

Table 1 Sociodemographic and clinical characteristics for people with CVD by episode settings

Characteristics of Patients		All N (%)	Community N (%)	Inpatient N (%)	P values
Sociodemographic characteristics					
Total number		17,002(100)	7,539(44.3)	9,463(55.7)	
	Male	8,813(51.8)	3,734(49.5)	5,079(53.7)	
	Female	8,179(48.1)	3,798(50.4)	4,381(46.3)	<0.001
	Missing	10(0.1)	7(0.1)	3(0.0)	
Age group	≤74	2581(15.2)	904(12)	1677(17.7)	
	75-84	4,714(27.7)	1,899(25.2)	2,815(29.7)	
	85-94	7,865(46.3)	3,674(48.7)	4191(44.3)	<0.001
	≥95	1,838(10.8)	1,058(14.0)	780(8.2)	
	Missing	4(0.0)	4(0.1)	0(0.0)	
SEIFA	1-2	2,232(13.1)	959(12.7)	1,273(13.5)	
	3-4	2470(14.5)	991(13.1)	1479(15.6)	<0.001
	5-6	3360(19.8)	1378(18.3)	1982(20.9)	

Preferred language	7-8	3487(20.5)	1351(17.9)	2136(22.6)	<0.001
	9-10	5350(31.5)	2791(37.0)	2559(27.0)	
	Missing	103(0.6)	69(0.9)	34(0.4)	
	English	14680(86.3)	6560(87.0)	8120(85.8)	
	Non-English	2103(12.4)	848(11.2)	1255(13.3)	
	Missing	219(1.3)	131(1.7)	88(0.9)	
Country of birth	Australia	10154(59.7)	4364(57.9)	5790(61.2)	0.013
	England	1093(6.4)	529(7.0)	564(6.0)	
	Italy	1160(6.8)	513(6.8)	647(6.8)	
	Greece	531(3.1)	241(3.2)	290(3.1)	
	Else	3723(21.9)	1632(21.6)	2091(22.1)	
	Missing	341(2.0)	260(3.4)	81(0.9)	
Characteristics of episode					
	2013	1092(6.4)	393(5.2)	699(7.4)	
	2014	1312(7.7)	523(6.9)	789(8.3)	
	2015	1356(8.0)	626(8.3)	730(7.7)	

Year of episode start	2016	1489(8.8)	655(8.7)	834(8.8)	<0.001
	2017	1598(9.4)	670(8.9)	928(9.8)	
	2018	1718(10.1)	799(10.6)	919(9.7)	
	2019	2035(12.0)	981(13.0)	1054(11.1)	
	2020	2589(15.2)	1278(17.0)	1311(13.9)	
	2021	2663(15.7)	1132(15.0)	1531(16.2)	
	2022	1150(6.8)	482(6.4)	668(7.1)	
Episode length	≤1 week	9558(56.2)	2442(32.4)	7116(75.2)	<0.001
	1-2week	2222(13.1)	987(13.1)	1235(13.1)	
	2-3 week	1170(6.9)	685(9.1)	485(5.1)	
	3-4 week	720(4.2)	486(6.4)	234(2.5)	
	>4 week	3332(19.6)	2939(39.0)	393(4.2)	
Phase type	Stable	3452(20.3)	2225(29.5)	1227(13.0)	<0.001
	Unstable	2274(13.4)	353(4.7)	1921(20.3)	
	Deteriorating	8462(49.8)	4290(56.9)	4172(44.1)	
	Terminal	2814(16.6)	671(8.9)	2143(22.6)	

Referral source	Hospital	10469(61.6)	2603(34.5)	7866(83.1)	<0.001
	Community service	5619(33.0)	4263(56.5)	1356(14.3)	
	Others	774(4.6)	581(7.7)	193(2.0)	
	Missing	140(0.8)	92(1.2)	48(0.5)	

Abbreviations: SEIFA: Socio-Economic Indexes for Areas (scores 1 –10).

Comparisons between the two groups were conducted using Pearson’s chi-square tests. Missing data entries were not accounted for in the analyses.

