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Examining Emergency Departments Practices on Advance Care Directives and Medical Treatment Decision Making Using the Victorian Emergency Minimum Dataset.

Abdi D. Osman, RN, DrPH[1, 2, 3]; Jocelyn Howell, MBBS, MPH[1]; Paul Yates, MBBS, PhD[1]; Daryl Jones, MBBS, PhD[1] and George Braitberg, MBBS MHlthServMt[1, 3]

[1]Austin Health, Emergency Department. Heidelberg, Melbourne. Australia.

[2]Victoria University, St Albans. Melbourne, Australia.

[3]University of Melbourne, Department of Critical Care. Australia

*Corresponding author

Correspondence to:

Dr Abdi D. Osman

St Albans Campus Block 4C Rm321

College of Sports, Health and Engineering

Victoria University, University Blvd, St Albans VIC 3021

Australia.

Email: abdi.osman@vu.edu.au

ORCID: 0000-0002-8104-8019

Running head. ED ACD/MTDM alerts in VEMD

Abstract

Introduction: Existence of Advance Care Planning (ACP) documents including contact details of Medical Treatment Decision Makers (MTDM), are essential patient care records that support Emergency Department (ED) clinicians in implementing treatment concordant with patients' expressed wishes. Based upon previous findings, we conducted a statewide study to evaluate the performance of Victorian public hospital emergency departments on reporting of availability of records for ACP.

Method: The study is a quantitative retrospective observational comparative design based upon ED tier levels as defined by the Australasian College for Emergency Medicine (ACEM) for the calendar year 2021.

Results: Of 1.8 million total Victorian ED attendances, 15,222 patients had an ACP alert status recorded. Of these, 7296 were aged ≥65 years (study group). Of the thirty-one public EDs that submitted data, 65% were accredited and assigned a level of service tier. The presence of ACP alerts positively correlated to location, tier level, age and gender (MANOVA wilk's; $p<0.001$, value=.981, $F= (12, 15300)$, partial $\eta^2=.006$, observed power=1.0 = 95.919).

Conclusion: The identified rate of ACP reporting is low. Strategies to improve the result include synchronising ACP (generated at different points) electronically, staff education, training and further validation of the data at the sending and receiving agencies.

Keywords: Emergency Department, Advance Care Directive, Medical Treatment Decision Making, Victorian Agency for Health Information.

Introduction

It is crucial for healthcare providers, especially those in the Emergency Department (ED), to remain cognisant of a patient's treatment and end-of-life wishes. These preferences are most effectively conveyed through an Advance Care Directive (ACD): a formal document outlining the patient's desires, including the appointment of a surrogate decision maker empowered to advocate and act on the patient's behalf should the patient become unable to do so. Additionally, Goals of Care (GoC) documentation describe what the patient aims to achieve during an episode of care within the context of their clinical situation. In our jurisdiction, the surrogate decision maker is known as a Medical Treatment Decision Maker (MTDM) but is often referred to elsewhere as Medical Power of Attorney[1]. The presence of an MTDM, particularly when the patient has cognitive impairment, can communicate the patient's wishes expressed to community caregivers when there is no documentation in hospital records[2]. This awareness ensures that clinicians can provide care that aligns with the patient's wishes with regard to treatment decisions.

With an average of 1.8 million patients presenting to the EDs annually in Victoria, it is crucial for healthcare providers to be well trained in accessing existing ACD records and ensuring MTDM contact details are valid. Of the 40 public EDs in the State of Victoria, nearly two-thirds are accredited as institutions where emergency specialist doctors are trained by the Australian College of Emergency Medicine (ACEM). These accredited institutions care for 1.4 million out of the total 1.8 million presentations to Victorian EDs[3].

It is suggested that everyone should have an ACD[1]. Older individuals aged 65 years and above, who currently account for 22% of reported visits to Victoria's EDs[4] are especially encouraged to have an ACD in place[1]. The significance of a documented ACD in the hospital's medical record has been underscored during the COVID-19 pandemic. Hospitals and emergency departments implemented a strict 'no visitor' policy, limiting access to families and caregivers, likely including surrogate decision-makers and those who typically serve as patient advocates[5-7].

