

Association Between the Communication Skills of Physicians and the Signing of Do-Not-Resuscitate Consent for Terminally Ill Patients in Emergency Rooms (Cross-Sectional Study)

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Background: The signing of do-not-resuscitate (DNR) consent is mandatory in providing a palliative approach in the end-of-life care for the terminally ill patients and requires an effective communication between the physician and the patients or their family members. This study aimed to investigate the association between the communication skills of physicians who participated in the SHARE (supportive environment, how to deliver the bad news, additional information, reassurance, and emotional support) model course on the patient notification and the signing of do-not-resuscitate (DNR) consent by the terminally ill patients at emergency rooms.

Methods: Between May 1, 2017 and April 30, 2018, a total of 109 terminally ill patients were enrolled in this study, of which 70 had signed a DNR and 39 had not. Data regarding the patients' medical records, a questionnaire survey completed by family members, and patient observation forms were used for the assessment of physicians' communication skills during patient notification. The observation form was designed based on the SHARE model. A multivariate logistic regression model was applied to identify the independent significant factors of the patient and family member variables as well as the four main components of the observation form.

Results: The results revealed that knowing how to convey bad news and providing reassurance and emotional support were significantly correlated with a higher rate of signing DNR consent. Additionally, physician-initiated discussion with family members and a predicted limited life expectancy were negative independent significant factors for signing DNR consent.

Conclusion: This study revealed that good communication skills help to increase the signing of DNR consent. The learning of such skills from attendance of the SHARE model course is encouraged for the physicians in the palliative care of terminally ill patients in an emergency room.

Keywords: communication skills, terminally ill, do-not-resuscitate, DNR, emergency room, ER, SHARE model

Introduction

Patients who are taken to the emergency room (ER) for the end-stage of their illness are often in a grave condition. There is currently an increasing emphasis on the issue of patient autonomy and dying with dignity and more end-of-life care is being initiated in ERs.¹⁻⁴ In these cases, caring physicians may raise concerns about care

aggressiveness and sometimes provide a palliative approach to avoid the unnecessary suffering of these the patients.¹⁻⁴ As instruction to all the involved healthcare providers not to perform further interventions and procedures, the signing of do-not-resuscitate (DNR) consent by the physicians in conjunction with the patients or their proxy decision makers is required^{5,6} and early initiation of DNR discussions is suggested to improve end-of-life care.² On the other hand, many ethnical Chinese believe that life and death are predetermined and that an individual must not plan for or discuss concerns related to end-of-life care.⁷ Most families may choose life-sustaining therapy to prolong the life of the patient or family member because of filial piety, particularly when the patient is a parent or other family elder.⁸ In addition, some family members may concern about a decrease in potentially critical interventions and survival rate of the patients once early DNR orders were signed.^{6,9} Therefore, physicians play an extremely important role not only in determining the need for hospice and palliative care for the patients, but also in notifying patients and their family members of the terminal condition of the patients.^{1,2}

Information concerning a patient's condition from the physician is vital to family members' decision making concerning the signing of DNR consent. In that moment, family members are typically extremely anxious or emotional and may find it difficult to make an optimal medical decision on behalf of the patient.² In the absence of a bad news communication model and assessment tools, the signing rate of DNR consent is only 23%.¹⁰ Therefore, a high level of communication skills is required in the caring physician to establish effective patient condition notification.^{11,12} Among difference communication models, the SHARE model was developed by the Japan Psycho-Oncology Society^{13,14} to understand patients' preferences regarding the disclosure of bad news and it emphasizes effective communication to provide patients with psychological support when receiving bad news.¹⁵ The acronym SHARE represents the four main components of this structured model: Supportive environment, How to deliver the bad news, Additional information, Reassurance, and Emotional support.¹³ The detailed emotional support training provided by the SHARE model has proven to have a positive effect in the areas of notification skills, emotional support, and providing information.¹⁶ Based on studies related to cancer patients' preference for being told the truth, the SHARE communication model has provided an emotional cushion to help patients cope during their time of grief¹⁵ and to promote communication among patients,

family members, and physicians.^{12,17} These programs are led by certified facilitators using small classes—four participants, two facilitators, and one standard patient—and role play to enable participants to learn important communication skills.¹⁵ After participating in the SHARE course of communication skills training, healthcare personnel's preference for truth-telling improve significantly.^{12,15,18} In this study, we aimed to investigate the association between the communication skills of the physicians who had participated in the SHARE model course on patient notification and the signing of DNR consent by the terminally ill patients at ERs.

