

RESEARCH COMMUNICATION

Evaluation of Preventing Chemotherapy Induced Oral Mucositis Project in Patients with Cancer of the Female Reproductive System at Maharaj Nakorn Chiang Mai Hospital, Thailand

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Abstract

Oral mucositis is an important and common complication among female patients who have cancer of the reproductive system receiving chemotherapy. This study aimed to evaluate the prevention of chemotherapy-induced oral mucositis project in female reproductive system cancer patients at Maharaj Nakorn Chiang Mai Hospital. The clinical practice guidelines evaluation model of the Registered Nurses Association of Ontario (RNAO, 2002) was used as a framework. The subjects included 14 nurses and practical nurses, and 404 patient reports. Data were collected by using of two forms developed by the researcher; the nurses' opinion form about the project's implementation and a mucositis form. Data analysis was conducted using frequency, percentage, and mean. The findings showed that 92.9 % of the subjects reported that they could consistently follow the clinical practice guidelines. All of them (100.00 %) agreed that the clinical practice guidelines were easily to follow, convenient to use, had good outcome, reduced nursing time, and were satisfied with this project. After the project's implementation, it was found that mucositis was reduced from 22.0 % to 9.9 %. The results of this study confirm that with the prevention chemotherapy-induced oral mucositis project for female reproductive system cancer patients, care is more efficient. These results could be extended for use in other similar settings.

Keywords: Chemotherapy - oral mucositis - patients with cancer of the female reproductive system

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Introduction

Oral mucositis makes the patients with cancer of the female reproductive system experience both physical and mental sufferings as well as changing social interaction. The patients have oral pains and problems in chewing and swallowing food (Cella et al., 2003). As a result, the patients' intake of nutrients and fluid is insufficient for physical needs; causing weariness and fatigue, and also increasing emotional imbalance, e.g. being irritated and short-tempered (Dodd et al., 2001). Oral mucositis also influences the treatment in that it causes the treatment to delay and the dosage is to be reduced in order to allow the oral mucositis to resume its normal condition. The patients then need additional treatments, both for analgesic administration and supplemental nutrient feeding (Sonis, Oster, & Fuchs, 2001). According to data collection from January-December 2007 on incidence of oral mucositis in the chemotherapeutic patients with cancer of female reproductive system in the Gynecological Ward 2, Maharaj Nakorn Chiang Mai Hospital, it was found that 22.00% of these chemotherapeutic patients suffered from oral

mucositis.

In order to develop quality of preventive measure against oral mucositis in the chemotherapeutic patients with cancer of female reproductive system in the Gynecological Ward 2, a quality development project for taking care of the chemotherapeutic patients with cancer of female reproductive system was established. The project committee was appointed, consisting of 1 instructor associated with gynecological cancer, 3 nurses in Gynecological Ward 2, and the researchers. The researchers had taken part in the operation of this Preventing Chemotherapy Induced Oral Mucositis Project in chemotherapeutic patients with cancer of female reproductive system at Maharaj Nakorn Chiang Mai Hospital, starting from the preparation stage to the implementation of the clinical practice guidelines in the Gynecological Ward 2, Maharaj Nakorn Chiang Mai Hospital, Faculty of Medicine, Chiang Mai University.

According to the e-data search, it was found that the Joanna Briggs Institute (JBI) had conducted a systematic literature review on the effectiveness of strategies for preventing and treating chemotherapy and radiation

