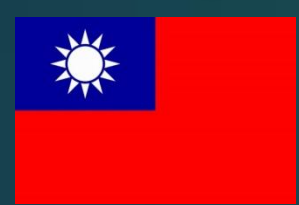# The analysis of effectiveness promoted by applying *information system* in evaluation of adverse effect after chemotherapy

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Background

According to the latest cancer registry annual report 2015 announced by Ministry of Health and Welfare in Taiwan, the number of new cases registered is 105,156, with an average that one may diagnosed with cancer every 5 minutes, which is 6 seconds faster compared with 2014 and break a new record of "The Cancer Clock". In Taiwan, cancer has been the top 1 cause of death for over 35 years since 1982. Mortality in 2016 was 172,418 in total. Mortality from cancer was 47,760, which is 27.7% of total mortality in 2016. Every 11 minutes and 2 seconds, one may die of cancer on average. The expense of cancer treatment in 2016 even hit a new record that reached 84.5 billion Taiwan dollars. Thus it could be seen by the above, cancer not only serious threats the health of the national but also highly increases national medical expense.

Chemotherapy is the most common cancer treatment. Chemotherapy kills cancer cell through systemic treatment. Yet, it also kills normal cell and cause adverse effect. Adverse effects may differ from different drugs adopted through chemotherapy or individual health condition. When the patient receive chemotherapy, if the evaluation tool that medical staff use is not inconsistent, or the written content is incomplete, it will directly affect or delay the treatment and even affect patience's condition.

Purpose

By applying information system, "Standardized evaluating tool of adverse effect", our hospital cancer treatment team unified the recording format of chemotherapy adverse effect through systematic evaluation. Members of cancer treatment team could have a quick understanding of patient's condition and reaction to the treatment then take appropriate medical measures. Meanwhile, it not only simplifies the writing medical records and standardization procedure, but also reduces writing errors and shortens recording time. It allows cancer treatment team to take timely measures to related adverse effects and thus improve the quality of cancer care.

Methods

Information

Cancer treatment team members discuss with Information engineers to implement National Cancer Institute (NCI) Common Terminology Criteria for Adverse Events (CTCAE) 4.0 system during the process of medical record digitization . To the standardize the evaluation of adverse effects, standard formats, specific columns and evaluating items have to be formulated, which completes the content of evaluation and make it consistent in recording.

Evaluation screen (partial)