Methods

Ethical Statement

The Chang Gung Memorial Hospital institutional review board approved this study (approval number 201700429B0). Approach to the patients' medical records was allowed by this approved number. The researchers explained the goals of the project in detail to the subjects before obtaining their consent and all the patients involved in the study did provide written consent. The patient privacy protection was performed using anonymous code for a patient's identity. The research data was kept confidential and only used for the purposes of the study and conducted in accordance with the Declaration of Helsinki.

Study Setting and study Population

This was a cross-sectional study and the work has been reported with the (Strengthening the Reporting of Cohort Studies in Surgery) STROCSS criteria.¹⁹ This study was performed in the ER of a 2686-bed medical center in southern Taiwan.²⁰⁻²² The research population consisted of end-stage terminally ill patients with cancer or other terminal diseases (such as cardiomyopathy, congestive heart failure, chronic obstructive pulmonary disease, emphysema, heart disease, liver disease ...etc.) who visited the ER and had received a recommendation of signing a DNR. The exclusion criteria consisted of the following: patients who had already signed DNR consent, patients aged under 20 years of age, patients who had received surgery or had committed suicide, patients not strong enough to complete the questionnaire survey, patients who would be discharged within 24 hrs, and patients who could not communicate well in Chinese or Taiwanese. This study included 19 attending physicians in the emergency department who had attended SHARE

model-centered communication skills training programs. Any potential study subject was enrolled during the study period from May 1, 2017 to April 30, 2018 when the both attending physician and the observer were on duty in the emergency room, but only the study subject who had signed the consent form was recruited into the study. The DNR consent was signed by both the patient and his (her) surrogate. If the patient was unable to sign the consent (for example, conscious disturbance or critical weakness), then the consent would be signed by the surrogates.

Assessment of Communication Skills

Before the implementation of the research, two nurse practitioners—with at least 20 years of experience in emergency care work, and that were members of the medical team—were assigned as “observers”. These two nurse practitioners had attended the SHARE course model and were familiar with communication skills in the training program. The observers received observation training to reduce bias and to obtain an objective assessment. The procedures for observing physicians’ presentation of bad news began with an explanation of the study’s goals and implementation steps. After the physicians gave their consent, the observers assessed the performance of those attending physicians who had agreed to participate in the study. To quantify the communication skills of the physicians in the process of explaining a signing of DNR consent to the family member, observation forms (i.e., the patient condition notification scoring form) were used by the observers to score the physicians’ presentation of bad news. The observation form was designed based on the SHARE model and included four aspects: supportive environment, how to communicate bad news, provision of additional information, reassurance, and emotional support.¹² Each question had three possible responses: “I have not done it,” “I have partially done it,” and “I have done it fully,” which were scored with 0, 1, and 2 points respectively. The overall questionnaire score was the sum of the scores for each question, and possible total scores ranged from 0 to 34 points. Higher scores indicated that there was a greater fit of the SHARE model in the patient condition notification.

Data Collection

In addition to the observation form, the research data included the following: (1) The patient medical records, including age, gender, marital status, number of chronic diseases, triage level, Charlson Comorbidity Index (CCI)

—which relies on the International Classification of Disease 9th Clinical Modification to assign scores to patient illnesses²³—the Glasgow Coma Scale (GCS), acute complications, and the patient’s source of medical expenses in multiple-choice; and (2) The questionnaire survey completed by family member interviews, including age, gender, level of education, relationship with the patient, religious belief, related situational experience of signing DNR consent (multiple choice), and reasons for considering signing DNR consent (multiple choice). The interviews of family members were conducted with the patients’ closest available living blood relatives. For privacy, face-to-face interviews were conducted in quiet, undisturbed areas in the ER.

