

GUEST EDITORIAL

Depression in older people living in residential homes

Introduction

There is a large body of published research relating to depression in residential homes for older people (also called long-term-care homes, and including both nursing homes and hostels) (Ames 1990; 1993; Seitz *et al.*, 2010; Snowden and Purandare, 2010; Snowden, 2010). However, despite increased detection and more frequent treatment in recent years, depression remains a significant problem for many older people living in such settings. This guest editorial summarizes current knowledge about prevalence, etiology, detection and screening, treatment and outcomes of depression in residential homes and concludes with a summary of key issues requiring urgent future action.

Residential care homes for older people

The provision of residential homes for older people varies markedly around the world and there is no universal agreed definition for these facilities, which include both hostels and nursing homes (also known in some places as low-level and high-level care) and are sometimes referred to as long-term care facilities (Ribbe *et al.*, 1997; Snowden and Purandare, 2010). Nursing homes can be defined as residential facilities offering 24-hour nursing care, while hostels can be considered as facilities that offer personal care and social involvement for people who can no longer manage at home, but need no more nursing care than could be provided by visiting nurses (Ribbe *et al.*, 1997). Using these definitions, 3.63% of Americans aged over 65 years were in nursing homes in 2004 (National Nursing Homes Survey, 2004), while the UK provision of all residential home beds was 450,000 in 2000, but is expected to rise to 1.1 million by 2051 (Wittenberg *et al.*, 2004). Australia has a total population of 22 million (just over one-third that of the UK and less than two-thirds of the US state of California) with a lower percentage aged over 65 than most European countries, but 162,300 Australians were living in mainstream residential care services in mid-2009, an increase of 2050 residents over the previous year (Australian Institute of Health and Welfare, 2010).

Depression: definitions and diagnosis

The term “depression” can refer to both depressive disorders and depressive symptoms. In modern research and clinical practice, diagnoses of depressive disorders are made most often using either the criteria of the World Health Organization’s International Classification of Diseases, 10th revision (ICD-10; World Health Organization, 1992) or the American Psychiatric Association’s Diagnostic and Statistical Manual, 4th edition (DSM-IV; American Psychiatric Association, 1994).

The ICD-10 mandates diagnosis of a depressive episode when four or more of the following ten symptoms are present most of the day, most days for at least two weeks in the absence of another disorder (e.g. hypothyroidism, schizophrenia, dementia, etc.) that could better account for the symptoms: low mood, loss of interest and enjoyment (anhedonia), disturbed sleep, decreased or increased weight or appetite, loss of energy, psychomotor slowing, poor concentration, feelings of guilt or self reproach, recurrent thoughts of death or suicide, and loss of confidence (World Health Organization, 1992). In the DSM-IV, five of nine of the above symptoms (excluding loss of confidence) must be present for the same two-week period for a diagnosis of major depressive disorder to be confirmed (American Psychiatric Association, 1994). Both systems require that the symptoms cause clinically significant stress or impairment in social, occupational or other important areas of functioning.

Milder forms of depression that do not fulfill criteria for ICD-10 depressive episode or DSM-IV major depression are common, often comorbid with other illnesses or recent bereavement, and frequently are of substantial clinical significance. These are sometimes referred to as minor depression, dysthymic disorder (if present chronically for two years) or depressive symptoms (Ames, 1993).

Prevalence and incidence of depression in residential care homes for older people

Prevalence of depression in residential care homes is high, ranging from 4% to 25% for major depressive disorder and 29% to 82% for minor

depression or the presence of depressive symptoms (Seitz *et al.*, 2010). A recent review by Seitz and colleagues (2010), published in this journal, examined 74 studies on prevalence of psychiatric disorders in nursing homes, including 26 on depression. Dementia, depression and anxiety were the most common psychiatric disorders affecting older people in long-term care. A range of instruments was used to assess depression in the 26 studies cited, making it difficult to determine prevalence more precisely than the wide ranges cited above. The Geriatric Depression Scale (GDS) was used in 12 studies but three different versions were used with a range of cut-off points (Seitz *et al.*, 2010). See Table 1 for a summary of selected prevalence studies.

In most countries prevalence of depression in residential homes is substantially higher than among community-dwelling older people, particularly in the case of major depression. Junginger and colleagues (1993) found that 21% of their sample living in nursing homes in the USA had major depression compared with 10% of community-dwelling older people. Similarly, a British study found a 9.3% prevalence of major depression in community-dwelling older people, compared with 27.1% in nursing homes (McDougall *et al.*, 2007). However, in the latter study, there was a similar prevalence of minor depression in community-dwelling and nursing home residents (26.7% compared with 22.6%).

One apparently contradictory Korean study found greater prevalence of depression in older people living in their own homes, with 39.5% showing symptoms of depression compared with 24.0% of nursing home residents (Chung, 2008). In this study, nursing home residents had significantly higher function in instrumental and personal activities of daily living (ADL), fewer children and more friends than community-dwelling older people. Functional ADL status is associated with depression (see Etiology section below) so this may explain this finding, which is out of line with most published comparative research. In addition, Korean cultural expectations of filial piety probably mean that older people with children are more likely to be cared for at home, regardless of their functional dependence.

The incidence of depression appears to be approximately 5–6% for new cases of both major and minor depression over a 6–12 month period (Parmelee *et al.*, 1992b; Smalbrugge *et al.*, 2006a). Progression from minor to major depression may be higher, with one study finding 16.2% of people with minor depression progressing to major depression over a 12-month period (Parmelee *et al.*, 1992b).

