The prevalence and types of advance care planning use in patients with advanced cancer: A retrospective single-centre perspective, Australia

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Objectives: In Australia participation rate in Advance Care Directives is 14%, and research is limited on Advance Care Planning (ACP) invitations and uptake among the patients with advanced cancer (PwAC). This study identifies the prevalence and types of documented ACP discussions in PwAC who died within two or four weeks of receiving chemotherapy.

Design: A retrospective audit was conducted. Statistical analysis was calculated in SPSS. Difference in ACP invitation and utilization between three groups [control, <2-weeks, and -4 weeks] was measured by Kruskal-Wallis and Chi-square (or Fisher-Exact) tests. Post-hoc follow-up pair-wise comparisons were performed. Adjusted prevalence ratios were estimated using two logistic regression models.

Setting: This study was conducted in XXX Coast University Hospital, Australia.

Participants: The records of 339 patients were examined and 320 patients were found eligible.

Results: Of the 320 PwAC [male: 55%; median age: 65 years], 227 (71%) received ACP invitation, and among the invited patients, 89% used Acute Resuscitation Plan; 54% used Enduring Power-of-Attorney; and 20% completed Advance Health Directives. From 7.5% [n = 24] of the patients who received chemotherapy in their last 2-weeks of life, 42% had not received an ACP invitation, 29% didn’t have Acute Resuscitation Plan and only 4% completed Advance Health Directives. There were significant differences among Control, <2-weeks, and 2–4 weeks groups in completing Acute Resuscitation Plan (P = 0.003) and Advance Health Directives (P = 0.045). A significant difference was also observed between control and <2-weeks groups in number of days since Acute Resuscitation Plan used. Completing an Acute Resuscitation Plan was associated with a lower risk of dying within two-weeks of chemotherapy (OR = 0.246; P = 0.008).

Conclusions: Low rates of ACP invitation and use in PwAC, especially who received chemotherapy in 2-weeks of dying confirm a need for embedding and regularly revisiting ACP framework in cancer care and educating staff, patients, and their family caregivers to increase uptake.

Keywords: Advance care planning, Advance Health Directive, Enduring Power of Attorney, Acute Resuscitation Plan, Palliative chemotherapy, Futile treatment

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Key points

Question What is the prevalence and types of Advance Care Planning use in patients with advanced cancer in XXX University Hospital, Australia?

Findings This retrospective audit of 320 patients found low Advance Care Planning invitation and utilization rates, especially in the patients who received chemotherapy in their last 2-weeks of life. In the oncology setting, completion of Acute Resuscitation Plans and Advance Health Directives significantly differed between the control, <2-weeks, and 2–4 weeks groups, identifying the <2-weeks patient group as the lowest utilizing.

Meaning The low utilization of Advance Care Planning in patients with advanced cancer decreases the scope of recognizing their preferences at end-of-life care that indicates a need for an embedded framework along with education and training for the staff and patients.

Background

Advance care planning (ACP) is widely reported to be of value in maintaining the patients’ autonomy, reducing patient and family anxiety, improving end-of-life care, and reducing futile or unwarranted intervention. 1 The ACP is a process of discussion and documentation involving but not limited to: knowledge of disease and diagnosis, personal concern about health and care, values and goals of care, treatment and care place preferences, and proxy decision maker(s). 2 Terminology and its application vary across and within countries, but ACP generally involves Advance Care Plans, Advance Care Directives, Statement of Choices, Advance Health Directives, Enduring Powers of Guardianship and/or Attorney, and Acute Resuscitation Plan. 3,4 It is advocated that older adults begin ACP early, even when they are healthy, but individuals should particularly be encouraged to participate in the process when diagnosed with a life-limiting or chronic illness. 4 Evidence shows both invitations to ACP and completion of documentation are effective, for example, Houben et al. (2014) reported a correlation of increased documentation and discussions about care preference with the patients’ wishes being met. 5 Therefore, the ACP becomes integral to the care, communication and treatment plans for patients and their families and carers in high-income countries including Australia.

The Australian federal government released national ACP policies in 2011 that recommended they be part of hospital admissions/care protocols; accordingly, the country’s state governments circulated guidelines to increase the patients’ ACP uptake. 6 National data suggests that delivering ACP remains complex and the uptake of ACP and frequency of end-of-life discussions have not kept pace. 7 Currently, about 14% of Australians have a completed Advance Care Directive, 8 and this uptake rate is comparable to the ACP prevalence of 12.7% in the USA, identified by a study undertaken in 2015 that assessed ACP practice with the largest international sample size of 24 291. 8 Research is limited on ACP uptake in Australia, meaning a lack of evidence to assist hospitals and governments to understand the impact of ACP initiatives, especially for cancer patients.