We have previously undertaken single-site studies on ACD record presence and MTDM contact details accuracy in our electronic medical record system[8-10]. Given the anticipated change in demographics of ED patients due to our ageing society[11], it is timely to assess the performance of ACD documentation previously noted to be under reported[12,13] despite the potential benefits[14]. Accordingly, we undertook this study to assess overall ACD records and MTDM contact information performance on a Statewide level by evaluating the Victorian Agency for Health Information (VAHI) database[15]. We compared these findings with our sites performance considering site's similarities and evaluated the generalisability of our study to other similar settings.

Aim

This study aimed to evaluate the performance of Victorian ED's in capturing ACD and MTDM alerts/flags based on the data submitted to VAHI from the Victorian Emergency Minimum Dataset (VEMD).

The primary study objective was to report ED performance in documenting the presence of or lack of ACD records and MTDM contact details for patients aged ≥65 years as in the VEMD and reported to VAHI. Our secondary objective was to compare this performance for patients aged ≥65 years according to ACEM classifications of EDs[16], a classification based upon the facilities level of ED services and other demographics.

Method

The study method was quantitative, with a retrospective observational comparative design. The study evaluated the Victoria State data on performance of ACP across the Public Emergency Departments. This data collection entails a process where at registration in ED, trained clerks ask patients specifically if they have an ACD and/or can identify a legally appointed MTDM if not already recorded in the system. This data is subsequently abstracted in the VEMD extract, which is submitted monthly[15]. The following variables coded within the VEMD are submitted to VAHI:

1 = No ACD alert

2 = ACD alert present

3 = MDTM alert present

4 = Both ACD and MDTM alerts present[15]

Data collected by VAHI from 31 Victorian metropolitan and rural public EDs was analysed against the ACEM tier delineation[16] for the calendar year 2021. As this study included all available state-based data, a priori sample size calculation was not performed.

Ethics approval for this study was obtained from the Austin Health Human Research Ethics Committee reference; HREC/87457/Austin-2022, and deeds and confidentiality agreements were obtained from the relevant institutional bodies prior to data release. Consent was waived given the nature of the study being retrospective and an ethical commitment was made and implemented for only approved study members to handle data with patient and/or facility identifiers.

Study variables and outcome

Baseline variables included age, gender, facility location, facility tier number, presentation frequency, and presence or absence of ACD and MTDM alerts. Patients aged ≥65 years were included in the study and further categorized into discrete age groups: 65-74, 75-84 and ≥85 years. The facility location was classified as either metropolitan or rural based on the facility's physical location. Emergency Department classification was based on the delineation used by ACEM for accreditation. The higher the tier, the more complex the healthcare facility with better resources, range of services and longer accreditation period for emergency medicine training. Major tertiary referral hospitals accredited for 36 months of training were defined as tier 1, 24 months tier 2, tier 3 for 12 months, and tier 4 for departments accredited for 6 months. ACD and MTDM alerts were coded as 1= No ACD alert, 2= ACD alert present, 3= MTDM alert present, and 4= both ACD and MTDM alerts present[15].

Statistical methods

The original data were imported into Microsoft Excel^{R}, institutional names were de-identified based on codes, and the final dataset was exported to SPSS^{TM} for analysis. Ordinal and interval data were presented as counts and percentages. Where there were missing values, the data were presented as n (number of cases) / N (number of instances where the value was known), with no assumptions made about missing data. The data were analysed using cross tabulations, linear regression and bivariate or multi-variate correlations. Categorical and nominal data were analysed using the chi-square test or Fisher's exact test to compare the proportions. Statistical significance for all data were indicated by a two-sided P value <0.05.

