Hospice Care and Consultation Services Improve the Rate of Do-Not-Resuscitate Order Signing and Reduce the Use of Chemotherapy at the End of Life

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Summary
We evaluate the percentage of terminal cancer patients willing to sign do-not-resuscitate (DNR) orders and avoid unnecessary chemotherapy. From 2005 to 2009, a total of 3,024 terminal cancer patients were enrolled. The DNR rate significantly improved from 45% to 75% and the unnecessary chemotherapy rate decreased from 5.2% to 2.9% one year after our hospice care and consultation service was implemented. Moreover, the DNR rate remained at 75% during the following 3 years. In this study, we conclude that hospice care and consultation can improve the rate of DNR order signing and decrease the rate of unnecessary chemotherapy use in terminal cancer patients.

Abstract
Background
Through the hospice consulting system, terminal cancer patients can have good quality end-of-life care. Hospice consulting systems can help educate patients and facilitate their informed decision making. To evaluate the percentage of terminal cancer patients willing to sign do-not-resuscitate (DNR) orders and avoid unnecessary chemotherapy.

Methods
From 2005 to 2009, a retrospective questionnaire-based study, a total of 3,024 terminal cancer patients in National Cheng-Kung University Hospital were enrolled. The consulting team of hospice physicians and hospice nurse specialists provided the truth-telling, information about DNR orders, clinical symptom control, and so on. Type of cancer and clinical symptoms were recorded, and the rates of DNR order signing and use of chemotherapy in last month of life were calculated.

Results
The DNR rate significantly improved from 45% to 75% and the unnecessary chemotherapy rate decreased from 5.2% to 2.9% one year after our hospice care and consultation service was implemented. Moreover, the DNR rate remained at 75% during the following 3 years. The main symptoms exhibited by patients were fatigue (24.2%), dyspnea (16.1%), and pain (15.9%).

Conclusions
Hospice care and consultation can improve the rate of DNR order signing and decrease the rate of unnecessary chemotherapy use in terminal cancer patients.

Keywords: Do not resuscitate order; hospice care; hospice consultation service

Introduction
Cancer is the leading cause of death in Taiwan. In 2009, more than 79,000 patients were newly diagnosed with cancer and more than 41,000 patients died from cancer according Taiwan Cancer Registry Database (http://tcr.cph.ntu.edu.tw). Based on regulations for Cancer Care Quality Assurance Measures enacted in 2006 pursuant to the Cancer Control Act of May 21, 2003, a cancer center and palliative care consultation and hospice care system were established in National Cheng-Kung University Hospital in Taiwan.

Patients with cancer require continuous supportive care by cancer care professionals. Taiwan is the first Asian country to enact a Natural Death Act in 2000. The act states that dying patients or their families have the right to refuse unnecessary medical management that only prolongs suffering. The Natural Death Act provides medical personnel a legal basis to makemedical decisions in accordance with the patients’ wishes. In oriental cultures, truth-telling about end-of-life issues ranks first among all ethical dilemmas [1,2]. Do-not-resuscitate (DNR) status is not discussed with patients in the

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early stages of their disease and this delay in truth-telling may affect their quality of end-of-life care [3]. Oncology clinicians and nurses in Taiwan differ in their attitudes toward truth telling [4,5]. Although the use of hospice and other palliative care services at the end of life has increased, many patients enroll in hospice less than 3 weeks before their death, which limits the benefit they may gain from these services [6]. Many patients receive chemotherapy the month before hospice admission [7]. Patients with terminal and advanced cancers often endure chemotherapy late in their disease course leading to unnecessary adverse effects, loss of quality of life, and delay in hospice care referral [8]. Hospice consulting services have a positive effect on the utilization of hospice care, DNR order signing rate, and quality of end-of-life care for terminal cancer patients [9,10]. However, many people receive anti-cancer chemotherapy until the end-of-life in Taiwan. Excessive chemotherapy can decrease the quality of life of patients. Physicians should consider the side effects in terminally ill patients before administering chemotherapy [11]. This issue of whether to provide chemotherapy to patients in a palliative care ward needs to be discussed [12]. We therefore analyzed data on clinical symptoms, type of cancer, and DNR order signing status collected yearly from patients eligible for palliative care consultation and hospice care in our cancer center during the period 2005 (the beginning of our consultation service) to 2009. We found that hospice care and palliative care consultation can improve clinical symptoms, increase the DNR order signing rate, and avoid unnecessary chemotherapy in terminal cancer patients.

