of elderly patients will increase in 2025 when the generation of baby boomers will be over 75 years old. Therefore, cancer treatment for the elderly is a matter of great concern. One of the problems in cancer treatment for elderly patients is an increased risk of complications. Elderly patients are generally in a "frailty" condition, and various functions are declining even if they look healthy. Such people may suddenly develop cancer and respond to "triggers"

such as injury or invasive treatment that may cause physical function to be reduced, and physical disability may occur. (Fig. 4). When treating cancer for elderly patients, special attention must be paid to the prevention of frailty-related complications. Therefore, oral supportive care is expected to play a greater role than ever.

"Cancer treatment without oral supportive care for cancer patients can't guarantee therapeutic quality." are the words of Dr. Yojiro Ota, who widely disseminated the importance of oral care in cancer treatment and contributed to the establishment of the medical-dental cooperation system in Japan. Adequate cancer therapy cannot be performed without oral supportive care. We will continue to raise the awareness of oral supportive care and to expand the medical-dental cooperation system, and to contribute to further improvement of the QOL of cancer patients and advance the results of cancer therapy.

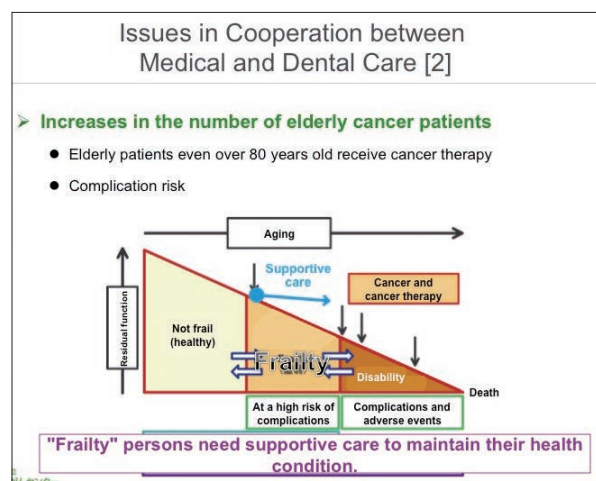


Figure 4. Issues in cooperation between medical and dental care providers

[Reference]

1) Temel JS et al, N Engl J Med 2010; 363:733-742.

“Dental Intervention for Supporting the Cancer Therapy ~The Importance of Oral Care at Perioperative Phases for Esophageal Cancer Surgery~”

Highly invasive esophageal cancer surgery is frequently associated with postoperative complications

Highly invasive esophageal cancer surgery is frequently associated with postoperative complications

Cancer therapy can be provided as “local therapy” such as endoscopic therapy, surgery and radiotherapy or as “systemic therapy” such as anti-cancer drug therapy. If cancer forms within the primary focus, or does not break the basal lamina or breaks it to a limited extent, the cancer can be excised endoscopically with little invasive treatment. If cancer breaks the basal lamina and spreads to lymph nodes near the primary focus, surgery would be indicated. Furthermore, if cancer cells enter the blood stream and spread to the lungs or liver, local therapy would no longer be applicable, and systemic therapy with anti-cancer drugs would be indicated. I am in charge of local therapy in patients with cancer spreading to lymph nodes near the primary focus or at stage III. In many patients, cancer cells seldom stay within the primary focus. I therefore often perform surgery on patients with metastases to regional lymph nodes.

In esophageal cancer surgery, “three-field lymph node dissection” is considered important, and by this procedure lymph nodes in three fields of bilateral cervical, mediastinal, and abdominal regions are dissected (Fig. 1). Most medical

professionals have seen esophageal cancer surgery as a difficult procedure that is frequently associated with postoperative complications and is at a low possibility of prolonged survival after the operation and at a high mortality. I also regarded the surgery as described above when I was a resident.

In the late 1990’s, the incidence of each of the postoperative complications associated with esophageal cancer surgery such as anastomotic leak and pneumonia ranged from approximately 10% to 30%, and only approximately 30% of patients were discharged without complications. Even at present, the incidence of postoperative complications associated with esophageal cancer surgery is approximately 70%, and the respiratory organ is commonly affected most. Such respiratory complication is considered to be an important cause of postoperative hospital death.1)-6) However, many reports published between around the 1980’s and the beginning of 2000 show that oral care is effective in preventing pneumonia. In response to these reports, Shizuoka Cancer Center has been trying to prevent postoperative pneumonia by including perioperative oral care and respiratory organ rehabilitation in the clinical path for cervicofacial cancer and esophageal cancer since 2002 when our center opened (Fig. 2).

