Ageing & Society (2023), **43**, 1089–1103
doi:10.1017/S0144686X21001148

ARTICLE

Survival and community care use by care home residents in England: does mental health matter?

Apostolos Tsiachristas[1]*, Antoinette Broad[2], Alice Coates[2], Surya Singh[1] and Jane Fossey[2,3,4]

[1]Health Economics Research Centre, Nuffield Department of Population Health, University of Oxford, Oxford, UK, [2]Oxford Health NHS Foundation Trust, Fulbrook Centre, Oxford, UK, [3]Fulbrook Centre, Oxford, UK and [4]Department of Psychiatry, University of Oxford, Oxford, UK
*Corresponding author. Email: apostolos.tsiachristas@ndph.ox.ac.uk

(Accepted 7 June 2021; first published online 2 August 2021)

Abstract

The aim was to provide evidence of mortality and community care costs of people living in care homes and to investigate its association with mental health based on the Mental Health Clustering Tool (MHCT). In an observational study, 5,782 residents living in 104 care homes were followed from 2014 to 2016. Residents were categorised into four groups using the MCHT: three with mental health conditions, 'non-psychotic', 'psychotic' or 'organic'; and one without mental health conditions, 'non-clustered'. Generalised estimating equations were used to explore associations between mean community care costs over 6 months per patient and the clustering of residents into the four groups. Differences in survival rates of residents were plotted using Kaplan–Meier curves and tested with the log-rank test and Cox regression analysis. Community care costs were similar among residents with dementia (£431) and without mental health conditions (£407), while costs were higher among residents with non-psychotic (£762) and psychotic (£1,724) mental health conditions. After adjusting for patient and care home characteristics, residents with dementia were 30 per cent less likely to die compared with residents without mental health conditions. Similarly, residents with psychotic conditions and residents with non-psychotic conditions were 25 and 20 per cent less likely to die, respectively, than residents without mental health conditions. The MHCT seems to provide an informative stratification of care home residents with regards to survival and community care use.

Keywords: mortality; community care; costs; mental health; dementia; care homes

Introduction

Moving care from hospitals into the community has been the latest direction of health policy in England, with the Five Year Forward View being the spearhead of testing new ways of delivering community care (NHS England, 2014). To serve this purpose, innovative community-based services such as hospital-at-home, single point of access, community therapy service, emergency multidisciplinary

units, community matrons, district nurses and community mental health teams have been developed to treat people in the community rather than in hospitals. Therefore, community care, which currently accounts for more than £10 billion yearly or 10 per cent of the National Health Service (NHS) budget, becomes an increasingly important part of health-care commissioning in England (Lafond *et al.*, 2016).

Following the Five Year Forward View, different models of integrated care have been recently established including the Enhanced Health in Care Homes (EHCH), multi-specialty community providers (MCP), and integrated primary and acute care systems (PACS) (NHS England, 2016*c*). EHCH initiatives work closely with MCP and PACS, and aim to improve the quality of life, health care and health planning for people living in care homes (NHS England, 2016*d*). Integrating care is a crucial factor for delivering high-quality care for residents in care homes because of their complex care needs due to high prevalence of cognitive impairment, multimorbidity and polypharmacy. Approximately 416,000 people are living in care homes, which is about 4 per cent of the population aged 65 years and over, and this figure rises to 16 per cent for those aged 85 or more (Laig, 2014). Of all care home residents, approximately 40 per cent have depression, which can increase with age as older people are more susceptible to risk factors leading to depression such as chronic illnesses and disability (Godfrey and Denby, 2004). Furthermore, 70 per cent have dementia or significant memory problems while 11 per cent of stroke patients move to care homes right after a stroke event (Godfrey and Denby, 2004; National Audit Office, 2010; Kane and Terry, 2015). Moreover, the mortality rate is four times higher in nursing home residents (who receive 24-hour care by care assistants) and three times higher in residential home residents (who receive 24-hour care by nurses) compared with their community counterparts (Shah *et al.*, 2013). High mortality among nursing home residents and residential home residents can be partly attributed to cognitive impairment and behavioural disturbance indicative of needing mental health management (Gordon *et al.*, 2014). Therefore, addressing the mental health care needs of care home residents is essential.

Patients with mental health problems face a lack of access to necessary physical health care and people with long-term physical health conditions also suffer higher rates of complications if they develop mental health conditions, which can increase costs of care by 45 per cent (Mental Health Taskforce, 2016). However, evidence shows that integrated care models and services can reduce these poor health outcomes and increased costs of care (Mental Health Taskforce, 2016). Integration of care can only be achieved if accompanied by alternative payment methods (Tsiachristas *et al.*, 2011, 2013; Tsiachristas, 2015). Therefore, health-care commissioners are urged to design payments for these integrated care models that include community care and adequately reflect the mental health needs of people with long-term physical health conditions (Mental Health Taskforce, 2016).

Community care costs are expected to constitute a relatively large part of payments for EHCH considering that these costs account for about 40 and 21 per cent of the total costs of dementia and stroke, respectively, while the proportions are only 5 and 2 per cent in cancer and coronary heart disease, respectively (Luengo-Fernandez *et al.*, 2012). The mental health components of these payments

https://doi.org/10.1017/S0144686X21001148 Published online by Cambridge University Press

are likely to be reimbursed similar to the new payment approaches that have been developed by NHS England and NHS Improvement to support commissioning and provision of mental health care as part of the National Tariff Payment system (NHS England, 2016*a*, 2016*b*). These payment approaches are based on the stratification of mental health patients into non-psychotic, psychotic and organic (*i.e.* cognitive impairment and dementia) using the Mental Health Clustering Tool (MHCT) (NHS Improvement, 2016). The MHCT was developed by the Department of Health and Social Care to support the implementation of Mental Health Payment by Results as it clusters a group of people with similar health and social care outcomes measured by the Health of the Nation Outcome Scales. Although the diagnostic accuracy of MHCT has been assessed (Trevithick *et al.*, 2015), little is known about how this stratification tool is associated with mortality and community care utilisation.

