

# Reducing Futile Acute Care Services for Terminally Ill Patients With Cancer: The Dignity Project

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**QUESTION ASKED:** Does timely documentation of goals of care (GOC) decrease futile utilization of acute care services (ACSs) including admissions to the intensive care unit (ICU)?

**SUMMARY ANSWER:** Patients with terminal disease frequently undergo interventions that are futile and possibly detrimental to their quality of life. We found that a timely documentation of GOCs in patients with terminal cancers significantly reduced the futile utilization of ACSs including ICU admission.

**WHAT WE DID:** This study involved a number of steps as indicated below: (1) Pre-intervention phase involves a root cause analysis and process mapping to identify the magnitude of and reasons for this issue and potential approaches to mitigate it. This was achieved through review of records of patients with cancer deemed for palliative care who died during their admission from November 2017 to May 2018. A number of variables were investigated including referral to palliative care and utilization of ACSs. (2) Intervention phase involves a multidisciplinary team of physicians from hematology-oncology, palliative care, and ICU; nurses; social workers; educators; and religious affairs, information technology, and quality improvement specialists. The intervention approach was named MED-REM to indicate multidisciplinary approach, evaluation, documentation, referral to palliative care, education, and monitoring. (3) After the MED-REM

model was implemented, a postintervention phase was done to review patients deemed palliative who died during their admission from December 2019 to June 2020. The pre-intervention and postintervention cohorts were compared and an estimate of impact was performed.

**WHAT WE FOUND:** Comparing pre-intervention with postintervention cohort, we observed that the documentation of GOC improved from 59% to 83% and ICU admission was reduced from 26% to 12%. The estimated annual cost saving from ICU bed utilization was \$777,600 in US dollars.

**BIAS, CONFOUNDING FACTORS:** The inclusion of all patients with metastatic cancer is a limiting factor because of the heterogeneity of prognostic factors between such patients. Furthermore, estimation of cost saving is subject to bias as some ACS interventions were not accounted for such as cost of mechanical ventilation, dialysis, vasopressor use, etc.

**REAL-LIFE IMPLICATIONS:** The results of our study highlight that interventions to improve timely determination and documentation of the GOC for patients with advanced cancer can lead to dramatic change in avoiding futile ACS resources and financial implications, improving communications across different healthcare workers, and more importantly preserving patients' dignity.

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Accepted on March 12, 2021 and published at [ascopubs.org/journal/op](https://ascopubs.org/journal/op) on April 27, 2021: Full-length article available online at DOI <https://doi.org/10.1200/OP.20.00922>

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## abstract

**PURPOSE** Patients with terminal diseases frequently undergo interventions that are futile and may be detrimental to their quality of life. We conducted a quality improvement project aimed to reduce the utilization of futile acute care services (ACSs) for patients with cancer treated with a palliative intent.

**METHODS** A multidisciplinary team reviewed the records of terminally ill patients with cancer who died between November 2017 and May 2018, during their admission at our institution. The review aimed to assess the magnitude of improper utilization of ACSs and admission to the intensive care unit (ICU). Lack of timely documentation of the goals of care (GOCs) was the main reason for this problem. We defined timely documentation as the availability of electronic documentation of patients' GOC before the need for ACSs. Interventions were implemented to improve the process; postintervention data were captured and compared with the baseline data.

**RESULTS** After the delivery of staff education and the implementation of mandatory documentation of the GOCs in the healthcare electronic record system, the timely documentation of the GOCs for patients with a palliative intent increased significantly from 59% at baseline to 83% in the postintervention phase. The impact of this intervention led to a decrease in admissions to the ICU from 26% to 12% and an estimated annual cost saving of \$777,600 in US dollars.

**CONCLUSION** Our interventions resulted in improved documentation of the GOCs and decrease in the utilization of ACSs including ICU admissions and the associated cost.