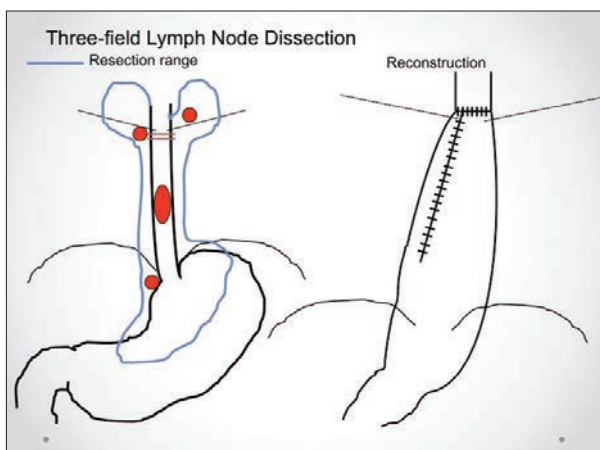


Figure 1. Esophageal cancer surgery: Three-field lymph node dissection

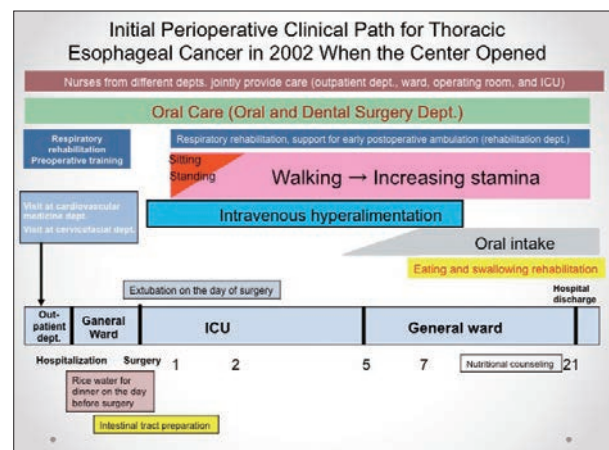


Figure 2. Initial perioperative care path for thoracic esophageal cancer in 2002 when the center opened

Does oral care prevent postoperative pneumonia?

Is it true that pneumonia is prevented by including oral care in perioperative management? To verify this question, our center conducted a “Multicenter retrospective study of the onset frequency of postoperative pneumonia in patients with thoracic esophageal cancer” to investigate the incidence of postoperative pneumonia and risk factors.⁷ In previous reports, the incidences of postoperative pneumonia were considerably different due to inconsistent definitions of pneumonia. In this study, pneumonia was defined as a pathological condition meeting at least two of the following criteria in addition to the essential requirement of a shadow in the lung at a chest X-ray examination: (1) fever at 38°C or higher; (2) abnormal white blood cell count ($\leq 3,000/\mu\text{L}$ or $\geq 10,000/\mu\text{L}$); and (3) sputum purulent. As a result, of 615 patients included in the study, 66 (10.7%) experienced pneumonia. Furthermore, multivariate analysis identified postoperative late tracheal tube extubation and preoperative body weight loss of 5% or more as risk factors of postoperative pneumonia. For prevention of postoperative pneumonia, accordingly, preoperative nutritional management and postoperative early tracheal tube extubation are recommended. Furthermore, reducing oral bacteria in advance is considered important.

Here, I review data between 2002 and 2008 at our center where oral care has been introduced in perioperative management. Of 191 patients with thoracic esophageal cancer who underwent thoracotomy, laparotomy, oesophagectomy and reconstruction, almost 100% received oral care and respiratory rehabilitation, and 11% (21 patients) experienced postoperative pneumonia. A previous report showed that the incidence of pneumonia complication was approximately 30%.⁸ The above results therefore indicate that the two supportive therapies of oral care and respiratory rehabilitation prevented pneumonia to a certain extent. Next, we reviewed how preoperative oral hygiene status was changed by oral care intervention, and furthermore investigated the relationship of the hygiene status change with the incidence of postoperative pneumonia at our center. Here, I show

the results. In this study, 62 patients who received preoperative oral care intervention and provided oral assessment results at both first and preoperative visits were included. The oral hygiene status before and after oral care intervention was rated on a scale of 4, good, generally good, slightly poor and poor. As a result, the number of patients with good oral hygiene status increased from 30 at the first visit to 49 of 62 patients at the preoperative visit, suggesting that the oral care intervention improved oral hygiene status. In addition, postoperative pneumonia occurred in 6 of 53 patients with improved oral hygiene status and in 5 of 9 patients with non-improved oral hygiene status, showing that the incidence of postoperative pneumonia was significantly lower in those with improved status than in those with non-improved status ($P = 0.0062$). The improvement of preoperative oral hygiene status is expected to contribute considerably to prevention against postoperative pneumonia.