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induced oral mucositis in patients with cancer (Kawanko et al., 1998). In this regard, suggestions were made thereon and comprised of two parts: oral cavity care guidelines and oral cavity care alternatives. Part 1 involved the oral healthcare guidelines, which consisted of oral assessment based on the World Health Organization's oral mucositis assessment scale (World Health Organization [WHO] cited in Kawanko et al., 1998), pre-treatment oral cavity care, and oral cavity care during treatment. Part 2 involved oral cavity care alternatives, which emphasized on the use of medication to prevent or to treat oral mucositis. The committee of Preventing Chemotherapy Induced Oral Mucositis Project in chemotherapeutic patients with cancer of female reproductive system at Maharaj Nakorn Chiang Mai Hospital had resolved to use the suggestions on oral mucositis prevention derived from Part 1, which included the oral healthcare guidelines, in preparing the clinical practice guidelines for Preventing Chemotherapy Induced Oral Mucositis Project in chemotherapeutic patients with cancer of female reproductive system at Maharaj Nakorn Chiang Mai Hospital. It had also resolved to implement the project based on the framework of Stetler Model of Research Utilization to Facilitate Evidence Based Practice (Stetler, 2001), which consisted of 5 stages. Stage 1, the Preparation, involved identifying to-be-solved problems, specifying place for implementation of research results, and searching for the research results associated with these problems. Stage 2 – the Content Validation, involved evaluating the acquired researches, and screening suggestions from such researches for utilization. Stage 3 – the Comparative Evaluation and Decision Making, involved drawing conclusions on the feasibility of implementation based on 4 principles, namely the feasibility of practice, the suitability of practice within the unit, the feasibility of successful practice within the unit, and the performers' acceptance. Stage 4 – the Interpretation and Application, involved concluding the evaluation results for practice, by determining method of applying the research results, prescribing a clear scope of practice, and proposing them to the practitioners for decision making in application thereof. Stage 5 – the Evaluation, involved following up the results of applying the clinical practice guidelines. This could be done by evaluating the process and results of applying the clinical practice guidelines, which the committee of Preventing Chemotherapy Induced Oral Mucositis Project in chemotherapeutic patients with cancer of female reproductive system at Maharaj Nakorn Chiang Mai Hospital had developed from the Joanna Briggs Institute's suggestions on the effectiveness of strategies for preventing and treating chemotherapy and radiation induced oral mucositis in patients with cancer (Kawanko et al., 1998) and experimentally implemented in the Gynecological Ward 2 in May 2009. The results of experimental implementation of clinical practice guidelines were then evaluated in May 2009. After that, the clinical practice guidelines were implemented in the Gynecological Ward 2 in June 2009, with regular monitoring of the project until September 2009. Finally, the project implementation results and outcomes were evaluated during October-December 2009.

The Preventing Chemotherapy Induced Oral Mucositis Project in patients with cancer of female reproductive system at Maharaj Nakorn Chiang Mai Hospital was carried out based on the framework of Stetler Model of Research Utilization to Facilitate Evidence Based Practice (Stetler, 2001). Its final stage of project implementation was the evaluation, where the project implementation was examined continuously so as to study the project results. This evaluation was a significant element of the project, as it provided information for the executives or the project operators in making a decision to improve methods of project implementation to suit certain units, and to achieve targeted objectives of the project. The project evaluation was conducted according to the framework of the clinical practice guidelines evaluation model of the Registered Nurses Association of Ontario (RNAO) (Ontario, 2002). The model consisted of 1) Structure Evaluation, i.e. staff sufficiency in project implementation, staff's knowledge about clinical practice guidelines, and adequacy of equipments in project implementation; 2) Process Evaluation, i.e. regularity in project implementation, ease of using clinical practice guidelines, convenience, time saving attribute, satisfaction of project participants, and problems and obstacles in implementation; and 3) Outcome Evaluation, i.e. changing health conditions, expenses of medical treatment, and period of hospital stay.