Cancer is a leading cause of death in Australia and the need for treatment- and care-planning between the practitioners and cancer patients is high. This disease of the cells accounted for 3 out of every 10 deaths in the country. 8 In 2011, cancer was responsible for 19% of the overall disease burden, and in 2020, there were 145 482 new cases found, resulting in 48 099 deaths. 9 Compared to common non-cancer causes of death, cancer has a distinct trajectory of functional decline with a more predictable terminal period, which may be more conducive to ACP and palliative care. 9 While cancer care continues to be highly intensive, driven in large part by local practice patterns, which may not reflect patients’ preferences. 11,12 A report published over a decade ago that described an environment of increasingly aggressive cancer care is mirrored in recent studies showing persistent use of hospital-based services near death, despite evidence that aggressive end-of-life interventions may not be associated with better medical or quality of life outcomes. 10

Health status of cancer patients treated with chemotherapy often continues to deteriorate. There are benefits of chemotherapy in terms of symptom control, i.e. palliative chemotherapy, 13 but ongoing use of chemotherapy must be balanced with the side effects and toxicity. Studies from North America point to a trend revealing increased use of chemotherapy in the last 2-weeks of life. 14–18 The benchmark for chemotherapy use in the last 2-weeks of life was set by Earle et al. (2004, 2008), which states less than 10% of patients should be receiving chemotherapy prior to death. 14,15 The Adam et al.’s (2014) comparison table identified an Australian, single-centre study that looked at 747 patients who died across two cancer care departments in New South Wales and revealed 8% of patients received palliative chemotherapy in the last 2-weeks and 18% for 4-weeks prior to death (where n = 398). 19 Interestingly, the predictor of palliative chemotherapy continuation until the last 4 weeks of life in the study by Kao et al. (2009) was the treating oncologist, yet this was not a statistically significant effect for 2-weeks prior to death. 20 It is pertinent that all cancer patients receiving chemotherapy, especially those with advanced stages of disease, should have had in-depth discussions with health staff about their end-of-life care.

We know little about the invitation and uptake of ACP in the patients with advanced cancer (PwAC). In 2014, a review of 113 studies on the effects of...
ACP, only 18% (20 studies) reported on complex ACP interventions and only two of them included patients with cancer. The studies were limited in their objectivity, as results were self-reported by next-of-kin after the patients had died. Currently, there exists disparity in the broader community in terms of preferences for end-of-life care including location of death, with 70% of the cohort stating a preference (in surveys) to have end-of-life care at home and yet 70% experience their end-of-life care in hospital. It remains a challenge to determine if the PwAC wishes are being met, if they are not being documented in the first place, ultimately resulting in reduced levels of patient care and autonomy. We, therefore, aim to estimate the prevalence and types of ACP utilizations in PwAC who have received chemotherapy. Our study also examined the use of chemotherapy and ACP for the subgroups of patients who received chemotherapy up until their last 2- and 4-weeks of life.

**Methods**

**Study design**

This retrospective audit examined the ACP documentation contained in the records of 339 oncology patients who received chemotherapy for solid tumours and who died between 1 January 2016 and 30 April 2017.

**Settings and subjects**

The audit was conducted at XXX Coast University Hospital, Australia. Our audit primarily focussed on oncology patients who were treated for solid tumours. A patient was defined in this study who was seen by oncology team and underwent at least one-cycle of chemotherapy/immunotherapy treatment. Patients with advanced solid tumours were included in this study. Generally, the PwAC would be present as an inpatient and subsequently receive a booking confirmation for chemotherapy treatment in oncology unit. The patients who met the oncology team and did not proceed to chemotherapy/immunotherapy intervention were excluded, resulted in 320 patients who met the inclusion criteria (Figure 1). The median age of all patients was 65 years, with a range from 21 to 94 years and 55% males.

**Data collection**

Data were collected from hospital administration records; electronic medical records (EMR); and the chemotherapy pharmacy treatment database (‘CHARM’). Specifically, the researchers retrieved data about how many PwAC had completed Advance Health Directives, an invitation to participate in any ACPs, a documented Advance Resuscitation Plan, a nominated default decision maker or Enduring Power-of-Attorney. Data were also collected for type of cancer, treating oncologist, date of last chemotherapy and place of death.