Etiology of depression

A number of factors contribute to depression in residential care homes, but no single factor can be considered the sole cause of depressive symptoms in most residents. Nor does any single factor (or combination of factors) have the same effect on different individual residents. The evidence indicates that variables including the types of homes; the education and training levels of staff; the personality, attitudes and coping strategies of residents themselves; resident health status (psychological health, physical disability/comorbidity and levels of function and dependence); social support; and length of time in care all have the potential to influence symptom expression.

Physical and mental health

In a review article one of the present authors (Ames, 1993) noted that physical disability was strongly associated with depression, but emphasized the need for further studies to identify and define other risk factors. Medical comorbidities and functional impairment have emerged as important risk factors in a number of subsequent studies (Henderson *et al.*, 1994; Hyer *et al.*, 2005; Segal, 2005; Watson *et al.*, 2006). Persistent pain also has been identified as a major risk factor, affecting both mood and quality of life (Cuijpers and Lammeren, 1999; Asghari *et al.*, 2006). Medications for a number of comorbid conditions (e.g. anti-hypertensive/cardiac drugs; treatment for Parkinson's disease, antineoplastic drugs and certain antibiotics) may also cause depression or produce depressive symptoms (Garavaglia, 2004).

The medical conditions listed by Hyer *et al.* (2005) include those whose symptoms may overlap with those of depression, and indicate a high correlation between dementia and depression. This correlation is reported in a number of other studies (Gruber-Baldini *et al.*, 2005; Sheehan *et al.*, 2007), though it is difficult to determine cause and effect. A history of previous depression is one of the best predictors of manifest depression in residents of care homes for older people (Payne *et al.*, 2002), and better cognitive functioning increases levels of risk of depression when associated with loss of physical function and capacity to live independently (Jones *et al.*, 2003; Tsai *et al.*, 2005). Jones *et al.* (2003) also identified Parkinson's disease and heart disease as risk factors, although medication for these conditions may be implicated too (Garavaglia, 2004).

Other studies have noted relationships between depression and loss of perception, as in hearing loss (Eisses *et al.*, 2004) and uncorrected refractive error

Table 1. Selected studies on prevalence of depression in residential homes

AUTHOR/S, YEAR	COUNTRY/CITY, AREA/SETTING	METHOD	FINDINGS AND REMARKS	SAMPLE SIZE	DIAGNOSTIC INSTRUMENT AND CRITERIA
Seitz <i>et al.</i> , 2010	Canada Long-term care (LTC)	Review of 74 studies examining the prevalence of psychiatric disorders and psychological symptoms in LTC populations. 26 examined depression. The 26 depression studies included 9 from North America, 7 from Europe, 1 from middle East, 4 from Aust/NZ, 1 from Africa and 4 from Asia.	Most studies involved few LTCs and were in developed countries. Prevalence of a major depressive disorder (MD) varied between 4–25% and depressive symptoms were reported in 29–82% of residents.	1 to 951 nursing homes (in 26 depression studies)	GDS (12 studies) DSM-III-R or DSM-IV (6 studies) CSDD (3 studies) CES-D (1 study) Other (6 studies)
Sandberg <i>et al.</i> , 1998	Sweden Nursing home Old people's homes Medical care districts	Cross sectional study, single survey assessment	41% depressed mood. Depressed mood most common in home medical care (48.5%) and nursing homes (47.5%).	717 hospital patients and care home residents 3 nursing homes 5 old people's homes 2 home medical care districts	Organic Brain Syndrome Scale
Achterberg <i>et al.</i> , 2006	Netherlands Nursing homes	Residents assessed within 10 days of admission	Overall prevalence of depressive symptoms was 26.9%, higher in residents admitted from their own homes (34.3%) than those admitted from hospital (19.7%) $p = 0.002$	562 residents 65 nursing homes	7-item MDS Depression Rating Scale (DRS) Cut off of ≥ 3
Chung, 2008	Korea Nursing homes Community	Analysis of 2 data sets	39.5% of community-dwelling older people showed symptoms of depression compared with 24.0% of nursing home residents	307 care home residents 166 community-dwelling residents	GDS-15 cut off ≥ 8

Table 1. Continued

AUTHOR/S, YEAR	COUNTRY/CITY, AREA/SETTING	METHOD	FINDINGS AND REMARKS	SAMPLE SIZE	DIAGNOSTIC INSTRUMENT AND CRITERIA
Kerber <i>et al.</i> , 2005	Iowa, USA Nursing homes	Secondary analysis of data collected from 279 randomly selected nursing home residents in rural Iowa, scoring >15 on the MMSE	Prevalence based on the GDS ≥ 6 was 37.3%. Overall prevalence according to any of the 3 measures was 67.1%	279 care home residents	MDS Depression quality indicator (sad mood plus 2 or more symptoms of functional depression), GDS-15 ≥ 6 , primary care provider (PCP) depression diagnosis from the residents' charts (diagnosis assigned by nurse or physician)
Lin <i>et al.</i> , 2007	Taiwan Nursing homes	Face to face interviews conducted using CES-D, social support scale, chronic condition checklist and socio-demographic inventory	81.8% of residents identified as depressed	138 residents 8 nursing homes	CES-D cut off ≥ 16 out of 60.
Mozley <i>et al.</i> , 2000	Manchester, UK Nursing homes	Newly admitted residents screened for cognitive impairment, depression and dependency.	Just under 45% identified as depressed cases	248 residents 30 nursing or residential care homes	GDS-15 cut off point of 5/6
Brodaty <i>et al.</i> , 2001	Australia Nursing homes	Residents surveyed using the BEHAVE AD observer rating scale.	Depressed mood in 42% of residents Behavioral disturbances frequently associated with psychosis and/or depression	647 residents 11 nursing homes	Answered positive to item 21 depressed mood and/or ≥ 1 on BEHAVE AD affective disturbance sub-scale and/or chart diagnosis of depression
McDougall <i>et al.</i> , 2007	England and Wales Nursing homes Community	Stratified random sub-sample of 2,640 participants from the Medical Research Council Cognitive Function and Ageing study (MRC CFAS) received Geriatric Mental State examination of whom 340 were living in institutions.	Prevalence of depression (case level – of a severity that warrants treatment) in institutions was 27.1% compared to 9.3% in those living at home. Sub-clinical depression 26.7% of people living in institutions and 22.6% of those living at home.	340 residents	GMS schedule analyzed by AGE-CAT included anyone with a diagnosis of depression even if secondary to dementia.