JCO Oncol Pract 17:e1794-e1802. © 2021 by American Society of Clinical Oncology

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## BACKGROUND

Patients with terminal illnesses frequently receive futile care including inappropriate admission to the hospital and treatments, interventions, and procedures of little or no benefit to the patient.<sup>1,2</sup> These interventions may be associated with patient's harm and poor quality of life (QoL) in addition to the cost and improper resource utilization. One of the major futile interventions performed in terminal patients with cancer is the utilization of acute care resources, especially admission to the intensive care unit (ICU).

Documentation of the goals of care (GOCs) for patients with advanced cancer is known to be poor worldwide. In a study performed by the palliative department at the Cancer Centre of Southeastern Ontario on 456

patients with advanced cancer, only 6% had a GOC documented by their oncologist.<sup>3</sup> A retrospective review of 2,498 patients with metastatic solid tumors at the Massachusetts General Hospital Cancer Center revealed that only 20.3% of patients had a documented code status.<sup>4</sup> In Australia, a single-center trial depicted that only 15% of patients with advanced cancer had an advanced care plan.<sup>5</sup> It has been recognized that the introduction of a standardized form for the documentation of GOCs can reduce the unnecessary mobilization of the code team and ineffective resuscitation attempts.<sup>6</sup>

Concerns were raised at our institution after the observation of several patients treated with a palliative intent receiving acute care service (ACS) interventions. The exact magnitude of this issue was unknown. ACS

Author affiliations and support information (if applicable) appear at the end of this article.

Accepted on March 12, 2021 and published at [ascopubs.org/journal/op](https://ascopubs.org/journal/op) on April 27, 2021; DOI <https://doi.org/10.1200/OP.20.00922>

interventions have several disadvantages in this specific population including wastage of essential resources, decreased cost-effectiveness, and impaired patient QoL. It was found that patients on palliative care cost less during a given admission than patients who receive standard care.<sup>7</sup> In the United States, the estimated daily cost for an ICU bed without mechanical ventilation is \$6,667 in US dollars (USD), whereas mechanical ventilation costs \$10,794 USD per day.<sup>8</sup> Comparatively, in our institution, the cost per day of a regular hospital bed is \$950 USD, whereas the cost per day of an ICU bed is \$2,100 USD with the cost of mechanical ventilation reaching \$3,200 USD per day.

There are several factors that predict survival after cardiopulmonary resuscitation (CPR); these include the severity of the acute illness, the type and number of preexisting health conditions, the patient's performance status, number of previous CPR attempts, and the diagnosis of cancer. The survival rate for seriously ill patients with cancer who receive CPR in ICUs is substantially low (reported as < 2%).<sup>9</sup>

Many scoring systems have been used to predict disease severity in the ICU. A high APACHE-II score has been associated with increased mortality and prolonged ICU stay.<sup>10</sup> In a Taiwanese study on 279 patients with cancer requiring ICU admission, the APACHE score and the containment of cancer have been found to predict survival in the ICU. Patients with progressive or recurrent cancer admitted with sepsis to the ICU had > 90% mortality within 180 days. The author suggested that their study might help in the decision of a hospice versus ICU admission for those patients by applying the scoring process.<sup>11</sup>

Most oncologists discussed end-of-life care within days of patients' death; however, early discussion even at the outpatient setting can lead to improvement in QoL and reduction of ACS usage for terminal patients with cancer.<sup>4</sup>

We conducted a quality improvement project at the King Abdulaziz Medical City, Riyadh, Saudi Arabia, aiming to assess the magnitude of the problem in our institution and encourage the early discussion of end-of-life care, early palliative care referral, and early electronic documentation of GOCs. Our goal is to avoid improper utilization of ACSs and provide better end-of-life care and better QoL for terminally ill patients with cancer.

## METHODS

This project was performed in three steps: the pre-intervention phase (to assess the magnitude of the problem), intervention phase (a model was applied to improve the practice), and postintervention phase (to quantify the improvement in practice). A multidisciplinary team including physicians from hematology-oncology, palliative care, and ICU; nurses; and information technology and quality improvement specialists managed the various stages of the project.