The spreadsheet was constructed in Excel with the first column pertaining to patient identification. Data extracted from the electronic medical record for entry into the spreadsheet included the following patient characteristics: gender, age, date of death, presence of a documented Advance Health Directive, of an Enduring Power-of-Attorney, an Acute Resuscitation Plan and an invitation to ACP. Place of death was also extracted from individual EMR. The database CHARM was used to obtain the variable of last chemotherapy treatment date and this was also recorded. The type of cancer and treating oncologist was obtained via EMR notes and cross-referenced with the CHARM database.

The ACP information was not always in the allocated section of EMR. In this case, a search of clinician notes (both inpatient and outpatient documentation) and social worker notes was undertaken. This process was repeated for the Enduring Powers of Guardianship and/or Attorney and invitation to ACP variables. Similarly, the Acute Resuscitation Plan was sometimes scanned into the EMR. If not, the aforementioned subsections of EMR were searched to confirm documentation of Acute Resuscitation Plan completion.

**Data analysis**

Continuous variables were summarized using means and standard deviations. Categorical variables were summarized as counts and percentages. Percentages were calculated in SPSS after excluding the missing values. The percentage of the missing values did not exceed 5% for any of the variables. The PwAC were grouped into three cohorts [control, <2-weeks, and 2–4 weeks] to understand whether ACP invitation and participation had occurred in the context of treatment futility. For the control group, ACP occurrence was assessed from the time a patient was seen by the oncology service (and commenced on treatment).
The control group represented patients who died at any point but more than 4 weeks after receiving chemotherapy. The Kruskal–Wallis test was therefore used to compare the distribution of continuous variables between the groups to test whether the distribution was significantly different. Chi-square (or Fisher-Exact) test was used to compare the categorical variables between the three groups. In both cases, post-hoc follow-up pair-wise comparisons were performed if the initial test results were significant to compare each pair of groups. Bonferroni correction was used to adjust the p values.

Two binary logistic regression models were developed:
1. Model 1: Compare the 2-weeks cohort to the control cohort (rest of the cohort excluding the 2–4 weeks group).
2. Model 2: Compare the 2–4 weeks cohort to the control cohort (rest of the cohort excluding the 2-week group).

Before performing logistic regression, days since Acute Resuscitation Plan and days since ACP were log transformed. Odds ratio was calculated, and the significance of the coefficients was assessed using Wald test. Likelihood ratio test was performed to assess whether the constructed models (which includes the independent variables) were significantly better than the null model.

**Ethics**

Ethics approval for the audit was granted by XXX Coast University Hospital and Health District Human Research Ethics Committee [Project Number: HREC/17/QGC/200]. The PwAC were de-identified and their hospital identification numbers were used to ensure privacy. The de-identified data were stored in a spreadsheet format on a computer with password encryption and kept at the hospital for analysis and comparison.

**Results**

Table 1 illustrates the types of ACP invitations and their uptake by the PwAC. About 71% (n = 227) of the total patients received ACP invitation. Of them, 20% completed an Advance Health Directive; 89% had an Acute Resuscitation Plan; and 54% had an Enduring Power-of-Attorney. From 7.5% of the PwAC who received chemotherapy in their last 2-weeks of life, 42% had not received an ACP invitation, 29% didn’t have an Acute Resuscitation Plan and just 4% had an Advance Health Directive.

Table 1 also shows the significant difference with respect to types of ACPs use between the three groups [Control VS <2-weeks VS 2–4 weeks]. The proportion of individuals who completed an Acute Resuscitation Plan was significantly different between the three groups (P = 0.003). Post-hoc comparisons showed that the proportion was higher in the control groups compared to the <2-weeks group only, but not the 2–4 weeks group. The proportion of PwAC who completed an Advance Health Directives was significantly different between the three groups (P = 0.045). Post-hoc analysis showed results similar to those noted with Acute Resuscitation Plan. Patients treated by one particular oncologist were significantly higher in the <2-weeks group compared to the control group, but not in the 2–4 weeks group. The proportion of males was higher in control group compared to the <2 weeks group and the 2–4 weeks group. The proportion of patients treated with immunotherapy was not significantly different between the three groups (P = 0.794). The location of death was not significantly different between the groups (P = 0.759). And the types of cancer were not significantly different between the groups.