Results

A total of 15,222 ED attendances from 31 public EDs were reported as having an ACD/MTDM alert/flag in the VEMD during the year 2021 for all Victorian public hospitals. Of these, 7296 were aged ≥65 years (the study group) of whom 3442 were male, 3846 were female, and eight were intersex. Of the reporting EDs, 65% (n=20) were accredited by ACEM (breakdown details in table 2) and had patient population attendances in the following order: tier 1(51%, n=3730), 2(17%, n=1270), 3(9%, n=648), and 4(2%, 142) with an additional 21% (n=1506) non-accredited. The total presentation made by the target population to the reporting EDs is 408,415 (individual presentation frequency; minimum =5, maximum =509 and mean =56 presentations). In a multivariate regression analysis on ACD/MTDM alert status and frequency of presentations, it was found to be statistically significant to location ($p=0.004$), age ($p<0.001$) and tier ($p<0.001$) but not with gender ($p=0.520$). Figure 1 indicates a breakdown of the frequency of presentation according to the ED tier, age categories, facility location and gender.

Insert Figure 1 here

Two thousand eight hundred and ninety five (40%) of the 7296 were reported to have had no alerts present, 1900 (26%) had only an ACD alert present, 1220 (17%) had an MTDM only alert present and 1281 (17%) had both ACD and MTDM alerts present, table 1 summarises the findings.

Insert table 1 here

The presence of ACD and MTDM alerts was positively related to location, facility tier age and gender (MANOVA wilk's; $p<0.001$, $F= (12, 15300)$ and observed power=1.0 = 95.919). Age was also found to be positively related to the frequency of presentation, location of the facility, gender and tier ($p<0.001$, $F= (184, 22901)$ and observed power=1.0 = 612.437).

Of the 31 facilities that are reported here, the performance of tier 1 (n=10), 2 (n=6), ~~and~~ 3 (n=3) and 4 (n=1) facilities on the reported ACD and MTDM alerts are compared (Table 2). It is important to note, this does not include facilities which were not classified by ACEM which make up 35% (n=11) of the included facilities.

Insert table 2 here

Discussion

Advance care planning in Australia encompasses documents and processes that assist individuals in pre-determining their future treatment preferences (ACD) and/or nominating their surrogate medical treatment decision maker (MTDM)[1]. Additionally Goals of Care (GoC) can be sought during each interaction with the health system when there is no ACD. In the State of Victoria, the ACP processes are legislated in the Medical Treatment Planning and Decision Act 2016, last amended in May 2023[17].

Advance care planning has been part of clinical practice for over 30 years in a variety of community and health facility settings[12]. However, its adoption has generally been poor[18,19].

Following our single site study, we examined ACD and MTDM performance on a State-wide level. We based our assessments on reported alerts or flags in patient records, which

indicated the presence of an ACD or MTDM contact[20]. To be clinically relevant, these alerts/flags must be readily available to the clinicians in the hospital medical record. If kept only in an administrative database, the information will not be available and less likely used appropriately[21]. Fortunately most electronic medical record (EMR) systems extract and display the information when available.

Despite the importance of comprehensive and reliable ACD documentation in emergency departments, achieving this goal has been difficult for various reasons[8,22]. The fact that, patients aged 65 years and above, make up close to a quarter of the total ED patient visits[4] with a projection of a rapid increase in this cohort due to an ageing society[23] makes the necessity of having accurate ACD records more vital.

The result of this report, based on data provided by VAHI[15], has revealed an overall low rate of reporting for total patients who attended the EDs[4]. Furthermore, the older population, who are highly recommended to have valid ACP documentation[1], were found to be under-represented in the report. Of the reported Victorian population aged ≥65 years (n=7296), which is far below the approximately 400,000 persons of the same age group who visit Victorian EDs annually[4], approximately 40% (n=2918) lacked any ACD or MTDM documentation in their records, highlighting an existing gap in relation to meaningful recording and utilization of ACD and MTDM documentation[24,25].

While there are known deficiencies in recording and implementing ACDs and identifying an MTDM, this dataset presents a lower level of recording than previously reported in the literature[12,26] or in our single-site studies[8,10]. This raises questions on the quality of the data, its acquisition and reporting process.