The preintervention stage involved a retrospective review of the records of patients with cancer ( $n = 161$ ) who died during admission from November 2017 to May 2018 (Table 1). The data collected included patient's age, sex, the type of cancer, the stage of cancer, and the aim of therapy (curative or palliative). Patients with palliative-intent therapy ( $n = 135$ ) were further analyzed with regard to the usage of critical care response team (CCRT), CPR, or ICU admission as well as referral to palliative care, the average ICU bed cost, and timely documentation of GOCs. The timely documentation of the GOCs is defined as the availability of electronic documentation for code status before the patient needs ACSs (Table 2).

After the magnitude of the problem was ascertained and a fish bone analysis was made to detect the reasons behind delayed GOC documentation, interventions were introduced to improve the practice. We named our intervention model MED-REM (Fig 1):

M = Multidisciplinary approach involved physicians, nurses, social workers, educators, psychologists, and the religious affairs department. Each individual team

**TABLE 1.** General Characteristics Stratified by Intervention

Characteristic	Preintervention (n = 135)	Postintervention (n = 174)	P
Age, median years (range)	65 (19-109)	68 (20-102)	.13
Age range, No. (%)			.64
< 50	25 (19)	28 (16)	
50-70	49 (36)	72 (41)	
> 70	61 (45)	74 (43)	
Sex, No. (%)			.25
Male	64 (47)	94 (54)	
Female	71 (53)	80 (46)	
Cancer type, No. (%)			.85
Hematologic	18 (13)	22 (13)	
Solid malignancy	117 (87)	152 (87)	
Risk, No. (%)			.0039
Stage I/II (or low risk)	6 (7)	1 (< 1)	
Stage III/IV (or high risk)	83 (93)	173 (99)	
NA (excluded)	46	0	
Cancer-directed therapy delivered, No. (%)			.045
No	41 (30)	72 (41)	
Yes	94 (70)	102 (59)	

Abbreviation: NA, not available.

has a specific role relating to improving the documentation of the GOCs. Each newly diagnosed patient with cancer was discussed in a multidisciplinary tumor board, where a plan of therapy as well as the GOC were decided and a process map was created for this reason (Fig 2).

E = Evaluation: continuous evaluation of the patient's condition and updating the electronic documentation accordingly.

D = Documentation: mandatory electronic documentation of the GOCs in the tumor board form and progress notes.

R = Referral to palliative care: once the decision has been made to treat the patient with a palliative approach, the patient is expected to be referred to palliative care if it has not been done earlier.

E = Education: a palliative care booklet was developed and distributed to the patients and their families to educate them about the role of palliative care in terminal illness and the limited benefit of ACSs for terminal patients with cancer. Staff received several educational lectures to emphasize the role of palliative care management and importance of early documentation of the GOCs.

M = Monitor: team leaders from each section were assigned to monitor the GOC documentation.

After implementing the MED-REM model, the multidisciplinary team analyzed the patients with cancer who expired between December 2019 and June 2020 (n = 187; Table 1) and those on the palliative approach treatment (n = 174) were further analyzed applying the same parameters as the preintervention group (Table 2).

Statistical analysis was performed to investigate the significance of the MED-REM intervention and its impact on the utilization of the ICU, CCRT activation, CPR, the timely documentation of the GOCs, and the location of death. Baseline patient-, disease-, and treatment-related variables were collected retrospectively and reported using descriptive statistics (counts, medians, and percentages). Categorical and continuous variables were compared using Pearson's chi-squared and Wilcoxon or Kruskal-Wallis test, respectively. Statistical analysis was performed using JMP software (SAS Institute Inc, Cary, NC).

This was conducted as a quality improvement project, which by the policy of our Institutional Review Board at King Abdullah International Medical Research Center is exempted from requirement of Ethics Committee's approval.