Prevention against postoperative pneumonia with double or triple supportive therapies

The above data show that postoperative pneumonia can be prevented by ensuring [1] preoperative good nutritional status and providing [2] oral care preoperatively, and therefore these two points are critical. As described above, our center has included oral care in the thoracic esophageal cancer perioperative path since 2002 when the center opened, and additionally has implemented oral care intervention in cooperation with locally practicing

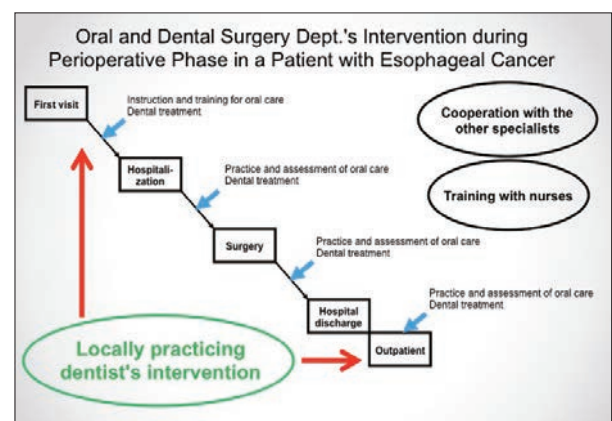


Figure 3. Dental and oral surgery department's intervention during the perioperative phase in a patient with esophageal cancer

dentists since 2010 (Fig. 3). That is, a comprehensive oral care system has been established for cancer patients: the hospital dental and oral surgery department provides oral care and assesses the hygiene status during the patient's hospital stay; and a dentist near home of the patient provides care before hospitalization and after hospital discharge, for instance, instructing the patient how to take oral care, removing dental calculus and treating periodontitis.

The current thoracic esophageal cancer perioperative clinical path at our center has included such oral care through cooperation with locally practicing dentists, respiratory rehabilitation provided by the rehabilitation department, and nutritional

management intervention against weight loss starting at the preoperative stage (Fig. 4). Accordingly, we perform surgery in the presence of preventive measures against postoperative pneumonia with double or triple supportive therapies. Until the 1990's, practices involved in esophageal cancer surgery were carried out only by the operating surgeons, but the standard practices have changed over time: at present, various departments and specialists including the rehabilitation department, dental and oral surgery department, and dental hygienists cooperatively provide care for treatment of the patient. As always, Shizuoka Cancer Center will make every effort to reduce the incidence of postoperative pneumonia by implementing appropriate preoperative oral care.

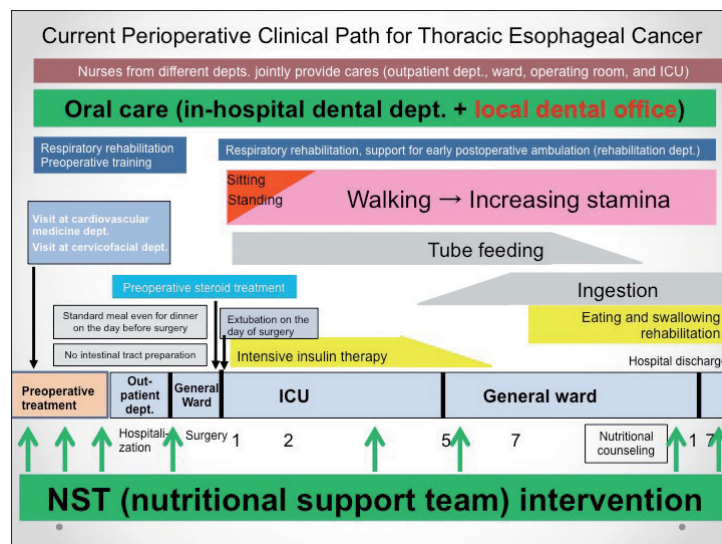


Figure 4. Current perioperative care path for thoracic esophageal cancer

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“Relationship between perioperative oral function management and oral bacteria”

Toru Eguchi, Head of Sunstar Shizuoka Institute

“Preoperative oral care” being widely introduced in various surgeries under systemic anesthesia, not limited to cancer therapy

Perioperative oral care is provided throughout three phases, the preoperative, postoperative and recovery phases. The purpose of oral care differs largely among these phases. It is therefore important to use oral care products meeting the care purpose of the phase.