Considering the use of the MHCT to design payment approaches, evidence on mortality and community care use of people living in care homes with and without mental health conditions are crucial for informing commissioning decisions, managing services and designing payments for integrated care services. The number of studies in the United Kingdom investigating mortality and length of stay in care homes is limited and existing studies do not consider the mental health care needs of those living in care homes (Fernandez and Forder, 2011; Steventon and Roberts, 2012; Shah *et al.*, 2013). Furthermore, there is currently neither national data collection for community care nor scientific studies of community care costs of people living in care homes. The closest studies to this population are costing studies focusing on dementia but they either do not include community care costs (Murman *et al.*, 2002; Gustavsson *et al.*, 2010; Schaller *et al.*, 2015) or have small sample sizes (Gage *et al.*, 2015). Therefore, the aim of this study was to provide evidence about the mortality and costs of community care of people living in care homes and explore its association with mental health based on the stratification of the MHCT. Such evidence is important for health-care commissioners in England to plan and commission efficiently the necessary health-care services for elderly people in care homes.

Methods

Study design and data

In a two-year observational study, we explored the community care utilisation of all people living in all care homes (*i.e.* 104) between 1 April 2014 and 31 March 2016 in Oxfordshire, South-East England. All data were routinely collected and were extracted every 6 months from electronic patient records for a period of two years. The data included individual-level usage of community care services and consisted of 5,782 care home residents with 15,418 community care utilisation records. Therefore, each resident could have up to four data-points in the two-year study period. The data included admissions to general and mental health wards in community hospitals as well as utilisation of community services (a full list of community care services is provided in the Appendix). Unit costs of community services were provided by local health authorities that were involved in the

https://doi.org/10.1017/S0144686X21001148 Published online by Cambridge University Press

commissioning of these services. Patient characteristics (*i.e.* age and gender) and care home characteristics (*i.e.* number of beds and type of care home) were also available. All residents were grouped, by clinicians, into having 'non-psychotic', 'psychotic' or 'organic' mental health conditions based on the MHCT, and those who were assessed by clinicians without having any mental health condition were labelled as 'non-clustered' in the dataset. The survival of each resident in the dataset was calculated from admission to care home to death or end of the study follow-up, whichever came first.

Statistical analysis

Kruskal–Wallis tests for continuous variables and chi-square tests for categorical variables were used to explore differences between residents grouped into non-psychotic, psychotic, organic and non-clustered, in terms of: (a) resident age and gender, (b) care home type (*i.e.* residential or nursing home) and size (measured in number of beds), (c) utilisation of community care services, and (d) community care costs. Differences in the survival of residents between mental health clusters were plotted using Kaplan–Meier curves and tested with the log-rank test as well as by performing a Cox regression analysis to adjust death relative risks for differences in patient characteristics (*i.e.* age and gender) and care home characteristics (*i.e.* type and size). The standard errors in the Cox regression allowed for intra-cluster correlation (*i.e.* correlation between residents of the same care home). The proportional hazards assumption was tested on the basis of Schoenfeld residuals after fitting the Cox regression model.

A multi-level regression analysis using generalised estimating equations with gamma distribution and log link was performed to investigate the association between mean community care costs over 6 months per patient (*i.e.* the outcome variable) and the clustering of residents into non-psychotic, psychotic, organic and non-clustered (*i.e.* the exposure variable). A gamma distribution was used as the outcome variable, community care costs, is a positive and skewed continuous variable. To adjust for confounding, we included variables expected to be associated with community care costs and mental health clustering such as resident age, gender and survival, as well as type and size of care home. We specifically controlled for the size of care home due to a Care Quality Commission (2013) report that showed larger care homes were more likely to take some action to ensure they met quality standards compared to small care homes (*i.e.* up to 100 residents). In all regression models, patients (level 1) were clustered in care homes (level 2) and cluster-robust standard errors were estimated.

Results

Of the 5,782 residents, 3,012 (52%) had cognitive impairment or dementia (categorised as organic), 226 (4%) had non-psychotic mental health condition, 119 (2%) had psychotic mental health condition, while 2,425 (42%) had no mental health condition (categorised as non-clustered) (Table 1). The majority of the residents were females (70%) and were living in nursing homes (71%), and there was small variation in these proportions across the mental health clusters. The mean age

https://doi.org/10.1017/S0144686X21001148 Published online by Cambridge University Press