## RESULTS

In the preintervention phase, a total of 135 patients were reviewed with a median age of 65 years (19-109); 71 patients (53%) were female. Of these patients, 117 (87%) had an underlying solid malignancy, whereas the remaining 18 (13%) had a hematologic malignancy. A total of 94 (70%) received cancer-directed therapy for their underlying malignancy.

ACS utilization in the preintervention phase was as follows. CCRT activation was done in 34 patients (25%), and 35 patients (26%) were admitted to the ICU with a median ICU length of stay (LOS) of 5 (1-67) days. CPR activation was

**TABLE 2.** ACS Use and GOC Stratified by Intervention

Characteristic	Preintervention (n = 135)	Postintervention (n = 174)	P
CCRT activated, No. (%)			.011
Yes	34 (25)	24 (14)	
No	101 (75)	150 (86)	
Admitted to ICU, No. (%)			.0018
Yes	35 (26)	21 (12)	
No	100 (74)	153 (88)	
CPR activated, No. (%)			.2
No	123 (91)	165 (95)	
Yes	12 (9)	9 (5)	
ICU LOS, median days (range)	5 (1-67)	9 (1-84)	.15
IQR	13	12	
Patient flagged DNR, No. (%)			.09
No	14 (10)	9 (5)	
Yes	121 (90)	165 (95)	
GOC documentation, No. (%)			< .0001
Timely	80 (59)	144 (83)	
Delayed	55 (41)	30 (17)	
Died within 7 days of DNR, No. (%)			.51
No	83 (69)	119 (72)	
Yes	38 (31)	46 (28)	
Location of death, No. (%)			.058
ICU	26 (19)	20 (11)	
Other	109 (81)	154 (89)	
Patient transferred to palliative care, No. (%)			.39
No	40 (30)	44 (25)	
Yes	95 (70)	130 (75)	
Time from referral to palliative care to death, n = 225 (%)			
≤ 30 days	61 (64)	83 (64)	
> 30 days	34 (36)	47 (36)	.95

Abbreviations: ACS, acute care service; CCRT, critical care response team; CPR, cardiopulmonary resuscitation; DNR, do not resuscitate; GOC, goal of care; ICU, intensive care unit; IQR, interquartile range; LOS, length of stay.

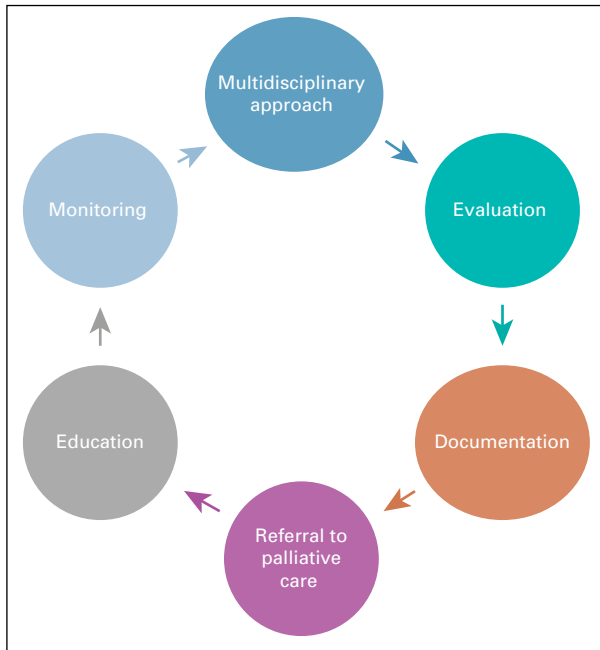


FIG 1. MED-REM intervention model.

done in 12 patients (9%), and 26 patients (19%) died in the ICU. Furthermore, 121 patients (90%) were flagged as Do-Not-Resuscitate (DNR) with timely GOC documentation in 80 patients (59%). A total of 95 patients (70%) were transferred to palliative care. Among those referred to palliative care, the referral-to-death time of  $\leq 30$  days was seen in 61 patients (64%). A total of 38 patients (31%) flagged as DNR died within 7 days from code status change.