Statistical Analysis

A statistical analysis was performed using SPSS software (version 23.0, IBM Corp., Armonk, NY, USA). Chi-Squared test were used to compare categorical data. The odds ratios (ORs) with 95% confidence intervals (CIs) of the associated conditions of the patients were obtained. The continuous variables were analyzed using one-way analysis of variance with a Games–Howell post-hoc test, and expressed as mean \pm standard deviation (SD). A multivariate logistic regression model was applied to identify independent significant factors of the patient and family member variables (source of medical expenses: 1 = Yes, 0 = No; discussed DNR with the patient: 1 = Yes, 0 = No; discussed DNR with the physician: 1 = Yes, 0 = No; experienced signing a DNR order for another family member: 1 = Yes, 0 = No; physician’s initiative in discussing with families: 1 = Yes, 0 = No; receiving notice of the patient’s critical condition: 1 = Yes, 0 = No; patient’s own intention: 1 = Yes, 0 = No; discussion among the patient’s family members: 1 = Yes, 0 = No; predicting limited life expectancy: 1 = Yes, 0 = No) as well as the four main components of the observation form (supportive environment: 0 = “I have not done it”, 1 = “I have partially done it”, 2 = “I have done it fully”; how to deliver the bad news: 0 = “I have not done it”, 1 = “I have partially done it”, 2 = “I have done it fully”; additional information: 0 = “I have not done it”, 1 = “I have partially done it”, 2 = “I have done it fully”; reassurance and emotional support: 0 = “I have not done it”, 1 = “I have partially done it”, 2 = “I have done it fully”) on the signing of DNR consent. *p* values < 0.05 were defined as statistically significant.

Results

Characteristics of the Patients

In total, there were 109 patients enrolled into this study, with 70 patients having signed a DNR and 39 not. As shown in Table 1, there were no significant differences in patient characteristics regarding the age, gender, marital status, triage level, number of chronic diseases, CCI, GCS, acute complications, and mortality between those who had signed (S-DNR) and those who had not signed DNR consent (N-DNR). A significant difference was observed in the coverage of medical care expenses. There was a significantly lower rate of insurance paying for patients' medical expenses in S-DNR consent than N-DNR (18.6% vs 56.4%; $p < 0.001$).

Characteristics of the Family Members

As shown in Table 2, there were no significant differences in characteristics of the family members regarding the age, gender, level of education, relationship with the patient, and religious belief between those family members who had signed or did not sign DNR consent. The S-DNR had a higher rate of signing DNR than N-DNR when they had discussed DNR with the patients (45.7% vs 12.8%, $p < 0.001$) or with physicians (54.3% vs 17.9%, $p < 0.001$), or had experienced signing DNR for another family member (17.1% vs 0.0%, $p = 0.015$). Regarding the reasons for considering signing DNR consent, there were significantly lower rates of “physician initiated the discussion with family members,” “receiving notice of the patient's critical condition,” “discussion among the patient's family members,” and “a limited life expectancy is predicted” but a higher rate of “patient's own intention” in those who signed DNR consent compared to those that had not.

Assessment of Communication Skills

Regarding the four main factors of the SHARE model (Table 3), an analysis of the observation form revealed that S-DNR had a higher score for “supportive environment” (6.07 ± 1.64 vs 4.90 ± 1.87 ; $p = 0.001$), “how to deliver the bad news” (13.49 ± 0.78 vs 12.62 ± 1.14 ; $p < 0.001$), and “reassurance and emotional support” (4.96 ± 1.41 vs 3.23 ± 1.49 ; $p < 0.001$) than N-DNR. There was no significant difference in the score for “additional information” between S-DNR and N-DNR. Compared to N-DNR, the S-DNR had a higher score for

Table 1 Patient Characteristic in Those Who Had Signed (S-DNR) or Did Not Sign a DNR Consent (N-DNR)

