

Special Article

Preparation and Practice of the Necessary Documents in Hospital for the “Act on Decision of Life-Sustaining Treatment for Patients at the End-of-Life”

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Purpose Six forms relating to decisions on life-sustaining treatment (LST) for patients at the end-of-life (EOL) in hospital are required by the “Act on Decision of LST for Patients at the EOL.” We investigated the preparation and creation status of these documents from the database of the National Agency for Management of LST.

Materials and Methods We analyzed the contents and details of each document necessary for decisions on LST, and the creation status of forms. We defined patients completing form 1 as “self-determined” of LST, and those whose family members had completed form 11/12 as “family decision” of LST. According to the determination subject, we compared the four items of LST on form 13 (the paper of implementation of LST) and the documentation time interval between forms.

Results The six forms require information about the patient, doctor, specialized doctor, family members, institution, decision for LST, and intention to use hospice services. Of 44,381 who had completed at least one document, 36,693 patients had form 13. Among them, 11,531, 10,976, and 12,551 people completed forms 1, 11, and 12, respectively. The documentation time interval from forms 1, 11, or 12 to form 13 was 8.6 ± 13.6 days, 1.0 ± 9.5 days, and 1.5 ± 9.7 days, respectively.

Conclusion The self-determination rate of LST was 31% and the mean time interval from self-determination to implementation of LST was 8.6 days. The creation of these forms still takes place when the patients are close to death.

Key words Documents, Life-sustaining treatment, End-of-life, Decisions

Introduction

There are many obstacles and taboos in Korea and other Asian nations regarding discussions on death. Proxy decision-making for end-of-life (EOL) is overwhelming, and the EOL discussion takes place approximately 2 to 8 days before death [1,2]. The use of advanced directives can promote patient participation in EOL discussions [3]. In Korea, the Act on Hospice and Palliative Care and Decisions on Life-Sustaining-Treatment for Patients at the EOL was enacted in 2016 and implemented in 2018 to enhance patients' involvement in making decisions about EOL [4]. This law allows terminally ill patients with no chance of rehabilitation to withdraw or withhold life-sustaining treatment (LST) with their own consent or that of their family members. The patient's intention for LST on the Act is a decision on four items, including

cardiac resuscitation, mechanical ventilation, hemodialysis, and anti-cancer drugs. This law covers 43 pages, including the act, enforcement decree, enforcement rules, a table, and seven forms. The seven forms required by law include the following: form 1 (LST plan form), form 6 (advanced directive form), form 9 (determination of whether the patient is at the EOL process), form 10 (confirmation of the patient's intention by advanced directive), form 11 (confirmation by consistent statements of two or more of the patient's family members), form 12 (confirmation by unanimous consensus of the patient's family), and form 13 (implementation of LST). Form 6 is written in advance by a person aged ≥ 19 years with a direct submission of his or her decision on whether to use a hospice, and should be written directly by the registration authority designated by the Minister of Health and Welfare; this form does not involve patient decisions regarding LST

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at the EOL. With the exception of form 6, the other six forms must be written by a doctor in a hospital, and occasionally also a specialist. With the commencement of the Act, more than one of the six forms should be prepared in the hospital and used to confirm the patient's intention to withdraw or withhold LST, determine whether the patient is at the EOL stage, and implement the patient's decision regarding LST.

Here we evaluated the components of the six forms that should be written in the hospital and are required by law to make plans for EOL treatment. We also analyzed the preparation of the forms and the implementation of LST decisions from the database of the National Agency for Management of LST in the year following the enforcement of the Act.