In the postintervention phase, a total of 174 patients were included with a median age of 68 years (20-102); 94 patients (54%) were male, and solid malignancy was the most common underlying diagnosis in 152 patients (87%). Cancer-directed therapy was given to 102 patients (59%).

ACS requirements in the postintervention phase were as follows. CCRT activation was requested in 24 patients (14%), and 21 patients (12%) were admitted to the ICU with a median LOS of 9 days (1-84). CPR was activated in nine patients (5%), and 20 patients (11%) died in the ICU (Table 2, Fig 3). A total of 165 patients (95%) were flagged as DNR, and 46 patients (28%) died within 7 days of status change to no code. GOC documentation was timely in 144 patients (83%), and 44 patients (25%) were transferred to palliative care service. A total of 47 patients (36%) died beyond 30 days of being referred to palliative care.

There were differences in some of the patient and disease characteristics between the preintervention and postintervention group. Patients in the postintervention group were older (68 versus 64 years;  $P = .13$ ), more likely to have high-risk disease at 99% versus 93% ( $P = .0039$ ), and having a lower proportion receiving cancer-directed

care at 59% versus 70% ( $P = .045$ ). With regard to ACS delivery, there was a lower proportion of patients admitted to the ICU in the postintervention phase compared with the preintervention phase at 12% versus 26% ( $P = .0018$ ) with a trend toward longer ICU LOS at 9 versus 5 days ( $P = .15$ ), respectively. Location of death was outside the ICU more frequently in the postintervention group at 89% versus 81% (0.058). CCRT involvement was significantly lower in the postintervention group (0.011). Timely documentation of the GOCs was higher postintervention at 83% versus 59% ( $P < .0001$ ). These results are further elaborated in Table 2. There were no significant differences in patients who required admission to the ICU stratified by phase, as shown in Table 3.