Variables	N-DNR (n = 39)	S-DNR (n = 70)	p value
Age (years), mean \pm SD	78.5 \pm 12.6	74.3 \pm 13.8	0.126 [†]
Gender, n (%)			0.238*
Female	12 (30.8)	31 (44.3)	
Male	27 (69.2)	39 (55.7)	
Marital status, n (%)			0.061*
Married	15 (38.5)	40 (57.1)	
Single, widowed or divorced	24 (61.5)	30 (42.9)	
Triage level, n (%)			0.505*
Level I	16 (41.0)	28 (40.0)	
Level II	18 (46.2)	27 (38.6)	
Level III or IV	5 (12.8)	15 (21.4)	
Number of chronic diseases, n (%)			0.297*
One	6 (15.4)	19 (27.1)	
Two	18 (46.2)	24 (34.3)	
\geq Three	15 (38.4)	27 (38.3)	
CCI, mean \pm SD	3.10 \pm 2.01	2.99 \pm 1.85	0.760 [†]
GCS, mean \pm SD	6.87 \pm 3.11	6.99 \pm 3.38	0.862 [†]
Acute complications, n (%)	35 (89.7)	52 (74.3)	0.093*
Source of medical expenses, n (%)			
Self savings	13 (33.3)	19 (27.1)	0.645*
Pay by spouse	8 (20.5)	9 (12.9)	0.435*
Sharing by children	31 (79.5)	52 (74.3)	0.707*
Pay by insurance	22 (56.4)	13 (18.6)	<0.001*
Mortality, n (%)	18 (46.2)	40 (57.1)	0.367*

Notes: Statistical analysis: *Chi-Squared test, [†]unpaired Student t-test.

Abbreviations: CCI, Charlson Comorbidity Index; DNR, do-not-resuscitate; GCS, Glasgow Coma Scale; SD, standard deviation.

the following questions: “relationship with the patient” and “invite family members to understand the condition” in the component of supportive environment; “avoid technical terms,” “possible causes of cardiac arrest,” and “if the condition is not explained smoothly, is there a request for assistance” in the component of how to deliver the bad news; “explain the future treatment policy” in the component of additional information; and “comfort patients and encourage their families to think positively” and “expressing concern” in the component of reassurance and emotional support. However, the score for “express the same mood” is lower in S-DNR than N-DNR.

Table 2 Characteristic of Family Members in Those Who Had Signed (S-DNR) or Did Not Sign a DNR Consent (N-DNR)

Variables	N-DNR (n=39)	S-DNR (n = 70)	p value
Age (years)	51.1 ± 13.4	52.7 ± 11.5	0.518 [†]
Gender, n (%)			0.238*
Female	17 (43.6)	38 (54.3)	
Male	22 (56.4)	32 (45.7)	
Level of education, n (%)			0.316*
Junior high school or below	9 (23.1)	21 (30.0)	
Senior high school (or technical education)	15 (38.5)	25 (35.7)	
Junior college	11 (28.2)	11 (15.7)	
University or above	4 (10.3)	13 (18.6)	
Relationship with the patient, n (%)			0.307*
Spouse	5 (12.8)	13 (18.6)	
Son	20 (51.3)	27 (38.6)	
Daughter	11 (28.2)	17 (24.3)	
Other	3 (7.7)	13 (18.5)	
Religious belief, n (%)			0.140*
Buddhism	5 (12.8)	20 (28.6)	
Taoism	24 (61.5)	32 (45.7)	
Other (including none)	10 (25.6)	18 (25.7)	
Situation in signing DNR, n (%)			
Discussed DNR with the patient	5 (12.8)	32 (45.7)	0.001*
Discussed DNR with the physician	7 (17.9)	38 (54.3)	<0.001*
Experienced signing DNR for another family member, n (%)	0 (0.0)	12 (17.1)	0.015*
Reasons for considering signing DNR upon, n (%)			
Physician initiated the discussion with family members	29 (74.4)	7 (10.0)	<0.001*
Receiving notice of the patient's critical condition	31 (79.5)	30 (42.9)	<0.001*
Patient's own intention	4 (10.3)	28 (40.0)	0.002*
Discussion among the patient's family members	27 (69.2)	31 (44.3)	0.021*
Predicting that the patient cannot be cured	17 (43.6)	26 (37.1)	0.649*
Patient has been in and out of the hospital frequently	5 (12.8)	10 (14.3)	0.891*
A limited life expectancy is predicted	15 (38.5)	12 (17.1)	0.025*

Notes: Statistical analysis: *Chi-Squared test, [†]unpaired Student t-test. Age is expressed as mean ± standard deviation.

Abbreviation: DNR, do-not-resuscitate.