Table 2 Clinical measure outcomes for patients with CVD by episode settings

		All		Community		Inpatients		P value
		N	%	N	%	N	%	
SAS Insomnia	Absent	10055	66.95%	4002	58.02%	6053	74.54%	<0.001
	Mild	3088	20.56%	1920	27.83%	1168	14.38%	
	Moderate	1544	10.28%	819	11.87%	725	8.93%	
	Severe	331	2.20%	157	2.28%	174	2.14%	
SAS Appetite problems	Absent	9429	61.84%	3795	53.24%	5634	69.39%	<0.001
	Mild	3760	24.66%	2316	32.49%	1444	17.79%	
	Moderate	1699	11.14%	848	11.90%	851	10.48%	
	Severe	359	2.35%	169	2.37%	190	2.34%	
SAS Nausea	Absent	12792	83.79%	5745	80.54%	7047	86.65%	<0.001
	Mild	1785	11.69%	1077	15.10%	708	8.71%	
	Moderate	583	3.82%	272	3.81%	311	3.82%	
	Severe	106	0.69%	39	0.55%	67	0.82%	

SAS Bowels problems	Absent	10458	68.85%	4369	61.70%	6089	75.09%	<0.001
	Mild	3345	22.02%	2063	29.13%	1282	15.81%	
	Moderate	1183	7.79%	582	8.22%	601	7.41%	
	Severe	204	1.34%	67	0.95%	137	1.69%	
SAS Breathing problems	Absent	5683	37.14%	2259	31.55%	3424	42.05%	<0.001
	Mild	4966	32.45%	2794	39.02%	2172	26.67%	
	Moderate	3816	24.94%	1799	25.13%	2017	24.77%	
	Severe	838	5.48%	308	4.30%	530	6.51%	
SAS Fatigue	Absent	5884	38.53%	1983	27.75%	3901	48.02%	<0.001
	Mild	4416	28.92%	2658	37.19%	1758	21.64%	
	Moderate	3892	25.49%	2022	28.29%	1870	23.02%	
	Severe	1079	7.07%	484	6.77%	595	7.32%	
SAS Pain	Absent	7380	48.14%	3046	42.31%	4334	53.31%	<0.001
	Mild	5313	34.66%	3003	41.71%	2310	28.41%	
	Moderate	2213	14.44%	997	13.85%	1216	14.96%	
	Severe	424	2.77%	154	2.14%	270	3.32%	

PCPSS Pain	Absent	7850	47.17%	3169	42.65%	4681	50.82%	<0.001
	Mild	6337	38.08%	3213	43.24%	3124	33.92%	
	Moderate	2049	12.31%	901	12.13%	1148	12.46%	
	Severe	405	2.43%	147	1.98%	258	2.80%	
PCPSS Other symptoms	Absent	3633	22.63%	1228	17.64%	2405	26.45%	<0.001
	Mild	7477	46.58%	3602	51.75%	3875	42.62%	
	Moderate	4165	25.95%	1886	27.10%	2279	25.07%	
	Severe	776	4.83%	244	3.51%	532	5.85%	
PCPSS Psychological	Absent	6823	40.89%	2604	35.44%	4219	45.19%	<0.001
	Mild	7476	44.81%	3684	50.14%	3792	40.61%	
	Moderate	2065	12.38%	944	12.85%	1121	12.01%	
	Severe	321	1.92%	116	1.58%	205	2.20%	
PCPSS Family	Absent	4259	26.80%	1424	20.02%	2835	32.30%	<0.001
	Mild	7577	47.69%	3726	52.38%	3851	43.88%	
	Moderate	3396	21.37%	1725	24.25%	1671	19.04%	
	Severe	657	4.13%	238	3.35%	419	4.77%	

Total RUG-ADL	Independent	2448	14.83%	1823	25.39%	625	6.70%	<0.001
	Limited physical assistance	4838	29.31%	2511	34.97%	2327	24.95%	
	Requires one assistant plus equipment	3728	22.59%	1393	19.40%	2335	25.04%	
	Requires two assistants for full care	5492	33.27%	1454	20.25%	4038	43.30%	
Transfer	Independent or supervision only	2757	16.61%	2060	28.43%	697	7.45%	<0.001
	Limited physical assistance	3217	19.38%	1672	23.07%	1545	16.52%	
	Other than two persons physical assist	2602	15.68%	1243	17.15%	1359	14.53%	
	Two-person (or more) physical assist	8022	48.33%	2272	31.35%	5750	61.49%	
Mobility	Independent or supervision only	4050	24.37%	2719	37.42%	1331	14.23%	<0.001
	Limited physical assistance	2899	17.44%	1399	19.25%	1500	16.04%	
	Other than two persons physical assist	2261	13.60%	1038	14.28%	1223	13.08%	