The evaluation of this Preventing Chemotherapy Induced Oral Mucositis Project in chemotherapeutic patients with cancer of female reproductive system at Maharaj Nakorn Chiang Mai Hospital focused on the evaluation in terms of process and outcome, because it was the evaluation of implementing clinical practice guidelines and was conducted during the project implementation. This corresponded to the statement of Grimshaw & Russel (1994) that the evaluation of implementing clinical practice guidelines during project implementation should focus on process evaluation and outcome evaluation. Another reason was that the project committee had already conducted the structure evaluation on staff sufficiency in project implementation, staff's knowledge about clinical practice guidelines, and adequacy of equipments in project implementation during the third stage of project implementation in order to examine promptness of staff and equipments prior to actual clinical implementation. Thus, the researchers aimed to evaluate the project during the project implementation in 2 aspects, namely the process evaluation and the outcome evaluation, so that they could utilize the evaluation results in improving the quality of project implementation so as to achieve the targeted objectives and to expand the practice results into other wards.

Research Objectives

1. To conduct a process evaluation of implementing the Preventing Chemotherapy Induced Oral Mucositis Project in chemotherapeutic patients with cancer of female reproductive system at Maharaj Nakorn Chiang Mai Hospital.

2. To conduct an outcome evaluation of implementing Preventing Chemotherapy Induced Oral Mucositis Project in chemotherapeutic patients with cancer of female

reproductive system at Maharaj Nakorn Chiang Mai Hospital.

Research Methodology

Type of Research: This research was a descriptive research to evaluate the Preventing Chemotherapy Induced Oral Mucositis Project in chemotherapeutic patients with cancer of female reproductive system in the Gynecological Ward 2, Maharaj Nakorn Chiang Mai Hospital, Faculty of Medicine, Chiang Mai University, during January-December 2009.

Population: The population of this research included nurses and practical nurses performing the duties in the Gynecological Ward 2 of Maharaj Nakorn Chiang Mai Hospital, and reports about chemotherapeutic patients with cancer of female reproductive system in the Gynecological Ward 2 of Maharaj Nakorn Chiang Mai Hospital.

Sample: The sample of this research included 14 nurses and practical nurses in the Gynecological Ward 2, Obstetrics and Gynecology Section, Nursing Department, Maharaj Nakorn Chiang Mai Hospital, who performed the duties during the implementation of the Preventing Chemotherapy Induced Oral Mucositis Project in chemotherapeutic patients with cancer of female reproductive system at Maharaj Nakorn Chiang Mai Hospital, and reports about chemotherapeutic patients with cancer of female reproductive system in the Gynecological Ward 2 during May-December 2009. This excluded the chief of Ward and other 2 nurses who were the project committee members.

Research Tools

1. Process Evaluation included a survey of general data of nurses and practical nurses, and a survey of opinions on the Preventing Chemotherapy Induced Oral Mucositis Project in patients with cancer of female reproductive system at Maharaj Nakorn Chiang Mai Hospital of nurses and practical nurses who participated in the Preventing Chemotherapy Induced Oral Mucositis Project in patients with cancer of female reproductive system at Maharaj Nakorn Chiang Mai Hospital.

2. Outcome Evaluation included a survey of general data of patients, and a data form for recording incidence of oral mucositis in chemotherapeutic patients with cancer of female reproductive system.

Data Analysis

1. General data of the sample were analyzed by descriptive statistics, using frequency, percentage, and mean.

2. Data from the survey of nurses' and practical nurses' opinions were analyzed by descriptive statistics, using frequency, and percentage.

3. Data on incidence of oral mucositis, its severity, and the week in which the symptom of oral mucositis was first shown were calculated for frequency and percentage.

Results of Data Analysis

1. General data of the sample, which was divided into 2 groups as follows:-

1.1 The sample that included 14 nurses and practical

Table 1. Practitioner Data (N=14)

Personal Data	n	%
Age (Range = 28-59, Mean = 45.43 years old)		
Less than 29 years old	1	7.14
30-39 years old	4	28.57
40-49 years old	3	21.43
50-59 years old	6	42.86
Education		
Certificate of Practical Nursing	6	42.85
Bachelor of Nursing Science	7	50.00
Master of Nursing Science	1	7.15
Position		
Practical Nurses	6	42.85
Nurse	8	57.14
Working Experience (Range=2-37, Mean=17.92years)		
Less than 10 years	3	21.43
11-20 years	4	28.57
21-30 years	4	21.43
31-40 years	3	21.43

nurses in the Gynecological Ward 2, Obstetrics and Gynecology Section, Nursing Department, Maharaj Nakorn Chiang Mai Hospital, who performed the duties during the implementation of the Preventing Chemotherapy Induced Oral Mucositis Project in chemotherapeutic patients with cancer of female reproductive system at Maharaj Nakorn Chiang Mai Hospital.