Table 2 shows that there was a significant difference in the number of days since Acute Resuscitation Plan between control and <2 weeks group, meaning that the Acute Resuscitation Plan often filled out by the oncology team as the patients’ condition deteriorates and they approach end-of-life. There was also a significant difference between the <2-weeks and the 2–4 weeks group. However, there was no significant difference in the days since Acute Resuscitation Plan between the control group and the 2–4 weeks group. Results show that there were no significant differences between the three groups with respect to age or days since ACP.

Table 3a and 3b present the logistic regression analysis results. Males were 59% less likely to die within 2-weeks of chemotherapy compared to females. Completing an Advance Health Directives was not significantly associated with dying within 2-weeks of chemotherapy (P = 0.1). But completing an Acute Resuscitation Plan was associated with a lower risk of dying within 2 weeks of chemotherapy (OR = 0.246; p = 0.008), the odds of dying within 2 weeks of chemotherapy among the PwAC who completed an Acute Resuscitation Plan was 75.4% lower compared to those who did not. There was a significant difference in treatment up to 2 weeks prior to death for one particular oncologist. Table 3b reports that males were 56% less likely to die within 2–4 weeks of chemotherapy compared to their counterpart. None of the remaining variables was significantly associated with dying within 2–4 weeks of chemotherapy.

**Discussion**

This study conducted a retrospective audit to estimate the prevalence and types of ACP utilization in Patient
with Advance Cancer (PwAC) in XXX Coast University Hospital, Australia. The ACP invitation and uptake rates were found to be low in hospital, especially in the patients who received chemotherapy in their last 2-weeks of life and confirms that rates remain consistently low across Australia despite high levels of relevance and applicability. The rate of advance care directive uptake in our study is higher than the findings in previous Australian studies, for example, a 2014 study found no advance care directives among 100 older patients in a hospital setting.23 However, our findings of 4% advance care directive completion by PwAC is lower than recent study findings, for example, the 2017 Australian National Advance Care Directive Prevalence Study reported 27% of people with a cancer diagnosis had documented their ACP preferences in an advance care directive.23 The ACP uptake rate in our study was also found to be lower than in other countries, such as USA (12.7%), UK (64%); and Belgium (11%).24–26 The low ACP invitation and uptake of advance care directive in the patients who received chemotherapy

### Table 1 Descriptive statistics for categorical variables (n = 320)

| Variable                  | <2 Weeks (n = 24) | 2–4 Weeks (n = 27) | Control (n = 269) | P     |
|---------------------------|-------------------|--------------------|-------------------|-------|
| **Advance care planning** |                   |                    |                   |       |
| AHD (%)                   | 1 (4.2)a           | 3 (11.1)b          | 59 (21.9)b        | 0.045*|
| EPOA (%)                  | 10 (41.7)          | 10 (37.0)          | 151 (56.1)        | 0.08  |
| ACP (%)                   | 14 (58.3)          | 19 (70.4)          | 196 (72.9)        | 0.316 |
| SOC (%)                   | 3 (12.5)           | 2 (7.4)            | 32 (11.9)         | 0.877 |
| ARP (%)                   | 17 (70.8)          | 22 (81.5)b         | 246 (91.4)b       | 0.003*|
| Gender (Male) (%)         | 9 (37.5)           | 13 (48.1)          | 58 (68.0)         | 0.024 |
| Immunotherapy (%)         | 5 (20.8)           | 5 (18.5)           | 46 (17.1)         | 0.794 |
| **Doctor (%)**            |                   |                    |                   |       |
| Doctor 1                  | 8 (33.3)a          | 4 (14.8)b          | 32 (11.9)b        | 0.0138|
| **Death location (%)**    |                   |                    |                   |       |
| Hospital (inpatient)      | 19 (82.6)          | 19 (76)            | 199 (76.2)        | 0.759 |
| Home                      | 4 (17.4)           | 6 (24.0)           | 42 (16.1)         |       |
| Hospice (8 bed facility)  | 0 (0)              | 0 (0)              | 16 (6.1)          |       |
| RACF (Nursing Home)       | 0 (0)              | 0 (0)              | 4 (1.5)           |       |
| **Cancer (%)**            |                   |                    |                   |       |
| Breast                    | 3 (12.5)           | 3 (11.1)           | 18 (6.7)          | 0.379 |
| CNS                       | 0 (0)              | 0 (0)              | 11 (4.1)          | 0.54  |
| Genito-urinary            | 2 (8.3)            | 3 (11.1)           | 31 (11.6)         | 1     |
| GI                        | 6 (25.0)           | 7 (25.9)           | 92 (34.5)         | 0.527 |
| Gynaec                    | 3 (12.5)           | 1 (3.7)            | 9 (3.4)           | 0.093 |
| Head & neck               | 0 (0)              | 1 (3.7)            | 10 (3.7)          | 1     |
| Lung                      | 8 (33.3)           | 6 (22.2)           | 51 (19.1)         | 0.241 |
| Melanoma                  | 0 (0)              | 1 (3.7)            | 7 (2.6)           | 0.757 |
| NEC/NET                   | 0 (0)              | 0 (0)              | 5 (1.9)           | 1     |
| Other                     | 0 (0)              | 0 (0)              | 10 (3.7)          | 0.826 |
| small cell lung           | 2 (8.3)            | 3 (11.1)           | 19 (7.1)          | 0.61  |
| Unknown primary           | 0 (0)              | 2 (7.4)            | 4 (1.5)           | 0.149 |