Staff

Members of cancer treatment team offer training program of "Applying information system to recording of adverse effects of chemotherapy", which including face-to-face instruction and E-learning. Staff who took training program would be considered as qualified after operation is correctly practiced. Departments assign seed staff to assist individual guidance.
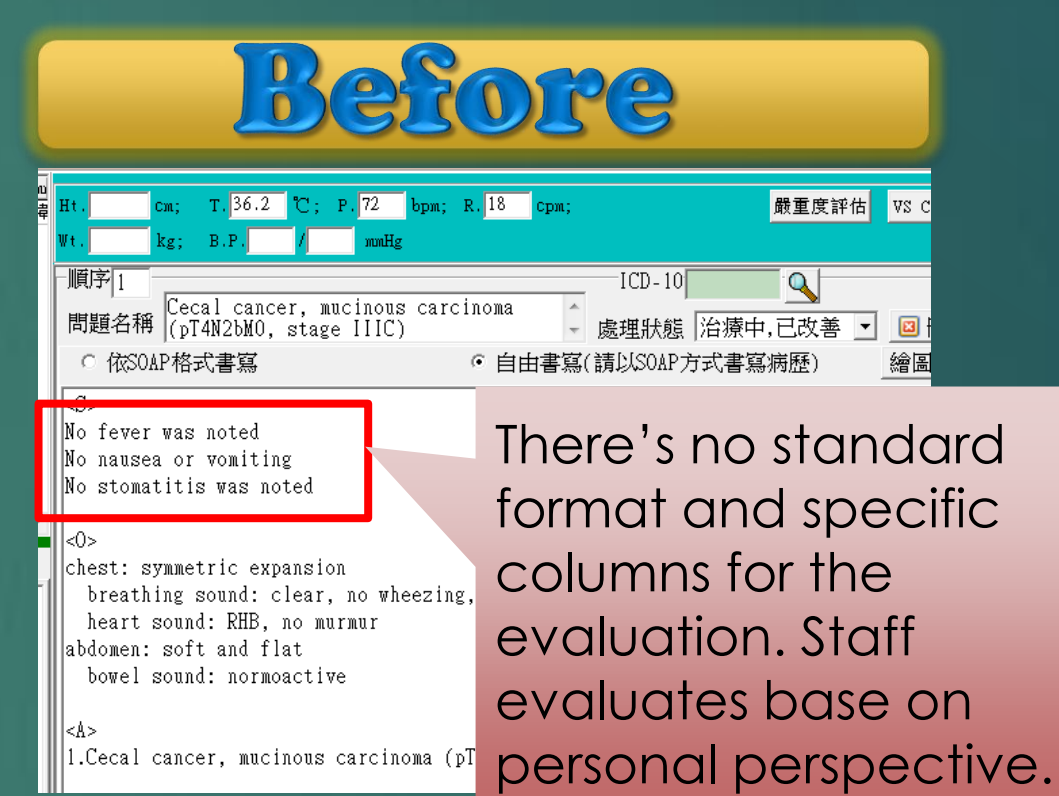
Seed staff and information engineer regularly participate in the safety conference of chemotherapy every quarter to feedback with problem they met during the operation.
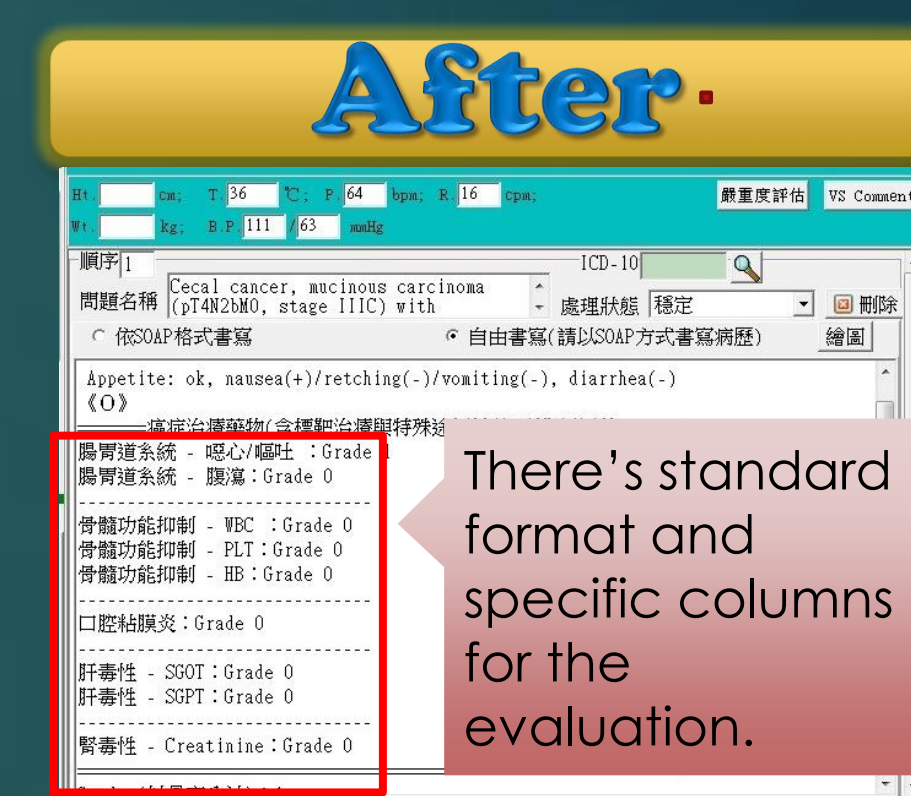
Policy

Management Committee of Medical Record approves that as for patient who receive chemotherapy in hospital, the evaluator should follow standard format to fulfill the column of "Evaluation of adverse effect of cancer treatment". The completeness of every column on the discharge medical record would be checked daily.