1.2 The sample that included 404 reports about chemotherapeutic patients with cancer of female reproductive system in the Gynecological Ward 2 during June-September 2009. Details were shown in Tables 1 and 2.

From Table 1, the sample participating in the Preventing Chemotherapy Induced Oral Mucositis Project in patients with cancer of female reproductive system at Maharaj Nakorn Chiang Mai Hospital consisted of 14 nurses and practical nurses, aged between 28-59 years old, with the average age of 45.43 years old and 42.86% were between 50-59 years old. Among them, 50% received a bachelor's degree, 57.14% were nurses. Their working experience ranged from 2-37 years, with an average of 17.92 years, and 28.57% of the sample had working experience between 11-20 years.

From Table 2, the sample participating in the Preventing Chemotherapy Induced Oral Mucositis Project in patients with cancer of female reproductive system at Maharaj Nakorn Chiang Mai Hospital consisted of 404 patients, with an average age of 50.31 years old, 57% of which were graduated with diplomas or lower, and 25.49% were Prathom 4 graduated. It was found that most of the sample, or 59.90%, suffered from ovarian cancer, followed by uterine cancer at 15.09%.

2. Data on Process Evaluation and Outcome Evaluation

2.1 Process evaluation was the survey of opinions of the sample representing 14 nurses and practical nurses participating in the Preventing Chemotherapy Induced Oral Mucositis Project in patients with cancer of female reproductive system at Maharaj Nakorn Chiang Mai Hospital. Details were shown in Table 3.

From Table 3, it was found that 100.00% of the sample

Table 2. Number and Percentage of Sample Representing Chemotherapeutic Patients with Cancer of Female Reproductive System, Classified by Age, Education, and Diagnosis (N=404)

Personal Data	n	%
Age (Range=17-79, Mean=50.31 years old)		
Less than 19 years old	3	0.74
20-29 years old	12	2.97
30-39 years old	40	9.90
40-49 years old	104	25.74
50-59 year old	191	47.28
60-69 years old	41	10.15
70-79 years old	13	3.22
Education		
Unschooling	45	11.14
Less than Prathom 4	103	25.49
Diploma or lower	233	57.68
Bachelor Degree	22	5.44
Master degree and higher	1	0.25
Diagnosis		
Ovarian cancer	242	59.90
Uterine cancer	61	15.09
Cervical cancer	48	11.87
Molar pregnancy, Choriocarcinoma	41	10.14
Peritoneal mesothelioma	6	1.48
Fallopian tube cancer	5	1.23
Vulvar cancer	1	0.29

Table 3. Number and Percentage of the Sample Representing Nurses and Practical Nurses Giving Opinions on the Preventing Chemotherapy Induced Oral Mucositis Project in Patients with Cancer of Female Reproductive System at Maharaj Nakorn Chiang Mai Hospital, Classified by Opinions on the Project Implementation (N=14)

Opinions on Project Implementation	Agree		Disagree	
	n	%	n	%
Able to follow consistently	13	92.86	1	7.14
Easy to use, without perplexities	14	100.00	0	0
Convenient to use	14	100.00	0	0
Have good outcome on patients	14	100.00	0	0
Save nursing time	14	100.00	0	0
Satisfied with the project implementation	14	100.00	0	0

representing nurses and practical nurses opined that the clinical practice guidelines were easy to use, were convenient to use, had good outcome on patients, and saved nursing time. They were all satisfied with the project implementation. In addition, 92.86% stated that they could follow the clinical practice guidelines consistently.