Table 1. Patient characteristics and resource utilisation of care home residents

	Total sample	Non-psychotic	Psychotic	Organic	Non-clustered
Sample size	5,782 (100%)	226 (4% of 5,782)	119 (2% of 5,782)	3,012 (52% of 5,782)	2,425 (42% of 5,782)
Sex:					
Females	4,040 (70% of 5,782)	166 (73% of 226)	85 (71% of 119)	2,103 (70% of 3,012)	1,686 (70% of 2,425)
Males	1,742 (30% of 5,782)	60 (27% of 226)	34 (29% of 119)	909 (30% of 3,012)	739 (30% of 2,425)
Type of care home:					
Residential	1,649 (29% of 5,739)	93 (41% of 225)	32 (27% of 117)	847 (28% of 2,995)	677 (28% of 2,402)
Nursing	4,090 (71% of 5,739)	132 (59% of 225)	85 (73% of 117)	2,148 (72% of 2,995)	1,725 (72% of 2,402)
	Mean (standard deviation) [minimum–maximum] {N}				
Age at beginning of follow-up***	87 (8) [43–110] {5,782}	85 (8) [61–103] {226}	80 (11) [47–103] {119}	87 (8) [49–110] {3,012}	88 (8) [43–107] {2,425}
Number of beds in care home	52 (19) [5–103] {5,739}	49 (17) [7–103] {225}	54 (23) [11–103] {117}	53 (19) [5–103] {2,995}	52 (19) [5–103] {2,402}

Significance level: *** $p < 0.001$, based on Kruskal–Wallis (for continuous variables) or chi-square (for categorical variables) test.

at the beginning of the follow-up period in the whole sample was 87 and ranged from 80 in the psychotic cluster to 88 in the non-clustered residents. The mean number of beds in the 104 care homes was 52, with a small variation between the four mental health groups of residents. As shown in the bar charts of Figure 1, the distribution of residents with mental health conditions was similar across the 104 care homes.

During six months, residents in care homes contacted district nurses on average 3.35 (standard deviation (SD) = 11.66) times, out-of-hours services 0.54 times (SD = 0.85), community mental health teams 0.28 times (SD = 1.21), a podiatrist 0.26 times (SD = 1.44), and speech and language therapists 0.22 times (SD = 0.79) (Table 2). Comparing community care utilisation across the four mental health categories, residents with non-psychotic disorders contacted emergency multidisciplinary units and hospital-at-home services slightly more frequently compared to residents in the other three categories. Together with residents with psychotic conditions, residents with non-psychotic conditions contacted community mental health teams most frequently while residents with dementia contacted community mental health teams less often. Residents with psychotic and non-psychotic conditions contacted community mental health teams on average 1.57 times (SD = 3.28) and 1.38 times (SD = 3.06), respectively. Residents with dementia contacted community mental health teams on average of 0.35 times (SD = 1.16). Residents with psychotic conditions were by far the group with the most frequent admissions to mental health wards in community hospitals (mean = 2.44, SD = 15.04). Residents with dementia visited more often compared to all other residents. On average, residents without mental health conditions contacted out-of-office hours services 0.62 times (SD = 0.97) in 6 months, which is slightly more frequently compared with residents with mental health conditions.

The mean 6-month community care costs per resident were £460 (SD = £1,879) and were driven primarily by the costs of district nurses (mean = £139, SD = £482), followed by hospitalisation in mental health wards (mean = £67, SD = £1,580), community mental health teams (mean = £54, SD = £232), hospitalisation in community hospitals (mean = £52, SD = £640) and out-of-office hour services (mean = £41, SD = £71) (Table 2). The community care costs of residents with dementia and residents without mental health conditions heavily influenced the mean community care costs of the whole sample (because they constituted 94% of the study sample). However, these costs were higher among residents with non-psychotic (£762) and psychotic (£1,724) mental health conditions and the main cost drivers were community mental health services and hospitalisation in metal health wards, respectively.

The mean survival during the follow-up period was 490 (SD = 290) days in the overall sample, 494 (SD = 298) days in the non-psychotic group, 520 (SD = 302) days in the psychotic group, 503 (SD = 299) days in the organic group and 473 (SD = 276) days in the non-clustered group. The lower survival in residents without mental health conditions is illustrated also in the Kaplan–Meier survival curves (Figure 2). These curves show that the survival probability was very similar in the four groups of mental health up to 16 months (*i.e.* 480 days) after admission to a care home and it dropped faster thereafter in residents without mental health conditions compared to residents with mental health conditions. After adjusting for

https://doi.org/10.1017/S0144686X21001148 Published online by Cambridge University Press