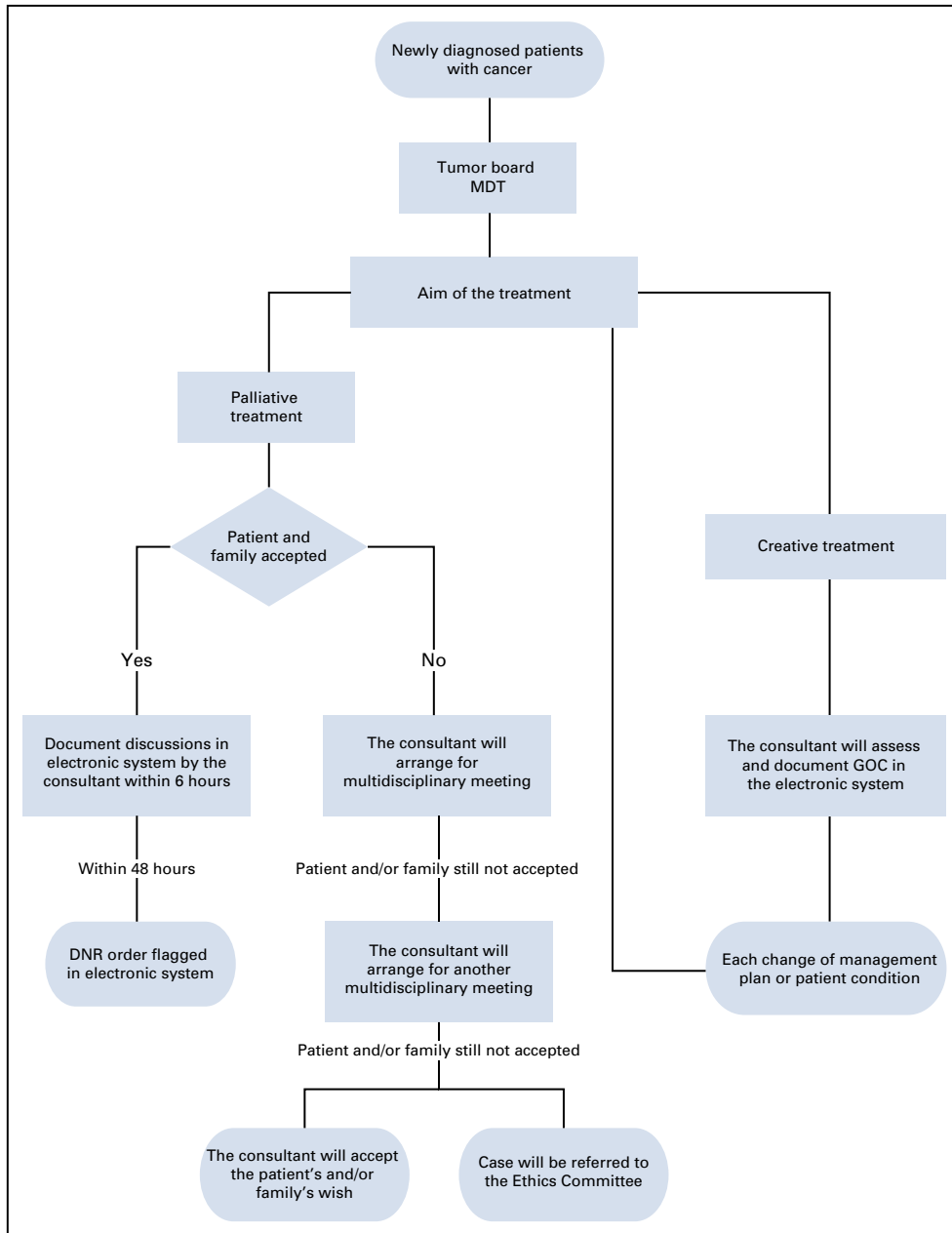
By reducing the ICU admission by 14%, we avoided the admission of 24 patients during the postintervention phase; with a median LOS of 9 days, we saved 216 days of ICU admission in 7 months. With an estimated cost of daily ICU admission of \$2,100 USD, the total cost saving during the postintervention phase was \$453,800 USD in 7 months or \$777,600 USD annually.

## DISCUSSION

Our project to reduce futile use of the ACSs resulted in a significant reduction in the usage of these services. In addition to the obvious cost saving financially, this improvement has more meaningful outcome of reducing the suffering and maintaining the dignity of many patients suffering from terminal cancers. One of the main reasons for offer futile care was the inability to determine the GOCs effectively and timely. Through staff education and the involvement of the palliative care service, the awareness of the need for timely discussions and the documentation of the GOCs was enhanced.

Like any society, culture plays a significant role in Saudi Arabia and has an impact on the patient's management. The culture is heavily centered on the family with decision-making responsibilities. Applying certain communication models could help to involve family in decision making without violating patient's autonomy.<sup>12</sup>

The main reason for delay or lack of documentation of the GOCs was attributed to the family member's refusal to accept the physicians' decision for DNR. The refusal of the family to accept the appropriate GOC is a result of lack of knowledge and awareness about the palliative intent of treatment and the futility of these interventions. The other reason is providing the information to the family at the time of patient's deterioration, which makes it difficult for them to accept the DNR decision. The recommended approach is to proactively build these discussions into the treatment protocols to occur much earlier in the treatment trajectory even within the outpatient setting.<sup>4</sup> Adding the mandatory GOC icons to our electronic outpatient progress notes had improved the documentation through earlier discussion