Independent Significant Factors for Signing DNR Consent

A multivariate logistic regression model (Table 4) was applied to identify the independent significant factors of the patient characteristics and family member characteristics that contributing to the signing of a DNR consent in the Tables 1 and 2, respectively, as well as the four main components of the observation form in the Table 3. The analysis revealed that “how to deliver the bad news” and “reassurance and emotional support” were positive independent significant factors but that “physician initiated the discussion with family members” and “a limited life expectancy is predicted”

were negative independent significant factors for signing DNR consent.

Discussion

This study investigated the association between signing of DNR consent by terminally ill patients and the communication skill of the ER physicians who had participated in the SHARE model course on patient notification. The findings revealed that knowing how to convey bad news and providing reassurance and emotional support were significantly correlated with a higher rate of signing DNR consent in terminally ill patients. Existing studies have reported that what physicians fear most is to face

Table 3 Scores from the Observation Form Which Contained the Four Main Factors of the SHARE Model

Variables	N-DNR (n=39)	S-DNR (n = 70)	p value
Supportive environment	4.90 ±1.87	6.07 ±1.64	0.001
Self-introduction	2.23 ±0.71	2.11 ±0.81	0.453
Choose a quiet environment	1.18 ±0.64	1.23 ±0.80	0.744
Relationship with the patient	0.85 ±0.67	1.29 ±0.66	0.001
Invite family members to understand the condition	1.49 ±0.68	1.74 ±0.53	0.032
How to deliver the bad news	12.62 ±1.14	13.49 ±0.78	<0.001
Avoid technical terms	1.38 ±0.54	1.81 ±0.39	<0.001
The whole process of the disease	1.77 ±0.43	1.90 ±0.35	0.086
Changes in related emergency procedures	1.85 ±0.37	1.94 ±0.29	0.131
Possible causes of cardiac arrest	1.85 ±0.43	2.00 ±0.00	0.003
Expressing the role of medical care at the time	1.92 ±0.27	1.97 ±0.17	0.251
Confirmation of family members' understanding of the relevant condition	1.90 ±0.31	1.89 ±0.32	0.853
If the condition is not explained smoothly, is there a request for assistance	1.62 ±0.49	1.91 ±0.28	<0.001
Additional information	5.13 ±0.92	4.99 ±0.92	0.442
Understand the patient's wishes and confirm it	1.72 ±0.51	1.87 ±0.38	0.077
Explain the future treatment policy	1.41 ±0.68	1.77 ±0.52	0.002
Provide other medical information	1.90 ±0.38	1.71 ±0.51	0.055
Reassurance and Emotional support	3.23 ±1.49	4.96 ±1.41	<0.001
Express the same mood	1.82 ±0.39	1.50 ±0.61	0.004
Encourage comfort patients and their families to think positively	1.28 ±0.72	1.81 ±0.43	<0.001
Expressing concern	1.03 ±0.49	1.59 ±0.69	<0.001

Notes: All values are calculated by the unpaired Student's *t*-test and expressed as mean ± SD.

Abbreviation: DNR, do-not-resuscitate.

patients and their family members alone, especially when conveying information in situations that are not covered in textbooks.¹¹ To cope with such situations, physicians should learn how to deal with pressure, enhance their self-confidence, and rely on observation of their peers and the use of frameworks to enhance their ability to

perform patient condition notification.¹¹ Physicians should therefore pay close attention to their words, observe their peers' explanations, and rely on self-reflection to improve their communication skills.^{11,24} Furthermore, the last dimension (reassurance and emotional support) should be emphasized throughout the

Table 4 Multivariate Logistic Regression Model for the Identification of the Significant Factors for Signing a DNR Consent

Predictors	β	OR	95% CI	p value
Intercept	-9.50			
Medical expenses pay by insurance	-0.20	0.82	0.22-3.12	0.766
Discussed DNR with the patient	-1.19	0.30	0.03-2.96	0.305
Discussed DNR with the physician	1.01	2.73	0.69-10.8	0.152
Experienced signing DNR consent for another family member	0.50	1.65	0.25-11.05	0.607
Physician initiated the discussion with family members	-2.93	0.05	0.01-0.32	0.001
Receiving notice of the patient's critical condition	0.14	1.15	0.28-4.69	0.847
Patient's own intention	0.89	2.43	0.32-20.02	0.409
Discussion among the patient's family members	-0.11	0.90	0.26-3.14	0.869
A limited life expectancy is predicted	-1.50	0.22	0.07-0.72	0.012
Supportive environment	-0.01	1.00	0.68-1.47	0.981
How to deliver the bad news	0.57	1.78	1.02-3.09	0.042
Additional information	0.30	1.34	0.64-2.81	0.432
Reassurance and emotional support	0.57	1.77	1.12-2.83	0.014

Abbreviations: DNR, do-not-resuscitate; OR, odds ratio; CI, confidential interval.