Materials and Methods

Demographic Characteristics

From 2005 to 2009, a total of 3,024 terminal cancer patients in National Cheng-Kung University Hospital were enrolled. The physicians and patients signed forms allowing the hospice care system to provide palliative care and consultation. The symptoms of patients were evaluated by the questionnaire, evaluation and assessment form. We used the cut points on 0-10 Numeric Rating Scales (NRS) for symptoms assessment scale. The questionnaire form include pain, nausea, vomiting, dyspnea, fatigue, constipation, sleeping disorder. We also evaluate other symptoms and signs including edema, ascites, abdominal distension, infection, jaundice, anemia and wound. If the patients could not read or write, a visiting member of the hospice team would read the questions and record the patients oral answers. In all, 235 patients received chemotherapy in the last month of life from 2009 to 2001.

The Hospice Care and Palliative Care Consultation System

The focus of our team of hospice physicians and hospice nurse specialists was to provide good hospice care in acute hospice care wards and to transfer terminal cancer patients to suitable postacute hospice care units. Our consultation team provide consent form, application form, service content form, the symptoms questionnaire, evaluation and assessment form, pain control and assessment form, advanced care plans form to the patients.

Definition Of Unnecessary Chemotherapy

Continuation of chemotherapy very near death may indicate overuse. This issue was clarified for different tumor types. Unnecessary chemotherapy was defined as use of futile chemotherapy during the last month of life [13,14] or death during the same hospitalization.

Statistical Analysis

All analyses were performed using SPSS 16.0 (SPSS, Chicago, IL, USA). Frequency distribution was used to describe the demographic data and the distribution of each variable.

Results

Patients’ Characteristics

A total of 3,024 terminal cancer patients in acute wards were referred to our hospice consult team. One year after implementing our palliative care consultation and hospice care program, the DNR order signing rate increased significantly from 45% to 75% and remained 75% during the following 3 years. The data are shown in Figure 1. The most common types of cancer were hepatocellular carcinoma (22.7%), lung cancer (19.2%), and gastrointestinal cancer (17.8%). The patients’ characteristic and cancer types are listed in Table 1. More than 50% of patients diagnosed with terminal cancer in our hospital received hospice care and palliative care consultation.

Clinical Symptoms

After consultation, 65% of patients received hospice care (ending in discharge, death, or transfer to another hospital) from their physicians in an acute care ward and 35% of patients received hospice care after transfer home or to a hospice care ward. The main symptoms exhibited by patients were fatigue (24.2%), dyspnea (16.1%), pain (15.9%), constipation (9.2%), nausea and vomiting (6.2%), edema (6.1%), ascites fluid build-up in the abdomen (5.8%; Figure 2).

Chemotherapy in the Last Month of Life

Chemotherapy was still in use one month before death in patients with gastrointestinal (G-I) cancers (31.5%), hematological malignancies (20.4%), lung cancer (17.4%), and genitourinary (GU) cancers (6.4%; Figure 3). After the implementation of our palliative care consultation and hospice care program, the unnecessary chemotherapy rate decreased from 5.2% to 2.9% (Table 2). Total

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560-600 Patients had died in the course of each year. The median overall survival was 10.4 months (95% confidence interval, 9–13 months).

**Discussion**

Chemotherapy has played an important role in improving cancer outcomes and is a cornerstone of therapy for most patients with cancer. However, it has many side effects. We found that chemotherapy was used in all patients referred to palliative care within 3 months before death and in only a small number of patients referred to palliative care within 1 month before death. This confirms that chemotherapy use extending to the end of life is less frequent and unnecessary. Doctors should be able to recognize the implications of excessive and aggressive use of chemotherapy and should actively communicate with patients about their therapeutic choices. However, many factors affect the use of chemotherapy near the end of life. Financial incentives [15-17] and the attitudes of patients with incurable cancer toward medical treatment in the last phase of life [18] affect the quality of health care provided by primary care physicians. Kao et al. reported that younger age, tumor type, and chemosensitivity are the important predictors of palliative chemotherapy usage in patients with advanced disease and that the individual clinician is the only factor influencing continuance of chemotherapy in the last 4 weeks of life [13]. In our study, the most frequent cancer types in terminally ill patients were gastrointestinal cancers, hematological cancers, and lung cancer. In the study by Kao et al., the most common types were neurological cancer, ovarian cancer, and colorectal cancer. In contrast to the rate of chemotherapy continuance (i.e., greater than...
References