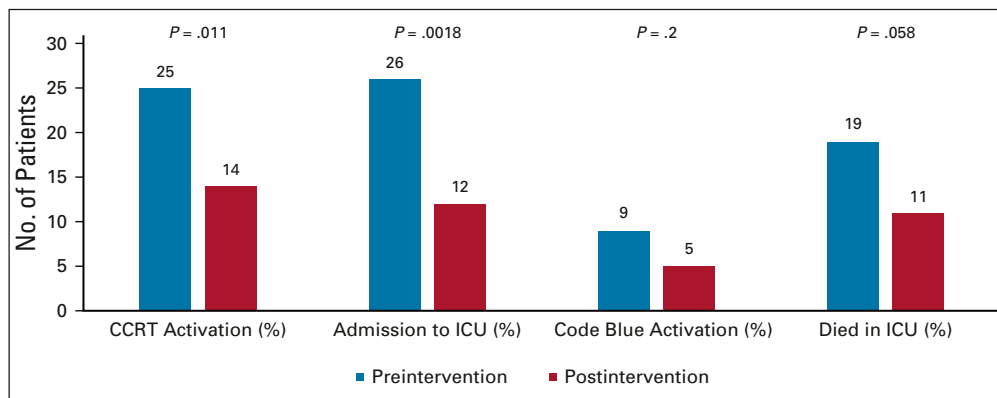
**FIG 2.** Process map: setting GOC for patients with cancer. DNR, do not resuscitate; GOC, goal of care; MDT, multidisciplinary team.

and identification of GOC prior to the need for admission. In addition, our process map figure was modified to incorporate decision and discussion of GOC immediately after tumor board discussion, which helped to improve the documentation by allowing enough time for the family to understand the given information.

The role of the palliative care team cannot be underestimated in enabling the process of establishing appropriate GOC. One of the main components of the World Health Organization's definition of palliative care is related to excellence in communication, ensuring the discussion of the GOC and the implementation of advance care

planning.<sup>13</sup> Longer duration of palliative care support for patients with advanced cancer is associated with a better QoL.<sup>14</sup>

One of the anticipated outcomes of our intervention would be to reduce the number of patients dying within 30 days from transfer to palliative care, reflecting early referral. In the postintervention data analysis, this has not been the case. This requires further investigation and root cause analysis to improve this indicator. One challenge is the patients' and families' beliefs that referral to the palliative care service means dying sooner or not receiving adequate care (no code = no care myth).<sup>15</sup> It was found that early



**FIG 3.** Impact of MED-REM intervention on ACS utilization. ACS, acute care service; CCRT, critical care response team; ICU, intensive care unit.

referral of patients with advanced cancer to palliative service resulted in improved survival and better QoL.<sup>16,17</sup> Our educational booklet, which we started distributing during the intervention phase and multiple educational sessions, has partially helped the patients and their families to overcome this fear.

A Finnish study looked at the duration between the decision for treatment with a palliative intent and the patient subsequently dying, which they found to be, on average, 46 days; most patients had a GOC with an appropriate code status assigned, but these decisions were found to have been taken closer to the point of the patient dying than they had aimed for.<sup>18</sup> Although not statistically significant, there was an increase in the number of patients identified as having a palliative intent for treatment post-MED-REM

intervention; following through with the appropriate referrals for patients with this intent established is important to ensure that good palliation is achieved prior to the terminal phase of the disease and not just as a consequence of a deterioration in condition.

The increase in timely GOC documentation and the decrease in the use of ACSs within our patient population will have a significant impact on the ability of our organization to use the ICU bed spaces effectively during the COVID-19 pandemic. In response to the COVID-19 pandemic, a large tertiary cancer center in Jordan moved from a predominantly patient-centered approach to DNR order application to a process that focused on the cancer community as a whole, enabling physicians to make these decisions unilaterally without the involvement of family members.<sup>19</sup> The need to make important resource-utilization decisions for the greater good of the whole cancer population has heightened the awareness of how important a timely GOC being documented is and the impact it can have on the cancer population as a whole. Following the COVID-19 pandemic, we may see a further reduction in the number of palliative patients who received ACSs as increased pressure has been applied during this time by patients who have much better chances of survival.