Smallbrugge <i>et al.</i> , 2006a	Netherlands Nursing homes	Residents assessed with the GDS-30 at baseline and 6-month follow-up.	Prevalence of depressive symptoms decreased from 41.3% to 28.8% at 6-month follow-up. Onset of depression among those not depressed at baseline was 4.7% and the rate of persistence was 63.3%. Persistence was more common among those with higher GDS scores (18–30) at baseline	350 residents	GDS-30 cut off >10
Junginger <i>et al.</i> , 1993	Louisiana, USA Nursing homes Community	Participants assessed with the Structured Clinical Interview for DSM-III (SCID) (and for nursing home residents, diagnoses recorded on charts)	25/100 NH residents were diagnosed with mood disorder (21% with major depression) and 5/50 community residents (all 5 with major depression).	100 care home residents 50 community-dwelling residents	SCID (and for nursing home residents, diagnoses recorded on charts)
Parmalee <i>et al.</i> , 1992a	Pennsylvania, USA Nursing homes Congregate apartments	One-year longitudinal study to examine incidence and persistence of depression among nursing home and congregate apartment residents.	15.7% of 868 persons interviewed at Time 1 displayed possible major depression and 16.5% displayed minor depressive symptoms. At Time 2 the incidence of major depression for non-depressives (at Time 1) was 5.6% and 6.6% for minor depression. More than 40% of possible major depressives at Time 1 showed no remission of symptoms but more than half of T1 minor depressives showed no depression at T2, however 16.2% had progressed to major depression.	868 residents	GDS-20 and DSM-III-R. Major depression was defined as the presence of a significant dysphoria or a score of ≥ 11 on the GDS, plus 4 additional depressive symptoms as enumerated by the DSM-III-R. Dysphoria without the 4 additional symptoms was labeled minor depression. For those who failed to complete the additional checklist data, GDS scores of 17 for major depression and 11 for minor depression were used.

Table 1. Continued

AUTHOR/S, YEAR	COUNTRY/CITY, AREA/SETTING	METHOD	FINDINGS AND REMARKS	SAMPLE SIZE	DIAGNOSTIC INSTRUMENT AND CRITERIA
Teresi <i>et al.</i> , 2001	USA Nursing homes	Random sample of 319 NH residents drawn from a random sample of 6 downstate New York nursing homes evaluated psychiatrically for depression. Sample of nurse aides, nurses and social workers also assessed the same sample.	14.4% of residents had major and 16.8% minor depression and the prevalence of depressive symptomatology, including possible depression was 44.2%.	319 residents 6 nursing homes	Psychiatrists used the CSDD, the Feeling Tone Questionnaire, the HDRS and the SCID personality disorders scale.
Chow <i>et al.</i> , 2004	Hong Kong Nursing homes	One-off assessment using the Chinese version of the GDS-SF	Significant depressive symptoms detected in 29% of subjects	245 residents	≥8 on GDS-15 for major depression

AGECAT = Automated Geriatric Examination for Computer Assisted Taxonomy; CES-D = Centre for Epidemiological Studies Depression; CSDD = Cornell Scale for Depression in Dementia; DRS = Depression Rating Scale; GDS = Geriatric Depressive Scale; GDS-SF = Geriatric Depressive Scale-Short Edition; GMS = Geriatric Mental State; HDRS = Hamilton Depression Rating Scale; MDS = Minimum Data Set; MMSE = Mini-Mental State Examination; SCID = Structured Clinical Interview for DSM-III

affecting vision (Owsley *et al.*, 2007). A further study identified a relationship between depression and malnutrition (Smoliner *et al.*, 2009) though no clear pathway of causality was apparent.

Individual personality, social history, attitudes and coping strategies

Loss, a major factor in admission into residential care homes, is strongly associated with depression. Personal loss encompasses grief over the death of loved ones, loss of home, pets, social support and close friends; loss of function and control over the body; loss of independence and autonomy; and loss of the familiar (Hyer *et al.*, 2005; Pot *et al.*, 2005; Zeiss, 2005; Choi *et al.*, 2008). An important factor is the loss of control over one's own destiny (Krach *et al.*, 1996). Personal coping styles and attitudes are important in explaining why some people are more negatively affected than others by loss and the presence of death. Cataldo (1994) found "non-hardiness and health-limiting death attitudes" to be reliable predictors of depression, and staff in another study identified social withdrawal (related to despair, loss, grief, loneliness and isolation) as a key indicator of depression (Choi *et al.*, 2009). Lack of assertiveness is likely to lower defenses against institutional risk factors (Segal, 2005). Higher education levels also correlate with greater likelihood of being depressed in long-term care (Eisses *et al.*, 2004), especially when associated with loss of mobility, function and independence.