Materials and Methods

The database of the National Agency for Management of LST includes seven forms: forms 1, 6, and 9-13. Form 6 can be prepared regardless of the disease and is excluded from the documentation required by the hospital. We collected the terminal status and EOL information required by each of the forms under the Act on Decisions LST for Patients in Hospice and Palliative Care or at the EOL as follows (S1 Fig. is Korean version of forms 1, 9-13): form 1, LST plan form; form 9, determination of whether the patient is at the EOL process; form 10, confirmation of the patient's intention by advanced directive; form 11, confirmation by consistent statements of two or more of the patient's family members; form 12, confirmation by unanimous consensus of the patient's family; and form 13, regarding the implementation of LST. A doctor with a patient who is in terminal status or at the EOL process writes form 1 to leave his/her intention of LST. If the patient is unable to leave his/her intention to the doctor, form 11 or 12 is completed by a doctor or specialist with his/her family.

We analyzed the preparation of the form's from the database of the National Agency for Management of LST between February 4, 2018 and January 31, 2019. Form 10 was excluded from this analysis because it was indirectly prepared in form 13 and details of form 10 were not available from dataset the National Agency for Management of LST. We defined patients with form 1 as "self-determination," and those with forms 11 or 12 as "family decisions". We collected the following data on forms other than form 10 from the database of the National Agency for Management of LST: Form 1, patient information (sex, age, status, address), institution (type and address), intention to use hospice services, and four decisions relating to LST, including the date on which the patient's intention was identified and the date of creation; form 9, patient information (sex, age, diagnosis), date of the doctor's decision, date of the specialist's decision,

and date of creation; form 11, patient information (sex and age), information relating to family members (total number, number of making a statement, relationships), and date of creation; form 12, patient information (sex and age), number of family members, and date of creation; and form 13, patient information (sex and age), institution (type and address), four decisions for LST, including verification of the patient's intention, the date on which the patient's intention was identified, and the date of creation. We compared the four items of LST on form 13, and the order of documentation and time interval between forms 1, 11, or 12 and form 13 according to the decision subject. Formally, after decision were made on LST in forms 1, 11, or 12, LST in form 13 were implemented. It is generally the order in which LST is implemented after a decision has been made. The time interval dates from the creation of forms 1, 11, or 12 to form 13 reflect the time from the decision to the implementation of LST. We also analyzed several dates that required more than one date within forms 1, 9, and 13.

Results

1. Description of each form

There are three forms relating to the decision on LST: forms 1, 11, and 12. Form 1 is Physician Order for Life Sustaining Treatment (POLST), which includes four items relating to LST decisions: The plan for the use of hospice services, the description of advanced statements, and the allowance of access to advanced statements. The patients state their intentions by marking each of the four items. Form 11 and 12 can be written by a family member on behalf of the patient when the patient is unable to express their intentions regarding LST. Form 11 can be prepared if a patient has previously expressed his/her thoughts regarding LST to more than one family member, and form 12 is a document that unanimously determines the LST if not. When completing form 12, the doctor should check the family relationship certificate to ensure that everyone who is mentioned on the form is in the patient's family.

Form 10 is used to identify the patient's intention in combination with form 6, which is an advanced directive. Form 9 is the doctor's determination of whether the patient is in the EOL process. Form 13 is created when the patient or his/her family makes the decision to withdraw or withhold LST.

The person who completes the forms must be a doctor, and a specialist should be added to form 11 and form 12. Form 10 requires a specialist when the patient is unable to express his or her opinion regarding LST. Up to four forms are required to confirm a patient's LST plan (forms 1, 11, or 12), as well as an advanced directive to verify the patient's intention (form

Table 1. Required information for each form that need to be created at a hospital on LST law