There are a few limitations concerning the study, some of which are a reflection of the complexity of the issue. For example, we included all patients with metastatic cancer under palliative care intent, which stems from categorizing cancer therapy in real-world oncology practice into either curative or palliative. This categorization has many limitations as not all metastatic cancer is the same and metastatic cancer does not mean automatically DNR. With recent advances in oncology, many patients with metastatic cancer live for years. Therefore, oncologists try to do their best to give chance to these patients up front and not deprive them from ACSs for potentially reversible events. Another challenge is not related to the variation between patients but the possibilities of changes in the status of an

**TABLE 3.** Characteristics of Patients Admitted to the Intensive Care Unit (ICU) Pre- and Postintervention

Characteristic	Preintervention (n = 35)	Postintervention (n = 21)	P
Age, median years (range)	64 (19-98)	73 (38-92)	.21
Age range, No. (%)			.53
< 50	7 (20)	3 (14)	
50-70	15 (43)	7 (33)	
> 70	13 (37)	11 (52)	
Sex, No. (%)			.33
Male	17 (49)	13 (62)	
Female	18 (51)	8 (38)	
Cancer type, No. (%)			.54
Hematologic	11 (31)	5 (24)	
Solid malignancy	24 (69)	16 (76)	
Cancer-directed therapy delivered, No. (%)			.12
No	26 (74)	19 (90)	
Yes	9 (26)	2 (10)	

individual patient from one day to another on the basis of the patient condition, tumor status, and available treatment options. For these reasons and others, we believe that the rate of early documentation of DNR before the use of ACSs will never reach zero and there will always be a need for CCRT, CPR, and ICU admission in oncology care. Another limitation is the lack of assessment of patient and family satisfaction about the process of setting the GOCs and its impact on patient and care giver experience. Finally, the median LOS in the ICU for the postintervention period was 9 days compared with 5 days for the preintervention period and the interquartile range was similar, ie, 13 versus 14, respectively. We hypothesized that the postintervention patients were sicker and more complicated. However, indicators for the acuity of patients' illness (such as APACHE score or others) were not collected or analyzed in the study.

Our future direction is to continue monitoring progress regularly and to ensure sustainability by integrating the changes into the work process and electronic medical records. We are confident that there are other advantages to early determination and documentation of the GOCs beyond the reduced utilization of ACSs that deserve evaluation in the future such as reduced patients' harm,

improved patient dignity at the end of life, reduced hospitalizations, and reduced utilization of other resources such as laboratory tests and imaging studies. Our aim is to help physicians and families overcome the barriers to appropriate referral of terminal patients with cancer to palliative care and explore and implement home management whenever feasible.

In conclusion, delayed determination and documentation of GOCs for terminal patients with cancer resulted in the improper utilization of ACS resources. Interventions to reduce this futile practice led to dramatic practice improvement in critical care usage and a significant decrease in the admission to the ICU with overall cost reduction.

Preventing unnecessary suffering for the patients and their families and providing dignity at this most difficult time by ensuring that the GOC is discussed and documented in a timely manner was our overall goal. Sustaining this improvement will be assured by integrating the changes into the work process and electronic medical records, enabling continuous monitor and audit. Future directions should focus on early introduction of palliative care and early discussion of GOCs with patients and their caregivers.

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## AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST

Disclosures provided by the authors are available with this article at DOI <https://doi.org/10.1200/OP.20.00922>.

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**Manuscript writing:** All authors

**Final approval of manuscript:** All authors

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**AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST**

**Reducing Futile Acute Care Services for Terminally Ill Patients With Cancer: The Dignity Project**

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**Consulting or Advisory Role:** AstraZeneca

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**Research Funding:** MSD Oncology, AstraZeneca, Pfizer

**Travel, Accommodations, Expenses:** AstraZeneca, Bristol-Myers Squibb

No other potential conflicts of interest were reported.