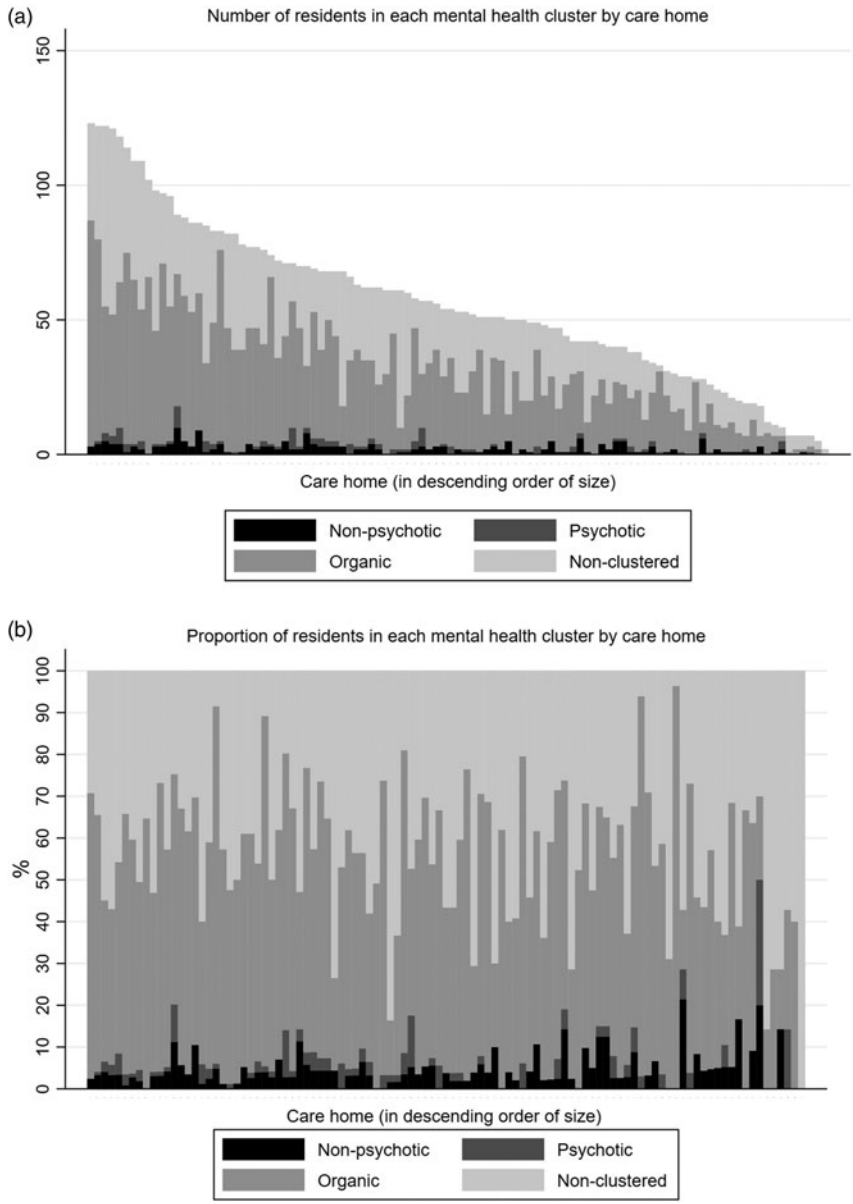

Figure 1. Absolute and relative numbers of residents in each mental health cluster by care home (in descending order of size).

patient (*i.e.* age and gender) and care home (*i.e.* type and size) characteristics, residents with dementia were 30 per cent (hazard ratio = 0.70, 95% confidence interval (CI) = 0.63–0.78) less likely to die during the follow-up period compared with residents without mental health conditions (Table 3). Similarly, residents with

https://doi.org/10.1017/S0144686X21001148 Published online by Cambridge University Press

Table 2. Six-month community care utilisation and costs per resident

Variable	Total sample	Non-psychotic	Psychotic	Organic	Non-clustered
N	5,782	226	119	3,012	2,425
			Mean (standard deviation) [maximum]		
Six-month community care utilisation per resident:					
Length of stay in community hospitals (days)	0.17 (2.01) [76]	0.20 (1.76) [24]	0.16 (1.45) [16]	0.11 (1.66) [76]	0.23 (2.42) [70]
Length of stay in mental health wards (days)***	0.15 (3.52) [147]	0.31 (2.85) [33]	2.44 (15.04) [146]	0.17 (3.75) [147]	0.00 (0.00) [0]
Community matron (visits)	0.00 (0.08) [3]	0.00 (0.07) [1]	0.00 (0.00) [0]	0.00 (0.09) [3]	0.00 (0.06) [2]
Community therapy service (visits)***	0.13 (0.87) [23]	0.15 (0.65) [5]	0.13 (0.99) [9]	0.70 (0.52) [11]	0.20 (1.17) [23]
District nurse (visits)	3.35 (11.66) [291]	2.73 (6.81) [50]	3.59 (14.22) [141]	3.20 (11.31) [186]	3.59 (12.29) [291]
Emergency multidisciplinary unit (visits)***	0.04 (0.30) [8]	0.09 (0.40) [4]	0.02 (0.15) [2]	0.03 (0.25) [5]	0.05 (0.36) [8]
Hospital-at-home (visits)***	0.04 (0.30) [7]	0.11 (0.64) [7]	0.01 (0.09) [1]	0.03 (0.29) [7]	0.04 (0.27) [5]
Minor injury unit (visits)***	0.01 (0.05) [1]	0.00 (0.00) [0]	0.01 (0.06) [1]	0.01 (0.06) [1]	0.00 (0.03) [1]
Musculoskeletal service (visits)	0.00 (0.05) [2]	0.00 (0.05) [1]	0.00 (0.00) [0]	0.00 (0.05) [2]	0.00 (0.03) [1]
Dietician (visits)	0.07 (0.67) [20]	0.14 (1.49) [20]	0.09 (0.66) [7]	0.04 (0.37) [9]	0.10 (0.83) [20]
Out-of-hours (visits)***	0.54 (0.85) [12]	0.50 (0.78) [5]	0.48 (0.71) [3]	0.49 (0.74) [9]	0.62 (0.97) [12]
Memory clinic (visits)***	0.03 (0.18) [4]	0.03 (0.20) [2]	0.03 (0.17) [1]	0.06 (0.24) [4]	0.00 (0.06) [1]
Community mental health team (visits)***	0.28 (1.21) [25]	1.38 (3.06) [24]	1.57 (3.28) [25]	0.35 (1.16) [20]	0.04 (0.41) [17]
Physical physiotherapy disability service (visits)	0.01 (0.15) [6]	0.01 (0.07) [1]	0.00 (0.05) [1]	0.01 (0.10) [4]	0.01 (0.20) [6]
Podiatrist (visits)	0.26 (1.44) [23]	0.44 (1.73) [14]	0.19 (1.02) [9]	0.23 (1.36) [23]	0.29 (1.52) [22]
Single point of access (visits)	0.03 (0.14) [2]	0.04 (0.17) [2]	0.03 (0.16) [1]	0.02 (0.12) [1]	0.04 (0.16) [2]
Speech and language therapy (visits)	0.22 (0.79) [19]	0.14 (0.52) [5]	0.20 (0.73) [6]	0.20 (0.66) [9]	0.25 (0.95) [19]
Tissue viability (visits)	0.06 (0.32) [9]	0.05 (0.24) [2]	0.06 (0.28) [2]	0.05 (0.27) [6]	0.07 (0.38) [9]