Toileting	Two-person (or more) physical assist	7410	44.58%	2111	29.05%	5299	56.66%	<0.001
	Independent or supervision only	2776	16.71%	2078	28.61%	698	7.46%	
	Limited physical assistance	3260	19.62%	1659	22.84%	1601	17.12%	
	Other than two persons physical assist	2796	16.83%	1295	17.83%	1501	16.05%	
Eating	Two-person (or more) physical assist	7782	46.84%	2231	30.72%	5551	59.36%	<0.001
	Independent or supervision only	6190	37.45%	3580	49.70%	2610	27.99%	
	Limited assistance	3946	23.87%	1801	25.00%	2145	23.00%	
	Extensive assistance/total dependence/tube fed	6393	38.68%	1822	25.30%	4571	49.01%	
AKPS	Normal activity(AKPS=90-100)	29	0.17%	18	0.24%	11	0.12%	<0.001
	Symptomatic and ambulatory(AKPS=70-80)	425	2.54%	343	4.59%	82	0.88%	
	Occasional assistance	1343	8.02%	945	12.65%	398	4.29%	

required(AKPS=60)						
Increasingly limited mobility(AKPS=30-50)	9058	54.10%	4628	61.93%	4430	47.79%
Completely bedfast (AKPS=10-20)	5888	35.17%	1539	20.59%	4349	46.91%

Abbreviations: SAS: Symptom Assessment Scale. PCPSS: Palliative Care Problem Severity Score, RUG-ADL: Resource Utilisation Group-Activities for Daily Living, AKPS: Australian-modified Karnofsky Performances Status,

Comparisons between two groups were conducted using Pearson’s chi-square tests. Missing data entries were not accounted for in the analyses.

Table 3 Regression analyses for factors associated with inpatient versus community palliative care

	Inpatient vs community Unadjusted OR (95%CI, p -value)†	Inpatient vs community Adjusted OR (95%CI, p -value)†	P value for trend
Sex (ref. male)	0.85(0.80-0.90; <0.001)	0.82(0.73-0.91; <0.001)	
Age group (ref. ≤ 74 years)			
75-84	0.80(0.72-0.88; <0.001)	0.81(0.68-0.96; 0.015)	
85-94	0.62(0.56-0.67; <0.001)	0.69(0.59-0.82; <0.001)	<0.001*
≥95	0.40(0.35-0.45; <0.001)	0.52(0.42-0.65; <0.001)	
Country of birth (ref. Australia)			
England	0.80(0.71-0.91; 0.001)	0.78(0.63-0.97; 0.025)	
Italy	0.95(0.84-1.07; 0.417)	0.87(0.69-1.11; 0.265)	
Greece	0.91(0.76-1.08; 0.275)	0.58(0.42-0.80; 0.001)	
Else	0.97(0.90-1.04; 0.366)	0.88(0.76-1.01; 0.067)	
Preferred language (ref. English)	1.20(1.09-1.31; <0.001)	0.81(0.66-0.99; 0.040)	
SEIFA (ref.1-2)			
3-4	1.45(1.31-1.60; < 0.001)	1.34 (1.09-1.65; 0.005)	<0.001*
5-6	1.63(1.48-1.79; < 0.001)	1.80(1.49-2.18; < 0.001)	

7-8	1.57(1.44-1.71; <0.001)	2.18(1.80-2.63; <0.001)	
9-10	1.72(1.58-1.88; <0.001)	1.61(1.35-1.93; <0.001)	
Year of episode start (ref. 2013)			
2014	1.28(1.08-1.52; 0.004)	0.85(0.65-1.11; 0.230)	
2015	1.09(0.93-1.28; 0.302)	0.52(0.40-0.68; <0.001)	
2016	0.84(0.72-0.99; 0.033)	0.61(0.47-0.79; <0.001)	
2017	0.92(0.79-1.07; 0.286)	0.70(0.54-0.91; 0.008)	
2018	1.00(0.86-1.17; 0.994)	0.43(0.33-0.56; <0.001)	<0.001*
2019	0.83(0.71-0.97; 0.015)	0.42(0.33-0.55; <0.001)	
2020	0.78(0.67-0.90; 0.001)	0.54(0.42-0.70; <0.001)	
2021	0.74(0.64-0.85; <0.001)	0.72(0.56-0.92; 0.009)	
2022	0.98(0.85-1.12; 0.733)	0.81(0.60-1.09; 0.161)	
Referral source (ref. hospital)			
Community service	0.11(0.10-0.11; <0.001)	0.16(0.14-0.18; <0.001)	
Others	0.11(0.09-0.13; <0.001)	0.15(0.12-0.19; <0.001)	
Phase type (ref. stable)			