Residential care home environments

Institutional factors that may contribute to depression include loss of privacy and frustration over shared rooms, noise, institutional furniture and odors, lack of stimulating social programs, lack of close relationships, high turnover rate of staff with little training and many cultural and educational differences, and other frustrations of living in close quarters with strangers under an institutional regime (Hyer *et al.*, 2005; Choi *et al.*, 2008). The medicalized environment of residential home settings and lack of alternative approaches to care have also been identified as depression risk factors (Garavaglia, 2004; Zeiss, 2005), as has the constant presence of death (Cataldo, 1994).

Length of time in care

The evidence suggests that the influence of length of time in care is different for cognitively impaired residents, and more likely to be a negative for the well-being of those without cognitive impairment (Stout *et al.*, 1993; Pot *et al.*, 2005). Many residents admitted with dementia have undiagnosed depression (Sheehan *et al.*, 2007), which is likely

to improve if diagnosed and treated on and after admission (Masand, 1995; Payne *et al.*, 2002). For residents with better cognitive function, the risk of becoming depressed increases with length of stay and an increased sense of hopelessness over health status and lack of autonomy (Jones *et al.*, 2003; Hyer *et al.*, 2005; Pot *et al.*, 2005; Tsai *et al.*, 2005).

Detection of depression

Despite high prevalence, depression is still under-detected in residential care homes (Davidson *et al.*, 2006). The Geriatric Depression Scale (GDS), the Cornell Scale for Depression in Dementia (CSDD), and, in the USA, the mood subscale of the Minimum Data Set (MDS) are the most frequently used tools for screening and detection.

Screening and detection instruments

The GDS has been widely used in residential care homes and several shorter versions have been developed, the most popular being the 15-item version. The original 30-item version (using a cut-off point of ≥ 11) has good psychometric properties. Gerety and colleagues (1994) found moderate to substantial agreement with the DSM-III-R criterion standard for major depression and recommended its use in residential care homes, as both a case finding and severity instrument. Jongenelis and colleagues (2005) found the GDS-30 to have sensitivity of 96.3% for major depression and 85.1% for minor depression compared with psychiatric interview and DSM-IV criteria. The 15-item version is generally preferred over the original as it is quicker to complete (6 minutes versus 12) and has good psychometric properties compared with the original version (McCurren, 2002) and with DSM criteria (Gerety *et al.*, 1994). A five-item version of the GDS is also effective as a screening tool for depression in cognitively intact older adults, with 0.94 sensitivity and 0.81 specificity compared with an evaluation by a geriatrician (Rinaldi *et al.*, 2003). As the GDS relies on self-report, there is debate as to whether it is suitable for use with people with mild to moderate dementia. A recent study comparing the GDS-15 with DSM-IV-TR criteria in people with and without dementia found adequate specificity and sensitivity, suggesting that it may be an appropriate instrument for use in these populations (Lach *et al.*, 2010).

The CSDD has been extensively evaluated for use in residential care homes. The CSDD covers five areas: mood related signs, behavioral disturbances, physical signs, cyclic functioning and ideational disturbances. It takes approximately 30 minutes to complete: 20 minutes with a carer (or other

informant) and 10 minutes with the older person. It is reliable, valid and sensitive, and can differentiate the entire range of severity, including mild to no depression (Alexopoulos *et al.*, 1988). Its limitations are that it takes 30 minutes to complete, requires trained personnel, does not correlate well with a psychiatrist's assessment, and is not always accurate in people with advanced dementia (de Bellis and Williams, 2008). Despite these limitations, de Bellis and Williams concluded that it is the most comprehensive depression screening tool for older people with and without dementia, making it suitable for use in residential care homes. The main advantage of the tool is its use of multiple sources of information. Koritsas *et al.* (2006) suggest that routine use of the CSDD in residential care homes could improve doctor, nurse and personal carer communication, as personal care staff can be informants in the assessment of depression. Poor communication between professionals has been identified as a barrier to identification of depression in residential care homes (Brown *et al.*, 2006).

Seven items from the mandated MDS from the Resident Assessment Instrument in the USA have been validated for use as a depression screening tool known as the MDS Depression Rating Scale (DRS) (Burrows *et al.*, 2000). In the original study the DRS compared favorably with the GDS-15 and the DRS has since been found to have adequate sensitivity and specificity and to be able to be reliably administered via self-report to residents with a MMSE score ≥ 12 (Ruckdeschel *et al.*, 2004). However, other studies have found poor correlation between the DRS and the GDS-15 (McCurren, 2002; Jones *et al.*, 2004; Meeks, 2004). This is probably due to the use of different information sources, as the GDS relies on self-report and the DRS is an observer-rated instrument. It may also be that the tools are measuring different elements of depression. One study found that the MDS identified greater depression among people with cognitive impairment and the GDS-15 identified more depression in people with better cognitive functioning (Jones *et al.*, 2004). Meeks (2004) did not recommend the use of the MDS DRS as a screening tool for residential care homes because of its poor correlation and poor psychometric properties compared with the GDS.

A single screening question "Do you feel that your life is empty?" was trialed as a screening tool for depression in residential care homes in London and compared with the CSDD. A "yes" response indicated that the resident was twice as likely to have depression and a "no" response meant that there was a 75% chance that they did not have depression. Half of the study sample ($n = 209$) scored less than 15 on the Mini-Mental State Examination

(MMSE) but there was no difference in sensitivity or specificity for the screening question for different levels of cognitive impairment. Watson *et al.* (2009) trialed five strategies for depression screening in residential aged care. The best strategy was a two-item version of the Patient Health Questionnaire (PHQ-2) with a sensitivity of 0.80 and specificity of 0.75 as it was brief and easy to administer.