(*Continued*)

Table 2. (*Continued.*)

Variable	Total sample	Non-psychotic	Psychotic	Organic	Non-clustered
Six-month community care costs per resident (£):					
Hospitalisation in community hospitals	52 (640) [24,137]	64 (559) [7,622]	50 (460) [4,923]	34 (526) [24,137]	74 (769) [22,231]
Hospitalisation in mental health wards***	67 (1,580) [65,994]	138 (1,280) [14,703]	1,096 (6,753) [65,545]	74 (1,685) [65,994]	0 (0) [0]
Community matron	1 (10) [397]	1 (9) [133]	0 (0) [0]	1 (12) [397]	0.4 (8) [265]
Community therapy service***	34 (229) [6,058]	38 (172) [1,317]	35 (260) [2,370]	18 (138) [2,897]	53 (307) [6,058]
District nurse	139 (482) [12,035]	113 (282) [2,066]	148 (588) [5,837]	132 (467) [7,665]	148 (508) [12,035]
Emergency multidisciplinary unit***	14 (111) [2,895]	33 (148) [1,447]	7 (55) [543]	12 (90) [1,809]	17 (131) [2,895]
Hospital-at-home***	6 (48) [1,120]	18 (102) [1,120]	1 (15) [160]	5 (46) [1,120]	5 (44) [800]
Minor injury unit ***	0.3 (3) [80]	0 (0) [0]	1 (3) [30]	1 (4) [80]	0.2 (2) [60]
Musculoskeletal service	0.1 (3) [122]	0.2 (3) [42]	0 (0) [0]	0.1 (3) [122]	0.1 (2) [75]
Dietician	6 (58) [1,750]	12 (128) [1,728]	8 (57) [562]	3 (32) [778]	8 (71) [1,750]
Out-of-hours**	46 (71) [1,006]	42 (65) [419]	40 (59) [252]	41 (62) [776]	52 (81) [1,006]
Memory clinic***	7 (37) [813]	5 (41) [407]	7 (34) [203]	12 (48) [813]	1 (12) [203]
Community mental health team***	54 (232) [4,782]	263 (586) [4,638]	300 (627) [4,782]	67 (222) [3,825]	7 (79) [3,156]
Physical physiotherapy disability service	1 (14) [554]	1 (7) [92]	0.4 (4) [45]	1 (10) [323]	1 (19) [554]
Podiatrist	11 (60) [958]	18 (72) [562]	8 (43) [389]	10 (57) [958]	12 (64) [917]
Single point of access	1 (6) [83]	2 (7) [83]	1 (7) [41]	1 (5) [62]	2 (7) [83]
Speech and language therapy	17 (61) [1,464]	11 (40) [385]	16 (57) [462]	15 (51) [693]	19 (73) [1,464]
Tissue viability	5 (28) [789]	5 (21) [197]	5 (24) [175]	4(24) [526]	6 (33) [789]
Total costs***	460 (1,879) [66,681]	762 (1,867) [19,487]	1,724 (7,022) [66,681]	431 (1,897) [66,162]	407 (1,066) [22,398]

Significance level: *** $p < 0.001$, based on Kruskal–Wallis (for continuous variables) or chi-square (for categorical variables) test.

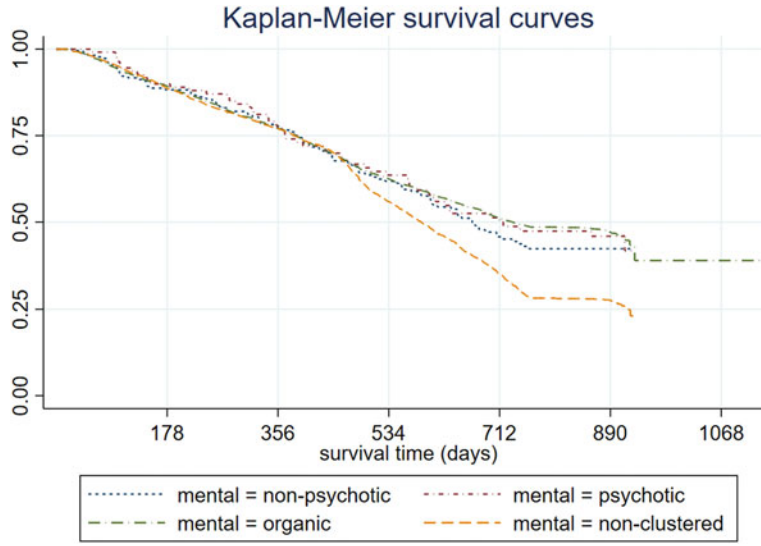

Figure 2. Kaplan–Meier survival curves from admission to care home by mental health category.

psychotic conditions and residents with non-psychotic conditions were 25 per cent (hazard ratio = 0.75, 95% CI = 0.58–0.97) and 20 per cent (hazard ratio = 0.80, 95% CI = 0.64–1.00), respectively, less likely to die during the follow-up period compared with residents without mental health conditions.