SHARE model-centered truth-telling process to reflect the preferences of patients with cancer.^{13,14}

The results of this study showed no significant differences in patient characteristics concerning the signing of a DNR, with the exception of a significantly lower rate of insurance paying for patients' medical expenses in S-DNR than N-DNR. These results are contradictory to earlier results reported in Taiwan, which state that patients' functional status, disease severity, and days of hospitalization are significant predictive factors for clinical physicians' and family members' DNR decisions.^{2,25,26} We believe that this contradiction can be attributed to that study being performed on different patient population, as opposed to this study, in which only end-stage patients with cancer or other terminal diseases were included.

A higher rate of "patient's own intention" in S-DNR than N-DNR was observed in this study. Obviously, if a patient is able to clearly convey his or her treatment wishes before becoming terminally ill, it would lessen family members' decision-making anxiety and sense of guilt.²⁷ Nonetheless, the family members play a key role in the decision making process of signing DNR consent. Family members' acceptance of the patient's wishes for DNR consent had a positive effect on DNR signing.^{28,29} Studies from Taiwan have reported that all decisions for older people—from living in long-term care facilities to receiving life-sustaining therapy or signing DNR consent—were made by their families.^{30,31} However, approximately half of the families thought that this decision should be made by the patients themselves and wanted to know what their parents thought of the decision making but still preferred that the healthcare provider ask them.³² This also reflects the importance of physicians' communication skills in such circumstances. Different explanatory approaches are necessary at different stages of a disease when performing patient condition notification while using the essential aspects of the SHARE model in a flexible manner in accordance with patient needs. Patients, family members, and the medical team jointly participating in a more objective and multifaceted assessment will result in a more accurate portrayal of patient condition notification skills required by emergency physicians.^{12,33}

In this study, the multivariate logistic regression model also confirmed "physician initiated the discussion with family members" as a significantly negative independent factor for signing DNR consent. We believe that the reason for this may be that if a patient's family members consistently evade discussion of the subject of death, believe that DNR signing implies giving up treatment, or believe that the time of DNR signing has not arrived, such family members will generally

avoid actively mentioning DNR consent, preferring to wait passively for the physician's decision. Such family members typically cannot reach a consensus concerning medical action when they are confronted with an emergency health crisis, making it difficult to obtain DNR consent.^{27,34,35} Furthermore, in this study, a patient's shortened life expectancy is negatively correlated with DNR signing by family members. Whether it means that a longer life expectancy is associated with a heavier burden for the family members require further investigation. However, we can infer from the results of this study that it is important for physicians to take the above two points into consideration when providing patient condition notification.

This study has some limitations. First, the sample size is limited. Second, this study was limited to one medical center and the results may not be generalizable to other medical centers. Third, the attitude of the physicians involved in this study toward the end-of-life care may vary and as such, may lead to bias, even though they had all attended the SHARE course. Fourth, this study included end-stage patients with cancer or other diseases; however, the patient's will or condition to sign DNR consent may differ in those who had cancer and those who had not, which may also lead to bias. Lastly, according to the recruiting procedure of the study subjects, there may be some selection bias in the study, seeing that only 19 of more than 40 attending physicians in the emergency department had attended in the study and the total terminally ill patients screened during this study period was unknown.

Conclusion

This study revealed that knowledge of how to convey bad news and provide reassurance and emotional support in ER physicians who had attended the SHARE model course were significantly correlated with a higher rate of signing DNR consent among terminal patients. The learning of such skill from attendance of SHARE model course is encouraged for the physicians in the palliative care of terminally ill patients in an emergency room.

Disclosure

The authors report no conflicts of interest in this work.

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