Notes: Different superscripts indicate that the groups are significantly different from each other.

ACP = Advance Care Plan; AHD = Advance Health Directive; EPOA = Enduring Power of Attorney; ARP = Acute Resuscitation Plan; SOC = Statement of Choices invitation; RACF = Residential Aged Care Facility; Hospice = 8 bed facility not attached to the hospital (not a palliative care unit).

### Table 2 Descriptive statistics for continuous variables (n = 320)

| Variable                  | Control (n = 269) | <2 Weeks (n = 24) | 2–4 Weeks (n = 27) | P     |
|---------------------------|-------------------|-------------------|--------------------|-------|
| Age                       | 67.00             | 68.00             | 62.00              | 0.661 |
| Days                      | 17.50 [6.00, 54.75] | 3.00 [2.00, 8.00] | 10.00 <0.001*      |       |
| ARP                       | 41.50             | 66.50             | 57.00              | 0.494 |
| ACP                       | 101.75            | 115.75            | 94.00              |       |

Note: Different superscripts indicate that the groups are significantly different from each other.

### Table 3a Predictors of death within two weeks of chemotherapy ($R^2 = 16.7\%$) [2-week group vs cohort]

| Variable                  | Odds ratio | Lower 95% CI | Upper 95% CI | Wald stat | P-value |
|---------------------------|------------|--------------|--------------|-----------|---------|
| Gender (Male)             | 0.41       | 0.156        | 0.99         | −1.94     | 0.053   |
| AHD                       | 0.182      | 0.01         | 0.923        | −1.63     | 0.1     |
| ARP                       | 0.246      | 0.088        | 0.73         | −2.64     | 0.008*  |
| Oncologist (1)            | 3.45       | 1.25         | 8.97         | 2.49      | 0.0128* |

### Table 3b Predictors of death within 2–4 weeks of chemotherapy ($R^2 = 5.8\%$) [2–4 weeks group vs. cohort]

| Variable                  | Odds ratio | Lower 95% CI | Upper 95% CI | Wald stat | P-value |
|---------------------------|------------|--------------|--------------|-----------|---------|
| Gender (Male)             | 0.44       | 0.187        | 0.988        | −1.95     | 0.051   |
| AHD                       | 0.493      | 0.113        | 1.51         | −1.11     | 0.266   |
| ARP                       | 0.473      | 0.169        | 1.55         | −1.35     | 0.178   |
| Oncologist (1)            | 1.173      | 0.32         | 3.4          | 0.27      | 0.787   |
chemotherapy in their last 2-weeks of life at XXX Coast University Hospital and in other Australian hospitals can be explained by scarcity of hospital resources and a diversity in policies and practices.