Residents with non-psychotic conditions and residents with psychotic conditions had 62 per cent (ratio of means = 1.62, 95% CI = 1.13–2.31) and 293 per cent (ratio of means = 3.93, 95% CI = 1.68–9.21) higher community care costs, respectively, compared to residents without mental health conditions after adjusting for patient (*i.e.* age and gender) and care home (*i.e.* type and size) characteristics as well as survival. The proportional hazards assumption was tested after fitting the Cox regression model, which showed that the assumption was not violated.

Discussion

The findings of this study show that 6 per cent of care home residents had mental health conditions and 52 per cent had dementia. These proportions seem to be similar across all 104 care homes, irrespective of their size. Residents with dementia and residents without mental health conditions were on average older than residents with mental health conditions. Residents without mental health conditions had the lowest survival during follow-up, even after adjusting for patient and care home characteristics. Overall, we found that residents with mental health conditions and dementia contacted emergency multidisciplinary units, hospital-at-home services and community mental health teams more frequently compared to residents without mental health conditions. On average, the 6-month community care costs of care home residents were £460. The unadjusted 6-month community care costs of residents with dementia and those without mental health condition were very similar, £431 and

https://doi.org/10.1017/S0144686X21001148 Published online by Cambridge University Press

Table 3. Results from the survival and cost regression analysis

Variable	Survival during follow-up	Six-month community care costs
	Hazard ratio (SE) [p] {95% confidence interval}	
Non-psychotic (Ref.: Non-clustered)	0.80 (0.09) [0.053] {0.64–1.00}	1.62 (0.29) [0.008] {1.13–2.31}
Psychotic (Ref.: Non-clustered)	0.75 (0.10) [0.028] {0.58–0.97}	3.93 (1.71) [0.002] {1.68–9.21}
Organic (Ref.: Non-clustered)	0.70 (0.04) [0.000] {0.63–0.78}	1.01 (0.10) [0.929] {0.84–1.22}
Age (in tens of years)	1.14 (0.04) [0.000] {1.08–1.20}	0.83 (0.06) [0.005] {0.73–0.94}
Male (Ref.: Female)	1.25 (0.05) [0.000} (1.15–1.35}	1.05 (0.14) [0.693] {0.82–1.36}
Survival time (months)	–	0.98 (0.01) [0.000] {0.98–0.99}
Nursing home (Ref.: Residential home)	1.12 (0.08) [0.098] {0.98–1.29}	0.49 (0.07) [0.000] {0.38–0.65}
Number of beds (in tens)	0.98 (0.14) [0.909] {0.74–1.30}	1.25 (0.52) [0.589] {0.55–2.83}
Constant	–	3,784 (2,454) [0.000] {1,062–13,487}
Sample size	5,739 residents	5,739 residents clustered in 102 care homes

Notes: Clustered standard errors (SE) allow for intra-cluster correlation. Ref.: reference.

£407, respectively. However, the unadjusted community care costs of residents with psychotic conditions (£1,724) were more than twice the costs of residents with non-psychotic mental health conditions (£762) and more than four times the costs of residents without mental health conditions (£407). After adjusting for patient and care home characteristics, residents with psychotic conditions and non-psychotic conditions had three times and 0.5 times higher community care costs, respectively, compared to residents without mental health conditions.

The findings of this study should be considered in light of the limitations. Due to data limitations, we do not have information on informal care-giving and we are also unable to consider co-morbidities of mental and physical health conditions. With regards to the former, the literature shows that there is substitution between informal care-giving and community care use, suggesting that the increased availability of community care services is associated with a decline in informal care-giving (Stabile *et al*., 2006; Pickard, 2012; Saloniki *et al*., 2019). Therefore, these substitution effects should be explored in care home residents with mental health conditions as they may have more complex needs compared to residents without mental health conditions. With regards to patient co-morbidities, differences in co-morbidities in the MHCT clusters can affect differences in costs. There is no evidence in the literature investigating differences in co-morbidities of elderly people living in care homes based on the MHCT clusters and their association with costs. However, this can be an extension of this study for future research. Future research can also investigate the use of community care services of elderly people by mental

https://doi.org/10.1017/S0144686X21001148 Published online by Cambridge University Press

health status not in care homes compared to those in care homes to observe differences in the need for community care services and study the impact of chronic conditions and visitors to care homes on the differences in survival probability of elderly people by MHCT cluster.

Despite these limitations, there are two particular strengths of this study. First, we have a large sample of residents living in care homes, where previous studies were limited due to their small sample size. Secondly, we are able to follow patients for a long time period of two years to estimate community care use and survival of residents. Our results are likely to be generalisable to England due to several similarities between our estimates and national average estimates. A Care Quality Commission (2017) report highlighted that community care services in Oxfordshire were similar and faced the same challenges as in other areas of England. Moreover, the community services included in our study and their unit costs are similar to the ones reported by the Personal Social Services Research Unit (2015). The recorded rate of dementia in people aged over 65 in Oxfordshire is very similar to the average rate of dementia in England (*i.e.* 4.33% *versus* 4.29%), and care homes in Oxfordshire have higher bed capacity for people over 65 with dementia (Public Health England, 2020). However, the proportion of care home residents with dementia and cognitive impairment found in our study (52%) was lower compared to the 70 per cent estimate from the Alzheimer's Society (Kane and Terry, 2015). This may be because the MHCT does not include significant memory problems in the organic cluster. Moreover, an international review found that the prevalence of anxiety disorders in care home residents was likely to be close to 5 per cent (Creighton *et al.*, 2017). This figure is close to the 4 per cent prevalence of non-psychotic conditions found in our study. Regarding psychotic conditions, Oxfordshire had a higher incidence of psychosis in people between 16 and 64 years old compared to the national average (21.0 *versus* 18.1 per 100,000 people) in 2011 (Public Health England, 2020). Estimates for the elderly population are not available. Furthermore, a previous costing study of care home residents with dementia reported similar costs to this study regarding community mental health services (*i.e.* £50 per 6 months in 2011/2012 prices) (Romeo *et al.*, 2017).