The delineation of emergency department into tiers can also affect quality of services. This delineation determines resource allocation and can disadvantage certain localities despite population growth[27]. Our study has shown the concentration of tier 1 EDs in the metropolitan areas (Table 2), while there is a more prominent growth of older population in the regional

areas[28]. These individuals are supposed to be one of the target population for higher performance of ACD and MTDM contact records presence considering ACP Australia's recommendation[1]. A study that made substantial policy proposals, summarised the implications of delineation in their exploratory review (p761) where they stated, "*the role delineation level of a service describes the complexity of clinical activity undertaken by that service, and is significantly impacted by the presence of medical, nursing and other health care personnel who hold qualifications compatible with the defined level of service[29]"*. Therefore, as the current delineation disadvantages rural/regional facilities, review of this under different and more holistic lenses may be worthwhile.

Limitations

The study has several limitations. It is a single jurisdictional study and therefore difficult to ascertain the cause of the very low number of reports contained in the dataset. How the alert is entered will impact reporting; for example, manual processes will reduce data entry[30], which further impedes the chances of providing goal concordant care[24]. The focus on ED data may limit health service reporting, as there are other opportunities during the patient journey to collect data. However, we were interested in ED data, as we strongly believe it is an important role for EDs as part of patient care and advocacy. The results raise several questions regarding the quality of the data and the acquisition and reporting process of VEMD. It is noted not all facilities were represented as 31 out of 40 State EDs have been reported to participate in transmitting the report. It is also noted that the reporting of inpatient data via the VAED (Victorian Admitted Episode Dataset) have better recording and utilisation of ACD and MTDM in in-patient facilities rather than EDs[24] pointing to a limitation in EDs data generating process. A review of hospital inpatient documentation rates may assist in developing a more comprehensive view of reporting further characterising this disparity positively as ACD/MTDM documents are generated in inpatient services.

Conclusion

The identified rate of ACD and MTDM recording is unsurprisingly low, with this study showing rates even lower than those in previous studies. This lower rate has raised several issues related to the quality of the data, ACP generating point's records synchrony, and translation of local site reporting to the State-based dataset. If there is no data issue, we suggest that resources be allocated to understand the barriers to reporting to improve performance. We believe that a comparison of ED and hospital inpatient datasets is undertaken, as well as an analysis of national datasets, to understand the true nature of ACD and MTDM reporting to inform future health services and emergency department practices and policies.

Declaration of Interest statement

No author among the team has any conflict of interest to declare.

Author Contributions statement

All authors have equally contributed to this study at different stages.

Data Availability Statement

Data can be availed where a reasonable request is made.

Declaration of funding

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Tables

Table 1: ACD and MTDM performance across different variables (MANOVA)

ACD and MTDM Performance report

	No ACD/MTDM present n (%)	ACD only Present n (%)	MTDM only Present n (%)	Both are present n (%)	P Value
ACD/MTDM status reported (n=7296)	2895 (39.7%)	1900 (26%)	1220 (16.7%)	1281 (17.6%)	
ED Location (n=7296)					
Rural (n=3345)	1367 (41%)	547 (26%)	635 (19%)	486 (14%)	<0.001
Metro (n=3951)	1528 (39%)	1043 (26%)	585 (15%)	795 (20%)	
Age (in categories)[a] (n=7296)					
Category 1 (n=1906)	793 (42%)	471 (25%)	313 (16%)	329 (17%)	
Category 2 (n=2164)	782 (36%)	583 (27%)	389 (18%)	410 (19%)	<0.001
Category 3 (n=3226)	1320 (41%)	846 (26%)	518 (16%)	542 (17%)	
ACEM ED Delineation/Tier (n=5790)[b]					
Tier 1 (n=3730)	1394 (37%)	977 (26%)	585 (16%)	774 (21%)	
Tier 2 (n=1270)	513 (41%)	306 (24%)	245 (19%)	206 (16%)	
Tier 3 9n=648)	227 (35%)	165 (25%)	129 (20%)	127 (20%)	<0.001
Tier 4 (n=142)	75 (53%)	61 (43%)	2 (1%)	4 (3%)	
Sex (n=7296)					
Male (n=3442)	1381 (40%)	898 (26%)	577 (17%)	586 (17%)	
Female (n=3846)	1506 (39%)	1002 (26%)	643 (17%)	695 (18%)	<0.001
Intersex (n=8)	8 (100%)	0	0	0	