Lim and colleagues found 124 hospitals providing cancer services from a total number of 1157 Australian hospitals in 2016 by a systematic search on the Australian Hospitals and Aged care Databases. The XXX Coast University Hospital is one of them – a Level-6 tertiary referral-centre – servicing a population of 600,000.\(^{28}\) The patient group in the XXX Coast University Hospital is reflective of urban Australian settings, with a predominant Anglo-Celtic ancestry and a similar cultural profile to the Queensland capital Brisbane and other Australian jurisdictions.\(^{28}\) This hospital is the only public oncology service in the region that has recruited an ACP Clinical Nurse Consultant to facilitate end-of-life conversations and planning for the patients’ health and personal care.\(^{28}\) Similar to other tertiary hospitals in Australia, this state-owned hospital operates out-patient clinic and day therapy unit for people with cancer. But having inadequate structures and resources in oncology clinics or units limits the ACP invitation and uptake between the practitioners and the cancer patients across Australia.\(^{11}\) In addition, the ACP laws and guidelines in the Australian jurisdictions are diverse, but they generally outline how a patient with decision-making capacity can record their future preferences for care and appoint a substitute decision-maker.\(^{6}\) These guidelines also describe the process for medical treatment decision-making for people without decision-making capacity. Despite such policy efforts, the ACP implementation is not directed by the state governments, instead it sits within general practices and hospitals across all jurisdictions. The lack of a definitive governing body for ACP implementation without any centralized evaluation or control processes, may be a significant contributor to the low uptake of advance care directives by PwAC.

The cancer patients may benefit from end-of-life care discussion and ACP documentation.\(^{1,5}\) The benefits attributed to cancer patients in ACP uptake includes establishing their right to treatment and care, control over treatment choices, and avoiding misinterpretation about the patients’ needs and decision making.\(^{3}\) For example, Brinkman-Stoppelenburg et al. (2014) outlined the evidence for ACP and its positive impact on patient outcomes.\(^{1}\) However, not all ACP documents are equivalent and therefore may be less likely to ensure patient outcomes. The Acute Resuscitation Plan was the most completed documented in our study yet contains the least legal power to ensure the PwAC outcomes. The Acute Resuscitation Plan completion is not dependent on the PwAC signatures, but rather involves verification through a hospital doctor and is only applicable to the hospital in which it is completed. Rietjens et al. (2016) highlighted the importance of patient engagement in decision making around end-of-life care preferences.\(^{29}\) A document with greater PwAC involvement may increase the likelihood of achieving their preferences. In terms of patient preference, the Advance Health Directives (also called Advance Care directive) requires the greatest patient involvement, and has a greater level of legal power (depending on state legislation), yet was the most under-represented document in our study.

The ACP uptake by cancer patients also benefits family members and healthcare professionals by reducing their burden of responsibility through sharing information preferences, guidance, and leadership in decision making.\(^{23}\) As a suite of documents, the ACP process has two main components: (i) surrogate decision maker; and (ii) documents related to patient preferences. In our study, 53% of PwAC had formally allocated a surrogate decision maker via completion of an Enduring Powers of Guardianship and/or Attorney. Despite advanced oncological illness, approximately half the PwAC in our study did not complete an Enduring Powers of Guardianship and/or Attorney and for those who did it was completed nine weeks prior to death (median time frame). In oncology settings, for the PwAC who are receiving chemotherapy/immunotherapy, there exists a distinct timeframe advantage and occasionally predictable functional decline associated with advanced disease. Such death trajectories allow more time for completion and regular revisitation of documents which should align with treatment goals. It could be assumed that many PwAC who did not formally document a decision maker may believe that family members or carers were adequately informed of their wishes. Shalowitz et al. (2006) revealed the PwAC surrogate decision makers incorrectly predicted patient preferences in one-third of cases.\(^{50}\)

In terms of decision making, it is of note that median time frames for Acute Resuscitation Plan completion in our study were the shortest for the PwAC who died within 2 weeks of receiving chemotherapy. This result was significant in our study but also speaks to the reality of advanced cancer. Hebert and Selby (2014) suggested family members and patients should be provided with an explanation of non-reversible aspects of an illness to help guide resuscitation plans.\(^{31}\) In the case of progressive/advanced cancer, the ARP is more representative of a change in the goals of care or treatment goals, and discussions are often centred around an upper limit of care. Revisions or alterations in resuscitation...
plans are therefore more likely to occur when a patient is clearly declining and approaching end-of-life.

Our study revealed that the male PwAC were approximately 59% and 56% less likely to die within 2 weeks or 4 weeks of receiving chemotherapy respectively compared with females. While the results were significant, it may also be explained by the types of solid tumours affecting both genders in our study. The literature points to a greater percentage of female-specific cancers that are treated as chronic diseases or maintenance therapies. A study by Nevadunsky et al. (2013) concluded that women with gynaecological malignancies undergo aggressive treatments at end-of-life without any evidence of improved quality of life or longevity. Despite the current study partly supporting the findings of Nevadunsky et al. (2013), there were no statistically significant differences between ACP documentation related to gender.