Details	Form No. 1	Form No. 9	Form No. 10	Form No. 11	Form No. 12	Form No. 13
Patient						
Name	○	○	○	○	○	○
Resident registration No.	○	○	○	○	○	×
Birth date	×	×	×	×	×	○
Diagnosis	×	○	×	×	×	×
Expressive ability	×	×	○	×	×	×
Address	○	×	×	×	×	×
Phone number	○	×	×	×	×	×
Disease status	○	×	×	×	×	×
Doctor						
Name	○	○	×	×	×	○
Certification No.	○	○	×	×	×	○
Institution	○	○	×	×	×	○
Decision content	×	○	×	×	×	×
Decision date	×	○	×	×	×	×
Signature	×	○	×	×	×	×
Specialist doctor						
Name	×	○	×	×	×	×
Specialized part	×	○	×	×	×	×
Board No.	×	○	×	×	×	×
Institution	×	○	×	×	×	×
Decision content	×	○	×	×	×	×
Decision date	×	○	×	×	×	×
Signature	×	○	×	×	×	×
Family members						
No. of family members	×	×	×	○	×	×
Statement of family member about the patient's intention for LST	×	×	×	○	×	×
Confirmation of family member about the other one's statements	×	×	×	○	×	×
Information on family members	×	×	×	×	○	×
					Name, relationship to patient, resident registration No., phone No., signature	
					Name, relationship to patient, resident registration No., phone No., signature	

(Continued to the next page)

Table 1. Continued

Details	Form No. 1	Form No. 9	Form No. 10	Form No. 11	Form No. 12	Form No. 13
Institution						
Name	×	×	×	×	×	○
Nursing No.	×	×	×	×	×	○
Location	×	×	×	×	×	○
Phone No.	×	×	×	×	×	○
Time and date	×	×	×	×	×	×
Four items relating to LST decisions						
Cardiac resuscitation, mechanical ventilation, hemodialysis, anti-cancer drugs	○	×	×	○	○	○
Plan for hospice service	○	×	×	×	×	×
Doctor's description required by law						
Legal descriptions	○	×	×	×	×	×
Confirmation method	○	×	×	×	×	×
Doctor's confirmation	○	×	×	×	×	×
	Date, name, signature					
Access rights to LST plan	○	×	×	×	×	×
Verification of patient's intention						
Confirmation of LST	×	×	○	×	×	○
Date	×	×	○	×	×	×
Registration No.	×	×	○	×	×	×
Name of the subject who completed the form						
Doctor	○	○	○	○	○	○
	Date, name, signature	Date, name, signature	Date, name, institution, certification No., signature	Date, name, institution, certification No., signature	Date, name, institution, certification No., signature	Date, name, signature
Specialist doctor	×	×	○	○	○	×
			Date, name, institution, specialized part, board No. signature	Date, name, institution, specialized part, board No. signature	Date, name, institution, specialized part, board No. signature	

LST, life-sustaining treatment.

10), to determine whether the patient is at the EOL process (form 9), and to implement his or her LST plan (form 13).

2. Contents and frequency of written forms

Information about doctors, specialists, institutions, and the patients who are withdrawing or withholding LST must be prepared. Form 11 includes information about two or more family members who have identified the patient's indirect

intention, and form 12 includes the number of families and information on all members of patient's family. The patient's name is required on all forms, but the resident registration number, birthdate, diagnosis, expressive ability for LST, address, phone number, and patient's status may or may not be required. Information about doctors, which may include name, certification number, institution in duty, decision date, or signature, is required on all forms except form 10. Forms

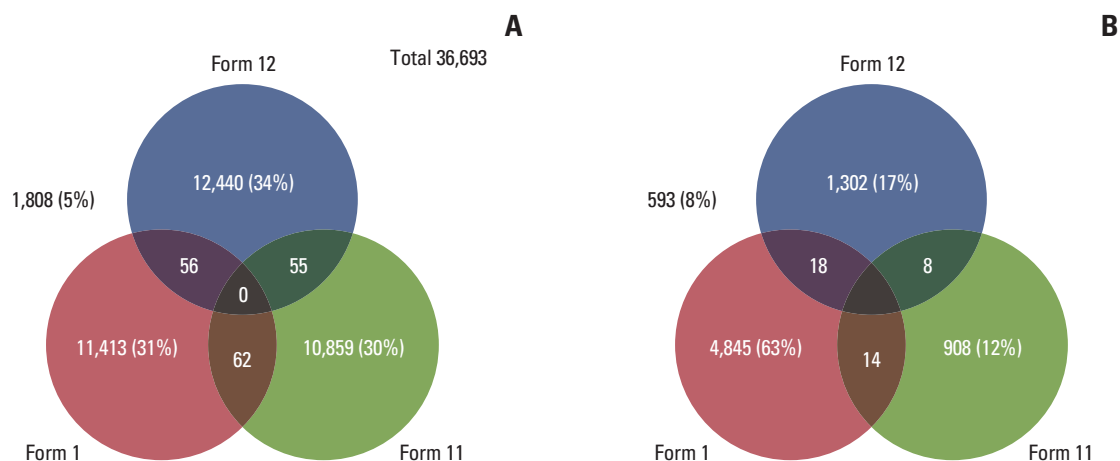


Fig. 1. Documentation status of patients who completed any form. (A) The status of the 36,693 patients who completed form 13. (B) Status of the 7,688 patients who did not complete form 13.

Table 2. LST determination on form 13 among patients with forms 1, 11, 12, and 13

Type of documentation	Self-determination			p-value
	Form 1	Form 11	Form 12	
No. of cases	11,413	10,859	12,440	
Cardiac resuscitation				
Marked	11,369 (99.6)	10,834 (99.7)	12,374 (99.4)	0.943
Unmarked	44 (0.4)	25 (0.3)	66 (0.6)	
Mechanical ventilation				
Marked	11,286 (98.9)	9,211 (84.9)	9,201 (74.0)	< 0.001
Unmarked	127 (1.2)	1,648 (15.2)	3,239 (26.1)	
Hemodialysis				
Marked	10,593 (92.9)	9,016 (83.1)	9,653 (77.6)	< 0.001
Unmarked	820 (7.2)	1,843 (17.0)	2,787 (22.5)	
Anti-cancer drugs				
Marked	8,890 (77.9)	6,497 (59.9)	6,511 (52.4)	< 0.001
Unmarked	2,523 (22.2)	4,362 (40.1)	5,929 (47.7)	< 0.001

Values are presented as number (%). LST, life-sustaining treatment.

9, 11, and 12 require specialist information in addition to information about the doctor, board number, and specialized field. Only form 13 requires information on the institution and the date and time of implementation separately. In addition to this information, form 13 also includes the following four items relating to LST decisions: Plan for the use of hospice services, the doctor’s legal description, permission to view patients’ advanced statements, and the verification of the patient’s intentions by a doctor. All forms must be dated, and forms 1, 9, 10, and 13 require more than one date, such as the date on which the status was identified and created. The contents of each form are summarized in Table 1.

3. Form preparation

A total of 44,381 patients had completed any of the forms required by the LST Act, among whom, 36,693 had completed form 13. Mean age of patients with form 13 was 70.2 years old (interquartile range, 56 to 84) and 22,032 (60.04%) of them were male. Of the 36,693, 1,808 (5%) had only completed form 13, while 34,885 other forms were completed by either the patient (form 1: n=11,531, 31%) or their families (form 11: n=10,976, 30%; form 12: n=12,551, 34%). However, 173 (0.5%) had completed two out of form 1, 11, and 12. Of the 7,688 patients without form 13, 593 (8%) had only completed form 9, 4,877 (63%) had completed form 1, 930 (12%) had com-

Table 3. Documentation time interval and date order from form 1, 11, or 12 to form 13

	Form 1 (n=11,531) ^{a)}	Form 11 (n=10,976) ^{b)}	Form 12 (n=12,551) ^{c)}
Time interval compared to form 13			
Mean±SD (range, day)	8.6±23.6 (-223 to 354)	1.0±9.5 (-304 to 219)	1.5±9.7 (-263 to 276)
Filled out on a same day with form 13			
	6,511 (56.6)	8,965 (81.7)	9,595 (76.4)
Filled out on a different day from form 13			
Before form 13 (correct order)	4,906 (42.5)	1,754 (16.0)	2,672 (21.3)
Mean±SD (range, day)	20.6±32.2 (1 to 354)	8.4±17.3 (1 to 219)	8.1±17.6 (1 to 276)
After form 13 ^{d)} (reversed order)	114 (1.0)	257 (2.3)	284 (2.3)
Mean±SD (range, day)	-16.2±30.5 (-223 to -1)	-14.0±34.2 (-304 to -1)	-12.0±25.2 (-263 to -1)

Values are presented as number (%) unless otherwise indicated. SD, standard deviation. ^{a)}Among patients who completed both form 1 and form 13 (including patients who also filled out forms 11 or 12), ^{b)}Among patients who completed both form 11 and form 13 (including patients who also filled out forms 1 or 12), ^{c)}Among patients who completed both form 12 and form 13 (including patients who also filled out forms 1 or 11), ^{d)}In the reversed order that doctor wrote form 13, then forms 1, 11, or 12.

pleted form 11, and 1,328 (17%) had completed form 12. Forty patients (0.5%) had completed two forms out of forms 1, 11, and 12. Fig. 1A and B show the forms preparation for patients with and without the form 13, respectively.

4. Four items of LST determination in form 13 and time interval from the LST decision and to implementation of LST according to decision subject

According to decision subjects, we compared the four items of LST decisions on form 13. For cardiac resuscitation, there was no significant difference in the implementation rate between self-determination and family decisions ($p=0.943$). For mechanical ventilation, hemodialysis, and anti-cancer drugs, the rates of self-determination were higher than those of family decisions (all $p < 0.001$) (Table 2).

Table 3 shows the time interval dates for the creation of forms 1, 11, or 12 to form 13 for patients with forms 1, 11, or 12 and form 13 (including patients with two forms in form 1, 11, and 12). The mean time interval from form 1 to form 13 was 8.6±23.6 days. The mean time interval from forms 11 or 12 to form 13 was 1.0±9.5 days, and 1.5±9.7 days, respectively. The mean time interval of patients who had completed form 1 was longer than those of patients with forms 11 or 12 (all $p < 0.001$). Among patients who had completed form 1, 56.5% were created on the same day as form 13. Among patients who had completed forms 11 or 12, 81.7% and 76.6% were created on the same day as form 13, respectively. The proportion of patients who had completed forms 11 or 12 on the same day was higher than that of patients who had completed form 1 ($p < 0.001$). Other 43.5%, 18.3%, and 23.6% with form 1, form 11, or form 12, respectively, were created on the different day as form 13. Patients with reversed order that form 1, 11, or 12 were created after form 13 were 1.0% in form 1, 2.3% in form 11, and 2.3% in form 12. For patients with correct date order which forms 1, 11, and 12 was created

before form 13, the mean time interval from forms 1, 11, or 12 to form 13 (written on different days) was 20.6±32.2 days, 8.4±17.3 days, and 8.1±17.6 days, respectively.

Form 1 includes two dates: The date on which the patient's intention was identified and the date of creation. In 15,943 of the 16,408 patients (97%) who had completed form 1, the two dates were the same. Form 9 requires the following three dates: The date on which the decision was made by the doctor, the date on which the decision was made by a specialized doctor, and the date of creation. Of the 37,359 patients who had completed form 9, 35,712 patients (96%) had the same date of decision by a doctor and date of creation, and 36,131 patients (97%) had the same date of decision by a specialized doctor and date of creation. Form 13 includes the following two dates: The date on which the patient's intention was identified and the date of creation. Of the 35,104 patients who had completed form 13, 25,268 (72%) had the same date.

Discussion

In the current study, we found that the self-determination rate of LST was 31% and the mean time interval from self-determination to implementation of LST was approximately 8.6 days, which is higher and longer than those from previous studies [1,2,5]. Indeed, the self-determination rates from recent single center and national retrospective studies were 29% and 33.5%, respectively [6,7]. There was little difference in the self-determination rate as a result of differences in the hospital settings, enrolled subjects, or research period. The time interval dates from the creation of forms 1, 11, or 12 to form 13 reflect the time from the decision to the implementation of LST. In the case of family decision, the mean time interval was about 1 day. It remains to be filled out when a patient is close to dying. Our results showed that approxi-

mately 56% of patients in the self-determination group and approximately 80% in the family decision group decided their LST and implemented it on the same day. In other words, these patients implemented LST on the day of the decision of LST. Family decisions are much more likely to be made and implemented on the verge of death. Therefore, it is necessary to encourage patients to participate in the discussion of LST at an earlier stage of illness.

Advanced care planning (APC), including EOL discussion, is important to help patients meet a peaceful and dignified death. Both the advanced directive and POLST are APC forms, although there are some differences between the two in terms of the population, who completes the form, and the time frame [8]. An advanced directive is a legal document that can be written by anyone regardless of his/her illness and includes a future medical care plan. The POLST form is a medical document that includes mainly EOL discussions. In 1991, physicians in Oregon developed the POLST program [9], which converts patients' wishes for treatment into medical orders. In Korea, the legislation of the POLST program is the Act on the decision of LST for patients at the EOL. This Act established an approach to EOL planning that is based on conversations between patients, family members, and doctors to determine and honor the wishes of seriously ill patients. The POLST forms need to be consistent and easy to write to allow patients' preferences regarding the use of LST to be honored. Incomplete and contradictory POLST forms may cause confusion among healthcare providers and may result in patients receiving treatment contrary to their wishes [10,11].

The implementation of the Act includes both withholding and withdrawing LST. Generally, there is no ethical or legal distinction between withdrawing and withholding LST. However, approximately 70% of Koreans think there should be ethical and legal differences between withdrawing and withholding LST [12], withholding being acceptable, but withdrawing socially unacceptable. As one law attempted to control acceptable withholding and difficult-to-accept withdrawing LST, complex forms and penalties were included in accordance with the latter. Under the Act, a person who violates the this LST law may be sentenced to up to 3 years in prison or fined up to 30,000,000 won. However, legislating and penalizing issues with insufficient social consensus do not change the social awareness of death. To this end, a complex, multifaceted, and longitudinal intervention such as continuous social efforts, institutional publicity, and education should be accompanied [13].

On the forms required for the Act in Korea, information about a patient and his/her doctor is repeatedly written. Information about hospitals is also repeated in that it is included in the information kept at the workplace of doctors

and specialists or requires administrative information. With the exception of forms 11 and 12, the other forms require more than one date to be input, such as the date of creation, the date of identification, and the date of decision. In more than 95% patients who have completed forms 1 and 9, several dates within the forms were same. Conversely, it is relatively simple to write the items relating to the LST decision. The LST decision item is written to express the patient's intention by marking the item and not expressing his/her wishes as I will or will not. Marking could cause confusion regarding whether a patient wishes to either receive or postpone LST.

The Oregon POLST registry is a 1- or 2-page format [14]. In Korea, there are six forms that have been created in the hospital, among which, at least two should be written. Six forms required an Act involving various basic information on patients, doctors, specialist doctors, family members, and institutions. Information about patients and doctors as subjects is required in all six forms. Information about hospitals is repeated in that it is included in the workplace information of doctors and specialists or requires administrative information. It is necessary to reduce both the number and items of forms to reduce the repetition of information between forms and to reduce the effort required to prepare the forms.

As four items of LST are based on a social consensus that took place in 2009 [15,16], they need to be organized according to LST intensity or patient status when a patient need LST and then modified to the current perception or medical judgment. In the revised version of March 26, 2019, extracorporeal membrane oxygenation, blood transfusion, inotropics, and other LST were added LST which terminally ill patient with no chance of rehabilitation could decide to withhold or withdraw. The Act not only relates to cancer patients but also terminally ill patients with chronic disease. Moreover, given that anti-cancer drugs with fewer toxicities, such as targeted agents, have been developed, the exclusion of anti-cancer drugs among LST items should be reconsidered. Considering that Oregon is using version 11 of the POLST in 2017 [13], constant renewal are needed to make it easier to verify the patient's intention of LST. Furthermore, the education of people who help patients understand the medical situation and write POLST properly is needed. According to a previous study, approximately 90% of patients who completed POLST and wished to receive chemotherapy in the first step changed their intention to not receive chemotherapy in the second step after the doctors had thoroughly explained the time of EOL [17].

To improve EOL care by reflecting the patient's value, designating an agent in case the patient cannot make a decision is another way. Establishing patients' rights to forgo and the authority of surrogate decision makers were achievements in the first phase of improving EOL care [18]. There is no

concept of a surrogate in the act of LST; therefore, without designating an agent, the decision is made based on indirect decisions by family unanimity or after receiving two or more statements from family members regarding the patient's wishes. However, the patient's family may not know the value of the patient's wishes for EOL care and may sometimes show an aggressive attitude toward EOL care [19,20]. In addition, there might be conflicts among family members or an issue of no family members who are available to make decisions. For this limited case, it might be important to establish surrogate decision makers about EOL process on behalf of incompetent patients. Actually, Korea has a family oriented Confucian culture, and many patients prefer to consider the best interests of their family members as opposed to their own. Indeed, some patients may suspend their LST to lessen the economic burden on the family [17]. Non-family surrogate decisions can cause another conflicts if there are no authority on the law. Therefore, earlier discussions on EOL care can not only help patients have time for self-determination, but also mediate different perspectives among patients and family members regarding life prolongation. This requires continuous social effort.

Our study had several limitations. First, since we examined data within a year of law enforcement, the results also included data related to trial and error in the settlement process. Approximately 17% of patients with at least one form had not completed form 13, 5% of patients with form 13 had not completed any other forms, and 0.5% of patients had completed forms 1, 11, and 12. There were also about 1-2% of patients whose decisions were made after LST was implemented. Second, we could not fully investigate all of the problems associated with form preparation, such as the completeness of the form and the difference in LST between forms, because of limited accessibility to data. Third, we excluded several patients with form 10 as advanced directive because it was not available. This can explain the lower self-determination ratio compared to the previous national survey. Although these results involve small numbers of patients, they are all self-determinators and will also increase in the future as more people complete form 6. Finally, there is an ambiguity about the fact that the date of creation of form 13 was indirectly regarded as the date of death. The dates of the completion of form 13 are expected to be similar to the

date of death when the LST decision is implemented, but in practice, it implies uncertainty that the patient can survive and the condition can improve.

In conclusion, we found that the self-determination rate of LST was 31%, and the mean time interval from self-determination to implementation of LST was approximately 8.6 days after the enforcement of the Act. However, the creation of these forms still takes place when the patient is near to death. Moreover, in the early stages of implementation, there are many types of forms, and some information on patients and doctors, and the date of creation need to be written repeatedly. Therefore, continuous revisions and updates of forms are needed. Moreover, social efforts and communication are important to change the perception of death and move forward with the discussion of death earlier.

Electronic Supplementary Material

Supplementary materials are available at Cancer Research and Treatment website (<https://www.e-crt.org>).

Ethical Statement

This study was reviewed and approved by the Ethics Committee of the National Evidence-Based Healthcare Collaborating Agency (NA19-008) and the Kangdong Sacred Heart Hospital (2019-12-013). The informed consent by patients was waived because all the information was tabulated in anonymized and deidentified fashion.

Author Contributions

Conceived and designed the analysis: Baek SK, Kim HJ, Kwon JH, Lee HY, Won YW, Kim YJ, Ryu H.

Collected the data: Baek SK, Kwon JH, Lee HY, Won YW, Kim YJ, Baik S.

Contributed data or analysis tools: Baek SK, Kwon JH, Lee HY, Won YW, Kim YJ.

Performed the analysis: Baek SK, Kim HJ, Kwon JH.

Wrote the paper: Baek SK, Kim HJ.

Conflicts of Interest

Conflict of interest relevant to this article was not reported.

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References

1. Baek SK, Chang HJ, Byun JM, Han JJ, Heo DS. The association between end-of-life care and the time interval between provision of a do-not-resuscitate consent and death in cancer patients in Korea. *Cancer Res Treat.* 2017;49:502-8.
2. Oh DY, Kim JH, Kim DW, Im SA, Kim TY, Heo DS, et al. CPR or DNR? End-of-life decision in Korean cancer patients: a single center's experience. *Support Care Cancer.* 2006;14:103-8.
3. Hong JH, Kwon JH, Kim IK, Ko JH, Kang YJ, Kim HK. Adopt-

- ing advance directives reinforces patient participation in end-of-life care discussion. *Cancer Res Treat.* 2016;48:753-8.
4. Ministry of Health and Welfare. Act on Hospice and Palliative Care and Decisions on Life-Sustaining Treatment for Patients at the End of Life. Sejong: Ministry of Health and Welfare; 2016.
 5. Kim DY, Lee KE, Nam EM, Lee HR, Lee KW, Kim JH, et al. Do-not-resuscitate orders for terminal patients with cancer in teaching hospitals of Korea. *J Palliat Med.* 2007;10:1153-8.
 6. Kim JS, Yoo SH, Choi W, Kim Y, Hong J, Kim MS, et al. Implication of the Life-Sustaining Treatment Decisions Act on End-of-Life Care for Korean Terminal Patients. *Cancer Res Treat.* 2020;52:917-24.
 7. Park SY, Lee B, Seon JY, Oh IH. A national study of life-sustaining treatments in South Korea: what factors affect decision-making? *Cancer Res Treat.* 2021;53:593-600.
 8. Bomba PA, Kemp M, Black JS. POLST: An improvement over traditional advance directives. *Cleve Clin J Med.* 2012;79:457-64.
 9. Oregon POLST history [Internet]. Portland, OR: Physician Orders for Life-Sustaining Treatment; c2012-2021 [cited 2021 May 10]. Available from: <http://www.oregonpolst.org/history>.
 10. Clemency B, Cordes CC, Lindstrom HA, Basior JM, Waldrop DP. Decisions by default: incomplete and contradictory MOLST in emergency care. *J Am Med Dir Assoc.* 2017;18:35-9.
 11. Moore KA, Rubin EB, Halpern SD. The problems with physician orders for life-sustaining treatment. *JAMA.* 2016;315:259-60.
 12. Heo DS. Life-sustaining medical treatment for terminal patients in Korea. *J Korean Med Sci.* 2013;28:1-3.
 13. Tolle SW, Teno JM. Lessons from Oregon in embracing complexity in end-of-life care. *N Engl J Med.* 2017;376:1078-82.
 14. Zive DM, Fromme EK, Schmidt TA, Cook JN, Tolle SW. Timing of POLST form completion by cause of death. *J Pain Symptom Manage.* 2015;50:650-8.
 15. National Evidence-based Healthcare Collaborating Agency. Social consensus on end-of-life decision in Korea. Seoul: National Evidence-based Healthcare Collaborating Agency; 2009.
 16. Heo DS. Patient autonomy and advance directives in Korea. *J Korean Med Assoc.* 2009;52:865-70.
 17. Kim JW, Choi JY, Jang WJ, Choi YJ, Choi YS, Shin SW, et al. Completion rate of physician orders for life-sustaining treatment for patients with metastatic or recurrent cancer: a preliminary, cross-sectional study. *BMC Palliat Care.* 2019;18:84.
 18. Wolf SM, Berlinger N, Jennings B. Forty years of work on end-of-life care: from patients' rights to systemic reform. *N Engl J Med.* 2015;372:678-82.
 19. Keam B, Oh DY, Lee SH, Kim DW, Kim MR, Im SA, et al. Aggressiveness of cancer-care near the end-of-life in Korea. *Jpn J Clin Oncol.* 2008;38:381-6.
 20. Tang ST, Liu TW, Lai MS, Liu LN, Chen CH. Concordance of preferences for end-of-life care between terminally ill cancer patients and their family caregivers in Taiwan. *J Pain Symptom Manage.* 2005;30:510-8.