Under-detection

Nurses and personal care staff should be well placed to detect depression because of their close involvement with residents, but most are not very good at recognizing the symptoms of depression (Leo *et al.*, 2002; Ayalon *et al.*, 2008). There is a poor relationship between resident and nurse CSDD ratings (Burrows, 1995). Brühl and colleagues (2007) found the GDS detected 50% more depression than did nurses. Nurses recognized depression in only 55% of residents diagnosed via a psychiatric interview using DSM-IV criteria and they detected depression in 40% of residents not diagnosed as depressed. In the study by Watson and colleagues (2009) mentioned above, measures completed by care staff (modified version of the CSDD and a one-item screen) failed to detect depression adequately. A UK study conducted by Bagley and colleagues (2000) found that only 15–27% of 308 newly admitted residents with depression were identified as depressed by staff (GDS compared with staff informant interviews). They concluded that more education was needed, as less than 2% of staff in their study had received in-service training on depression in older people. Ayalon *et al.* (2008) found that paraprofessional staff working in residential care homes were more likely to view depression as a normal phenomenon, had less accurate beliefs about signs and symptoms and were less familiar with effectiveness of treatments for depression than nurses, social workers and activity staff. Education should be targeted to meet the needs of this group, as they provide the bulk of the care to residents.

Education

A number of studies have investigated the impact of education on detection and treatment of depression in residential care homes (McCabe *et al.*, 2008). In an American study investigating nursing home physicians' beliefs about how well they can detect and treat depression, excellent training (versus good, fair, poor or none) and the use of screening tools were associated with better recognition and treatment skills, and practice guideline awareness was associated with greater self-reported treatment competency (Banazak *et al.*, 1999). A single

education session for general practitioners (GPs) on late life depression was associated with improved GP recognition of depression in nursing home residents in an Australian study (Davidson *et al.*, 2006). In another Australian study, staff education was one component of a successful multifactorial intervention for improving detection and treatment of depression in residential care homes (Llewellyn-Jones *et al.*, 1999). Dutch nursing home staff randomized to a 4-hour training session on recognition of depression through observation of ADLs (using the Behavior Rating Scale for Psychogeriatric Inpatients) were better able to recognize depression than those in the control group. The ability to identify residents who were not depressed did not differ between groups. The use of video-based training also improves nursing staff's ability to detect mood symptoms in nursing home residents (Wood *et al.*, 2002). Having a mandated screening tool also improves recognition and initiation of treatment for depression in residential care homes (Boyle *et al.*, 2004).

Treatment and management of depression in residential homes

Assessment is an essential pre-requisite to treatment (Morris, 2008) and may identify factors that could cause or contribute to depression, such as drug reaction, medical illness (Morris, 2008), pain (Asghari *et al.*, 2006), or environmental factors (Choi *et al.*, 2008). Addressing such issues may alleviate depressive symptoms.

Treatment approaches

The main approaches in treatment of depression anywhere at any age can be divided into biological (e.g. antidepressants and electroconvulsive therapy (ECT)), psychological (e.g. cognitive behavior therapy) and social (e.g. recreational activities). Treatments may be used singly or in combination depending on circumstances. Table 2 displays a summary of representative treatment studies in residential care homes.

Antidepressants are the most common treatment for depressed residents (Brown *et al.*, 2002; Carlson and Snowden, 2007). There is evidence that antidepressants are effective for treating depression, in particular, major depression in care home residents (Rovner and Katz, 1993; Snowden *et al.*, 2003). It is suggested that antidepressants should be included in the first-line treatment for residents with major depression (American Geriatrics Society and American Association for Geriatric Psychiatry, 2003). Several different classes of antidepressant are available (Baldwin, 2008) and the choice

of medication should be based on the side effect profile, potential interactions with other medications and the resident's comorbid illnesses (Masand, 1995; Rosen *et al.*, 2000; Kallenbach and Rigler, 2006). Antidepressants should be started at a low dose and be increased slowly (Snowdon *et al.*, 1996; Bell and Goss, 2001; American Geriatrics Society and American Association for Geriatric Psychiatry, 2003; Kallenbach and Rigler, 2006). ECT is usually administered in hospital and is reserved for severe depression, but because it works quickly ECT should be considered as the first-line treatment for residents at high risk of suicide (Kallenbach and Rigler, 2006).

Numerous psychological approaches are appropriate to treat depression in residential care homes. These include behavior therapy (Meeks and Depp, 2003; Meeks *et al.*, 2008; 2009), cognitive therapy (Zerhusen *et al.*, 1991; Tsai *et al.*, 2008), cognitive behavior therapy (CBT) (Hyer *et al.*, 2008), and life review approaches (Chao *et al.*, 2006; Plastow, 2006). Social interventions include various types of recreational activities (Snowden *et al.*, 2003), e.g. therapeutic biking programs (Fitzsimmons, 2001; Buettner and Fitzsimmons, 2002). Most of the studies cited above reported significant beneficial effects and some review papers have concluded that psychosocial approaches are effective in treating depression, in particular minor depression, in residential care homes (Snowden *et al.*, 2003; Hyer *et al.*, 2005). Consistently, it is suggested that non-pharmacological methods should be considered as first-line treatment for residents with minor depression (American Geriatrics Society and American Association for Geriatric Psychiatry, 2003). It is important to note that many of these approaches were delivered in a group format (Bharucha *et al.*, 2006). Group therapy is a more practical and cost-effective strategy in the residential home environment (Carlson and Snowden, 2007). Individual psychotherapy is not available in most residential care homes (Snowden *et al.*, 2003) due to a shortage of trained psychotherapists, cost, and, in many countries, a lack of any tradition of psychotherapists working in residential care homes.