Unstable	0.17(0.15-0.19; <0.001)	17.60 (14.15-21.90; <0.001)	
Deteriorating	1.70(1.48-1.97; <0.001)	1.28 (1.10-1.48; 0.001)	
Terminal	0.31(0.28-0.34; <0.001)	1.49(1.19-1.86; <0.001)	
RUG Total (ref. independent)			
Limited physical assistance	0.12(0.11-0.14; <0.001)	2.53(2.09-3.05; <0.001)	
Requires one assistant plus equipment	0.33(0.31-0.36; <0.001)	4.43(3.53-5.58; <0.001)	<0.001*
Requires two assistants for full care	0.60(0.55-0.66; <0.001)	6.02(4.62-7.83; <0.001)	
AKPS (ref. AKPS=70-100)			
AKPS=60	1.64(1.27-2.11; <0.001)	1.72(1.15-2.56; 0.008)	
AKPS=50	2.08(1.63-2.64; <0.001)	2.23(1.50-3.30; <0.001)	<0.001*
AKPS=30-40	5.12(4.05-6.47; <0.001)	4.18(2.80-6.26; <0.001)	
AKPS=10-20	10.97(8.67-13.88; <0.001)	5.02(3.26-7.74; <0.001)	
SAS score for insomnia (ref.absent)			
Mild	1.37(1.10-1.70; 0.005)	0.64(0.56-0.74; <0.001)	
Moderate	0.55(0.44-0.69; <0.001)	0.58(0.48-0.70; <0.001)	<0.001*
Severe	0.80(0.63-1.01; 0.064)	0.43(0.29-0.63; <0.001)	

SAS score for appetite (ref.absent)				
Mild	1.32(1.07-1.63; 0.010)	0.79(0.68-0.90; 0.001)		
Moderate	0.56(0.45-0.69; <0.001)	0.89(0.73-1.08; 0.240)	<0.001*	
Severe	0.89(0.71-1.12; 0.329)	0.77(0.52-1.14; 0.194)		
SAS score for nausea (ref.absent)				
Mild	0.54(0.48-0.59 ; <0.001)	0.94(0.79-1.12; 0.490)		
Moderate	0.93(0.79-1.10 ; 0.408)	1.28(0.97-1.69; 0.076)	<0.001*	
Severe	1.40(0.94-2.08 ; 0.096)	1.82(0.93-3.55; 0.082)		
SAS score for bowels (ref.absent)				
Mild	0.68(0.51-0.92; 0.011)	0.61 (0.54-0.71; <0.001)		
Moderate	0.30(0.23-0.41; <0.001)	0.80 (0.65-0.99; 0.036)	<0.001*	
Severe	0.51(0.37-0.69; <0.001)	1.72 (1.03-2.86; 0.038)		
SAS score for breathing(ref. absent)				
Mild	0.88(0.76-1.02; 0.098)	0.93 (0.81-1.07; 0.322)	<0.001*	

Moderate	0.45(0.39-0.53; <0.001)	1.20 (1.02-1.40; 0.024)	
Severe	0.65(0.56-0.76; <0.001)	1.74 (1.32-2.29; <0.001)	
SAS score for fatigue (ref. absent)			
Mild	1.60(1.40-1.83; <0.001)	0.72(0.62-0.83; <0.001)	
Moderate	0.54(0.47-0.62; <0.001)	0.73(0.62-0.86; <0.001)	<0.001*
Severe	0.75(0.66-0.86; <0.001)	0.65(0.51-0.84; 0.001)	
SAS score for pain (ref. absent)			
Mild	0.81(0.66-0.99; 0.044)	0.66(0.58-0.74; <0.001)	
Moderate	0.44(0.36-0.54; <0.001)	0.85(0.72-1.01; 0.061)	<0.001*
Severe	0.70(0.56-0.86; 0.001)	0.76(0.54-1.07; 0.111)	
PCPSS score for other symptoms (ref. absent)			
Mild	0.55(0.51-0.60; <0.001)	0.82(0.71-0.96; <0.010)	
Moderate	0.62(0.56-0.68; <0.001)	0.91(0.76-1.08; 0.277)	<0.001*
Severe	1.11(0.94-1.32; <0.206)	0.97(0.72-1.30; 0.817)	
PCPSS score for family (ref. absent)			
Mild	1.13(0.95-1.34; 0.160)	0.39(0.34-0.45; <0.001)	<0.001*

Moderate	0.59(0.50-0.69; <0.001)	0.29(0.25-0.34; <0.001)
Severe	0.55(0.46-0.65; <0.001)	0.39(0.30-0.52; <0.001)

Abbreviations: OR: odds ratios, CI: confidence interval, SEIFA: Socio-Economic Indexes for Areas, RUG-ADL: Resource Utilization Group-Activities for Daily Living, AKPS: Australian-modified Karnofsky Performance Status, PCPSS: Palliative Care Problem Severity Score, SAS: Symptom Assessment Scale, Ref.: reference.

NOTE. Bold indicates significant value $p < 0.05$. * Unadjusted and adjusted OR values estimated based on univariate and multivariate binary logistic regression models. Patients admitted to community palliative care services used as the reference group.

† Adjusted models include all variables selected through the forward-backward stepwise procedures; unadjusted models include each specific variable.