Barriers to participation in ACP have been investigated by several studies. There are four major challenges identified in ACP discussion and uptake: firstly, the patients and families avoid discussion because they feel they are giving up on a cure and being resigned to death; secondly, healthcare staff not wanting to remove patient and family hope and focus on prolonging life; thirdly, healthcare staff are reluctant to discuss ACP as it may be interpreted as treatment failure or giving up; and finally, the patients and families not having the health literacy to navigate ACP documents and feeling overwhelmed. When the studies investigated ACP uptake in the oncology population, the barriers were patients’ anxiety, inadequate physician training, insufficient time for having ACP conversations, determining appropriate time and setting, and ‘tick box’ approach. In addition, Michael et al. (2013) suggested a lack of disease-specific ACP discussions and outlined the importance of ACP intervention as several discussions throughout the disease trajectory. Optimal time frames for ACP discussions for oncology patients undergoing chemotherapy intervention remain unclear. In particular, studies should look at the time between the initial development of ACP and the subsequent revisions of the plan as suggested for all patients on the end-of-life spectrum as indicated in the consensus guidelines for quality end-of-life care. The quality and content of end-of-life discussions, along with early palliative care involvement has been identified as a significant variable in the development and implementation of ACPs and may require guideline development to ensure a consistently effective approach.

This study was limited by a lack of documented hospital admissions in the last four-weeks prior to death and the intervention received during this time. Focusing on last four-week time may have influence on the low ACP uptake among the patients. There were also several confounding variables in this study. It is recognized in younger patients with late-stage cancer diagnosis, they tended to have ongoing chemotherapy treatment, predominantly due to patient preference. Patients in this category might be encouraged to simultaneously pursue aggressive care while also planning for their future care. In the instance of de-novo metastatic disease, it was likely that the patients will prefer all available treatment options and often present with severe illness leaving a shortened window of opportunity for ACP discussions and completion. In this study, there was limited data collected on revisions to ACP, i.e. in some cases the Acute Resuscitation Plan or Advance Health Directives were revised several times and the data did not capture this. Statement of Choices documentation was not included in the ACP invitations in 2016.

However, the study generates evidence for a specific cohort examined and the relevance of ACP implementation in the context of imminent death. Also, it provides pertinent and scarcely available data on the utilization of ACP in oncology patients that would benefit the practitioners in engaging the patients and their families in ACP. Overall, this study clarifies why ACP invitation has not been integrated into routine care for PwAC and informs the importance of ACP invitation and uptake by the patients who received chemotherapy in their last 2-weeks. Our study acknowledges that ACP is a complex and dynamic process, therefore, our findings may help the oncology out-patient clinics and therapy units in Australia and in other countries to initiate PwAC-friendly ACP discussion that requires personal, emotional, social and legislative factors to align.

Impact statement

- An indication as to which forms of ACP are utilized by Oncology patients with solid tumours;
- Results showing low rate of invitations to participate in ACP and completion of Advance Health Directives in patients who died after receiving chemotherapy treatment;
- Significantly low ACP rate for subgroup of patients receiving futile treatment (within 2 weeks of death); and
- The data from this study may guide future research and population-based intervention in attempting to improve the uptake of ACP.

Conclusions

This study acknowledges the presence of government policies and initiatives, but the ACP prevalence rates remain low among the PwAC in Australian hospitals. Of concern are the decreased rates of completion for the PwAC receiving potentially futile treatment in
their last weeks of life. Our evaluation of ACP rates in a population of PwAC revealed the common form of ACP completion was the Acute Resuscitation Plans followed by Enduring Powers of Guardianship and/ or Attorney and then Advance Health Directives/Advance Care Directives. Significantly, Advance Health Directives/Advance Care Directives completion rates in this setting were almost identical to Australian population rates, despite advanced disease. The study highlights the need for a range of strategies to improve ACP invitation and completion rates: first, embedding the ACP framework for all patients aged 65 years and over within hospitals; second, ACP education, training, and mentoring for staff; third, engaging social workers in health literacy interventions to educate patients and their family caregivers about ACP uptake; and finally, revising the ACP documentation in regular intervals with disease progression. Further research should focus on barriers to ACP completion in the oncology setting, which may have broader application to the PwAC and ensure patient preferences are aligned with care received.

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