

# **EVIDENCE-BASED CLINICAL PRACTICE FOR ORAL MUCOSITIS FOR PATIENTS WITH CANCER RECEIVING TREATMENT**

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# BACKGROUND

- About **15%-40%** patients with cancer may get oral mucositis after the chemotherapy or/and radiotherapy
- The incidence is up to **90%** in the patient with continuous radiotherapy for head and neck
- Oral mucositis harms the ability of drinking and eating, impairs the rest, impedes the communication and ruins the dignity of patients
- Oral mucositis also incapacitates the tolerance of the patient for chemotherapy and radiotherapy

# DEFINITION

- Oral mucositis is the inflammation of oral mucous
- It mainly caused by the general **cyto-toxicity** of the chemotherapy and the **local stimulation** to the oral mucous from the radiation
- The manifestations includes: redness, ulcer, bleeding, gingival edema and pain

# OBJECTIVE

- *To **find out the evidences** for prevention, treatment and nursing for oral mucositis*
- *To **Mark** every evidence with **EVIDENCE LEVEL***

# RETRIEVAL

- **Keywords:** mucositis, cancer
- **Database:** National guideline clearinghouse, Cochrane library, Joanna Briggs institute, Registered nurses' association of Ontario, and Chinese bio-medical literature database, etc
- **Enroll criteria:** Only the clinical guideline, systematically review and best practice are included, one high-quality review are also included

# EVIDENCE

- **Assessment**

- Risk factor
- Clinical manifestation

- **Prevention, treatment and nursing**

- Mouth care plan
- Local intervention
- General administration
- Pain relieve

# LEVELS OF EVIDENCE

(FROM JBI, 2004)

- **Level I**

Evidence obtained from a systematic review of all relevant randomized controlled trials.

- **Level II**

Evidence obtained from at least one properly designed randomized controlled trial.

- **Level III.1**

Evidence obtained from well designed controlled trials without randomization.

## •Level III.2

**Evidence obtained from well designed cohort or case control analytic studies preferably from more than one centre or research group.**

## •Level III.3

**Evidence obtained from multiple time series with or without the intervention. Dramatic results in uncontrolled experiments.**

## •Level IV

**Opinion of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees.**



# ASSESSMENT-1

- **Risk factor**

- **Related to the patient**

- Age
- Gender
- Clearance
- Saliva
- Heredity
- Body mass index
- Kidney function
- Smoking
- History

- Related to cyto-toxicity
  - Special chemical or biologic agents
  - Dosage and timetable of drugs
  - Type of transplantation
  - Position and the type of radiotherapy
  - Combination of chemotherapy with radiotherapy

# ASSESSMENT-2

- **Clinical manifestation**

- Scales from:

- World Health Organization (WHO)
- National Cancer Institute(NCI)
- Radiation Therapy Oncology Group( RTOG)
- Western Consortium for Cancer Nursing Research (WCCNR)

	0	1	2	3	4
<b>WHO</b>	None	Soreness $\pm$ erythema	Erythema, ulcers, and patient can swallow solid food	Ulcers with extensive erythema, and patient cannot swallow solid food	Mucositis to the extent that alimentation is not possible
<b>NCI (For radiotherapy)</b>	None	Erythema	Patchy reaction $\leq$ 1.5 cm, noncontiguous	Confluent reaction $>$ 1.5 cm, contiguous	Necrosis or deep ulceration
<b>NIC (For chemotherapy)</b>	None	Painless ulcer, erythema, or moderate pain without mucous ulcer	Pain erythema, edema, or ulcer, patient can swallow food	Pain erythema, edema, or ulcer, patient need intravenous infusion	Serious ulcer, patient need (total) parenteral nutrition, or need prophylactic intubation
<b>RTOC</b>	None	Erythema	Patchy reaction $<$ 1.5 cm, noncontiguous	Confluent reaction $>$ 1.5 cm, contiguous	Necrosis or deep ulceration, $\pm$ bleeding
<b>WCCNR</b>	None	Lesions: 1-4 Color: slight red Bleeding: N/A	Lesions: $>$ 4 Color: moderate red Bleeding: spontaneous	Lesions: coalescing Color: very red Bleeding: spontaneous	N/A

# PREVENTION, TREATMENT AND NURSING-1

- Mouth care plan
  - Before the anti-cancer treatment (IV Grade)
    - Treat the caries and periodontal disease
    - Health education
    - Plan for the daily oral hygiene routine

- After(during) the anti-cancer treatment  
(IV Grade)