The estimated community care costs of people in care homes account for approximately 20 per cent of the total spending per person on health care (£2,350 in 2015) (Office for National Statistics, 2017). Commissioning EHCH and other integrated care services for this population should be well designed to include community care services adequately and alternative payment methods should include community care costs accurately. Care home residents with mental health conditions and dementia should additionally be clearly distinguished due to their higher costs compared to those without mental health conditions. Furthermore, studies have shown that the mental health and physical disability needs of residents with dementia were often unmet within care homes (Hancock *et al.*, 2006). Residents with dementia and mental health conditions have a high need of community care services and thus their mental health should be promptly and adequately monitored in care homes. Considering that a third of people with dementia live in care homes and constitute the majority of care home residents, it is essential that care home settings meet the needs of people with dementia (Kane and

https://doi.org/10.1017/S0144686X21001148 Published online by Cambridge University Press

Terry, 2015) and provide effective interventions to improve the quality of life of people with dementia in care homes (Ballard *et al*., 2018). Our findings show that residents with dementia were about the same age as people without mental health conditions when admitted to care homes and outlived all other groups of residents. This should also be considered when designing efficient capitated payments for this specific population to avoid budget shortfalls. Moreover, the costs of residents with dementia are expected to be higher in the case of comorbidity with mental health conditions (Herrmann *et al*., 2006).

Conclusion

Our findings indicate that the MHCT provides an informative stratification of care home residents with regards to survival and community care use. There are proportionally more residents in care homes with mental health conditions, who live longer and use more community care services compared to residents without mental health conditions. Such evidence can be helpful to health-care commissioners to plan, commission and pay for a large part of the care needed by elderly people living in care homes.

Author contributions. AT conceived the study, performed the analysis and drafted the manuscript. AB, AC and JF collected the data. SS contributed to drafting and revising the manuscript. All authors have made substantial revisions to earlier drafts and approved the final manuscript.

Financial support. This research was funded by the National Institute for Health Research (NIHR) Collaboration for Leadership in Applied Health Research and Care Oxford at Oxford Health NHS Foundation Trust, now recommissioned as NIHR Applied Research Collaboration Oxford and Thames Valley. The views expressed are those of the author(s) and not necessarily those of the NHS, the NIHR or the Department of Health and Social Care.

Conflict of interest. The authors declare no conflicts of interest.

References

Ballard C, Corbett A, Orrell M, Williams G, Moniz-Cook E, Romeo R, Woods B, Garrod L, Testad I, Woodward-Carlton B, Wenborn J, Knapp M and Fossey J (2018) Impact of person-centred care training and person-centred activities on quality of life, agitation, and antipsychotic use in people with dementia living in nursing homes: a cluster-randomised controlled trial. *PLOS Medicine* **15**, e1002500.

Care Quality Commission (2013) *Not Just a Number: Home Care Inspection Programme National Overview*. London: Care Quality Commission.

Care Quality Commission (2017) *Oxfordshire Local System Review Report*. Available at https://www.cqc.org.uk/sites/default/files/20180208_oxfordshire_local_system_review_report.pdf.

Creighton AS, Davison TE and Kissane DW (2017) The correlates of anxiety among older adults in nursing homes and other residential aged care facilities: a systematic review. *International Journal of Geriatric Psychiatry* **32**, 141–154.

Fernandez J-L and Forder J. (2011) Impact of changes in length of stay on the demand for residential care services in England. Report commissioned by Bupa Care Services, PSSRU Discussion Paper 2771. Canterbury: PSSRU.

Gage H, Cheynel J, Williams P, Mitchell K, Stinton C, Katz J, Holland C and Sheehan B (2015) Service utilisation and family support of people with dementia: a cohort study in England. *International Journal of Geriatric Psychiatry* **2**.

Godfrey M and Denby T (2004) *Depression and Older People: Towards Securing Well-being in Later Life*. Bristol, UK: Policy Press.

https://doi.org/10.1017/S0144686X21001148 Published online by Cambridge University Press

Gordon AL, Franklin M, Bradshaw L, Logan P, Elliott R and Gladman JR (2014) Health status of UK care home residents: a cohort study. *Age and Ageing* **29**.

Gustavsson A, Jonsson L, Rapp T, Reynish E, Ousset PJ, Andrieu S, Cantet C, Winblad B, Vellas B, Wimo A and Ictus Study Group (2010) Differences in resource use and costs of dementia care between European countries: baseline data from the ICTUS study. *Journal of Nutrition, Health and Aging* **14**.

Hancock GA, Woods B, Challis D and Orrell M (2006) The needs of older people with dementia in residential care. *International Journal of Geriatric Psychiatry* **21**.

Herrmann N, Lanctôt KL, Sambrook R, Lesnikova N, Hebert R, McCracken P, Robillard A and Nguyen E (2006) The contribution of neuropsychiatric symptoms to the cost of dementia care. *International Journal of Geriatric Psychiatry* **21**.

Kane M and Terry G (2015) *Dementia 2015: Aiming Higher to Transform Lives*. Alzheimer's Society. Available at https://www.alzheimers.org.uk/download/downloads/id/2700/dementia_2015_aiming_higher_to_transform_lives.pdf.