Firstly, at the preoperative phase, to control oral bacteria, a dentist or dental hygienist provides “professional oral care.” The care is called “Professional Mechanical Tooth Cleaning (PMTC),” by which dental calculus is removed (scaling) using dental mechanical instruments followed by surface polishing to prevent plaque accumulation. Through professional oral care, the oral bacterial condition is improved quantitatively and qualitatively, reaching a normal oral flora in healthy persons. Because qualitative improvement of normal oral flora contributes to the prevention of postoperative aspiration pneumonia, preoperative professional oral care is being introduced in various surgeries under systemic anesthesia, not limited to cancer therapy. After receiving PMTC, a patient continues oral care by themselves at home to maintain the improved condition until surgery. It is important to brush their teeth more carefully than ever using not only a toothbrush, dental floss and interdental brush but also antiseptic tooth paste or rinse and a single tuft tooth brush.

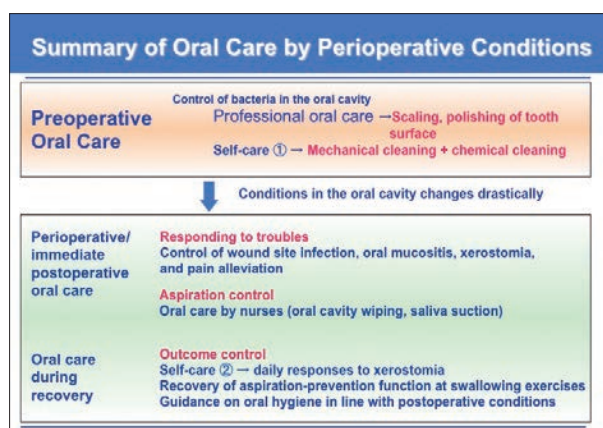


Figure 1. Outline of oral care by perioperative status

Drastic change the condition in the oral cavity during therapy and corresponding oral care

After a healthy oral bacterial condition is achieved by preoperative professional oral care and self-care, cancer therapy is started. Just after surgery, the condition in the oral cavity drastically deteriorates from the above preoperative status due to oral complications that occur as a consequence of the effects of chemotherapy or radiation therapy and surgery. Oral care at this phase should intensively work on bacterial management not to aggravate oral complications by mitigating pain due to oral mucositis and mouth dry due to decreased saliva. However, because the patient has a delicate oral condition due to oral mucositis and mouth dry, the same oral care as that at the preoperative phase would be strong stimulus and painful, making adequate bacterial management difficult. To minimize the oral suffering to the extent possible, Sunstar Inc. in collaboration with the Shizuoka Cancer Center and Shizuoka Dental Association developed products meeting the top three patient requirements, (1) Low stimulus (2) Oral moistening and (3) Refreshing in the oral cavity. Through the development process, Sunstar Inc. endeavored to reflect the long-accumulated experience of the late Dr. Yojiro Ota, previous director of the Dental and Oral Surgery Department of Shizuoka Cancer Center, in the products. Sunstar Inc. is confident that we have developed oral care products suitable for sensitive mucosa and the gingiva.

The purpose of oral care at the recovery phase after the completion of therapy is to prevent extensive caries and oral infections caused by decreased saliva. At this phase, dental care products can be selected from those used at preoperative and perioperative phases according to the condition at the recovery phase.

By the medical fee revision in 2014(2016), the insurance expenses for perioperative oral function management was increased. The Ministry of Health, Labour and Welfare also recognizes the importance of oral care in preventing complications. We, Sunstar Inc., aim to support improvement of the QOL of cancer patients, medical-dental cooperation and high-quality medical practices.

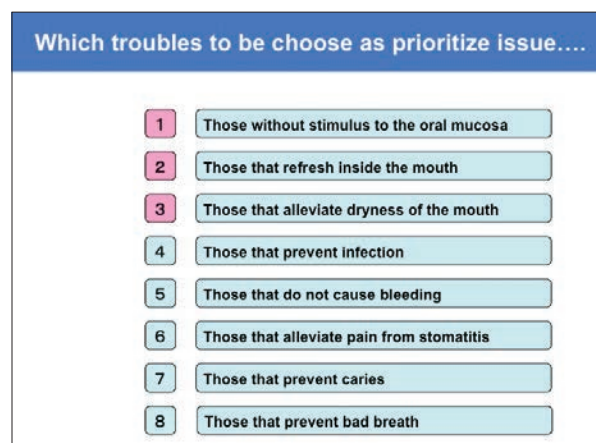


Figure 2. The Oral Problem Solving Products Required Most from the Patients