- Assessing should be carried out routinely by the patients and the professional
- Choose the suitable soft toothbrush or cotton swab, clean the tooth and gingiva, and use the alcohol-free collutory
- Rinse every 2-3 hours, using NS to moist the oral cavity
- Use the floss daily, except the patient with thrombocytopenia

- Take off the denture to clean every day; the denture should be taken off before night sleep
- Avoid stimulation, such as the hot food /drink, smoke and alcohol
- Supply the protective intervention, such as lubrication for lips, local anesthesia
- Active treatment for the mucositis and oral infection
- Maintain good nutrition status

# PREVENTION, TREATMENT AND NURSING-2

- **Local intervention**
  - Antibacterial agent (I Grade)
    - Polymixin/tobramycin/amphotericin(PTA) pastille/paste
    - Iodophors solution
    - The two drugs can kill the oral microorganism extensively, so prevent and treat oral infections



- Mucous protector (I Grade)

- Sucralfate

- Thick, protect the mucous for a few hours, prophylactic effects

- Honey

- Viscous, acidic, hyperosmotic, water-absorbing, and abundant in minerals and vitamins. The glucose oxidase in honey can change the glucose into glucanic acid and hydrogen peroxide. Cheap, safe and easy for using

- Vera

- Anti-inflammatory and healing effects

- Cryotherapy

- Mouth with ice for 20-30 minutes, can cool the mouth, constrict the blood vessels, and reduce the blood volume in the oral cavity

- Laser (II Grade)

- Improve the proliferation and healing of the mucous, and also have the anti-inflammatory and analgesia effects

- Granulocyte colony-stimulating factor (G-CSF) (I Grade)
  - Both chemotherapy and radiotherapy cause granulopenia. G-CSF can facilitate the proliferation, maturation and activation of the neutrophilic granulocyte
  - G-CSF also can improve the migration and proliferation of oral epithelial cell, and increase the proliferation of the keratinocyte. So G-CSF can prevent the oral mucositis, and shorten the course of mucositis
  - Most researches use the G-CSF locally (smearing or rinsing), and some researches also report subcutaneous injections

# PREVENTION, TREATMENT AND NURSING-3

- **Systemic administration**

- **Amifostine (I Grade)**

- Amifostine is a cyto-protection drug. It will turn into WR-1065 in the body
- WR-1065 is highly selective for normal cell. Because amifostine can inactivate the oxygen radicals and alkylating agents when entering normal cells, it can protect the normal cell in chemotherapy

- **Glutamine (I Grade)**

- Glutamine is the energy resource of mucous cell
- It can protect the mucous by decreasing the inflammatory factors and related apoptosis.
- Glutamine can increase the adhesion of fibroblast and collagen, so increase the recovery of mucous

- Keratinocyte growth factor (KGF) (I Grade)

- Patients with malignancy hematologic disease may accept high-dose chemo/radiotherapy before stem cell transplantation
- KGF is recommended before and after the chemo/radiotherapy. KGF can improve the growth of epidermal cell, having the prophylactic and therapeutic effects for mucositis
- It can stimulate the growth of epidermal cell, accelerating the healing of ulcer
- Palifermin is artificial KGF

- Homeopathy (I Grade)

- The principal of homeopathy is congener can cure congener. If the thing can cause the symptom, the thing can cure the symptom
- There is some evidence to support the drug (Traumeel S) from homeopathy can treat the mucositis

# PREVENTION, TREATMENT AND NURSING-4

- Pain relieve

- Local intervention

- Analgesia rinses include lidocaine and benzocaine, etc
- Low-energy laser can initiate the photochemical reaction in mucous cell, so can improve the healing and causing pain relieve (IVGrade)
- Capsaicin is an activation of paprika. Desensitization treatment to neurons using capsaicin can relieve the pain temporarily



- **Systemic administration**

- patients with stem cell transplantation always have serious oral mucositis, intravenous infusion opioids always be taken for pain relieve
- There are some evidences to show that there is no difference between the effects of patient controlled analgesia (PCA) with continuous intravenous infusion. PCA are believed to reduce the dosage of anodyne and prolong the time of pain relieve

( I Grade )

- **Psychotherapy**

- Psychotherapy is always recommended to combine with the drug
- There are still not enough evidences to confirm the effects of psychotherapy. The maybe effective psychotherapy includes: cognitive behavioral therapy, relaxation therapy, imagination training and hypnosis, etc
- Relaxation therapy and imagination training can undergrad the pain  
( II Grade )



**THANKS!**