There is also some evidence that other approaches, such as staff training (Glaister and Blair, 2008), changes in health service model (Snowden *et al.*, 2003) and residential home environment (Bell and Goss, 2001) might also be effective in reducing residents' depressive symptoms.

It seems likely that combining medical and psychosocial approaches would be the best way to manage depression in residential care homes (McCurren *et al.*, 1999; American Geriatrics Society and American Association for Geriatric

Table 2. Representative studies of treatment for depression in residential homes for the elderly

AUTHOR, YEAR	COUNTRY	SETTING	MEASURES	DESIGN	N	TREATMENT(S)	LENGTH	RESULT
Buettner <i>et al.</i> , 2002	USA	Skilled long-term care facility and assisted living centre	MMSE, 15 item GDS, CMAI	RCT	70	Therapeutic biking in residents with dementia vs. control	12 weeks, including phase 1 (2 week of intense treatment) and phase 2 (10 week of maintenance)	Mean GDS decreased significantly from 8.00 to 4.48 after phase 1 and 3.14 after phase 2 in the treatment group; no changes in the control group
Burrows <i>et al.</i> , 2002	USA	Long-term care facility	HDRS, CSD, CGI-S, 15 Item GDS, MMSE	RCT	24	Paroxetine vs. placebo	8 weeks	No differences on CGI-S between the two groups, group comparisons could not be conducted on HDRS, CSD, and GDS
Cernin <i>et al.</i> , 2009	USA	Senior assisted living community	GDS, MLDT, PES-AD, Global mood	Cross over	15	Individual psychotherapy (pleasant event activities); immediate treatment vs. wait-list treatment	12 weeks, 3 30-min sessions per week	Significant decrease in mean GDS (from 12.33 to 10.66) in the whole treatment sample
Chao <i>et al.</i> , 2006	Taiwan	Nursing home	Chinese version of GDS-S, RSE, QLI	Quasi-experimental	24	Group psychotherapy; reminiscence group therapy vs. control	9 weeks, one hour per week	Significant improvement in self-esteem (24.45 to 29.18), but not in depression and life satisfaction in the treatment group one week after treatment. No significant changes in these measures in the control group

Fitzsimmons, 2001	USA	Long-term facility	GDS-S	RCT	39	Small-group socialization and recreational bicycle therapy vs. wait-list control	2 weeks, 5 60 min sessions per week	Mean GDS score decreased significantly from 7.68 to 4.21; scores did not change in control group
Hyer <i>et al.</i> , 2008	USA	Veteran's nursing home	GDS-S, LSI-Z, MMSE	RCT	25	CBT; 2 trials (1) initial trial where group, individual, and staff therapy (GIST) vs. treatment as usual (TAU) and (2) the continuation trial, where the GIST group remained and the TAU group crossed over to GIST	Initial trial consisted of 15 sessions (up to 2 individuals and 13 groups sessions), the continuation trial consisted of 14 sessions (absent the initial individual session)	Significant differences between GIST and TAU in favour of GIST on the GDS-S and LSI-Z after the initial trial. The GIST group maintained improvements after the continuation trails. After crossover to GIST, TAU group showed significant improvement in GDS-S.
Jordan <i>et al.</i> , 2009	Australia	Residential aged care facility	CMAI, CSDD, PAS	Controlled experimental	Staff = 93, residents = 45, family re-members = 33	Multiple intervention, consisting of staff depression training program, three interventions targeted at residents (key worker, life story book, walking and talking program)	Training program: eight sessions ranging from 1.5 to 2 hours Three residents interventions: 12 weeks	The training program was positive received by the staff. Staff knowledge and self-efficacy have increased significantly for the treatment group and maintained over time. There were more positive feelings and reactions to entering the residential facilities among residents four to six months following entry in the treatment group.

Table 2. Continued.

AUTHOR, YEAR	COUNTRY	SETTING	MEASURES	DESIGN	N	TREATMENT(S)	LENGTH	RESULT
Llewellyn-Jones <i>et al.</i> , 1999	Australia	Residential care facility	GDS	RCT	169	“Shared care intervention” public health approach aimed at improving detection, self-referral, and access to treatment services vs. usual care	Mean interval between baseline and follow up was 40.9 weeks	GDS scores lower in intervention group by an average of 1.42 points
McCurren <i>et al.</i> , 1999	USA	Nursing home facility	GDS	Randomized trial	85	Individual psychotherapy and paraprofessional visits; individualized, unstandardized intervention that included encouraging behavioral activation and social engagement vs. usual care	24 weeks, 2 visits per week by volunteer, 1 visit per week by nurse	GDS decreased significantly in intervention group, not in control group
Meeks and Depp, 2003	USA	Nursing homes	SADS, GAS, HDRS, GDS, MMSE	RCT	20	Individual behavioral therapy, pleasant event behavioral intervention vs. treatment as usual	10 weeks (6 weeks active treatment and 4 weeks maintenance), one session per week	The treatment led to increased activity level and improvement in diagnosis of depression.
Rosen <i>et al.</i> , 2000	USA	Center for Jewish Seniors	MMSE, GAS, HDRS, the UKU side effect rating scale	Experimental	12	Medication-sertraline	6 weeks, residents started on 50 mg/day and 4 weeks later, the psychiatrist reviewed the residents with an option of increasing the dose to 100 mg/day for the final 2 weeks	All residents tolerated their medication without any significant side effects. The HDRS and GAS scores improved significantly and 75% of the residents met criteria for ‘remission’.
Tsai <i>et al.</i> , 2008	Taiwan	Nursing home	GDS, MMSE, the Barthel Index	Quasi-experimental	63	Self-administered self-worth therapy and dignity therapy vs. non-treatment control	4 weeks, one 30-minute session per week	Depressive symptoms at 2-month follow-up were more effectively decreased in the experimental group than in the control group