[a]Age was categorised into 1=65-74, 2=75-84, 3≥84
[b]non-accredited facilities =1506

Table 2: All Tiers Health services ACD and MTDM Performance frequencies

	ACD and MTDM Alert Status						
Health Service	**No ACD/MTDM present n (%)**	**ACD only Present n (%)**	**MTDM only Present n (%)**	**Both are present n (%)**	Total	Location	IQ Ranges[a] Kurtosis Skewness

Tier 1							
002	149(10.7%)	156(16.0%)	39(6.7%)	128(16.5%)	472(12.7%)	Metro	
003	79(5.7%)	74(7.6%)	69(11.8%)	65(8.4%)	287(7.7%)	Metro	
008	77(5.5%)	11(1.1%)	33(5.6%)	3(0.4%)	124(3.3%)	Rural	(n=3730)
010	236(16.9%)	212(21.7%)	188(32.1%)	159(20.5%)	795(21.3%)	Metro	IQR=10-21
015	82(5.9%)	77(7.9%)	58(9.9%)	64(8.3%)	281(7.5%)	Metro	K=-1.025
018	237(17%)	88(9%)	34(5.8%)	150(19.4%)	509(13.6%)	Metro	S=0.109
020	77(5.5%)	63(6.4%)	7(1.2%)	7(0.9%)	154(4.1%)	Metro	
021	155(11.1%)	139(14.2%)	47(8%)	131(16.9%)	472(12.7%)	Metro	
026	78(5.6%)	61(6.2%)	53(9.1%)	51(6.6%)	243(6.5%)	Metro	
030	224(16.1%)	96(9.8%)	57(9.7%)	16(2.1%)	393(10.5%)	Metro	
Total	**1394(37.4%)**	**977(26.2%)**	**585(15.7%)**	**774(20.8%)**	**3730(100%)**		
Tier 2							
001	70(13.6%)	65(21.2%)	52(21.9%)	50(24.3%)	237(18.7%)	Rural	
005	76(14.8%)	59(19.3%)	53(21.6%)	41(19.9%)	229(18%)	Rural	(n=1270)
013	136(26.5%)	45(14.7%)	41(16.7%)	20(9.7%)	242(19.1)	Rural	IQR=5-17
016	102(19.9%)	71(23.2%)	28(11.4%)	23(11.2%)	224(17.6%)	Metro	K=-1.163
017	73(14.2%)	24(7.8%)	0	2(1%)	99(7.8%)	Rural	S=0.070
025	56(10.9%)	42(13.7%)	71(29%)	70(34%)	239(18.8%)	Rural	
Total	**513(40.4%)**	**306(24.1%)**	**245(19.3%)**	**206(16.2%)**	**1270(100%)**		
Tier 3							
006	77(33.9%)	60(36.4%)	64(49.6%)	71(55.9%)	272(42%)	Rural	(n=648)
007	74(32.6%)	54(32.7%)	2(1.6%)	8(6.3%)	138(21.3%)	Rural	IQR=6-11
011	76(33.5%)	51(30.9%)	63(48.8%)	48(37.8%)	238(36.7%)	Rural	K=-1.688
Total	**227(35%)**	**165(25.5%)**	**129(19.9%)**	**127(19.6%)**	**648(100%)**		S=0.472
Tier 4							
014	75	61	2	4	142	Rural	
Total	**75(52.8%)**	**61(43%)**	**2(1.4%)**	**4(2.8%)**	**142(100%)**		

[a]IQ ranges – Inter-quartile range

Figures

Figure 1. Distribution of presentation frequency according to ED tier, age categories, facility location and gender