Lafond S, Charlesworth A and Roberts A (2016) *A Perfect Storm: An Impossible Climate for NHS Providers' Finances? An Analysis of NHS Finances and Factors Associated with Financial Performance*. London: Health Foundation. Available at http://www.health.org.uk/publication/perfect-storm-impossible-climate-nhs-providers%E2%80%99-finances.

Laig W (2014) *Strategic Commissioning of Long Term Care for Older People: Can We Get More for Less?* London: LaingBuisson.

Luengo-Fernandez R, Leal J and Gray AM (2012) UK research expenditure on dementia, heart disease, stroke and cancer: are levels of spending related to disease burden? *European Journal of Neurology* **19**.

Mental Health Taskforce (2016) *The Five Year Forward View for Mental Health*. Available at https://www.england.nhs.uk/wp-content/uploads/2016/02/Mental-Health-Taskforce-FYFV-final.pdf.

Murman DL, Chen Q, Powell MC, Kuo SB, Bradley CJ and Colenda CC (2002) The incremental direct costs associated with behavioral symptoms in AD. *Neurology* **59**.

National Audit Office (2010) *Progress in Improving Stroke Care: Report on the Findings from Our Modelling of Stroke Care Provision*. London: National Audit Office.

NHS England (2014) *The NHS Five Year Forward View*. London: NHS England.

NHS England (2016*a*) *Developing a Capitated Payment Approach for Mental Health: Detailed Guidance*. London: NHS England.

NHS England (2016*b*) *Developing an Episodic Payment Approach for Mental Health: Detailed Guidance*. London: NHS England.

NHS England (2016*c*) *New Care Models: Vanguards – Developing a Blueprint for the Future of NHS and Care Services*. Available at www.england.nhs.uk/vanguards.

NHS England (2016*d*) *The Framework for Enhanced Health in Care Homes*. London: NHS England.

NHS Improvement (2016) *2017/18 and 2018/19 National Tariff Payment System Annex C: Technical Guidance for Mental Health Clusters*. London: NHS Improvement.

Office for National Statistics (2017) *UK Health Accounts: 2015*. Available at https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthcaresystem/bulletins/ukhealthaccounts/2015.

Personal Social Services Research Unit (2015) *Unit Costs of Health and Social Care 2015*. Available at https://www.pssru.ac.uk/pub/uc/uc2015/full.pdf.

Pickard L (2012) Substitution between formal and informal care: a natural experiment in social policy in Britain between 1985 and 2000. *Ageing & Society* **32**, 1147–1175.

Public Health England (2020) *Public Health Profiles*. Available at https://fingertips.phe.org.uk/.

Romeo R, Knapp M, Salverda S, Orrell M, Fossey J and Ballard C (2017) The cost of care homes for people with dementia in England: a modelling approach. *International Journal of Geriatric Psychiatry* **32**.

Saloniki E, Nizalova O, Malisauskaite G and Forder J (2019) *The Impact of Formal Care on Informal Care for People Over 75 in England*. Available at www.pssru.ac.uk.

Schaller S, Mauskopf J, Kriza C, Wahlster P and Kolominsky-Rabas PL (2015) The main cost drivers in dementia: a systematic review. *International Journal of Geriatric Psychiatry* **30**.

Shah SM, Carey IM, Harris T, DeWilde S and Cook DG (2013) Mortality in older care home residents in England and Wales. *Age and Ageing* **42**.

Stabile M, Laporte A and Coyte PC (2006) Household responses to public home care programs. *Journal of Health Economics* **25**, 674–701.

https://doi.org/10.1017/S0144686X21001148 Published online by Cambridge University Press

Steventon A and Roberts A (2012) Estimating length of stay in publicly-funded residential and nursing care homes: a retrospective analysis using linked administrative data sets. *BMC Health Services Research* **12**, 377.

Trevithick L, Painter J and Keown P (2015) Mental health clustering and diagnosis in psychiatric in-patients. *Psychiatrist* **39**.

Tsiachristas A (2015) *Payment and Economic Evaluation of Integrated Care* (Doctoral thesis). Erasmus University Rotterdam, Rotterdam, The Netherlands.

Tsiachristas A, Hipple-Walters B, Lemmens KMM, Nieboer AP and Rutten-van Molken MP (2011) Towards integrated care for chronic conditions: Dutch policy developments to overcome the (financial) barriers. *Health Policy* **101**.

Tsiachristas A, Dikkers C, Boland MRS and Rutten-van Molken MP (2013) Exploring payment schemes used to promote integrated chronic care in Europe. *Health Policy* **113**.

Appendix

Table A1. Community care services included in the dataset, units of measurement and unit cost

Community care service	Unit of measurement	Unit cost (£)
General ward in community hospital	Days	317.59
Mental health ward in community hospital	Days	448.94
Community matron	Visits	132.45
Community therapy service	Visits	263.37
District nurse	Visits	41.32
Emergency multidisciplinary unit	Visits	361.81
Hospital-at-home	Visits	160.03
Minor injury unit	Visits	60.04
Musculoskeletal service	Visits	56.11
Out-of-hours service	Visits	83.85
Memory clinic	Visits	203.3
Community mental health team	Visits	191.27
Physical physiotherapy disability service	Visits	92.38
Podiatry	Visits	41.66
Single point of access	Visits	41.32
Speech and language therapy	Visits	77.04
Tissue viability	Visits	87.66

Cite this article: Tsiachristas A, Broad A, Coates A, Singh S, Fossey J (2023). Survival and community care use by care home residents in England: does mental health matter? *Ageing & Society* **43**, 1089–1103. https://doi.org/10.1017/S0144686X21001148