Zerhusen <i>et al.</i> , USA 1991	Nursing homes	BDI	RCT	57	Group psychotherapy; cognitive therapy vs. music therapy vs. usual care	10 weeks, 2 60-min sessions per week	BDI scores lower in cognitive therapy group (mean change of 12.37) compared to music group (1.53) and control (2.63)
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Note: BDI = Beck Depression Inventory, CGI-S = Clinical Global Impression of Severity, CMAI = Cohen-Mansfield Agitation Inventory, CSDD = Cornell Scale for Depression in Dementia, GAS = Global Assessment Scale, GDS = Geriatric Depressive Scale, GDS-S = Geriatric Depressive Scale-Short Edition, HDRS = Hamilton Depression Rating Scale, LSI-Z = Life Satisfaction Index Z, MLDT = Macneil-Lichtenberg Decision Tree, MMSE = Mini-Mental State Examination, PAS = Psycho-geriatric Assessment Scales, PES-AD = Pleasant Events Schedule For Alzheimer's Disease, QLI = Quality of Life Index, RSE = Rosenberg Self-Esteem Survey, SADS = Schedule for Affective Disorders and Schizophrenia

Psychiatry, 2003; Morris, 2008). However, no recent studies have systematically investigated the possible benefits of such a combined approach.

Over the past 12 years there has been increasing interest in multifaceted approaches to the treatment of depressed residents (Llewellyn-Jones *et al.*, 1999; 2001; Brooker and Woolley, 2007; Brooker *et al.*, 2007; Hyer *et al.*, 2008; Jordan *et al.*, 2009). For example, the multifaceted shared care intervention used by Llewellyn-Jones *et al.* (1999) included: (a) multidisciplinary consultation and collaboration to remove barriers to care, (b) training of GPs and carers in detection and management of depression, (c) depression-related health education and activity programs for residents. Similarly the British Enriched Opportunities program (Brooker and Woolley, 2007; Brooker *et al.*, 2007) included individualized assessment of residents, case work, an activity and occupation program, staff training, management and leadership. These studies reported significant improvement in residents' depression and suggest that integrating multiple modalities should be the focus of future research.

As discussed above, it can be difficult to identify depressed residents. It is also challenging to treat them effectively. Some antidepressants, such as selective serotonin reuptake inhibitors (SSRIs), may have limited efficacy in residents with comorbid dementia (Burrows *et al.*, 2002). In addition, some residents may not be able to participate effectively in psychotherapy because of their limited cognitive function (Kallenbach and Rigler, 2006; Carlson and Snowden, 2007).

There are important methodological limitations in many treatment studies. These include small sample sizes (Bharucha *et al.*, 2006), variable study inclusion criteria (Snowden *et al.*, 2003; Hyer *et al.*, 2005), short treatment duration (Hyer *et al.*, 2005), few randomized controlled trials (Carlson and Snowden, 2007) and heterogeneous outcome measures (Bharucha *et al.*, 2006). However, these studies do provide strong evidence that depression is treatable in nursing home residents (Hyer *et al.*, 2005).

Issues in treatment of depression

In spite of the evidence that depression is treatable in residential homes, many studies have found that depression is under-treated in this group (Masand, 1995; Hyer *et al.*, 2005). About 50%, or even up to 75% of residents with depression were receiving no treatment at all (Rovner *et al.*, 1991; George *et al.*, 2007).

Although there is evidence that the initiation of treatment for depression has improved in recent

years (Boyle *et al.*, 2004), the treatment is often inadequate or inappropriate. First, there is a reliance on antidepressants and very few residents receive non-pharmacological treatment for depression (George *et al.*, 2007; Choi *et al.*, 2009). Second, many residents receiving antidepressants are on sub-therapeutic doses (Draper *et al.*, 2001; Brown *et al.*, 2002). There is also evidence that antidepressants are rarely reviewed by physicians (O'Connor *et al.*, 2010). Given these problems, it is not surprising that only a minority of residents on antidepressants show improvements in depressive symptoms (Draper *et al.*, 2001; Boyle *et al.*, 2004). The findings of inadequate treatment of depression in residential care homes have major implications for the management of depression in these environments. Many researchers have suggested that the management should go beyond first generation problems, such as identification and initial treatment, to include second generation problems, such as strategies for partial- and non-responders, and ongoing management through the maintenance phases (Draper *et al.*, 2001; Datto *et al.*, 2002; Weintraub *et al.*, 2002; Boyle *et al.*, 2004; Carlson and Snowden, 2007).

Outcome and prognosis of depression in residential care homes

As discussed in the etiology section, there is a bi-directional relationship between depression and risk factors for depression. Depression in residential homes is linked to poor physical health, decreased functional and cognitive abilities, pain, and poor nutrition (Parmelee *et al.*, 1991; 1992a; Anstey *et al.*, 2007; Smoliner *et al.*, 2009). Depressed residents also have lower levels of social engagement (Achterberg *et al.*, 2003; Tsai *et al.*, 2009), more behavioral and vocal disturbance (Dwyer and Byrne, 2000; Brodaty *et al.*, 2001), poorer quality of life (Smoliner *et al.*, 2009) and increased use of health care services (Smalbrugge *et al.*, 2006b).