2.2 Outcome evaluation was the quantitative gathering of incidence of oral mucositis, its severity, and the week in which the symptom of oral mucositis was first shown among the sample representing chemotherapeutic patients with cancer of female reproductive system and participated in the Preventing Chemotherapy Induced Oral Mucositis Project in patients with cancer of female reproductive system at Maharaj Nakorn Chiang Mai Hospital, as shown in Table 4.

From Table 4, the sample participating in the

Table 4. Incidence, Severity, and Time when Oral Mucositis Symptoms were first Shown (N=404)

Classified	Yes		No	
	n	%	n	%
Incidence of oral mucositis	40	9.90	364	90.10
Severity of oral mucositis				
1 st level	26	65.00		
2 nd level	12	30.00		
3 rd level	1	2.50		
4 th level	1	2.50		
Weeks in which symptom of oral mucositis was first shown				
1 st week	28	70.00		
2 nd week	8	20.00		
3 rd week	4	10.00		

Preventing Chemotherapy Induced Oral Mucositis Project in patients with cancer of female reproductive system at Maharaj Nakorn Chiang Mai Hospital consisted of 404 patients. There were 40 patients, equal to 9.90%, experiencing oral mucositis. Among them, the highest number of 26 patients, equal to 65.00%, had 1st level of severity, followed by 12 patients, or 12.00%, with 2nd level of severity. In addition, the majority of 70.00% first exhibited the symptom of oral mucositis in 1st week after the administration of chemotherapy.

Discussion

Process Evaluation could be discussed in details as follows. For the sample representing nurses and practical nurses, 92.86% stated that they were able to consistently follow the clinical practice guidelines. This was because the whole sample took part in all stages of implementing clinical practice guidelines, starting from proposing the derived research results to the sample for their mutual decision about the use of Joanna Briggs Institute's suggestions on the effectiveness of strategies for preventing and treating chemotherapy and radiation induced oral mucositis in patients with cancer (Kawanko et al., 1998).

All the sample members took part in making suggestions for improving the suitable clinical practice guidelines for use in wards before proposing the guidelines to experts. The whole sample took part in the experimental implementation of clinical practice guidelines in order to give suggestions and adjust the practice methods for more suitability; by adjusting the timetable of the patients' oral hygiene practice, adjusting the method of recording drinking water, and improving a more easy-to-use record form of oral mucositis incidence. During the project implementation, they involved in continual evaluation of results and problem-solving; by coordinating the provision of food appropriate for chemotherapeutic patients with cancer of female reproductive system, and coordinating with the attending physicians about increasing volume of water intake for non-water restricted patients as well as weekly evaluations. Refresher courses were arranged for the sample every month, while project committee meetings were held every 2 months. Coordination among related units was constantly pursued in order to resolve any

problems and difficulties. Regular supervisions were carried out so that the healthcare staffs were encouraged and got constant attention. Furthermore, monthly educational programs for the sample could stimulate the sample to consistently follow the clinical practice guidelines. From the sample, 1 member, equal to 7.14%, was unable to consistently follow the clinical practice guidelines and gave an opinion that some patients had already been treated prior to the chemotherapy with diazepam, which was a tranquilizer. Consequently, these patients became drowsy, giddy and sleepy; thus resulting in their limitations to participate in the project activities.

Easy to Use, without Perplexities: For the sample representing nurses and practical nurses, 100% opined that they were able to use the clinical practice guidelines easily without perplexities. Having an average working experience in the field of Obstetrics and Gynecology for 17.92 years, the sample could therefore follow the clinical practice guidelines easily. The refresher courses for the sample every month and constant supervision would stimulate the patient to consistently follow the clinical practice guidelines.

For the sample representing nurses and practical nurses, 100% opined that they were able to use the clinical practice guidelines conveniently. The schedule of project activities was fixed in consistent with that of the existing activities. Equipments necessary for the practice were sufficient. The record form of oral mucositis incidence was short, concise and simple. The project received the support from executives and supervisors. All of the aforementioned reasons made it possible to propose problems and needs, which could then be resolved regularly. As a result, the clinical practice guidelines could be followed more conveniently and swiftly.

For the sample representing nurses and practical nurses, 100% opined that the clinical practice guidelines could be used and had good outcome in treating chemotherapeutic patients with cancer of female reproductive system. It was because these clinical practice guidelines were made based on suggestions from a systematic literature review of the Joanna Briggs Institute (Kawanko et al., 1998), which was a famous institute. The clinical practice guidelines were implemented through a systematic process and thus practiced consistently. The outcome on the sample representing patients was that the incidence reduced to 9.90% (as per Table 4).

For the sample representing nurses and practical nurses, 100% opined that using the clinical practice guidelines helped save time in taking care of the sample representing patients. The implementation of the clinical practice guidelines brought about a systematic approach of nursing the sample representing patients, and clear nursing guidelines. When the performers followed the clinical practice guidelines consistently, they would develop skills in using the clinical practice guidelines, and thus be able to follow the clinical practice guidelines more swiftly. In addition, as using the clinical practice guidelines had reduced the incidence of oral mucositis in the sample representing patients, it also reduce the burden of administering medicines or applying analgesic

viscous to the sample representing patients, thereby reducing the time in nursing the sample representing these patients.

All members of the sample representing nurses and practical nurses (100.00%) were satisfied with the project implementation, because they had taken part in all stages of the project implementation, ranging from participating in development of the clinical practice guidelines through giving information about problems and obstacles in the experimental implementation. This accompanied by the fact that these clinical practice guidelines were easy to use, convenient and clear, had simple and uncomplicated practical steps, and saved time in taking care of the sample representing patients. The guidelines also helped to reduce the incidence of oral mucositis in the sample representing patients from previously 22.00% to 9.90%. When the implementation produced successful outcome as targeted, work satisfaction took place. Therefore, all the members of the sample representing nurses and practical nurses were satisfied with the project implementation.

As for problems and obstacles in project implementation, there was only 1 member of the sample, equal to 7.14%, who could not consistently follow the clinical practice guidelines consistently, giving an opinion that some patients, prior to being administered with chemotherapeutic medicine, had already been treated with diazepam, which was a tranquilizer. Consequently, these patients became drowsy, giddy and sleepy; thus resulting in their limitations to participate in the project activities. In concluding the implementation of the Preventing Chemotherapy Induced Oral Mucositis Project in chemotherapeutic patients with cancer of female reproductive system at Maharaj Nakorn Chiang Mai Hospital, which had been applied from suggestions of Joanna Briggs Institute (Kawanko et al., 1998) on the effectiveness of strategies for preventing and treating chemotherapy and radiation induced oral mucositis in patients with cancer; it was found that the implementation process was convenient, easy and simple. It saved time in taking care of patients, and could be practiced consistently. Problems and obstacles in project implementation were rare. Finally, all members of the sample representing nurses and practical nurses were satisfied with the project implementation.

Outcome Evaluation could be discussed in details as follows. This Preventing Chemotherapy Induced Oral Mucositis Project in patients with cancer of female reproductive system at Maharaj Nakorn Chiang Mai Hospital used the clinical practice guidelines that were examined by the experts knowledgeable and competent in taking care of chemotherapeutic patients with cancer of female reproductive system. Steps of the project implementation were approved by the healthcare team working in the ward, were experimentally implemented, and were subsequently improved for more suitability, ease, simplicity, and convenience of use. Problems and issues were reviewed so as to be consistent with the need for developing service quality of the ward attending chemotherapeutic patients with cancer of female reproductive system, to be consistent with

the need of patients for relief of sufferings from oral mucositis, and to respond to the hospital policy toward quality development for service excellence. In the project implementation, an interdisciplinary team was established. Moreover, project activities were practiced consistently. Educational programs concerning working practices were arranged for all the ward healthcare team members every month. Follow-ups and practice evaluations were conducted regularly every 1-2 weeks. The sample representing nurses and practical nurses had positive opinions toward the project implementation. The clinical practice guidelines were uncomplicated, clear, and easy to understand; could be followed consistently; and exhibited benefits of implementation. As discussed above, all members of the sample representing nurses and practical nurses were satisfied with the project implementation using the clinical practice guidelines. This caused the project implementation to run so continuously and consistently that the incidence of oral mucositis in the chemotherapeutic patients with cancer of reproductive system reduced from 22.00% pre-implementation to 9.90% post-implementation.

Details of outcome could be discussed as follows. In following the clinical practice guidelines, cleansing mouth and teeth every 2-4 hours made the oral cavity clean and decreased oral cavity infection that caused oral mucositis to become severe and proliferated.

Intake of nutrients and water sufficient for body needs helped stimulate the regeneration of oral epithelial cells destroyed by chemotherapy, at an equal pace of cell damages. In addition, consuming mild food and using alcohol-free mouthwash would reduce the irritation of newly-grown cells still weak and sensitive to various irritants, thereby decreasing the intensity of oral mucositis incidence. Keeping water in the mouth for some time or sipping water frequently moistened oral epithelial cells, lessened withering of oral epithelial cells, and thus reduced the incidence of oral mucositis.

Education programs involving personal or group teaching and demonstration every week helped patients and relatives to acquire knowledge and skills, as well as stimulated the patients' regular self-care. Therefore, patients had an opportunity to exchange their problem-solving experiences and improve their self-care practices.

Refresher courses were arranged for all members of the ward healthcare team every month, regarded as reviews of knowledge about the clinical practice guidelines, and stimulation toward consistent implementation of the clinical practice guidelines. This would also provide the healthcare staff an opportunity to address problems and obstacles in conducting project activities, and thus to solve such problems together.

It could be seen that implementation of the Preventing Chemotherapy Induced Oral Mucositis Project in patients with cancer of female reproductive system at Maharaj Nakorn Chiang Mai Hospital, using the clinical practice guidelines developed from Joanna Briggs Institute's suggestions on the effectiveness of strategies for preventing and treating chemotherapy and radiation induced oral mucositis in patients with cancer, could practically reduce the incident of oral mucositis

in chemotherapeutic patients with cancer of female reproductive system.

References

- Cella D, Pulliam J, Fuchs H, et al (2003). Evaluation of pain associated with oral mucositis during the acute period after administration of high dose chemotherapy. *Cancer*, **15**, 406-12.
- Dodd MJ, Dibble S, Miaskowski C, et al (2001). A comparison of the effective state & quality of life of chemotherapy patients who do & do not develop chemotherapy induced oral mucositis. *J pain symptom manage*, **21**, 498-505.
- Grimshaw, Russel (1994). Evaluation of clinical practice guidelines. <http://mdm.ca/cpgsnew/cpgs/CPGworkshop1994/1575e.html>
- Kawanko I, Long L, Hodgkinson B, et al (1998). The effectiveness of strategies for preventing and treating chemotherapy and radiation induced oral mucositis in patients with cancer. Adelaide: the Joanna Briggs institute for evidence based nursing and midwifery.
- Ontario R.NAO (2002). Best practice guideline. <http://www.mao.org/practice>
- Sonis ST, Oster G, Fuchs H (2001). Oral mucositis & the clinical & economic outcomes of hematopoietic stem-cell transplantation. *J Clin Oncol*, **19**, 2201-5.
- Stetler CB (2001). Updating the stetler model of research utilization to facilitate evidence based practice. *Nursing Outlook*, **49**, 272-9.