Results

Before implement of information system, there's no standard format and specific columns for the evaluation of adverse effects of chemotherapy. Staff evaluates base on personal perspective and makes it time-consuming for the team viewing medical records. Randomly collect samples from 50 medical records/times; monitored completeness in recording of adverse effects of chemotherapy was 75.3%. 6 months after Common Terminology Criteria for Adverse Events (CTCAE) 4.0 System introduced to digitized medical record, we re-evaluated with the same condition and circumstance, the completeness reached to 99.1%, which is a remarkable improvement with an increase of 23.8%. Up to January-April 2018, monthly sampling of 10 people / time, monitored completeness in evaluation of adverse effects of chemotherapy is up to 100%.
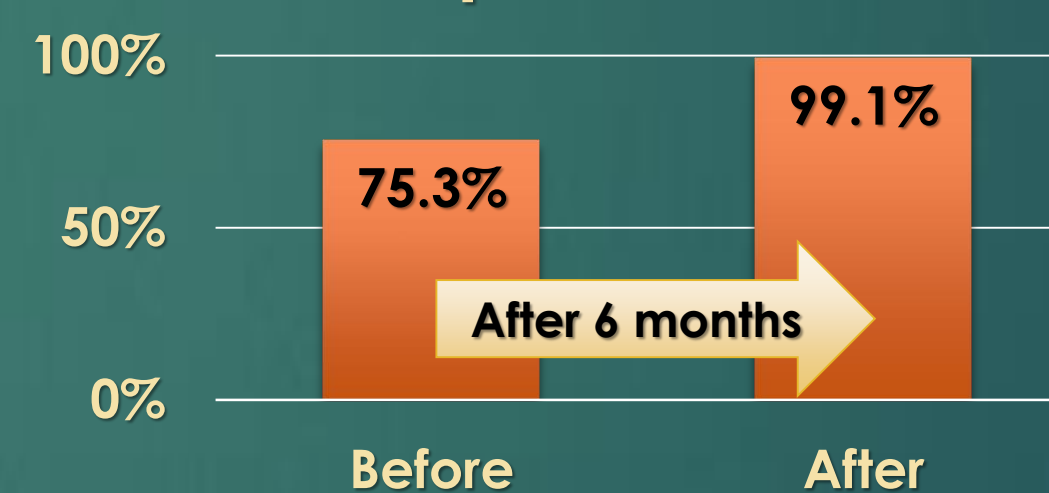

Before — There's no standard format and specific columns for the evaluation. Staff evaluates base on personal perspective.
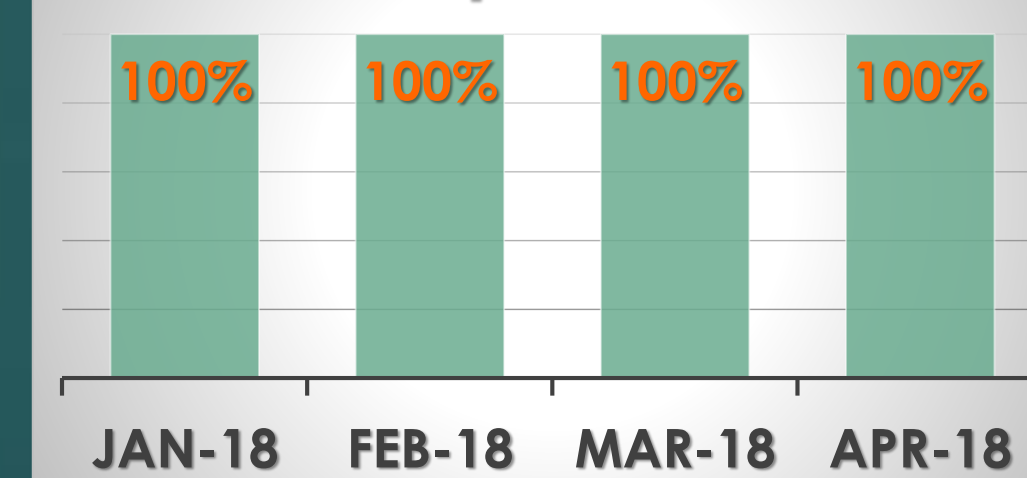
After — There's standard format and specific columns for the evaluation.

Completeness
100%
99.1%
75.3%
After 6 months
50%
0%
Before   After

Completeness
100% 100% 100% 100%
JAN-18 FEB-18 MAR-18 APR-18

Conclusions

Evaluation of adverse effects of chemotherapy is a very important procedure of the treatment and also the basis of measures to deal with adverse effects. Furthermore, it is a crucial factor in adjusting the dosage of chemotherapy or changing the therapeutic drugs during the treatment. If adverse effects are well-controlled, the patient's treatment compliance is relatively improved, which will indirectly increase the treatment completion rate and survival rate.

Comments

After the Common Terminology Criteria for Adverse Events (CTCAE) 4.0 system introduced to digitized medical record, it not only established standardized evaluating tools, but shortens recording time as well, which allows cancer treatment team to have a clear picture of patient's condition in the shortest time. It becomes a common professional language in cancer care that medical treatment team could communicate with each other efficiently.