The most alarming outcome of depression is that it is a significant risk factor for mortality in care home residents. Rovner *et al.* (1991) examined the relationship between depression and mortality in 454 nursing home residents. The likelihood of death at one year was increased by 59% for residents with major depression compared to those with only depressive symptoms or no depression. Ashby *et al.* (1991) followed 973 care home residents for 8 to 16 months and found that depression was associated with increased mortality. In particular, depressed residents were three times more likely to die than

those without depression or dementia. In the study by Parmelee *et al.* (1992a) of 898 nursing home and congregate apartment residents, the mortality rates were 33% for residents with major depression, 28% for residents with minor depression and 16% for non-depressed residents after 18 months. This result indicates a systematic and significant increase in mortality with increasing severity of depression. In one small study, the mortality rate for depressed residents reached 59% after four years (Ames, 1992).

These studies indicate that depression is associated with increased mortality in residential care homes for older people. However, there is controversy about the mechanism by which depression exerts its effect (Samuels and Katz, 1995). While some studies found that depression was an independent risk factor for mortality in residents (Rovner *et al.*, 1991; Shah *et al.*, 1993), others found no significant relationship between depression and mortality when demographic variables and correlates of depression, such as physical health, functional impairment, cognitive status, and history of depression, were taken into account (Parmelee *et al.*, 1992a; Cuijpers, 2001). The different results might be due to methodological differences, such as the definition of depression, sampling strategies and the sample sizes, and more studies are needed for a clearer understanding of the relationship between depression and mortality among those who live in residential care homes.

There is evidence that much depression in residential care homes is chronic, with persistence rates ranging from 44% to 63%. Sutcliffe *et al.* (2007) followed 308 newly admitted UK residents for nine months. Of the residents who were depressed at baseline, 44% were still depressed after five and nine months. Similarly, Barca *et al.* (2010) reported a persistence rate of 45% after 12 months. Smalbrugge *et al.* (2006a) followed 350 Dutch nursing home residents for six months and reported a persistence rate of 63%. This figure is similar to Ames *et al.* (1988), who found that of residents surviving after four years, 63% of previously depressed residents were still depressed and only 17% had recovered. Weyerer *et al.* (1995) followed 120 newly admitted residents (60 from residential care homes in the city of Mannheim Germany, and 60 from care homes in London, UK) for eight months. The prevalence of depression was high in both cities at admission (35% in Mannheim and 48% in London) and did not change significantly over eight months. In both places, depression at baseline was the best predictor for depression three months and eight months later; sex, age, social isolation, ADLs, and cognitive impairment at the time of admission were not

significantly associated with depression either three or eight months later.

The persistence rate seems to be lower for depressed residents with dementia. Payne *et al.* (2002) followed 201 residents with cognitive impairment. They found that at six months, only 15% of the depressed residents were still depressed, and at 12 months only 7.5% were depressed. The study suggested that the decline in depression over the year after admission likely reflects appropriate diagnosis and treatment of depression in residential care homes.

Depression might also be a risk factor for suicide in residents (Reiss and Tishler, 2008). A study in Finland found that 12 nursing home residents died by suicide in a 12-month period, accounting for 0.9% of all suicides in Finland in that year. Nine (75%) of them were diagnosed with a depressive syndrome, although only three (33%) were recognized by staff as having depressive symptoms before their death (Suominen *et al.*, 2003).

It is important to point out that there are as yet relatively few outcome studies of depression in residential homes and most of those studies have short follow-up periods (Llewellyn-Jones and Snowden, 2007). More longitudinal studies are needed for a better understanding of the outcomes of depression in residential care homes.

Conclusion and recommendations for action

Despite increased detection and treatment of depression in recent years (Boyle *et al.*, 2004), depression remains a significant problem for older people living in residential homes (Snowdon, 2010). Prevalence remains high and the few longitudinal studies that have been conducted show high persistence of depression over time. Care staff still lack knowledge and understanding of depression with many seeing depression as a normal phenomenon for older people (Ayalon *et al.*, 2008). Depression is therefore often not detected or treated. This lack of detection and treatment may have serious consequences, as depression does not often remit spontaneously in these home residents (Smalbrugge *et al.*, 2006a; Barca *et al.*, 2010) and is a significant risk factor for mortality (Ashby *et al.*, 1991; Rovner *et al.*, 1991; Shah *et al.*, 1993), and suicide (Suominen *et al.*, 2003). Detection is the essential first step in initiating assessment and treatment for depression.

Further research is needed to investigate those treatment approaches that appear promising, particularly multifaceted (Llewellyn-Jones *et al.*, 1999) and psychosocial approaches (Snowden

et al., 2003; Hyer *et al.*, 2005). There is also a need for more longitudinal studies to inform us about incidence, persistence and outcomes of depression.

In clinical practice, there is a need for education of care staff (particularly personal carers) to ensure they understand that depression is a serious and treatable condition and that they recognize depressive symptoms and signs. Screening for depression should be mandatory in all residential care homes and linked to a process for referral and initiation of assessment and treatment. Finally, residential care homes could address environmental factors associated with depression, such as lack of privacy, and institute interventions known to benefit people with depression, such as recreational activities, for all residents as preventive measures for depression.

The devotion of an entire issue of *International Psychogeriatrics* (volume 22, issue 7) to the topic of mental health issues in long-term care homes, and the existence of the International Psychogeriatric Association's Task Force on Mental Health Services in Long-term Care Homes (Conn and Snowden, 2010) indicate both the importance of depression in this setting as well as a determination to do something about it. However, a quarter of a century after one of us commenced a doctoral project which focused on the treatment of depression in residential care (Ames, 1990), the situation for many depressed residents around the world is still far from satisfactory and much work remains to be done, not least in ensuring the translation of existing knowledge into routine practice.

Conflict of interest

None.

Description of authors' roles

All five authors collaborated closely in reviewing the literature, and writing and revising this guest editorial.

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