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The Role of Symptom Presentation in the Diagnosis and Treatment of the Depressed Elderly:

A Closer Look at Anhedonia and Dysphoria

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Submitted in partial fulfillment of degree of Doctor of Philosophy, Clinical Psychology

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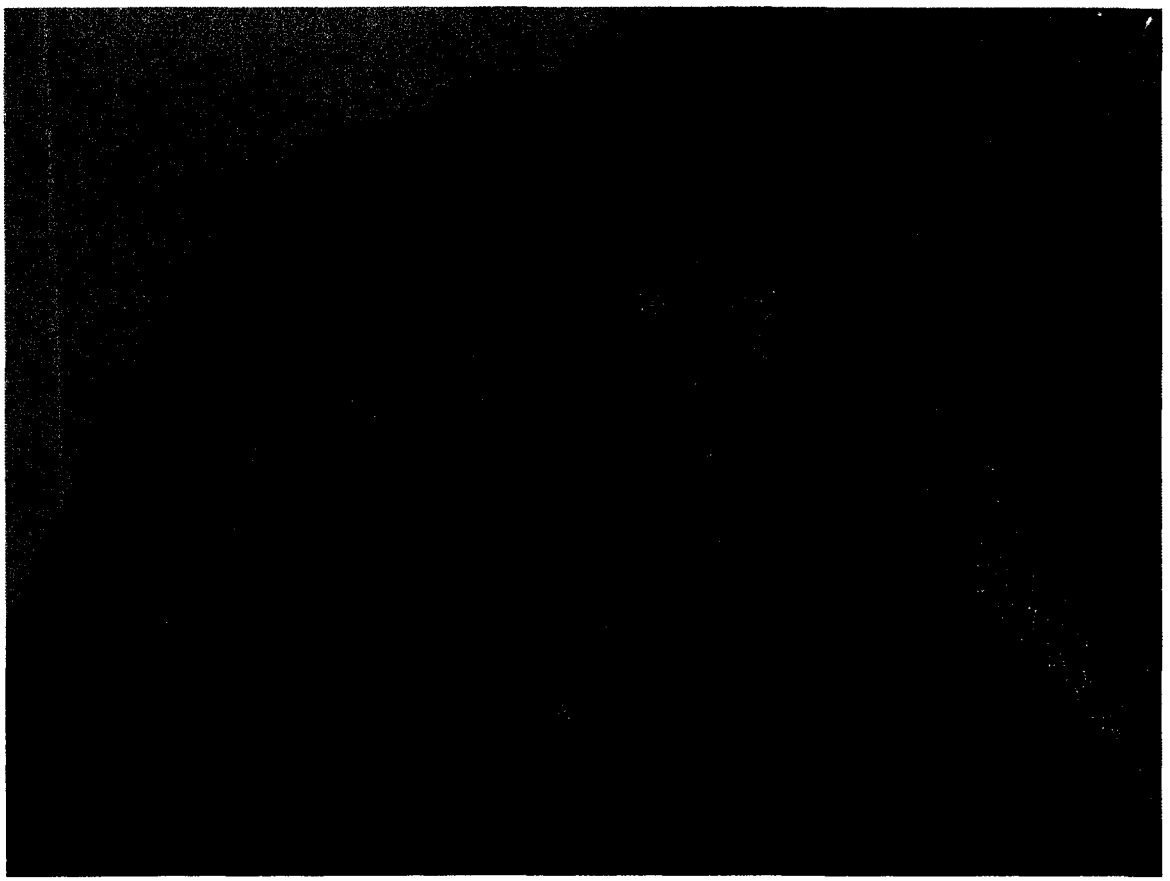
Dedication



In memory of Wayne "Daddy" Clyburn

3 July 1943 – 13 May 2003

My Kindred Spirit and Ever-Present Inspiration

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Wow, it's done. It's really done. I have fantasized about writing this section of my thesis for so long and here it goes...

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Abstract

The main objective of this study was to examine how symptom presentation relative to anhedonia and dysphoria influences diagnosis and treatment patterns documented on the Minimum Data Set for long-term care. It was hypothesized that diagnosis and treatment for depression would be more likely when dysphoria was present. Two samples were included in the present study. The first sample was comprised of 162 residents from three nursing homes and a Veterans' Care facility in Ontario, with an average age of 82.92 (SD=6.86). The second sample consisted of 1477 nursing home residents aged 65 years and over (average age=83.69, SD=7.93) from 22 facilities across Ontario. The prevalence of identified depression in each sample was 30% and 16%, respectively. A large majority of the residents identified as depressed in each sample (on average, 75%) were receiving antidepressants. The results of logistic regression analyses applied to the data indicated that a diagnosis of depression was more likely if the resident was female, of younger age, had less cognitive impairment, and clinically significant levels of dysphoria. These results lend some support to the assertion that long-term care residents presenting with anhedonia in the absence of dysphoria, or "depression without sadness", may be particularly vulnerable to the under-recognition of depression. Further logistic regression analyses of the larger sample revealed that antidepressant treatment was more likely if the resident was younger, had less cognitive impairment, and had clinically significant levels of anhedonia, dysphoria, or both. The findings indicated that most identified depression was treated, but also suggest that certain subgroups may be at risk for the under-recognition of depression.

The Role of Symptom Presentation in the Diagnosis and Treatment of the Depressed Elderly: A Closer Look at Anhedonia and Dysphoria

Depression in older adults was identified as a significant public health problem over a decade ago (National Institute of Health, 1992) and more recently in 1999 by the U.S. Surgeon General (U.S. Department of Health and Human Services, 1999). The magnitude of its impact has been manifested in the suffering it creates for the individual, as well as in the burden it has placed on their caregivers and the health care system. As the population of individuals over age 65 continues to grow, clinicians will be challenged with the diagnosis and treatment of more late-life depression.

The research is clear that a significant amount of late-life depression goes unrecognized and untreated (Harmon, Schulberg, Mulsant, & Reynolds, 2001; Lebowitz et al., 1997; Mann, 1995), particularly among older nursing home residents (Brown, Lapane, & Luisi, 2002; Rovner et al., 1991). These difficulties have been noted to exist even when the older adults are pervasively depressed and at suicidal risk (Conwell, Olsen, Caine, & Flannery, 1991; Jorm, 1995; Kemp, Staples, Lopez-Aqueres, 1987; Mann, 1995). The implications of this neglect are staggering, given that depression in older people increases the risk of morbidity and mortality from physical illness (Frasure-Smith, Lesperance, & Talajic, 1993, 1995; Katz, 1996; Schultz et al., 2000), disability in physically healthy individuals (Bruce, Seeman, Merrill, & Blazer, 1994; Wells, Stewart, & Hays, 1989), suicide (U.S. Department of Health and Social Services, 1999), and cognitive decline (Yaffe et al., 1999). The health care costs associated with depression are also alarming, even in comparison with chronic medical illness and physical impairment (Fries, Mehr, Schneider, Foley, & Burke, 1993; Wells, Stewart, & Hays,

1989), after adjusting for medical comorbidity (Simon, Vonkorff, & Barlow, 1995), and even when accounting for depressive symptoms without a formal diagnosis of depression (Hays, Wells, & Sherbourne, 1995).

The diagnosis of depression in the elderly, and particularly in institutionalized populations, is further complicated by age differences in depressive symptom experiences. These differences include a greater frequency of somatic symptoms (Blazer, Bachar, & Hughes, 1987), and more anhedonia ("depression without sadness") than dysphoria present in older adults (Gallo & Rabins, 1999). This pattern of anhedonia vs. dysphoria is believed to be even more pronounced among the institutionalized elderly than community residents (Stones, 2000). Depression that has anhedonia as its prevailing symptom presents a further challenge in diagnosis. It is characterized by a quieter, less typical presentation of depression, particularly when the individual's withdrawal from families, friends, and activities of interest is not accompanied by verbal complaints of distress (Kaplan & Sadock, 1991). When this withdrawal occurs in the context of cognitive impairment, the challenge of accurately diagnosing depression may be even greater. The expressions of sadness and behavioural disturbances that characterize dysphoria represent a more typical presentation of depression and more direct evidence of the disorder.

In light of suggestions that the depressive symptoms presented by the elderly individual are related differentially to the likelihood of the depression being detected or diagnosed (e.g., Steffens et al., 2000), it could also be argued that symptom presentation plays a role in the likelihood of receiving treatment. This idea has not been empirically tested.

The purpose of the present investigation is to test and extend the hypothesis that symptom presentation plays a role in the underrecognition and undertreatment of depression for the institutionalized elderly. Using data from the Minimum Data Set 2.0 (MDS 2.0; Morris, Hawes, Murphy, & Nonemaker, 1995), an international assessment tool that aims to improve the quality of care of long-term care residents, behavioural and emotional indicators relative to dysphoria and anhedonia will be investigated. The relationship between these indicators, MDS scale scores, and the likelihood of a depression diagnosis and treatment will be the focus of the investigation.

The Magnitude of Late-Life Depression: Its Prevalence and Impact

Prevalence of major depression and depressive symptomatology. Epidemiological data have generally shown a lower prevalence of major depression in elderly compared to younger adults (Blazer, Hughes, & George, 1987; Kessler et al., 2003; Newmann, 1989; Weissman, Bruce, Leaf, Florio, & Holzer, 1991). As summarized in Table 1, prevalence estimates for a Major Depressive Disorder among community-dwelling older adults generally fall between 1% and 5% (Baltes, Mayer, Helmchen, & Steinhagen-Thiesen, 1993; Beekman et al., 1995; Blazer, Burchett, Service, & George, 1991), with most studies reporting rates in the low end of this range. These rates are higher for nursing home residents, with estimates ranging from 10-20% (Brown, Lapane, & Luisi, 2003; Jones, Marcantonio, & Rabinowitz, 2003; Jongenelis et al., 2004; Parmelee, Katz, & Lawton, 1989).

Although epidemiological data have generally shown a lower prevalence of diagnosed major depression in the elderly compared to younger adults, higher rates of depressive symptoms are reported for those above 65 years of age (Gurland, Wilder, &

Berkman, 1988; Newmann, 1989). Prevalence estimates of elderly community residents meeting clinically significant cut-off scores for depressive symptoms generally range from 9.0% (Blazer et al., 1991; Stallones, Marx, & Garrity, 1990) to 16% (Murrell, Himmelfarb, & Wright, 1983). Again, estimates are higher among institutionalized samples, ranging between 23% and 43% (Jongenelis et al., 2004; Katz, Lesher, Kleban, Jetanandani, & Parmelee, 1989; Parmelee, Katz, & Lawton, 1989).

Table 2 presents a summary of the prevalence estimates of depressive symptomatology in community and residential samples. Clearly, when clinically significant depressive *symptoms* are used to indicate depression rather than a depression *diagnosis*, higher prevalence rates are reported. It has been suggested that this trend provides evidence that the symptoms endorsed by older individuals may not fit well with existing diagnostic criteria (Gallo, Anthony, & Muthén, 1994).

Significantly higher rates of depressive disorders and clinically significant symptoms are also found among the institutionalized elderly than in those living in the community. Using data from the Epidemiologic Catchment Survey, Blazer (1989) calculated that the inclusion of older subjects with major depression in nursing homes would have raised the one-year prevalence rates for those over age 65 years from 0.9 to 1.4, or by 56%. The rate of depression can be even higher among nursing home residents who have been newly admitted, with these individuals being twice as likely to receive such a diagnosis than those who are not recent admissions (Parmelee, Katz, & Lawton, 1989).

Blazer and colleagues (1991) further proposed that the wide variability within prevalence estimates can largely be attributed to the approach used to define or measure

depression. In at least one study (i.e., Gottfries, 1997), the prevalence of depression was operationalized by the proportion of patients who had been prescribed antidepressants, discounting the possibility that not all depression is treated.

The inclusion of a disproportionate number of somatic items within the content of a scale has also been identified as having an influence on prevalence estimates. For example, Ernst and Angst (1995) reviewed the prevalence rates given in over 15 studies on late-life depression and concluded that an increase in depressive symptoms with age was strongly associated with a higher proportion of somatic items within the scales used. When the items were comprised mainly of symptoms of psychological distress, such as dysphoria, there was a moderate drop or leveling off of depression at age 65+ years.

In addition to inconsistencies in prevalence estimates being attributed to the scales used to assess depression, other explanations offered include the suggestion that depressed elderly subjects are lost to prevalence estimates by institutionalization and death. O'Brian and Ames (1994), for example, concluded that there is a direct influence of depression on mortality by increasing vulnerability to somatic illness, the risk of which tends to be higher among older individuals. Thus, some elderly depressives are lost to epidemiological studies because they have worse health and die earlier than subjects who are not depressed, thereby underestimating the prevalence of late-life depression.

The consequences of depression. The impact of the depression on the elderly individual and society in general is far-reaching. These consequences relate to negative health effects, poorer compliance with treatment, greater health care utilization, and in the most compelling form, mortality due to either suicide or failing health.

Depression has been found to be an independent risk factor for the incidence of ischemic heart disease in individuals 65 years and over (Roose & Sackheim, 2004). In individuals who have already been diagnosed with heart disease (e.g., myocardial infarction, angina), comorbid depression is associated with an increased risk of cardiovascular mortality (Roose & Sackheim, 2004). Specifically, one study indicated that severe levels of depressive symptoms increased the 6-year mortality rate of older adults with cardiovascular disease by 24% (Schultz, Martire, Beach, & Scheier, 2000). There is also research suggesting that older individuals with myocardial infarction and comorbid depression were five times more likely than those who were not depressed to be deceased at six-month follow-up (Frasure-Smith, Lesperance, & Talajic, 1993). However, conclusions regarding the increased risk of mortality among the depressed elderly are controversial. Despite the numerous reports of increased mortality rates related to depression (e.g., Penninx et al., 2001), there is some evidence to indicate that the relationship between depression and mortality disappears among community dwellers when cognitive and functional status are controlled (Blazer, Hybels, & Pieper, 2001). Thus, it has been proposed that depression does pose an increased risk of mortality through various pathways, such as physical and cognitive decline.

Not surprisingly, older adults with depression also incur greater health care costs (Fries et al., 1993) and are more frequent consumers of health care resources (Callahan, Hui, Nienaber, Musick, & Tierney, 1994). Depressed elders visit the emergency room three times as much as those who are not depressed (Katon & Schulberg, 1992). Co-morbid depressive symptoms, particularly in late-life, are also associated with reduced

compliance with treatment for various medical disorders, including diabetes (Viinamaki, Niskanen, & Uusitupa, 1995).

The association between depression and suicide in older adults is well-established (Conwell, Duberstein, Cox, Herrmann, Forbes, & Caine, 1996), with the magnitude of this association increasing with advancing age (Conwell & Brent, 1995). Both major and minor depressions are significant predictors of suicide in later life (Conwell et al., 2001; Harwood, Hawton, Hope, & Jacoby, 2001; Waern et al., 2002). In a review of psychological autopsy studies of older suicide victims, Conwell (2004) concluded that 71% to 95% of elderly suicide victims had a diagnosable major depressive disorder at the time of death. In the only prospective cohort study to date examining suicide in the elderly, subjects with clinically significant depressive symptomatology were 23 times more likely to commit suicide than asymptomatic subjects (Ross, Bernstein, Trent, Henderson, & Paganini-Hill, 1990). The reasons for suicide differ between older and younger adults, with the former occurring more often in the context of physical illness and bereavement (Carney, Rich, Burke, & Fowler, 1994; Duberstein, Conwell, & Cox, 1998).

The Presentation of Depression in the Elderly

Diagnostic categories. The symptoms of Major Depressive Disorder, as defined in the Diagnostic and Statistical Manual for Mental Disorders (DSM)- Fourth Edition – TR (American Psychiatric Association, 2000), and outlined in Table 3, include dysphoria (depressed mood), anhedonia (diminished interest or pleasure in all or nearly all activities), appetite or weight disturbance, sleep disturbance, psychomotor agitation or retardation, loss of energy, worthlessness or guilt, inability to concentrate, and/or

recurrent thoughts of death or suicide. At least five symptoms must be present for most of the day of nearly every day during a two-week period. One of these symptoms must be either dysphoria or anhedonia. This disorder is often recurrent and can present in the elderly as an initial or recurrent episode.

Most of the literature focuses on major depressive disorder. It is not clear, however, how fully these conventional diagnostic categories represent the experience of affective disorders among older adults. For example, a requirement that symptoms be clinically significant or cause impaired social, occupational, or other functioning was introduced in the DSM-II-R for dysthymia and in the DSM-IV for major depressive disorder. However, it has been suggested that this criterion could affect diagnosis in older adults disproportionately, as there are often lower functional expectations in the post-retirement years (Fiske, Kasl-Godley, & Gatz, 1998; Friedhoff, 1992). In addition, the DSM-IV does not allow the diagnosis of Major Depression if it can be established that the depressive symptoms are a direct physiological effect of a medical disorder or substance. This rule has been criticized by Alexopoulos and Apfeldorf (2004), who pointed out that although co-morbidity with medical disorders is the rule, rather than the exception, the causal relationship between medical illness and depression cannot be easily ascertained. Certainly, there is evidence that physical decline can lead to the onset of depression (Kennedy, Kelman, & Thomas, 1990; Steffens, Hays, & Krishnan, 1999). However, there is also evidence that depression can exacerbate medical illness, reduce health-related quality of life, and interfere with the effectiveness of treatment for various physical illnesses (Bruce, 1999; Creed et al., 2002; Katz, 1996; Meeks, Murrell, & Mehl, 2000).

Subsyndromal depression in late-life. As a result of concerns about the validity of current diagnostic categories for older adults, the 1991 Consensus Conference on Depression in Late Life suggested the need for more research in this regard on minor depression (Blazer, 1994). There was also a recommendation in the 1999 report of the U.S. Surgeon General that there may be a need for a new diagnostic entity of minor depression to describe the cluster of symptoms that do not fit well with the current criteria for Major Depression (U.S. Department of Health and Social Services, 1999). Although major depression may be no more prevalent in older adults than in younger adults, the presence of minor depression and other subsyndromal depressive symptoms are much more common (Broadhead, Blazer, & George, 1990; Mulsant & Ganguli, 1999; Parmelee, Katz, & Lawton, 1989), particularly in the oldest-old (Tannock & Katona, 1995).

Minor depression is currently listed in the DSM-IV-TR (American Psychiatric Association, 2000) as a "potential category". The criteria required for a diagnosis of minor depression are the same as those for major depression, but require fewer symptoms. The DSM-IV-TR defines research criteria for minor depression as follows: Two to four of the following symptoms must be present for two weeks: depressed mood and markedly diminished interest or pleasure in all or almost all activities; significant weight loss when not dieting or weight gain; a decrease or increase in appetite; insomnia or hypersomnia; psychomotor agitation or retardation; fatigue or loss of energy; feelings of worthlessness or excessive or inappropriate guilt; diminished ability to think or concentrate, or indecisiveness; recurrent thoughts of death, recurrent suicidal ideation without a specific plan, a suicide attempt, or a specific plan for committing suicide. The

symptoms must be present nearly every day and one of the symptoms must be depressed mood or diminished interest or pleasure. There must also never have been another mood or psychotic disorder diagnosed in the past. These criteria have been criticized by Snaith (1987), who argues against using somatic and nonspecific vegetative symptoms and instead focusing on the psychological symptoms of depression. Of these, he feels anhedonia is the most important symptom of depression.

Broadhead and colleagues (1990) investigated the prevalence of minor depression using North Carolina ECA data and defined minor depression as being the presence of neither dysphoria nor anhedonia, but at least one other depressive symptom from the DSM-III. Their findings indicated that at age 60 years and over, the prevalence of all diagnostic categories of depression was lower than that of younger adults, with the exception of minor depression without mood disturbance. These criteria inflated the total prevalence at age 60+ years to one-third, a similar estimate to that reported for younger subjects. The authors advised that that current diagnostic categories may represent an imperfect fit to the depressive profile presented by older adults.

Evidence that major and minor depression may in fact represent two different entities came from research by Beekman and colleagues (1995) who found that the risk factors for major depression (e.g., personal and family history of depression) differed from those of minor depression (e.g., chronic disease, smaller social networks). The authors concluded that minor depression may be less chronic in nature, but related more to personal stressors. Despite reports of its lesser chronicity, the clinical significance of minor depression is indicated by findings that minor depression is a strong predictor of the future onset of major depression (Katon & Schulberg, 1992; Parmelee, Katz, &

Lawton, 1992; Zisook, Paulus, Shuchter, & Judd, 1997), and is associated with a high prevalence of suicide attempts (Conwell, 1994; Judd, Akiskal, & Paulus, 1997), significant disability (Rosen, Mulsant, & Pollock, 2000), and frequent use of non-mental health services (Beekman, Deeg, Braam, Smit, & Van Tilburg, 1997). These findings, as well as the high prevalence estimates of minor depression, highlight the importance of recognizing nonmajor clinically significant depression.

The presentation of late-life depression. Knowledge of the clinical picture presented by the depressed elderly and a delineation of the differences in the presentation of depressive symptoms presented by elderly and younger age groups can contribute to our understanding of the special considerations warranted when assessing and treating late-life depression.

The research has increasingly focused on the role that age plays in depressive symptom presentation and there is a growing body of evidence documenting differences in the depressive symptom experience in late life (Caine, Lyness, King, & Connors, 1994; Newmann, Engel, & Jensen, 1991). One of the most pervasive differences lies in the extent to which older age groups endorse somatic symptoms associated with depression. Zemore and Eames (1987), for example, compared the responses of young and old adults on the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) and reported that age differences in the scores on this symptom checklist disappeared once somatic complaints were excluded from the analysis. Berry, Storandt, and Coyne (1994) proposed to do a comparative analysis of the findings reported by Zemore and Eames (1987) using items from the Zung Self Rating Depression Scale (Zung, 1965) given to 462 community-dwelling older adults. Their results provided

support for the findings of the previous authors by showing significant age differences in the endorsement of somatic complaints. These reports of somatic symptoms were especially prominent among older women who reported greater difficulty sleeping at night, less interest in sex, loss of appetite, and increased constipation compared with younger women. Because these symptoms are similar to the physical changes that often accompany the aging process, the authors cautioned that the diagnosis of depression in later life, especially in women, may be confounded by age-related physical changes. Even when medically well, the elderly have been found to report more somatic symptoms than younger adults, including constipation, appetite disturbance, insomnia, and hypochondriasis (Blazer, Bachar, & Hughes, 1987; Brodaty et al., 1991). This difference was found regardless of whether the depression was of late or early-onset.

Several authors have also reported a decreased likelihood of dysphoria as a symptom of depression in the elderly (e.g., Friedhoff, 1992; Gallo, Anthony, & Muthén, 1994; Gallo, Rabins, Lyketsos, Tien, & Anthony, 1997; Kongstevedt & Sime, 1992; Suh & Gallo, 1997). Using data from the ECA studies, Newmann, and colleagues (1991) reported a lower depressive syndrome level in the older cohort (i.e., age 66-92) versus the younger age group (i.e., 51-65 years), in addition to important differences in the presentation of depressive symptoms between the age groups. The results suggested that feelings of dysphoric mood, as well as excessive guilt, were much less prominent in the clinical picture presented by the older cohort than a presentation of a quieter form of personal despair marked by loss of interest in oneself and one's world. Thus, Newmann and colleagues suggested that measurement approaches that place a heavy emphasis on the presence of dysphoric mood in arriving at a diagnosis of depression or in generating

composite scale scores, as is done with commonly used measures such as the Centre for Epidemiologic Studies of Depression Scale (CES-D; Radloff, 1977), may systematically underestimate a form of depression that is more common with advancing age. The authors advised that older adults may be experiencing a unique type of depression, yet still be experiencing equal amounts of distress. Also using data from the ECA study, Gallo, Anthony, and Muthén (1994), reported that older individuals were less likely to endorse an item comprising dysphoria than younger respondents with the same level of overall depression. In an additional study using a community sample, a current or lifetime history of two-week dysphoria was found only slightly less often in individuals over age 65 years versus younger subjects (Blazer, 1989). Baker and colleagues (1991, 1995) examined the prevalence of depressive symptoms among older African American medical patients and found that verbal statements of dysphoric mood were not typical for the older adults. This alternative depressive picture, which transcends the typical constellation of symptoms presented by younger adults (i.e., depressed mood with or without anhedonia) has been termed "depression without sadness" (Gallo & Rabins, 1999).

Lawton and colleagues (1996) investigated the affective states presented by 77 elderly individuals in residential care using the Philadelphia Geriatric Centre Positive and Negative Affect Scale (Lawton, Kleban, Dean, Rajagopal, & Parmelee, 1992). Among the 19 elderly individuals diagnosed with major depression, it was anhedonia, or lack of pleasure, that seemed more prominent than pervasive dysphoria. The authors advised that these results act as a persuasive reminder that dysphoria cannot be relied on as the cardinal marker of major depression among older adults. Anhedonia, however, was

deemed to be an important characteristic of the depressive clinical picture presented by the older adults.

Gatz and Hurwicz (1990) also compared the negative and positive affective components among older adults and reported that they were less likely than other age groups with similar depressive levels to endorse items on a well-being subscale. Based on this finding, the authors proposed that older adults may be more likely to experience a lack of positive feelings than active negative feelings. Using the SCID (Spitzer, Williams, & Gibbon, 1987) definition of anhedonia (i.e., "a lot less interested in most things or unable to enjoy things you used to enjoy"), O'Donnell and Chung (1997) found that anhedonia was a useful clue to major depression among medically ill patients who denied depressed mood on the Beck Depression Inventory (Beck & Steer, 1987).

In addition to posing a potential barrier to the accurate recognition of late-life depression, there is also some evidence to suggest that a depressive presentation in which anhedonia is present in the absence of dysphoria may be related to an increased risk of significant functional impairment (Gallo et al., 1997). In a 13-year follow-up analysis of the 1,612 older participants (i.e., 50 years or older at the time of the initial interview) in the Baltimore sample of the ECA study, Gallo and colleagues (1997) concluded that a nondysphoric depression was associated with an increased risk for death, impairments in activities of daily living, and cognitive impairment. These results were not wholly explained by baseline measures of age, functional status, or comorbid medical illness. Unfortunately, however, this "quieter", nondysphoric depression type is more likely to be overlooked by nursing home staff and is an infrequent reason for referral to a psychiatrist (Fenton et al., 2004).

Heterogeneity of late-life depression: Late onset vs. early onset. The differentiation between depressive disorders that represent a continuation of conditions from earlier in the life cycle (i.e., early-onset depression) and disorders with first onset in old age (i.e., over age 60) is often not addressed in the literature. The few studies that have considered this distinction, however, have reported differences in severity and symptom presentation between the two groups. One of the most consistent findings regarding differences between early-onset and late-onset depressive illness is a lesser likelihood of a family history of affective disorders among patients with late-onset depression (Burvill, Hall, Stampfer, & Emmerson, 1989; Conwell, Nelson, Kim, & Mazure, 1989; Heun, Papassotiropoulos, Jessen, Maier, & Breitner, 2001; Musetti et al., 1989). Late-onset depressives are also more likely to exhibit cognitive impairments and physical disability than elderly individuals who are having a recurrent episode (Alexopoulos, 1989; Jorm, 2000; Lebowitz et al., 1997).

There have also been some indications from the research that time of onset of depression could have implications on prognosis in late-life depression. Kongstevdt and Sime (1992) compared the depressive profiles of 40 late-onset geriatric depressives to a group of 40 depressed elderly individuals who had experienced their first depressive episode as young adults. Their findings indicated that the late-onset group scored significantly lower (i.e., lower severity of depression) than the early-onset group on the Beck Depression Inventory (BDI; Beck et al., 1961) and the Geriatric Depression Scale (GDS; Yesavage, Brink, & Rose, 1983). On the basis of this finding, Kongstevdt and Sime (1992) cautioned that because the late-onset depressives complain of fewer and milder symptoms, they are at danger of being underdiagnosed when common cut-off

points of self-report instruments are used. It has also been reported that elderly patients with early-onset depression are more likely to have recurrences of depression following treatment, longer hospital stays, more residual symptoms following discharge, and are at greater risk for suicide (Conwell, 1996; Conwell et al., 1989; Georgotas, McCue, Cooper, Nagachandran, & Chang, 1989).

Despite scant research on the differences between the two subtypes of late-life depression, the studies that have been done highlight important distinctions in severity, etiological factors, and prognosis. Future research on prognosis and treatment outcome would do well to consider this heterogeneity in late-life depression.

Is Late-Life Depression Under-Recognized?

Despite the staggering toll that late-life depression takes at the individual and societal level, the recognition of depression among older adults is problematic. Within the general medical setting, for example, the research has been clear that a significant number of depression cases in older adults are missed. One study, for example, reported that 90% of the older adults in their sample who had met criteria for a depressive disorder on a screening instrument had seen a physician in the past year and were not screened for depression (Kemp, Staples, & Lopez-Aqueres, 1987). Similarly, Mann (1995) reported that 2 out of 3 cases of significant depression in the older adults of their sample had gone undetected by their primary care physician. A more recent study documented that primary care providers are more than 50% less likely to record a diagnosis of depression in elderly patients as compared to younger adult patients (Harman et al., 2001).

Rapp and Davis (1989) shed some disturbing light on the perceptions of late-life depression among a sample of medical residents. The authors reported that the medical

residents in their U.S. study knew few of the diagnostic criteria for depression, rarely screened for depression unless it was the primary complaint of the patient, and believed that treatments for depression in the elderly were only minimally effective. Although there appears to be a stronger focus in recent years on the importance of training general physicians in geriatrics, a study by Linden and colleagues (1995) provided further evidence of the difficulties in recognizing late-life depression among newly-trained physicians. The medical residents in their study attributed depressive symptoms (e.g., low energy, changes in appetite and sleep, loss of interest, fatigue) to a medical illness or medication side effects in over half of the elderly community residents identified as depressed by psychiatrists.

Disturbingly, this under-recognition among the depressed elderly appears to exist even when the symptoms are pervasive and the individual is at risk for suicide (Conwell et al., 1991). The majority of the older, depressed suicide victims that have been studied saw their primary health-care provider in the last week of their lives (Conwell et al., 2000).

These findings are particularly alarming in light of evidence that the majority of older persons seek mental health treatment from their general physician (Ettner & Hermann, 1997; Harman, Crystal, Walkup, & Olfson, 2003; Olfson & Pincus, 1996). Shapiro and colleagues (1984) noted that 74 percent of elders with depressive symptoms seek care in a general medical setting, whereas only 29 percent seek care in mental health services, and 21 percent do not seek care at all. With a general lack of specialized training in diagnosing and treating the unique features of late-life depression, coupled with the frequency with which the depressed elder elects to seek treatment in a medical

setting over a psychiatric setting, it is cautioned that many cases of comorbid late-life depression simply go undetected and untreated (Koenig et al., 1992; Small, 1991; Young, Klap, Sherbourne, & Wells, 2001).

Challenges in the Recognition of Late-life Depression

It is well established, then, that treatable depression in the elderly often goes unrecognized. It appears that detection is problematic even when the individual has made a recent visit to their family physician, or when the depression is severe enough to lead to suicide within days of being seen by a healthcare provider (Conwell et al., 2000). Initiatives to improve the recognition of clinically significant depression in this age group could benefit from a better understanding of the barriers to accurate detection and diagnosis.

Comorbidity with medical illness. The accurate diagnosis of depression in physically ill older adults can be an exercise in disentangling confounds (Parmelee, Lawton, & Katz, 1998). Diagnosis is often complicated by somatic manifestations of depression that may not easily be distinguished from physical health problems. The central question about somatic symptoms in depressed older adults is whether they are reliable indicators of depression or merely an artifact of the high comorbidity of physical illness in this age group. Symptoms of various physical ailments (and side effects related to their treatment) can mirror the symptoms of a depressive disorder (e.g., sleeping problems, weight loss, fatigue). The difficulties associated with diagnosing depression in the medically ill have been extensively reviewed (Kathol et al., 1990; Katon & Roy-Byrne, 1988; O'Donnell & Chung, 1997; Parmelee, Lawton, & Katz, 1998). Major depression commonly goes unrecognized and underdiagnosed in medically ill patients in

part due to the overlap between the physical symptoms of the underlying medical illness and the neurovegetative symptoms diagnostic of major depression, including fatigue, insomnia, loss of libido, and psychomotor retardation (Belkin, Fleishman, Stein, Piette, & Mor, 1992; Kathol, Mutgi, Williams, Clamon, & Noyes, 1990; Leedom, Meehan, Procci, & Zeidler, 1991; Wise & Taylor, 1991).

These difficulties have been attributed to practices by both the depressed elder and the primary care physician. The difficulties that physicians have in recognizing depression among older adults presenting with a primarily somatic picture of depression have been well-established in the research (e.g., Kemp, Staples, & Lopez-Aqueres, 1987; Mann, 1995; Shapiro et al., 1984). The elderly themselves can also contribute to the difficulty of detecting depressive symptoms amidst somatic illness. Older adults are sometimes inclined to focus on physical symptoms and fail to report or deny emotional symptoms (Blazer, 1994). Misattributions of somatic symptoms to physical rather than emotional causes may result in underdiagnosis of psychiatric problems in physically frail older persons (Fiske, Kasl-Godley, & Gatz, 1998). Alternatively, changes in energy levels, sleep problems, and other processes related to normal aging may be misinterpreted as somatic indicators of depression (Pincus, Callahan, Bradley, Vaughn, & Wolfe, 1986).

The diagnostic category "mood disorder due to a general medical condition" was introduced in the DSM-IV to specifically address mood disorders in medically ill patients. This category is defined as a mood disturbance for which there is evidence that the disturbance is a direct consequence of a general medical condition. However, this category has been criticized for being too vague to allow for a reliable diagnosis of

depression. As O'Donnell and Chung (1997) pointed out, neither a threshold number of depressive symptoms, nor a minimum duration of mood disturbance is required.

Differential diagnosis with dementia. Due to overlapping symptoms between cognitive impairment and the vegetative symptoms of depression, disentangling the two conditions can be challenging. Symptoms such as concentration difficulties, loss of energy and interest, psychomotor retardation, sleep problems, and agitation mimic signs of the early stages of dementia, and may accompany depression in the absence of dementia (McGuire & Rabins, 1994). There are believed to be multiple, shared, and reciprocal relationships between depression and cognitive impairment. There is some suggestion that depression worsens the cognitive impairment among the demented elderly (Fitz & Teri, 1994; Poon, 1992) and that a depression disorder or depressive symptoms can act as a risk factor for Alzheimer's Disease (Devanand et al., 1996; Jost & Grossberg, 1996; Kral, 1983; Speck, et al., 1995). Reifler and colleagues (1986) reported that 40% of older adults with major depression developed a dementia a few years later. Alternatively, others have shown that memory loss can lead to depression (O'Connor, Pollitt, Roth, Brook, & Reiss, 1990). Often the reversible cognitive impairment, general functioning, and overall quality of life can be improved when the comorbid depression is successfully treated (Greenwald et al., 1989; Katz, 1996; Verhey et al., 1993).

The frequency of misdiagnosing depression as dementia has been reported to be in the 10-15% range (NIH Consensus Conference, 1992). An alternative view has suggested that the overlapping of cognitive symptoms between dementia and a dementia syndrome of depression can lead to overdiagnosis of depression in elderly individuals with dementia (Burke, Rubin, Morris, & Berg, 1988; Greenwald et al., 1989). The

importance of a careful assessment of past history, and the duration and temporal course of symptoms has been emphasized as a helpful means of differentiating between dementia and depression (Dick & Gallagher-Thompson, 1996; Thorpe & Groulx, 2001). Other authors have highlighted the importance of attending to responding style of the patient during cognitive testing. Thorpe and Groulx (2001) suggested that although both the demented and the depressed respondent typically show deficits in various areas of cognitive functioning, those with dementia often volunteer incorrect information and appear unbothered by this, whereas the depressed individual is more likely to respond "I don't know" and be disturbed by perceived deficits. These authors also point out that whereas changes in sleep and irritability levels are more gradual and progressive in dementia, they tend to be of a subacute nature in depression.

Cohort effects and ageism. There is evidence to suggest that the fear of the stigma associated with mental illness, particularly among older cohorts, interferes with depression recognition. For example, older persons are more likely to attribute depressive symptoms to physical illness and are less likely than younger adults to report psychiatric disorders (Kermis, 1986; Small, 1991). They may focus on somatic symptoms to the exclusion of depressive symptoms, because the former are more easily discussed (O'Connor, Rosewarne, & Bruce, 2001). Lewinsohn and colleagues (1993) also reported a relationship between birth cohort and the tendency to label oneself as depressed. Individuals from less recent cohorts (i.e., the elderly) were less likely to see themselves as depressed, given the same number of symptoms.

There may also be ageist attitudes among health care providers, who interpret the signs and symptoms of distress as normal aging processes that are therefore irreversible.

The assumption that depression is an inevitable consequence of aging is contradicted by the relatively low rates of depression among older persons relative to those under age 65 (Kessler et al., 2003). However, these negative stereotypes have been related to a tendency to ignore or misdiagnose mental health problems among the elderly and in turn, preclude the provision of appropriate treatment (Cole & Bellavance, 1997; Smyer & Gatz, 1995; Weiss, 1994).

Problems with diagnostic criteria. As reviewed in a previous section, the unique symptom pattern documented among depressed older adults raises questions about how well the current diagnostic system maps onto the clinical profiles of depression observed among older adults. It has been suggested that the bias against older adults created by mismatched diagnostic criteria may account for lower rates of reported depressive disorders for this group (Gallo, Anthony, & Muthén, 1994; Kumar, Lawvretsky, & Elderkin-Thompson, 2004; Newmann, Engel, Jensen, 1991). An interesting finding on this issue emerged from a study by Gallo and colleagues (1999) who assessed the knowledge and attitudes of community family physicians in Baltimore regarding the identification and management of late-life depression. The physicians identified the atypical presentation of depression by older adults (i.e., depression in the absence of dysphoria) as the most common barrier to adequate recognition and treatment of depression in this population. This finding sheds important light on the implications that the unique symptom presentation endorsed by depressed older adults can have on the likelihood of being accurately diagnosed and treated.

Depression in Long-Term Care Settings

The research has consistently reported higher rates of depression among the institutionalized elderly than those living in the community (Gueldner et al., 2001; Jongenelis et al., 2004). The bulk of the research on mental well-being measures reports that most community residents score above the midpoint (Stones, 2002), with the average score within the general population of 7-8 on a 10-point scale (Heady & Wearing, 1988). Exceptions, however, are the mid-range well-being scores reported by nursing home residents (Stones & Kozma, 1989) and the institutionalized mentally ill (Kozma & Stones, 1987).

The exact reasons for the higher prevalence estimates in nursing home settings are still unclear. Various explanations have been proposed, such as disability and chronic illnesses precipitating the need for institutionalization, the nature of the institutional environment itself, increasing numbers of patients with psychiatric illness being admitted to nursing homes, or a combination of all these (Barder, Slimmer, & LeSage, 1994; Eisses et al., 2004; Jongenelis et al., 2004). Certainly, depression in nursing home residents more frequently co-exists with dementia, medical illness, and functional disability when compared to community-dwelling older adults (Kurlowicz, Evans, Strumpf, & Maislin, 2002). There is also unpublished research using MDS data suggesting that elderly individuals diagnosed with a mood disorder were equally likely to be in a psychiatric hospital as they were to be a resident of a nursing home without specialized mental health services (Perry, 2000). These results are striking given that nursing homes often lack on-site geropsychiatric consultation of trained geriatric nurses or psychiatrists (Ginsburg, Hamilton, Madora, Robichaud, & White, 1998).

There is also evidence to suggest that symptom presentation varies across settings, with nursing home residents more likely to present a depressive picture that has anhedonia as the prevailing symptom (Steffens et al., 2000; Stones, 2000). The elderly community residents in Stones' investigation exhibited higher positive affect than negative affect, whereas the institutionalized residents had much lower scores for positive affect. Stones concluded that depression in elderly nursing home residents may be a manifestation of a loss of pleasurable experiences. This view has been shared by other researchers who have suggested that there is a poverty of enjoyable activities that encourage independence and personal control in the elderly resident (Barder, Slimmer, & LeSage, 1994; Brendenberg, 1983; Kruzich, 1986).

Whatever the reasons for the higher rates of depression in nursing home samples, the evidence is clear that it is has a significant impact on residents' perceived quality of life, general functioning, and interaction within the facility (Borowiak, & Kostka, 2004; Katz, Simpson, Curlik, Parmelee, & Muhly, 1990; Rovner et al., 1991). It is also clear that continued efforts need to be directed towards the improved recognition and management of depression in this particularly vulnerable population.

Challenges in Assessment

Perhaps the most significant challenge in the detection of late life depression lies in the imperfect fit of current standards and tools in the assessment and diagnosis of late-life depression. A common criticism of applying measures not specifically designed for older populations concerns their long length and complicated rating schemes that render comprehension difficult for cognitively impaired individuals (Dick & Gallagher-Thompson, 1996; Pachana, Thompson, & Gallagher-Thompson, 1994). Other criticisms

have included a lack of standardization in the administration of a measure (e.g., Hamilton Rating Scale for Depression; HRSD; Hamilton, 1967) (Pachana, Thompson, & Gallagher-Thompson, 1994), low reliability in the oldest old (e.g., BDI) (Gallagher, Thompson, & Zelinski, 1982), and insensitivity in detecting minor depression (Alexopoulos, 1995). Measures like the HRSD have also been criticized for their overinclusion of somatic symptoms, which can reflect genuine physical changes that are common with aging or physical health problems, rather than be indicative of depression (Dick & Gallagher-Thompson, 1996).

As a previous section indicated, older adults who are physically ill and exhibit somatic presentations of depression are particularly at risk for inadequate diagnosis and treatment (Belkin et al., 1992; Kathol et al., 1990). There has been a general lack of agreement over how the somatic symptoms of depression should be measured. One approach has been the avoidance of items where the signs and symptoms of depression overlap with those of medical illness, such as in the Geriatric Depression Scale (GDS; Yesavage, Brink, & Rose, 1983), which includes no somatic symptoms. This approach has been criticized for its potential to miss an important part of the depressive syndrome and thus, risk producing erroneously low scores (Alexopoulos, 1995). There is some research to suggest that somatic complaints can serve as important clues in diagnosing depression among the physically ill elderly. For example, one study (Koenig, Cohen, Blazer, Krishnan, & Sibert, 1993) reported that somatic indicators were equally as powerful predictors as affective symptoms in diagnosing depression among male psychiatric inpatients. In addition, Ryan and colleagues (1995) reported that geriatricians were recognizing a subgroup of acute medically ill patients as depressed who were not

being detected by either psychiatrists or the Geriatric Depression Scale. The authors concluded that geriatricians were more likely than psychiatrists to view somatic symptoms as signs of depression.

An alternative approach to the assessment of depression is to be all-inclusive and accept a broad range of symptoms, regardless of their origin. It has been suggested that a more accurate response to depression may be achieved if physicians were less concerned about the reasons for depressive symptoms (e.g., medical illness) than they are in ascertaining whether a depressive syndrome is present (Alexopoulos, 1995; Callahan, Dittus, & Tierney, 1996). As Schneider and Olin (1995) pointed out, patients whose symptoms fulfill the criteria for a depressive disorder should respond to treatment regardless of etiology. Others recommend that the patient should be evaluated for depression whenever functional impairment or somatic complaints seem disproportionate to the extent of medical illness (Gallo, 1999).

Anhedonia: A Closer Look

Assessment of ahedonia. Snaith (1993) described anhedonia as "a neglected symptom of psychopathology", noting the exclusion of the concept from several popular depression rating scales. The Hamilton Depression Rating Scale (HRSD; Hamilton, 1960, 1967) has one item phrased "work and interest", although this item is concerned mainly with the ability to work. The Beck Depression Inventory (BDI; Beck et al., 1961) does not directly assess anhedonia, with an item on social withdrawal being the closest approximation to the concept. There are three instruments that directly assess anhedonia. The Snaith-Hamilton Pleasure Scale (SHAPS; Snaith, Hamilton, Morley, Humayan, Hargreaves, & Trigwell, 1995) is the newest anhedonia measure and is a brief self-report

instrument that assesses one's ability to experience pleasure in variety of domains. A measure by Chapman and colleagues (1976) provides separate scales for physical and social anhedonia, while a measure by Fawcett and colleagues (1983) consists of 36 items of various activities rated on the degree of pleasure associated with each. Both of these measures have been criticized for cultural bias and for including activities that are not applicable to all respondents (Snaith et al., 1995).

Intervention for anhedonia. Anhedonia has played a central role in psychosocial theories of depression that relate the onset of depression to a lack of positive reinforcement and a poverty of enjoyable experiences within one's environment (Miller, 1987). Certainly one of the most distressing aspects of institutionalization is the relinquishing of control over daily activities (Hulicka, Morganti, & Cataldo, 1975). Adding elements of control, predictability, and rewarding activities to the daily lives of nursing home residents has had significant effects on their psychological well-being, self-esteem, and perceived competence (Rodin & Langer, 1977; Schulz, 1976; Shary & Iso-Ahola, 1989).

There is also evidence to suggest that increasing well-being among nursing home residents relates to increasing their options of things to do and providing them with an activity that they can look forward to. For example, Rattenbury and Stones (1989) reported that a group of nursing home residents who were randomly assigned to either a reminiscence or a current events discussion group showed significant improvements in mental well-being, as compared to a no-treatment control group. The authors concluded that increases in mental well-being scores were related more to involvement in an enjoyable group activity, rather than the content of the group discussion. Additional

evidence comes from the research of Rosen and colleagues (1997) who assessed the effect of control-relevant psychosocial intervention among 31 elderly nursing home residents exhibiting either minor depression or a major depressive episode. Residents were asked to plan a series of recreation activities (e.g., day trips, current events discussion group) of their choice that lasted 8 weeks. At the end of the intervention, there were significant improvements in scores on the Hamilton Depression Scale, the Geriatric Depression Scale, social withdrawal, and anhedonia among those randomly assigned to the psychosocial intervention versus the waiting-list control group. The authors concluded that these improvements were attributed to the rewarding experiences and the social interaction afforded by the intervention.

Thus, deficits among nursing home residents in their ability to experience pleasure (i.e., anhedonia) may relate to the lack of choice in their activities and a general lack of rewarding and stimulating activity present in the institutionalized environment. As demonstrated in the above research, the successful treatment of anhedonia may relate more to the recovery of a sense of choice and control in the daily routine of the resident. There is at least some evidence to suggest that anhedonic subtypes of depression have a longer duration of illness and need to be on antidepressants for significantly longer than their non-anhedonic counterparts (Chaturvedi & Sarmukaddam, 1986; Majtabai & Olfson, 2004). Anhedonia has also been identified as an important clinical marker predicting response to antidepressant drugs (Klein, 1974; Snaith, 1995). In addition, anhedonia has been related to deficits in executive functioning (Lampe, Sitskoorn, & Heeren, 2004) and slower reaction times in neuropsychological testing (Dubal & Jouvent, 2004). Recent evidence also suggests that late-onset major depressive disorder, in which

there are symptoms of anhedonia, is associated with greater deficits in tasks of attention and executive function than recurrent geriatric depressive disorder (Rapp et al., 2005). All of these findings appear to suggest that the underlying etiology of anhedonia may be different from that of dysphoric depression. However, the phenomenological differences of these depressive profiles are not yet well understood.

Is Late-life Depression Adequately Treated?

Once the validity of the diagnosis has been confirmed, priorities can shift from interpreting the affective symptoms to the more pragmatic question of how to ensure the delivery of optimally safe and effective treatments. However, despite clear evidence of the efficacy and effectiveness of various treatment approaches for late-life depression, there is a growing body of evidence to suggest that not only are many depressed older adults going unrecognized, they are often inadequately or inappropriately treated, or not treated at all (Blazer, 2003; Brown, Lapane, & Luisi, 2002; Geiselmann & Bauer, 2000; Heston et al., 1992; Lebowitz et al., 1997; Lyness et al., 1996; Mulsant & Ganguli, 1999; Rovner et al., 1991; Unutzer et al., 1997, 1999, 2000; Williams et al., 2000). Advancing age has been noted to significantly reduce the likelihood of receiving antidepressant medication (Brown et al., 1995). One report estimates that only 20% of depressed community elders are treated (Cole & Yaffe, 1996). Among nursing home residents, fewer than one-quarter of those diagnosed with depression received any treatment (Rovner et al., 1991).

Isometsa and colleagues (1994) conducted a retrospective analysis of older suicide victims (mean age=50) from the Finnish National Suicide Prevention Project with diagnoses of current major depression by DSM-III-R criteria. The authors reported that

despite the principal diagnosis of major depression among the victims, less than half were receiving treatment at the time of their suicide. Only 3% were receiving an adequate dose of antidepressants, 7% received weekly psychotherapy, and 3% were treated with ECT. Even more alarming were findings that 59% of the victims had seen a health care provider in the last month, 39% in the last week, and 18% on the day of their deaths.

In a study that surveyed men admitted to a tertiary care study in the U.S., less than half of the 53 patients diagnosed with major depression had their disorder documented and treated by the clinical staff. Another 40% were not prescribed antidepressant medication (Koenig et al., 1992). Similarly, none of the older adults meeting criteria for a depressive disorder in the study by Kemp and colleagues (1987) were receiving treatment, despite recent visits to primary care physicians among 90% of the patients.

Hirdes and colleagues (2000) compared antidepressant use in long term care facilities in Canada, Japan, Iceland, and Czech Republic using data from the Minimum Data Set and found that with the exception of Iceland, most residents with a diagnosis of depression and/or behavioural indicators of depression *did not* receive an antidepressant. These findings are consistent with a results reported by Ryan and colleagues (1995). Although the geriatricians and psychiatrists in their study showed high agreement for the recognition of depression and the perceived need for treatment in a sample of acute geriatric admissions, none of the patients were receiving antidepressant medication at the time of discharge (Ryan et al., 1995). The authors attributed the undertreatment of depression to therapeutic pessimism in which clinicians view late-life depression as normal, and therefore underestimate the clinical utility of treatment.

Even when depressed elders are identified and treated for their depression, this treatment is often inadequate. In one of the largest nursing home samples used to evaluate the management of late-life depression in older institutionalized samples, Brown and colleagues (2002) analyzed data from the Minimum Data Set (MDS) for residents aged 65 and over from 1,492 nursing homes in five U.S. states. Their results indicated that among the 42,901 residents with an active diagnosis of a major depressive disorder documented on the MDS (prevalence estimate of 11%), 55% were receiving an antidepressant. Of those residents receiving an antidepressant, 32% were receiving doses less than the manufacturers' recommended minimum effective dose for treating depression. Residents aged 85 years or over, black residents, and those with severe cognitive impairment were least likely to receive an antidepressant.

There is some evidence to indicate that the initiation of the 1987 Omnibus Budget Reconciliation Act (OBRA '87) has created some improvements in the detection and treatment of late-life depression in U.S. nursing homes. With the beginning of this legislation in 1998, all U.S. nursing homes were required to complete an MDS for all residents at admission, upon significant change in clinical status, and at least annually. Its initiation also coincided with the beginning of the era of second-generation antidepressants. Data from the Centers for Medicare and Medicaid Services (CMS; formerly the Health Care Financing Administration) indicate that antidepressant use in U.S. nursing homes increased from 28.8% in 1998 to 35.5% in 2000 (Crutchfield, 2001). However, although care practices may have improved, they still appear to be problematic. Data collected from 200 nursing home residents from five different facilities after the nursing home reform legislation was enacted indicated that less half (i.e., 46%) of the

residents with clinically significant depressive symptoms (as indicated by a Geriatric Depression Scale score greater than 10) were receiving antidepressants (Weintraub, Datto, Streim, & Katz, 2002). These authors also demonstrated that 27% of the nursing home residents on antidepressants were at dosages below the recommended range suggested by the experts on late life depression (i.e., Alexopoulos et al., 2001 of the expert consensus panel). Thirty-five percent of the residents were receiving the minimum recommended dosage and 37% were on dosages above the minimum recommended dosage. These results are consistent with the findings of Brown and colleagues (2002) described earlier.

Recent data also suggest that current practices regarding the duration of antidepressant use for late-life depression are problematic (Weintraub et al., 2003). Over half of depressed nursing home residents who did not experience significant improvement in their symptoms after a 10-week acute treatment period of 100mg of sertraline responded when the dosage was increased to 200mg per day over an eight-week extension phase of treatment. The authors advised that an important area for future research and clinical initiatives is greater attention to the adequate dosing and duration of antidepressant trials with older depressives.

Obstacles to the Adequate Treatment of Late-Life Depression

In addition to the obstacles to depression recognition that inevitably translate into barriers to treatment, various obstacles specific to adequate pharmacotherapy in late-life depression have also been identified. Reynolds and colleagues (1992) summarized the main obstacles as non-compliance; discontinuation due to side-effects of medication; inadequate family support to aid in proper compliance; comorbid medical illness that

interferes with adequate antidepressant dosing; self-medication with other drugs, such as alcohol; and inadequate education of patient and family about depression and its treatment. With regards to non-pharmacological interventions, community elders with physical or transportation limitations may have less access to mental health services, whereas elderly nursing home residents may not have the option to pursue these services due to resource constraints.

The stigma associated with mental illness may also pose a significant barrier to treatment. There is some evidence to suggest that older adults request services less often and refuse mental health services more often than younger adults (Unutzer et al., 1997). Sirey and colleagues (2001) demonstrated that a perceived stigma associated with a diagnosis of depression among older adults acts as a significant predictor of their decision to discontinue treatment. Consistent with this finding, there are also available data to suggest that older adults use significantly fewer mental health services than what would be expected based on prevalence estimates of depressive disorders in this population (Crawford, Prince, Menezes, & Mann, 1998; Goldstrom et al., 1987). Elderly patients seen by their general practitioner are also less likely than younger patients to be seen by a mental health specialist (Olfson et al., 2000; Pingitore, Snowden, Sansone, & Klinkman, 2001). In addition, Lin and colleagues (2000) noted that in a primary care setting, more than one-third of patients did not refill their initial antidepressant medication.

The clinician or elderly individual who views the depression as an inevitable aspect of growing old and the losses associated with old age (e.g., physical deterioration, retirement) may also be less likely to consider treatment. Assumptions that the symptoms are an expectation of aging or a concomitant medical illness lead to nihilistic views of

treatment whereby treatment is considered unnecessary or unhelpful (Roose & Dalack, 1992).

Comorbidity with medical illness is also likely to interfere with adequate treatment for late-life depression. Clinicians may either assume that the depressive symptoms are a natural consequence of the physical illness, or concentrate all of their treatment initiatives on the coexisting medical condition and view antidepressants as a contraindication to this treatment (Katz et al., 1990). The findings of Brown and colleagues (2002) support this claim. They reported that nursing home residents with multiple diagnoses, including cancer, were less likely to receive pharmacological treatment.

A final barrier to the adequate treatment of depression in the elderly relates to the structure of service delivery by general practitioners. It is not uncommon for physicians to arrange appointment times in 15-minute blocks, precluding the time necessary for a thorough investigation of the complex nature of late-life depression, particularly in the context of significant medical comorbidity. In addition, general practitioners, the most common point of contact for depressed elders, often lack specialized training in geriatrics (Kyomen & Gottlieb, 2003). With increasingly excessive demands being placed on an already overburdened mental health system, general physicians now have to assume a higher level of responsibility. Their modified role often includes the provision of services that have traditionally fallen to a Psychiatrist or specialist services. Regardless of the level of training that general physicians may have in geriatric mental health, the graying of the population will translate into a greater number of elderly individuals presenting with mental health needs. This scenario, in addition to reports that a large majority of

depressed elders are first seen by their primary care providers (Harman et al., 2003; Olfson & Pincus, 1996), underscore the need for the continued implementation of educational interventions for primary physicians in the accurate diagnosis and treatment of depression in the elderly. There is also the need for well-controlled evaluations of the effectiveness of these interventions in improving current care practices. Unfortunately, research to date has shown that these interventions have not led to long-term changes in practice patterns post-intervention (Callahan, 2001).

Summary

Prevalence estimates for a Major Depressive Disorder among community-dwelling older adults generally fall between 1% and 5% (Baltes et al., 1993; Beekman et al., 1995); these rates are significantly higher among nursing home residents, with estimates lying between 10-22% (Brown, Lapane, & Luisi, 2002; Parmelee, Katz, & Lawton, 1989). One-quarter to one-half of nursing home residents suffers from clinically significant depressive symptoms (Jongenelis et al., 2004; Katz et al., 1989; Koenig et al., 1988; Parmelee, Katz, & Lawton, 1989). Depression has serious consequences for both the individual and society at large, including a greater risk for mortality from co-morbid medical illness, suicide, disability, treatment non-compliance, more frequent physician visits, and a heavy burden on the health-care system (Callahan et al., 1994; Conwell et al., 1996; Fries et al., 1993; Penninx et al., 2001). Despite its magnitude, there is considerable conceptual difficulty in diagnosing depression in older persons. Older persons themselves tend not to label their negative feelings as "depressed" but often report symptoms that are metaphors for depression, such as cognitive complaints of worthlessness, hopelessness, or despair (Blazer, 1993). In addition, it is not always clear

how to interpret somatic symptoms (e.g., sleep problems, decreased appetite) or behavioural complaints (e.g., agitation, low energy) of the older person. These symptoms could be interpreted as medical problems or drug side effects (Dick & Gallagher-Thompson, 1996). Cognitive impairments that accompany depression can be misdiagnosed as the early signs of dementia and are therefore not given appropriate treatment (Burke et al., 1988). Complicating these challenges further is a lack of specialized geriatric training among primary care physicians, who are most likely to be the first point of contact between the depressed elder and the health community (Shapiro et al., 1984). Even when emotional symptoms are detected, there is the attribution of these symptoms, by both the professional and the older adult, to the processes of normal aging (Weiss, 1994).

The evidence is clear that depression in the elderly often goes unrecognized and untreated (Geiselmann & Bauer, 2000; Mulsant & Ganguli, 1999; Rovner et al., 1991; Unutzer et al., 1997, 1999, 2000). This trend is believed to be even more prominent in nursing home settings where more frequent comorbidity with depression adds to the complexity of diagnosis and pharmacotherapy (Blazer, 2003; Brown, Lapane, & Luisi, 2002; Jones, Marcantonio, & Rabinowitz, 2003). Although the initiation of OBRA '87 in the U.S. appears to have lead to improvements in antidepressant treatment response among U.S. nursing home populations, the adequate recognition and management of symptoms still needs improvement.

The research has consistently pointed to differences in the depressive picture presented by the young and the old, with cautions that the clinical picture of late-life depression may not fit well with current diagnostic criteria (Newmann, Engel, & Jensen,

1991). There is evidence that older adults, particularly nursing home residents, tend to present a quieter picture of depression, characterized by more anhedonia and less dysphoria, which is in contradiction with the more typical profile of depression in which depressed mood predominates (Gallo, Anthony, & Muthén, 1994).

It has recently been proposed that the alternative depressive picture presented by the elderly may pose a significant barrier to the accurate detection (and therefore treatment) of late-life depression (Stones & Kirkpatrick, 2002). However, this argument has not yet been tested. This important issue is central to the purpose of the present investigation.

The Minimum Data Set for Long-Term Care (MDS 2.0) is mandated for use in chronic care hospitals in Ontario and in long-term care facilities internationally. To maximize the potential of this tool to inform clinical practice and improve the quality of care in these settings, it is imperative that research continues to investigate the clinical utility of the various MDS outcome measures and how the information derived from the instrument may be utilized to identify care gaps in important clinical domains. For example, the study by Hirdes and colleagues (2000) described earlier highlighted important care gaps in the treatment of depression among the institutionalized elderly. A practical application of this study will be to provide information on how well the current depression items of the MDS 2.0 capture the domains of anhedonia and dysphoria. In addition, the use of a large database of MDS 2.0 assessment information from nursing homes involved in the Resident Assessment Instrument—Health Informatics Project (RAI-HIP; described further in Methods section) will allow for further investigations of

the differential likelihood of diagnosis and treatment relative to symptom profile among over 1400 nursing home residents.

Purpose of Research

The overall objective of this research is to examine patterns of identified depression and treatment relative to the symptom presentation endorsed by elderly nursing home residents. Information derived from the MDS assessments of nursing home residents included in two separate data sets were used to determine the relative contribution of predictor variables (i.e., dysphoria, anhedonia, cognitive impairment, pain, gender, age) to MDS-listed diagnosis and treatment practices. The prevalence of depression and treatment, as well as the sociodemographic and clinical characteristics of depressed nursing home residents were explored.

Hypotheses

1. A diagnosis of depression on the MDS 2.0 is more likely when the elderly individual is reported to endorse dysphoria, rather than anhedonia in the absence of dysphoria.
2. Treatment for depression, either pharmacological or psychological, is more likely to occur for residents reported to endorse dysphoria, rather than anhedonia in the absence of dysphoria.
3. Consistent with previous research, a diagnosis and/or treatment of depression will be more likely when the resident is female, of younger age, and less cognitively impaired.

Method

Sample 1 – The Thunder Bay/London Long-Term Care Data

Participants. The participants were all 162 nursing home residents from three nursing homes in Thunder Bay, Ontario (n=70; 16 men, 54 women) and a Veterans' Care facility in London, Ontario (n=92; 89 men, 3 women) included in a larger study of depression. The assessments were completed between March 2002 and September 2002. Nurse Managers selected participants for the Thunder Bay sample based on clinical judgment that the residents had the cognitive capability to answer questionnaire items appropriately (i.e., because other questions addressed by the larger depression study required the completion of self-report scales). The 70 participants from Thunder Bay do not include six residents who for various reasons did not provide informed consent.

For the London/Veterans' Care sample, participants were randomly selected from the program census (n=279 on the first day of the study), regardless of their cognitive functioning. This process enabled the selection of 129 residents for sequential approach with 14 deemed ineligible (e.g., deceased, unable to contact Substitute Decision Maker [SDM] for consent). Of the 115 remaining residents or SDMs approached for consent, 16 refused (e.g., due to hearing problems, disinterest). The number of residents with completed staff-rated assessments was 92, with assessments for another seven residents not completed (e.g., for reasons of resident death, scheduling challenges).

Assessment procedures. The administrators of all the facilities gave permission for nurses to use work time to complete an abbreviated version of the MDS 2.0 (see Appendix A) and other measures not reported in the present research. A staff member (RN or RPN) having experience with the MDS 2.0 and the care of specific residents was

responsible for completing the assessments. Data collection procedures included direct questioning of residents, questioning of other staff members with direct knowledge about the care of particular residents, and chart examination.

Measures

The Minimum Data Set for Long-Term Care. The Minimum Data Set (MDS) is a component of the Resident Assessment Instrument (RAI) and is an international assessment tool that focuses on the clinical needs and preferences of the individual receiving care. The instrument provides a comprehensive overview of multiple areas of functioning and acts as a screening tool rather than a diagnostic tool (Hirdes & Rook, 1998). The MDS 2.0 has been mandated for use in Ontario Complex Continuing Care (CCC) Hospitals/Units since 1996 and in all licensed nursing homes in the United States since the early 1990's. The MDS items are completed by staff, (mainly nursing staff), who gather information from a variety of sources, including the resident, other staff, caregivers, and client records. The assessments are completed at admission, quarterly intervals, or after a significant change in care needs.

The primary goal of the RAI is to guide careplanning initiatives. The MDS includes a series of items that serve as triggering mechanisms that flag potential problems areas in various domains of functioning. Assessment protocols are also provided that offer suggestions for appropriate follow-up. A second function of the RAI system lies in the outcomes measures embedded within the tool (e.g., Depression Rating Scale; Burrows et al., 1995). The concurrent and construct validity of these measures have been well documented (e.g., Burrows et al., 1995; Mor et al., 1995; Morris et al., 1994). Also embedded within the MDS are quality indicators that provide benchmarks against which

to compare careplanning practices across facilities, or even internationally. For example, one report prepared by the Canadian Institute of Health Information (CIHI, 1998) indicated that Ontario institutions have a lower prevalence than most other countries of depression disorders that are not being treated. However, an earlier report indicated that Ontario facilities have higher rates of physical restraint use (Ljunggren, Phillips, & Sgadari, 1997). Thus, the information derived from the MDS quality indicators shed important light on care practices that are done well and those that need improvement. A final application of the RAI tool is to provide information on funding needs based on the level of functioning of the clients and their care needs (i.e., case-mix funding), rather than on the type of facility.

Dependent Variables

Identified depression. The MDS 2.0 contains an item on whether or not the resident has a current diagnosis of depression. A depression diagnosis recorded on the MDS 2.0 is based on the resident's clinical record or by consultation with a physician who confirms that symptoms are attributed to a depression diagnosis. For this item to be endorsed, the depression must be active in the last 7 days, as judged by its relationship to the resident's current functional, cognitive, and behavioural status; the need for nurse monitoring; or risk for death. The MDS manual does not include specific diagnostic criteria for the presence of depression.

Receipt of antidepressant medication. The assessor is asked to indicate how many days of the last 7 days the resident received an antidepressant medication. For the purposes of the current study, this item was recoded to indicate whether or not the resident had received any antidepressant medication in the last 7 days.

Receipt of non-pharmacological intervention. Assessors indicate if the resident received any interventions or special programs during the last 7 days. These included psychological therapy, group therapy, a behaviour symptom evaluation program, evaluation by a licensed mental health professional, and resident-specific environmental changes to address mood/behaviour patterns.

Predictor Variables

Dysphoria. Items from the MDS 2.0 considered symptoms of dysphoria included seven items contained in the MDS Depression Rating Scale (MDS-DRS; Burrows et al., 2000). These included negative statements, persistent anger, unrealistic fears, repetitive health complaints, repetitive anxious complaints, sad facial expression, and tearfulness. The scoring of these items was on a 3-point scale such that the highest score indicates a daily occurrence of the behavior. The internal consistency of the Depression Rating Scale exceeded .7 in previous research, with its validity established by correlations with the Hamilton Depression Scale and the Cornell Scale, and a >90% sensitivity to detect depression when tested against psychiatric diagnosis (Burrows et al., 2000).

Anhedonia. A measure termed here as the Anhedonia Index consisted of two withdrawal items from the MDS 2.0 (i.e., withdrawal from activities of interest; reduced social interaction) supplemented by an item on anhedonia from the mental health version of the Minimum Data Set (i.e., statements by a resident indicating a general lack of pleasure). The scoring of these items was also on a 3-point scale, such that the highest score (i.e., 2) indicates a daily occurrence of the symptom.

Cognitive status. The cognitive status of the resident was represented by scores on the Cognitive Performance Scale (CPS; Morris et al., 1994). This scale uses five items to construct a measure of seven cognitive impairment levels ranging from intact (category 0) to very severe impairment (category 6). These items include comatose status, short-term memory, ability to make self be understood, cognitive skills for daily decision-making, and independence in eating. The validity of the CPS has been established against the mini-mental measure (Morris et al., 1994).

Pain. The MDS records data on the frequency of pain symptoms and pain intensity. The MDS-Pain Scale categorizes pain symptom into those that are mild, moderate, or excruciating and occur never, less than daily, and daily. The validity of the MDS Pain measure has been established in nursing home populations (Cadogan, Schnelle, Yamamoto-Mitani, Cabrera, & Simmons, 2004). The measure was also shown to be highly predictive of pain scores on the Visual Analogue Scale (Fries, Simon, Morris, Flodstrom, & Bookstein, 2001).

Other predictor variables. Other measures used in data analysis included demographics (age, sex, type of facility, length of stay in residence), frequency of insomnia, and comorbid medical (e.g., hypertension, diabetes, cancer) and psychiatric conditions (anxiety, schizophrenia, and bipolar disorder).

Sample 2 – The RAI-HIP Data

Participants. The participants in Sample 2 come from a database of MDS 2.0 data collected as part of the Resident Assessment Instrument-Health Informatics Project (RAI-HIP). This project was a pilot study designed to test the applicability of the RAI series of instruments to form the basis of an integrated health information system. Its

primary purpose was to model transition activity of users across health care sectors and improve linkages between home care, acute care, long-term care, and mental health services. The secondary aim of the project was to provide an opportunity for agencies to pilot test the MDS system specific to their sector for use in day-to-day service provision, which includes functions such as care planning, outcome measurement, resource allocation, and strategic planning. Thus, MDS data were collected for long-term care, acute care, mental health, and home care patients across numerous Ontario cities, including Thunder Bay, Scarborough, Guelph, Kitchener-Waterloo, Whitby, and Etobicoke between the years 2000-2002.

These data were used to revisit the questions explored in Sample 1 regarding the role of symptom presentation in diagnosing and treating depression. Similar logistic regression models as applied to the data in Sample 1 were used to predict the likelihood of diagnosis and treatment given different categories of symptom endorsement presented in the MDS form.

Measures. The residents included in Sample 2 were assessed via the full MDS 2.0 tool (see Appendix B). The measures applied to this sample were identical to the measures used with the previous sample, with one exception. The Anhedonia Index used with Sample 2 was not supplemented with the anhedonia item extracted from the MDS for mental health. Thus, the Anhedonia index applied to this sample included only the two items on withdrawal from activities of interest and reduced social interaction.

Analytic Approach

Descriptive analyses included a delineation of the sociodemographic variables, comorbid conditions, and measures of pain and cognitive impairment that characterized a

subgroup of residents given a diagnosis of depression of the MDS. To examine the independence of the Depression Rating Scale items from those on the Anhedonia Index, exploratory factor analysis using the principal components method of extraction with oblique rotation was applied to the data. A series of logistic regression analyses were used to evaluate the associations between potential predictors of a depression diagnosis and the receipt of antidepressant treatment. The separate regression analyses modeling the prediction of diagnosed depression, antidepressant use, and combinations of diagnosis and antidepressant treatment all included the predictor variables of anhedonia, dysphoria, age, gender, facility type, Cognitive Performance Scale score, MDS Pain score, and insomnia. These predictors were chosen based on evidence for their relevance from previous literature, as well as on a crude analysis of the associations between the diagnosis and treatment of depression and various independent variables. From the final model, the independent effects of these variables on the likelihood of diagnosis and/or treatment were determined by deriving odds ratios and corresponding 95% confidence intervals (CIs). Interpretation of an odds ratio derived from such regression may refer to the significance of the Wald statistic or the corresponding confidence intervals. Although a Wald statistic significant at a given level is usually accompanied by confidence intervals that are either fully below or fully above 1 at the given level of significance, most publications refer to confidence intervals rather than to the Wald statistic. This study follows such practice and interprets the odds ratios by reference to the 95% CIs.

Results

Sample 1: The Thunder Bay/ London Long-Term Care Data

Comparisons across facilities. Comparison of participants by type of facility showed a significantly higher percentage of males ($p<.001$) in the veterans' facility than in the nursing homes. This difference is in an expected direction because most veterans from that cohort were male. The veterans' facility also had more residents with moderately severe, severe, and very severe impairment on the Cognitive Performance Scale as indicated by standardized adjusted residuals >2 in a significant χ^2 analysis ($\chi^2(6)=37.66, p<.001$). Because there was biased sampling toward the selection of residents with higher cognitive performance only in the nursing homes, this finding probably reflects a sampling difference rather than a population difference. The mean ages across facilities showed no significant differences (t[159]=0, p=1.00); both types of facilities had mean and median years of birth of 1920 and 1919, respectively.

There were no significant differences across type of facility for the frequency of diagnosed depression ($\chi^2(1)=.082$, $p>.72$) or the receipt of antidepressant medication ($\chi^2(1)=.997$, $p>.31$). Comparisons of diagnosed depression and the use of antidepressant medication showed no significant differences across type of facility. The proportions of residents with diagnosed depression were 31.4% in the nursing homes and 29.3% in the veterans' facility. The corresponding proportions of residents in receipt of antidepressant medication were 35.7% and 43.5%, respectively. The use of non-medicinal mood interventions was uniformly low, ranging from .6-6.8%, with no differences across type of facility.

Because the only difference between types of facility that unequivocally represents a difference between populations is the sex distribution, a decision to combine the samples to provide greater statistical power in subsequent analyses seemed appropriate. A limitation is that the combined sample contains a disproportionate number of males compared to the overall population of residents in long-term care.

Characteristics of combined sample. The combined sample included 162 residents from three nursing homes in Thunder Bay, Ontario (n=70) and a Veterans' long-term care facility in London, Ontario (n=92). None of the residents assessed were new admissions. With the exception of three residents who had lived in the nursing homes between one and three 3 months before the assessment, most residents had been in their long-term care residence for at least six months. The sociodemographic and clinical characteristics of Sample 1 are presented in Table 4. Most residents were between 75 and 84 years of age (53.1%), with a mean age of 82.92 (SD=6.86). Males greatly outnumbered females (64.8% vs. 35.2%). Most residents were widowed (48.8%), or married (25.3%). The average Cognitive Performance Scale score was 1.94 (SD=1.87), suggesting mild cognitive impairment. Alzheimer's Disease and other dementias were present in 16.7% and 18.5% of residents. The average MDS-Pain Score was 2.29 (SD=1.80), indicative of a moderate level of pain. The prevalence rates of psychiatric diagnoses other than depression were low, with 5.6% having a diagnosis of an anxiety disorder, 1.9% with bipolar disorder, and 2.5% with schizophrenia.

Analyses of structure and reliability. Exploratory factor analysis was used to examine the independence of the Depression Rating Scale items from those on the Anhedonia Index. A scree plot showed two main factors with eigenvalues of 3.09 and

1.74, and eigenvalues of 1.04 and 1 for the only other factors with eigenvalues ≥1. The two main factors correlated at -.27. Table 5 shows factor loadings for individual items of >.3. These loadings indicate that all the Depression Rating Scale items except for persistent anger correlated with the first factor and all the Anhedonia Index items correlated with the second factor. The only cross-factor correlation was sad facial expression, which showed a moderate loading on the second factor. These findings generally confirm the independence of items on the Depression Rating Scale from those on the Anhedonia Index.

Coefficient alpha reliabilities for the multi-item scales used in the study were .72 for the Depression Rating Scale, .76 for the Anhedonia Index, and .93 for the Pain Scale. Although the Cognitive Performance Scale uses a hierarchical scoring scheme, the coefficient alpha reliability for the items on the scale was .79. Consequently, the reliabilities for all the scales meet or exceed a minimal criterion of .7. These findings confirm the internal consistency of the scales.

Measures of anhedonia and dysphoria. In order to simplify the terminology for subsequent discussion, the terms *dysphoria* and *anhedonia* refer to scores above cut-off points for predicted depression derived from the Depression Rating Scale and the Anhedonia Index, respectively. The recommended cut-off range for depression on the Depression Rating Scale includes scores of 3 or higher (Burrows et al., 2000). The percentage of residents meeting this criterion in the present data was 31.7%. Because the Anhedonia Index is a new measure without an established algorithm for the prediction of depression, the decision was to use a cut-off that gave a comparable percentage of disordered cases to the Depression Rating Scale. A cut-off range of 2 or more on the

Anhedonia Index gave a similar percentage of 31.5% residents with scores indicating possible disorder. Of the residents within the cut-off range on either index, 35% showed only dysphoria, 34% showed only anhedonia, and 32% showed both dysphoria and anhedonia.

Evidence on the convergent and discriminant validities of the anhedonia and dysphoria measures are presented in Table 6 and include correlations against psychiatric and neurological diagnoses. Both measures showed a significant correlation with diagnosed depression (Φ=.19, p<.02 for anhedonia; and Φ=.21, p<.01 for dysphoria), but nonsignificant correlations with diagnoses of anxiety, bipolar disorder, schizophrenia, cerebral vascular accident, and dementia.

The prevalence and correlates of identified depression. The prevalence rates for an active diagnosis of major depression documented on the MDS and the receipt of antidepressant medication were 30.2% and 40.1%, respectively. Of those with a diagnosis of depression, 80% were taking antidepressants. Of those receiving antidepressants, 60% were depressed, suggesting that some antidepressants were given as a treatment for a condition other than depression (e.g., pain, insomnia). Table 7 presents sociodemographic and clinical characteristics of the residents with an active clinical diagnosis of depression on their MDS, as well as the prevalence rates of depression associated with these characteristics. The prevalence was slightly higher in women (35.1%) than men (27.6%) and among those between the ages of 75-84 yrs (34.9%). Prevalence rates were fairly uniform across degrees of cognitive impairment, with depression being slightly more common among those with severe cognitive impairment (34.48%). Nearly 20% of depressed residents also had a diagnosis of Alzheimer's Disease, with another 26.5%

having a dementia other than Alzheimer's. The only psychiatric diagnosis comorbid with a depression diagnosis was anxiety, with only *6.1% of depressed residents also having a* diagnosis of an anxiety disorder. The most common comorbid medical diagnoses among depressed residents were hypertension (32.7%) and diabetes (28.6%). The prevalence of depression was fairly consistent across pain categories, with most depressed residents having no pain or mild levels of pain. However, it should be noted that the prevalence rates of some of these conditions were low within the entire sample (e.g., only three residents had an anxiety disorder, and only fourteen had diabetes). The frequencies of various treatment modalities received by residents diagnosed with depression in this sample are outlined in Table 8. The documented use of non-medicinal intervention in the depressed subgroup was low relative to pharmacological intervention.

Predictors of depression diagnosis and treatment. Tables 9 and 10 show the variables that significantly predicted a diagnosis of depression and antidepressant use obtained from separate logistic regressions. In both analyses, only dysphoria, either alone or in combination with anhedonia, was a significant predictor. Residents with only dysphoria (not anhedonia) were more likely to have a diagnosis of depression (OR=3.71, CI=1.33-10.34), as were those with both anhedonia and dysphoria (OR=5.34, CI=1.66-17.20). Residents with dysphoria were also more likely to receive antidepressant medication (OR=2.75, CI=1.04-7.24 for dysphoria alone; OR=4.96, CI=1.59-15.50 for both anhedonia and dysphoria). Similar analyses to predict the use of other psychotropic medication (i.e., antianxiety or antipsychotic medication) identified insomnia as the only significant predictor (OR=2.72, CI=1.01-7.33). The low frequencies of non-medicinal mood interventions (e.g., psychological therapy, group therapy, behavioural symptom

evaluation program) precluded the application of multivariate analyses to evaluate the prediction of these forms of treatment.

The final analysis of Sample 1 data was a multinomial logistic regression that examined appropriate and anomalous combinations of diagnosis and treatment by antidepressants. Appropriate combinations include antidepressant use with diagnosed depression, whereas anomalous combinations include diagnosis without treatment and treatment without diagnosis. As illustrated in Figure 1, the percentages of residents within these categories were 24.1% (diagnosis and treatment), 6.2% (diagnosis without treatment), and 16.0% (treatment without diagnosis). Fifty-four percent fell within a null category of no diagnosis and no treatment.

The findings presented in Table 11 show that only dysphoria, either alone, or in combination with anhedonia, predicted a diagnosis of depression treated with antidepressants (OR=4.52, CI=1.46-13.98 for dysphoria alone; OR=9.09, CI=2.32-35.70 for both anhedonia and dysphoria). However, only anhedonia in the absence of dysphoria predicted the anomalous combinations of diagnosis without treatment (OR=7.79, CI=1.04-58.55) and treatment without a depression diagnosis (OR=3.83, CI=1.02-14.42). Figure 2 illustrates these relationships by the frequency of anhedonic and dysphoric symptom profiles within each diagnosis-treatment category.

Revising the anhedonia measure: A reanalysis. The anhedonia index used in the above analyses included an extra item on anhedonia that was adapted from the MDS-MH (i.e., verbal statements of a general lack of pleasure in life). This item is not a standard item on the MDS used in nursing home settings. To determine if a measurement approach more consistent with traditional MDS assessments in long-term care would lead to

different findings with the current sample, the analyses relevant to the anhedonia were revised by including only two items on the anhedonia index (i.e., withdrawal, reduced social interaction). This revision did not significantly alter the main findings reported for Sample 1. The two-item anhedonia index maintained its independence from the Depression Rating Scale items, with items loading on separate factors in a Principal Components Analysis (oblique rotation). The associations between the anhedonia and dysphoria measures with the diagnosis of depression did not change. Only dysphoria, either alone (OR=4.13, CI=1.56-11.13), or in combination with anhedonia (OR=5.16, CI=1.44-18.46), contributed significantly to the likelihood of having a diagnosis of depression. The revised measurement approach also produced little change in the predictive relationship between anhedonia symptoms and the receipt of antidepressant medication. Antidepressant treatment was more likely only if dysphoria was present (OR=2.79, CI=1.11-7.02 for dysphoria alone; OR=6.73, CI=1.86-5.43 in combination with anhedonia). The significant predictors of depression diagnosis and treatment combinations did not change, with the exception of the scenario in which treatment was provided in the absence of diagnosis. Both anhedonia (OR=4.30, CI=1.12-16.59) and a combination of anhedonia and dysphoria (OR=6.85, CI=1.15-40.65) were significant predictors.

Sample 2: The RAI-HIP Data

Sample characteristics. MDS assessments were available for 1566 men and women from 22 nursing homes and homes for the aged across Ontario. Only residents who were aged 65 years and over and not in a comatose state were included in the analyses (n=1477). Two of the residents were new admissions; the rest were residents for

whom a quarterly re-assessment MDS was completed. The average length of stay at time of assessment was 48.33 months (SD=64.08; median=27.19). Table 12 summarizes the sociodemographic and clinical characteristics of the sample. Most residents were in the old-old age group (i.e., 48.5% were 85 years and over), with a mean age of 83.69 (SD=7.93). Women far outnumbered men (76.2% vs. 23.5%). Most residents were widowed (57.5%), married (19.4%), or never married (14.6%). The average CPS score was 3.15 (SD=2.07), indicating moderate impairment. The average Pain Scale score was .80 (SD=0.95), suggesting a mild degree of pain. Most residents (60.8%) had three or fewer comorbid medical diagnoses (e.g., cancer, dementia, cerebral vascular accident, hypertension).

Analyses of structure and reliability. Similar to the analytical procedures applied to the Sample 1 data, an exploratory factor analysis was used to examine the independence of the Depression Rating Scale items from the MDS-Anhedonia Index. A principal-component method of extraction resulted in a scree plot showing two factors with eigenvalues greater than 1 (i.e., 2.72 and 1.62). An oblique rotation of these two main factors resulted in a correlation of 0.18. Table 13 shows factor loadings for individual items >.3. These loadings indicate that all the Depression Rating Scale items correlated with the first factor, whereas both Anhedonia items correlated with the second factor. These findings confirm the independence of items in the Depression Rating Scale from items in the Anhedonia Index.

The coefficient alpha reliabilities of each scale were comparable to those reported previously for Sample 1. The reliability coefficients were .70 for the Depression Rating Scale, .86 for the Anhedonia Index, .94 for the Pain Scale, and .79 for the Cognitive

Performance Scale. These values provided further confirmation of the internal consistency of the scales.

Anhedonia and dysphoria. Unlike the Anhedonic Index used with the Sample 1 data, which included a single item adapted from the MDS for Mental Health assessing the frequency with which the resident made statements indicating a general lack of pleasure in life, the index used in the Sample 2 dataset includes only two items (i.e., withdrawal from activities, reduced social interaction). The percentage of residents meeting the cutoff score of 3 or higher on the Depression Rating Scale was 28.3%. A cut-off range of 1 or more on the Anhedonia Index gave a similar percentage (i.e., 27.6) of residents with scores indicating possible disorder. Of the residents within the cut-off range on either index, 37.9% showed only dysphoria, 35.5% showed only anhedonia, and 26.5% showed both dysphoria and anhedonia.

Evidence for the convergent and discriminant validity of the anhedonia and dysphoria measures is summarized in Table 14 and included a significant correlation with depression (ϕ=.20, $p<.001$ for dysphoria; ϕ=.09, $p<.001$ for anhedonia), but nonsignificant correlations with diagnoses of bipolar disorder and dementia.

The prevalence and correlates of identified depression. The prevalence of documented major depression in this sample was 16.0%. Table 15 presents the sociodemographic characteristics of the residents with an active clinical diagnosis on the MDS, as well as the prevalence rates of depression associated with these characteristics. Depression was slightly more prevalent in women (16.8%) than men (14.3%) and among those in the younger age groups (18.4% of residents aged 65-74 years vs. 14.29% of residents 85 years old and over). Depression was also more prevalent among residents

who were cognitively intact (22.0% of residents with no/mild impairment). However, 12.0% of depressed residents also had a diagnosis of Alzheimer's disease and another 35.9% had a diagnosis of dementia other than Alzheimer's. The most common comorbid medical diagnoses were hypertension and diabetes, with one-quarter of depressed residents also having one or both of these diagnoses. Depression was more prevalent among those with mild (22.2%), moderate (23.4), or severe (20.8%) pain. The most common comorbid psychiatric diagnosis was anxiety, with 12% of depressed residents also having a diagnosis of an anxiety disorder documented in their MDS assessment.

Twenty-eight percent of all residents were receiving antidepressant medication. Seventy percent of depressed residents were receiving an antidepressant. Forty percent of those on antidepressants were depressed. Antianxiety agents were the next most common pharmacotherapy among the depressed residents (29.8%), followed by antipsychotics (26.7%). The prevalence rates of non-medicinal mood interventions were uniformly low, ranging from 0-8.6%, with the most common intervention being a referral to a licensed mental health professional. The frequency with which the various treatment modalities were provided to the residents is presented in Table 16.

Predictors of diagnosed depression and treatment. The separate regression analyses to predict diagnosed depression, treatment, and combinations of treatment included the following as predictors: facility, dysphoria, anhedonia, gender, age, insomnia, Pain Scale score, CPS score, number of comorbid medical diagnoses, and length of stay in facility at time of assessment. The variables that significantly predicted a diagnosis of depression are presented in Table 17. Women were more likely to have a diagnosis of depression than men (OR=1.69, CI=1.12-2.56). Older age was associated

with a lesser likelihood of having a diagnosis of depression (OR=.97, CI=.95-.99). Cognitive impairment was inversely related to a diagnosis of depression, with the more impaired residents being less likely to have a depression diagnosis (OR=.81, CI=.74-.88). Finally, only dysphoria, either alone or in combination with anhedonia, significantly predicted a diagnosis of depression (OR=2.45, CI=1.61-3.73 for dysphoria alone; and OR=4.83, CI=3.06-7.61 for a combination of anhedonia and dysphoria). Anhedonia in the absence of dysphoria was not a significant predictor of depression diagnosis (OR=1.60, CI=1.00-2.57).

Table 18 presents the significant predictors of the receipt of antidepressant medication. Age was inversely related to the receipt of antidepressants; older age was associated with a lesser likelihood of being on antidepressant medication (OR=.96, CI=.94-.97). Residents having more severe levels of pain were more likely to be on an antidepressant (OR=1.26, CI=1.10-1.45), whereas those with more severe impairment in cognitive functioning were less likely to be on antidepressive medication (OR=.88, CI=.82-.94). Both dysphoria and anhedonia were associated with a higher likelihood of receiving an antidepressant (OR=2.14, CI=1.51-3.04; and OR=1.84, CI=1.28-2.65, respectively).

The final analysis used multinomial regression analysis to evaluate associations between the predictor variables and different combinations of depression diagnosis and treatment. As depicted in Figure 3, the percentage of residents within these categories include 11.1% with a diagnosis and treatment, 4.9% with a diagnosis but no treatment, 16.5% with treatment but no diagnosis, and 65.4% falling within a null category of no diagnosis and treatment.

The findings presented in Table 19 show that both anhedonia and dysphoria, as well as a combination of the symptoms (OR=2.31, CI=1.35-3.98 for anhedonia only; OR=3.04, CI=1.84-5.02 for dysphoria alone; OR=6.10, CI=3.47-10.70 for both anhedonia and dysphoria), predicted the combination of depression diagnosis and treatment. Women were also more likely to have a combination of diagnosis and treatment (OR=1.74, CI=1.07-2.84), as were younger residents (OR=.95, CI=.93-.97), and those with less cognitive impairment (OR=.76, CI=.69-84). The combination of treatment without a diagnosis was also predicted by anhedonia (OR=1.61, CI=1.04-2.48), dysphoria (OR=1.95, CI=1.28-2.98), and combinations of anhedonia and dysphoria (OR=2.48, CI=1.48-4.14). This combination was also slightly more likely in younger residents (OR=.96, CI=.94-.98) and those who were experiencing pain (OR=1.26, CI=1.06-1.50). However, dysphoria (but not anhedonia) was the only significant predictor of a diagnosis of depression without treatment (OR=3.44, CI=1.96-6.04 for dysphoria alone; OR=5.68, CI=2.79-11.56 for both anhedonia and dysphoria). Figure 4 illustrates these relationships by the frequency of anhedonic and dysphoric symptom profiles within each diagnosis-treatment category.

Results Summary

Sample 1: The Thunder Bay/London data. In total, 30.2% (n=49) of the 162 long-term care residents included in this sample had a diagnosis of depression documented on their MDS assessment. Eighty percent of depressed residents were treated with an antidepressant and 60% of residents receiving an antidepressant had a diagnosis of depression. Depression was more prevalent among residents who were female, aged 75 to 84 years, and who were more cognitively impaired. Approximately one-third of residents

had dementia, hypertension, and/or diabetes. A diagnosis of depression was significantly more likely if the resident had clinically significant levels of dysphoria (i.e., met or exceeded the cut-off score on the Depression Rating Scale). Dysphoric (but not anhedonic) residents were also more likely to receive an antidepressant. The most prevalent diagnosis-treatment combination was a diagnosis of depression that was being treated with antidepressants (24%). When the predictors of the different categories of diagnosis and treatment were considered, the appropriate combination of a depression diagnosis and antidepressant treatment was predicted only by dysphoria. However, only anhedonia contributed to a greater likelihood of having a diagnosis of depression that was not being treated with antidepressants. Anhedonia was also the only significant predictor of the scenario in which antidepressant treatment was given in the absence of a diagnosis of depression.

Sample 2: The RAI-HIP data. Of the 1477 long-term care residents aged 65 and over in this sample, 16% had an MDS-documented diagnosis of depression. The overall prevalence of antidepressant treatment was 28%; of those residents with an active diagnosis of depression, 70% were receiving antidepressant medication. Only 40% of residents receiving an antidepressant medication were depressed, suggesting that this treatment was being used for conditions other than depression. Thirty percent of depressed residents were receiving an antianxiety agent and 27% were given antipsychotics. Depression was more prevalent among residents who were female, aged 65 to 74 years, and who were experiencing pain. Twelve percent of depressed residents also had a diagnosis of Alzheimer's Disease; 36% had a form of dementia other than Alzheimer's. Twelve percent of depressed residents also had a diagnosis of an Anxiety

Disorder. The most common comorbid medical diagnoses were hypertension and diabetes.

Separate logistic regression analyses to predict the likelihood of depression diagnosis and treatment revealed that a diagnosis of depression was more likely if the resident was female, of younger age, had less cognitive impairment, and had clinically significant levels of dysphoria. The receipt of antidepressant treatment was more likely if the resident was younger, had less cognitive impairment, and were experiencing higher degrees of pain. Both dysphoria and anhedonia emerged as significant predictors of antidepressant treatment.

The most common diagnosis-treatment combination was the receipt of antidepressant medication in the absence of a diagnosis of depression (16.5%). Evaluations of how the symptom presentation relative to anhedonia and dysphoria related to these combinations revealed that a combination of diagnosis and treatment was predicted by both anhedonia and dysphoria, as well as gender, age, pain, and degree of cognitive impairment. Both dysphoria and anhedonia were also related to a greater likelihood of receiving treatment for depression in the absence of a documented diagnosis, as were age and pain severity. However, only dysphoria predicted a diagnosis of depression that was not being treated with antidepressants.

A comparison of the results of Sample 1 and Sample 2. Table 20 presents the similarities and differences between the findings for Samples 1 and 2. The first difference relates to the prevalence rates for depression diagnosis and antidepressant treatment. The prevalence of depression among the residents in Sample 1 was almost twice as high than that found in Sample 2 (i.e., 30% vs. 16%). Forty percent all residents in Sample 1 were

receiving antidepressant medication, compared to 28% in Sample 2. A higher proportion of depressed residents were being treated with antidepressants in Sample 1 (80%) than in Sample 2 (70%). The sociodemographic and clinical characteristics of depressed residents were similar across samples. In both samples, depression was more prevalent among residents who were female, from a younger age category (i.e., less than 85 years old), and who were experiencing pain. Rates of comorbidity among depressed residents were fairly high in both samples with dementia, hypertension, and diabetes. The rates of comorbidity of depression with other psychiatric diagnoses were uniformly low across samples, with an anxiety disorder being the most common dual diagnosis (6% in Sample 1 vs. 12% in Sample 2). The only difference between the samples was in the relationship between cognitive impairment and the prevalence of depression. In the first sample, rates of depression were fairly stable across degrees of cognitive impairment, whereas in the second sample, a depression diagnosis was more often assigned to those with less cognitive impairment.

With respect to the predictors of a diagnosis of depression, regression analyses of Sample 1 data revealed that only dysphoria was significantly related to a greater likelihood of having a depression diagnosis. Age, gender, cognitive impairment, pain, insomnia, and anhedonia did not contribute to the likelihood of a depression diagnosis. Analyses of Sample 2 data revealed different predictors of a depression diagnosis. Residents were more likely to be have a depression diagnosis if they were female, younger, less cognitively impaired, and had clinically significant levels of dysphoria.

Analyses of the predictors of the receipt of antidepressant treatment also revealed inconsistent results. In Sample 1, dysphoria was the only significant predictor of

antidepressant treatment. Among the residents in Sample 2, treatment with antidepressants was more likely if they were younger, had less cognitive impairment, were experiencing more pain, and had dysphoria, anhedonia, or a combination of these symptoms. Gender and insomnia were not significant predictors of antidepressant treatment in either sample.

An evaluation of the associations between depressive symptom presentations (i.e., anhedonia and dysphoria) and different combinations of diagnosis and treatment also produced inconsistent results between both datasets. In Sample 1, the combination of a depression diagnosis with antidepressant treatment was predicted by only dysphoria; both anhedonia and dysphoria predicted this combination in the second sample. The receipt of antidepressant medication in the absence of a diagnosis was predicted only by anhedonia in the first sample; both anhedonia and dysphoria predicted this combination in Sample 2. Finally, a higher likelihood of having a diagnosis of depression that was not being treated with antidepressants was related to only anhedonia in the first sample; only dysphoria predicted this diagnosis-treatment combination in the second sample.

Discussion

The purpose of the present study was to examine patterns of identified depression and treatment relative to the symptom presentation endorsed by elderly nursing home residents. Information derived from the MDS assessments of nursing home residents included in two separate data sets were analyzed to determine the relative contribution of predictor variables (i.e., dysphoria, anhedonia, cognitive impairment, pain, gender, age) to MDS-listed diagnosis and treatment practices. Sample 1 included 162 residents from three nursing homes in Thunder Bay, Ontario, and 92 residents from a Veterans' Care

Facility in London, Ontario. Sample 2 included 1477 nursing home residents from 22 facilities across Ontario. It was hypothesized that the diagnosis and treatment of depression would be less likely when the affective symptom profile was characterized by anhedonia in the absence of a dysphoria. Because this depressive picture represents an atypical affective profile, which has been termed "depression without sadness", it was proposed that it could pose a significant challenge to the accurate detection and treatment of depression in nursing home residents. This study represents the first empirical investigation of the diagnosis and treatment patterns relative to differences in affective profiles.

The Prevalence of Identified Depression

In sample 1, which included residents from a Veterans' long-term care facility and three nursing homes, 30% of residents were identified as having a depressive disorder on their MDS assessment. In sample 2, which included residents from 22 nursing homes across Ontario, 16% of residents were identified as depressed. The prevalence estimate of 30% within the first sample is higher than rates reported in earlier large-scale studies (Brown, Lapane, & Luisi, 2002; Canadian Institute of Health Information, 1998; Hirdes et al., 2000; Jones, Marcantonio, & Rabinowitz, 2003; Jongenelis et al., 2004), but is consistent with some other findings (Anderson, Buckwalter, Buchanan, Maas, & Imhof, 2003). A prevalence rate of 16% is more consistent with estimates reported previously (Canadian Institute of Health Information, 1998; Jones, Marcantonio, & Rabinowitz, 2003).

The higher prevalence rate in sample 1 than sample 2 could have two possible interpretations. One conclusion could be that Sample 1 actually had a greater number of

depressed residents (i.e., a conclusion related to resident characteristics). An alternative explanation, however, relates to recognition rates of depression. Because most of the residents comprising sample 1 came from a Veterans' care facility, differences in recognition rates between the samples could be attributed to differences in provider characteristics. For example, Veterans' facilities are typically better funded, have higher staff-resident ratios, and have more RN's than RPN's compared to traditional long-term care facilities (Dr. M. Gibson, personal communication, February 24, 2005). A higher staff-patient ratio could translate into a greater opportunity for symptom identification by nursing staff, who are likely to be consulted by the physician when making the depression diagnosis. In addition, a better-resourced health care team may also mean that assessors have better access to psychogeriatric consultants when recording a diagnosis.

Various differences in the characteristics of the samples may also be contributing to a higher prevalence of identified depression in Sample 1. Seventy of the residents included in the first sample were selected on the basis of an impression by the nurse manager that their cognitive skills were such that they could complete questionnaires (due to their inclusion in a larger study on depression in which self-report was a component). Thus, this sample had a higher level of cognitive functioning than sample 2. It was determined from regression analyses that cognitive status is a significant predictor of a depression diagnosis, with identified depression being more likely among residents with less cognitive impairment. Therefore, it seems plausible that at least part of the higher prevalence of identified depression in sample 1 can be explained by higher cognitive functioning in the residents.

An additional sample characteristic that may have contributed to the differences in rates of identified depression between the samples concerns the age of the residents. Sample 1 was comprised of younger residents, with the large majority of residents being younger than age 85. More than half of the residents in sample 2, however, were aged 85 years and over. Since younger age was revealed as a significant predictor of having a depression diagnosis, it is possible that the higher prevalence estimate of depression in sample 1 could also be partly attributed to the younger age of the residents.

Rates of Depression Treatment

The overall prevalence of antidepressant use was 40% in sample 1 and 28% in sample 2. The variability in rates between the samples may reflect clinical responsiveness; we would expect that the sample with a higher rate of identified depression would also have a higher rate of antidepressant use. Of those residents who were identified as depressed, 80% were receiving antidepressants in sample 1, compared to 70% in sample 2. These rates are higher than those reported in previous research (Brown, Lapane, & Luisi, 2002; Crutchfield, 2001; Weintraub et al., 2002), but are a consistent with a recent report (Boyle et al., 2004). The present findings also contradict earlier reports stating that most depression in nursing home residents is untreated (Heston et al., 1992; Koenig et al., 1992; Rovner et al., 1991). The high rates of antidepressant prescribing are also consistent with best practices guidelines (AGS & AAGP, 2003), which identify antidepressant medications as the first line of treatment for major depression in nursing home residents.

Which Resident Characteristics Predict a Diagnosis of Depression?

Analyses of sample 2 data revealed that residents were more likely to be identified as depressed if they were female, less than 85 years old, and had less cognitive impairment. These findings are consistent with other research on the predictors of depression in elderly samples (Brown, Lapane, & Luisi, 2002; Jones, Marcantonio, & Rabinowitz, 2003). The statistical significance of these predictors could be interpreted as more depression in residents with these characteristics, or alternatively, as evidence for the under-recognition of depression in specific subgroups. For example, as surmised by other authors (e.g., Cassileth et al., 1984; Jones, Marcantonio, & Rabinowitz, 2003), a lower prevalence of depression in the old-old subgroups could reflect more effective coping in this group. An alternative explanation relates to study design. The current study is cross-sectional and as such, could be prone to selective survivorship. Previous research has shown that depression is associated with higher mortality rates, particularly among the oldest age groups (Roose & Sackheim, 2004; Schulz et al., 2000). Thus, the oldest residents included in this sample may represent the most robust individuals of this subgroup, with more adaptive coping mechanisms.

A second alternative explanation for a lower likelihood of depression in the old-old subgroup relates to possible ageism by care providers. Previous research has alluded to the attribution of depressive symptoms to the aging process by both clinicians and the elderly individuals themselves (Gallo, Anthony, & Muthén, 1994; Sirey et al., 2001). Thus, according to this explanation, depressive symptoms in the old-old subgroup may be more likely viewed as an inevitable consequence of old age, rather than a depressive disorder.

The finding of a lower likelihood of identified depression in more cognitively impaired individuals is also consistent with previous research (Brown, Lapane, & Luisi, 2002). This finding could also be interpreted as a lower prevalence of depression in this subgroup, or as an indication of measurement bias among levels of cognitive functioning. The literature is clear on the diagnostic challenges posed by cognitive impairments that co-exist with depressive symptoms (Greenwald et al., 1989; NIH Consensus Panel, 1992; Yesavage, 1992). Thus, it is possible that depression is not as easily recognized in more cognitively impaired residents. In addition to the complexities of depressive symptoms that may mimic the symptoms of dementia (McGuire & Rabins, 1994), these residents may also be less able to communicate symptoms to care providers.

A higher likelihood of identified depression in females is also supported by previous research (Brown, Lapane, & Luisi, 2002; Murell, Himmelfarb, & Wright, 1983). Previous research has also suggested that men are less likely than women to report mood-related symptoms and dysphoria (Brown et al., 1995; Kuehner, 2003; Winkler et al., 2004). This reporting bias among males may make them more prone to the underdetection of depression (Potts, Burnam, & Wells, 1991).

Age, cognitive status, and gender were not identified as significant predictors of depression diagnosis in sample 1. This finding likely reflects the homogeneity of the sample. A large majority of the residents were male, in addition to a more restricted age range (i.e., fewer old-old residents) and less variability in cognitive impairment (i.e., half of the residents were chosen based on their ability to communicate in self-report questionnaires).

What Resident Characteristics Predict Treatment?

The receipt of antidepressant treatment was more likely among the residents in Sample 2 if they were younger, had less cognitive impairment, or were experiencing pain. A lower likelihood of antidepressant treatment in older residents has been attributed to a greater prevalence of comorbid physical illness, which may complicate medication regimes or be viewed as a contraindication to antidepressant therapy (NIH Consensus Panel, 1992). Ageism may also contribute to the nihilistic perception that the oldest residents may be less likely to benefit from treatment (Roose & Dalack, 1992). This pessimism may in part be related to the general exclusion of the oldest-old (aged $\geq$ 85 years) in clinical trials used to inform treatment management guidelines (NIH Consensus Panel, 1992).

The role that cognitive impairment has in determining the likelihood of treatment may be interpreted in the context of the communication abilities of the residents. As discussed previously, cognitively intact individuals are more able to communicate depressive symptoms and treatment choices.

A greater likelihood of antidepressant treatment among residents reporting more frequent or severe pain symptoms is understandable in light of frequent comorbidity between pain and depressive symptoms (Casten, Parmelee, Kleban, