Analytical Study on Medical Expenses of Hospice Service for Terminal Patients

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Abstract

As Korea has just turned into an aging society with the increase of average life expectancy, and the main causes of deaths is cancer and other chronic diseases. And this corresponds to a dramatic increase in medical expenses for the aged. To curve this problem, the hospice care can be an effective alternative, which can provide patients with both quality service and intensive care to help ensure high quality life for the patients. To demonstrate the economical effect of hospice services, a comparative study on the medical expenses of geriatric hospitals and general hospitals, which bear similarities in common regarding the characteristics of their patients, is performed. Thus the results of the study can serve as a quantitative indication for the management of hospice services.

Key Words: Hospice service, Terminal patients

THE CONCEPT OF HOSPICE

So dramatic was the increase in the population of the aged in Korea, with the increase of life expectancy and gradual changes of the causes of death to chronic diseases, such as cancer, that the increase in the consumption of medical resources by the aged surged.

In general, the medical purpose is to cure diseases; therefore the medical efforts have been concentrated on the extirpation of diseases, making the most use of medical knowledge and facilities available. But recent causal changes of deaths revealed the limitations of the existing cure-orientated medical practices. That is, even though intensive medical service can sustain a patient's life a bit longer, patients' satisfaction with their extended life, however, is another matter. The demands for medical service by terminal patients have been so big, but then the cure-orientated medical practices, however, have not been not been so economical, from the efficiency point of view on medical practices.

Considering such reality in medical service, medical people began to search for new alternatives, and it is hospice service that came into their attention as one of the alternatives. Hospice service, which can be helpful in avoiding heavy

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dosage of medication while improving the quality of patients' life at the same time, can offer new potential in medical practice in the face of such causal changing of death as in today. And it has made the need for more systematic, scientific management of hospice service necessary.

Hospice is about providing a natural deathbed environment without artificial extension or curtail of a patient's life. And the underlying philosophy of hospice is to preserve human dignity by providing physical, spiritual, and psychological care in which a patient can face their death humanly. Hospice programs can be provided in everyday life zone of a patient rather than in special place and building facility, taking into accounts a patient's condition and other necessary services.

Hospice environment can be regarded as both medical-oriented and care-orientated in which terminal patients and their families can be served with consistent care both at home and hospital. The main object of hospice is not a disease itself but a patient and the patient's family, therefore its ultimate purpose is not to elongate a patient life but to improve the quality of the residual life of the patient.

The history of hospice goes back to the Middle age, but the modern concept of hospice trace its origin back to the religious relief of "Mercy Sisters" which started in Grate Britain, though the most advanced country in hospice is United States of America. With the foundation of NHO in 1978, hospice in U.S. started organized publicity and education, and the legislative development in hospice made the field become a part of the existing medical system.

The reason behind the hospice success in U.S. was because of not only the popular acceptance of the basic concept of hospice but also the dramatic increase in medical expenses. That is, as the average life expectancy improved, so did demands for medical services increase dramatically, resulting in serious impact of medical expenses on the national economy. According to its causal analysis, the main cause of the dramatic increase in the medical cost was due to the increase in the aged and terminal patients. The U.S. national congress which did various researches to resolve the deficit problem of her Medicare program such as Blue Cross became to pay attention to hospice program, which was already in operation in some regions by then, and in 1982 when the TEFRA (Tax Equity's Fiscal Responsibility Act) was passed in the Congress, the hospice became to constitute a part of existing medical system.

In Korean case, it was Galbari medical practitioner's office that started hospice for the first time, and then facilitated mainly by religious organizations such as Catholic Hospital, Seongmo's (Meaning holy mother in Korean) Hospital, and Saint Paul's Hospital. But by then it was little known to the public because hospice service tended to be limited to the level of relief activities and was not well organized, but then with the population increase in the aged and terminal patients, it became to draw the public's attention. And the consequence was hospital style hospice consisted of general hospital and a ward specialized in hospice. Then publicity and education about hospice contributed to the increased among the public, by then its theoretical and academic

base had already been established by the efforts of domestic, overseas researchers.

But there are several problems looming in Korea before the full-scale implementation of hospice service took place. First and foremost, it is a matter of human resources. The hospice service involves voluntary participation of various walks of specialists. Especially under current circumstances where the trend of nuclear family develops rapidly, securing voluntary workers is necessary for the successful implementation of hospice service. Unlike the cases in developed countries, however, the layers of voluntary works are very thin in Korea where it is considered to take much longer than in developed countries to secure the same level of volunteer workers, let alone the slow change in the sense of social, cultural value.

Second, it is absolute demand for high quality medical service. This matter is about the same in the overseas cases, but the demand for high quality medical service so high and intense in Korea that it can distort Korean medical system in general, which contradicts the basic premise of hospice. The development and legalization of the hospice is considered to be very difficult unless the notion that hospice is minimal care for the poor is overcome in Korea.

Third, it is the lack of backing system. Even though the effect of hospice, in other words, people's interest in hospice as an alternative way of reducing medical expenses is rising recently with the rapid increase of the aged population and terminal patients, it still falls short of being independent medical system yet. And the main reason lies upon the profitability of private medical institutes. To improve the situation, medical charge criteria system should be prepared through act analysis of each part of the hospice in detail, together with standardization of its operation.

Considering the current social, medical circumstances, and medical system, the systemization of hospice is necessary. For overseas cases, hospice has already been systemized, and the analysis of the system reported its effectiveness, in terms of patients' satisfaction and economic reason. In Korea, there has been almost no quantitative indication of the cost-effect of hospice other than analogical inference about the efforts put into. And for the reason, it can be the short history of hospice, but most of all it is because each process of hospice, which is the basis of medical cost assessment, has not been clearly defined yet. The items of hospice services, therefore, should be classified in specific and analyzed to see the quantitative effect of the economization of medical cost. For the analysis of the effect of medical cost economization under the current circumstances, the study took inferential approach to measure the medical cost-effect of hospice by studying the medical costs at geriatric hospitals main patients of which are similar to those patients at hospice.

CHANGE IN MEDICAL ENVIRONMENT

Overall medical circumstance in Korea is currently undergoing a substantial change. Some of the main phenomena are (1) the aging of society due to the increased life expectancy, (2) the in-

crease of terminal cancer patients with changes in disease pattern, and (3) the disproportionate demand for medical service.

1. Aging population

In 2000, the average life span of Koreans was 76.5 years which is 14 years of increase from the average of 62.3 in 1971. And it is expected to increase to 78.8 years in 2010, and then 80.7 in 2020. So the size of aged population of the total population has been on its steady increase ever since the population aging began in the year 2000 where the aged ratio was 17% then, and the aged ratio is expected to increase to 14% in 2018 which is considered aged Society. And the 18 years of aging period will be one of the shortest periods of time compared to that of already aged societies of other countries. For example, in France it took 130 years (1865~1995); US. 30 years (1945~2015); Japan, 25 years (1970~1995). But in Korean the aging process has been so dramatic that it is rather urgent to make systematic, cultural, financial preparation for it.

2. Pattern change in disease

With the increase of national income, the changing of death causing disease has been on-going, as people's life style changes, and the cancer has become main death causing disease since 1982. Last year, the registered number of cancer patients was 72,323, of them 39,565 were male; 32,745, female, which is 11.7% increase from 64,761 in the year of 1995.

And this trend is reflected apparently in the (Table 1) below. In 2002, the total number of deaths was 24,700 thousand, of them 63,000 (25.6% of the total) died of cancer, making cancer the number one killer. Among the top 10 lethal diseases, cancer showed the most increase and its death rate is on continuous increase (20 out of 100 thousands). In 2002, the annual average number of cancer patients was estimated at 99,000. As the (Fig. 1) shows the death rate of cancer is increasing with time, and especially remarkable thing is that the cerebral blood vessel related diseases and cardiac disorders which are commonly

Table 1. Change in the Cause of Death (1992~2002)

Death cause	1992		2002		Increase	
	Place	Death rate	Place	Death rate	Place	Death rate
Cancer	1	110.7	1	130.7	–	20.0
Cerebral blood vessel disorders	2	80.3	2	77.2	–	−3.1
Cardiac disorders	3	43.0	3	37.2	–	−5.8
Diabetes	7	13.5	4	25.1	3	11.6
Lower respiratory disorders	8	12.9	5	22.6	3	9.7
Epilepsy	5	31.6	6	22.0	−1	−9.6
Suicide	10	9.7	7	19.13	3	9.4
Traffic accidents	4	34.4	8	19.12	−4	−15.3
High blood pressure	6	27.4	9	10.6	−3	−16.8
Respiratory tuberculosis	9	9.9	10	6.6	−1	−3.3

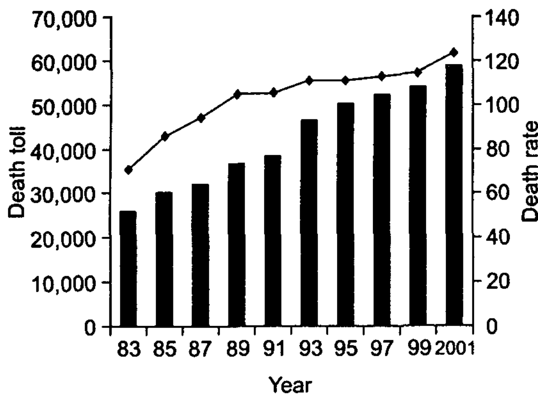

Fig. 1. Change in cancer death rate.

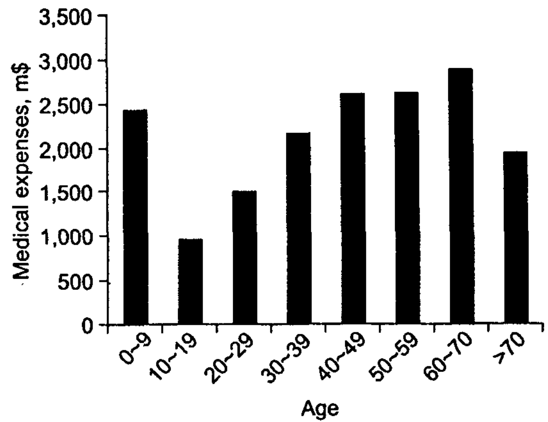

Fig. 2. Medical expenses by age for the year of 2002.

found in the case of the aged are the top three lethal diseases together with cancer. And this trend will continuously increase medical cost, as the aging of the society will continue.

3. Situation of Medical Cost in Korea

It was the 1996 that Korean Medical Insurance system reversed from the black into the red, according to the National Health Insurance Corporation 1998, the main cause behind the reversal was the increase of the aged and the number of people who received medical service through the system. For example, for the period of 1990~1996, the number of the people who were the beneficiary of the system dramatically increased among those who were more than 60 years old then, while it decreased for those who were less than 34 years old then, which indicated the aging of the subject of the Medical Insurance System. For the same period, there were 44% and 22% increases in the number of outpatients and inpatients respectively, with the increase of 7% in medical fee.

Even though the big recent increase of medical insurance fee rescued the system out of the red, the current expansion of beneficiary application of the system to include both long term patients and serious cases will cause additional increase in medical cost as the number of terminal patients and the aged will dramatically increase.

With the change in current social structure, the trend towards nuclear family will accelerate, and old man (or woman) - alone households (more than 65 years old) has showed a big increase and live-alone old man (or woman) population doubled for the 10 year period of 1995~1985. And this fact not only contributed to aged patients being end up in a hospital but also affected the 'the quality of life' of the patients.

The (Fig. 2) shows the medical expenses by age for the year of 2002 in Korea. The total medical cost in 2002 was 18,831,600 million won, which was about 400 thousand won per person. As shown in the table, the medical cost increased with age, especially for the case of the aged who were more than 65 years old then, the medical cost per person was about 80 thousand won, which was the double of the national average.

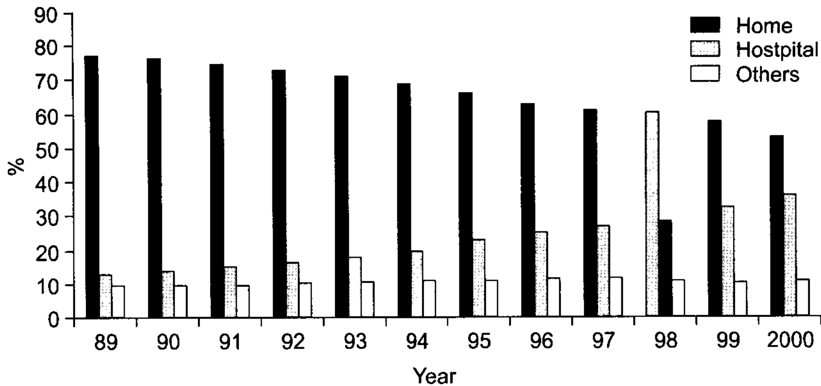

Fig. 3. Change of death bed place.

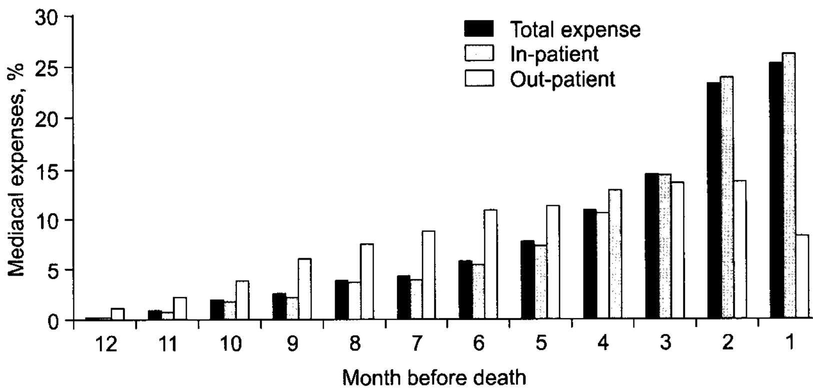

Fig. 4. Medical treatment ratio of the cancer patients by month.

The increase of medical expenses was not only due to the expansion of medical service to meet the aging population with the increase of average life span, but also due to the increased demand for quality medical service. The (Fig. 3) shows the death bed place, the more people chose a hospital for their deathbed place each year. For example, the ratio of hospital deaths was 12.8% in 1989, and then it increased to 39.9% in 2001. Even though there was direct connection between the death ratio and hospitalization, it implies probable increase in demand for quality medical service.

The (Fig. 4) shows the historical distribution of medical expenses for the period of 12 months preceding the death of cancer patients. As indicated in the table, the expenses of outpatients

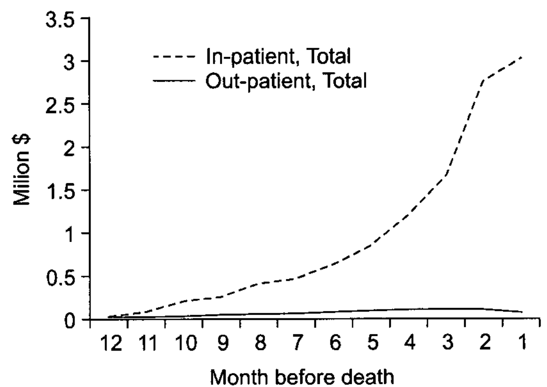

Fig. 5. Monthly medical charge of the dead by cancer.

had increased until 3 months prior to the death and then did not change up to the point of death, while the hospitalization charge increased exponentially up to the point of death, thereby assimilating total charge with hospitalization charge. The (Fig. 5) shows the total medical fee by month for the period of 12 months preceding the death. First of all, the gap of medical charge between inpatient and outpatient became wider as the end of life drew closer, and the medical charge for inpatient became 50.4 times that of outpatients when it came to one month prior the death. The medical fee for inpatient steadily increased up to the point of death, while the medical fee of outpatient was almost consistent for the 12-month period.

And this reflects that the more expensive medical resources were the more intensively used as the death came closer. Here, it should be reviewed for the matter of efficient use of medical resources that what it meant to the patient and his/her family to give intensive medical treatment to the patient who had been diagnosed as irrevocable, terminal patient with imminent death.

Considering this, hospice can be a good alternative not only to ensure medical service which can improve the quality of patient's life, but also to cut down on medical cost by preventing the use of unnecessary, expensive medical resources.

ANALYSIS OF MEDICAL FEE FOR THE PATIENTS IN THEIR TERMINAL STAGE

1. Objective and Method

As mentioned already, the basic purpose of hospice is to help give moral strength to terminal patients to face his/her death as comfortably as they can, while keeping human dignity for the rest of his/her life, and to improve the life quality of patients and the well-being of patients' families at the same time. From economical point of view, hospice is desirable, cost-effective business, saving medical cost and improving the use of medical resources. Starting from this point of view, this study estimated the potential cost-effect of hospice by making comparative analysis on the medical cost of general hospital and geriatric hospital. Even though the estimation had its limitation being based on the medical records available, the estimation can serve as basic data for the estimation on the potential cost-effect of hospice.

For the study, one general hospital and one geriatric hospital were selected. Regarding the general hospital, there were 651 deaths for the period of January~December 2003. And 205 of them were cancer patients, which accounted for 31.4% of the total deaths. Of them, 17 patients were selected for the investigation and analysis of their hospitalization, discharge records, and electronic database of OCS.

And for the case of geriatric hospital, the study took 5 months for period of March~July of 2003, and the subject of study were those deaths with more than 60 days of hospitalization prior their deaths. The contents of the investigation included medical records such as hospitalization records, doctors' orders, nursing records, medical check-up records, medication records, prescriptions, etc. and doctors' patient interview

records, nursing diary, duty transfer records, nurses' patient interview records, bill records, statistic records, patient care instructions for nurse, plan for ward programs, etc.

2. Results

1) General hospital

The general characteristics of the patients were summarized in the (Table 2). The male female ratio of the 17 patients was about the same, and the biggest age group was for the range of 50~69 years old (8 patients, 41.7%), with the next biggest group being the range of 30~49 years old (4 patients 23.5%). By disease, the most cases were cancer patients (14 persons, 82, 5%), and the rest cases were 2 and 1 for leukemia (11.8%) and Myeloma (5.9%) respectively. In terms of days of hospitalization, the most cases were for the range of 41~60 days (7 patients, 41.2%), and the next range was 21~40 days (4 patients, 23.5%), with one extreme case of more than 120 days.

Table 2. Gneral Characteristics of the Patients: General Hospital (n=17)

Division		Frequency	%
Sex	Male	9	52.9
	Female	8	47.1
Age	Less than 30	1	5.9
	30~49	4	23.5
	50~69	8	47.1
	More than 70	4	23.5
Disease	Cancer	14	82.3
	Leukemia	2	11.8
	Myeloma	1	5.9
Days of hospitalization	Less than 20	3	17.6
	21~40	4	23.5
	41~60	7	41.2
	61~70	2	11.8
	More than 120	1	5.9

The next (Table 3) is the cross summation by sex, age, days of hospitalization. The sex ratio of male vs. female by disease was similar to its general distribution. But by age, most of cancer patients were more than 50 years old. For the days of hospitalization, the distribution of cancer patients was similar to the general distribution of all the patients (Table 2). The hospitalization pe-

Table 3. Distribution of Disease by Sex, Age, Days of Re-hospitalization: General Hospital (n=17)

Division		Cancer	Leukemia	Myeloma
Sex.	Male	8	1	
	Female	6	1	1
Age	Less than 30		1	
	30~49	4		
	50~69	8	1	1
	More than 70	2		
Days of hospitalization	Less than 20	3		
	21~40	3		1
	41~60	6	1	
	61~70	2		
	More than 120		1	

riod for leukemia was comparatively long, while the period for Myeloma was comparatively short.

(Table 4) is the summary of the comparative analysis on medical expenses of the cancer patients by sex. The total medical expense per man was 7,073 thousand Won, which was slightly higher than 6,878 Won for a woman. But due to the fact that the average days of hospitalization of man was shorter that of woman, the medical expense per a day showed some difference between man and woman: 191 thousand Won for a man; 156 thousand Won, woman. The biggest part of medical expense was the medication injection fee; then the order by the size was hospital charges, medical checking charges, medical treatment and operation charges, blood transfusion charges, and CT fee.

According to the (Table 5), the total of medical expense for a leukemia patient in his/her terminal stage was 15,166 thousand Won, which was the largest part, and the next was for a cancer patient (6,990 thousand Won). In terms of the days of hospitalization, the longest one was for Leukemia; the second largest, cancer and Myeloma. For the medical expense per day, it was Myeloma that did cost the dearest, 207 thousand Won; then cancer, 175 thousand Won; and Leukemia, 110 thousand Won. Regarding medical charge by item, the expensiveness went by this order: injection charge, test charge, hospital charge, blood transfusion charge, and medical treatment and operation charges. But for the Leukemia, the order was injection charge, blood transfusion charge, and medical test charge respectively.

2) Geriatric hospice

The general characteristics of the patients at the geriatric hospital were summarized in the (Table 6). For sex, the most cases of the seven-

Table 4. Medical Expense of the Cancer Patient by Sex: General Hospital

Division	Total medical cost (1,000 won)	Days of hospitalization	Medical expense per day (1,000 won)
Male	7,073	37	191
Female	6,878	44	156

Table 5. Medical Expenses by Disease: General Hospital

Division	Total expense (1,000)	Days of hospitalization	Expense per day (1,000)
Cancer	6,990	40	175
leukemia	15,166	138	110
Myeloma	5,801	28	207

Table 6. General Characteristics of the Aged Patients: Geriatric Hospice (n=7)

Division		Frequency	%
Sex	Male	1	14.2
	Female	6	85.8
Age	70~79	3	42.9
	80~89	1	14.2
	90~99	3	42.9
Disease	Respiratory system	3	42.9
	Cardiac system	3	42.9
	Neural system	1	14.2
Days of re-hospitalization	Less than 90	1	14.2
	91~120	2	28.7
	121~150	3	42.9
	More than 150	1	14.2

Table 7. Disease Statistic by Sex, Age, Days of Hospitalization: Geriatric Hospice (n=7)

Division		Respiratory	Cardiac	Neural
Sex	Male			1
	Female	3	3	
Age	70~79	2	1	
	80~89		1	
	90~99	1	1	1
Days of hospitalization	Less than 90	1		
	91~120	1		1
	121~150	1	2	
	More than 150		1	

teen patients were women, and by age, three patients were in the age range of 70~79 and 90~99 each, with one patient in the range of 80~89. Regarding patient statistics, respiratory disorders and cardiac disorders were three for each case, with the other one being neural system disorder. As for the days of hospitalization, the most cases were for the range of 121~150 days (three patients, 42.9%), with one patient being in the range of more than 150 days.

(Table 7) is the summation of medical cost by disease of geriatric hospital. The total medical cost for Respiratory disease was Seven million Seven hundred Sixty-six thousand (7,766,000) Won; Neural disease, Six million Forty-two thousand (6,042) Won; Cardiac disease, Five million One hundred fifty-one thousand (5,151) Won. And there was not much difference regarding the length of rehabilitation by disease. But the re-hospitalization period of Cardiac disease was comparatively long so that medical cost per day was comparatively small. For the medical cost by item, the hospitals charges and nursing charges took up most part of the total, and then came the operation charges and medication charges.

Table 8. Comparison of Medical Expenses by Disease: Geriatric Hospice

Division	Total expenses (1,000 won)	Days of hospitalization	Medical expanse per day (1,000 won)
Respiratory	7,766	129	60
Cardiac	5,151	156	33
Neural	6,042	120	50

CONCLUSION

In conclusion, it is time to discuss potential cost-effectiveness of hospice by doing comparative analysis on the medical expenses of terminal patients of the general hospital and the hospital for the aged. The calculation of the medical charge for the Medical Insurance was, of course, different between the general hospital and the geriatric hospital, according to their classification as medical institutes. Because of difficulty to make comparatively accurate projection due to the limitation that the kind of the diseases compared between the two hospitals was different, approximate, indirect approach was considered for the projection instead.

First of all, even though the total expense of the general hospital was a bit bigger than its equivalent of geriatric hospital, the expense per day of geriatric hospital was remarkably as low as a third of that of the general hospital (110~207 vs. 33~60 thousand won), that is, the geriatric hospital was more economical in terms of mean expanse per day. As mentioned already, there were differences between the two institutes in terms of disease, medical charges, and the level of medical treatments, but it also can be difficult to deny the fact that there will be considerable waste of medical resources if terminal patients get treated at acute care facility of general hospitals.

So from these results, a reasonable inference can be made that considerable amount of medical cost could be spared if hospice is employed in general level. And the medical cost of hospice could be cut down because the mean expense of hospice would be similar to that of a hospital for the aged, and the days of hospitalization could be reduced by home care. Therefore policy, social level support and criteria for medical charge calculation should be provided through standardization, systemization of hospice services. But at the same time, the original concept and purpose of hospice that dignity of patient, comfortable death, well-being of patient's family should be maintained all the way.

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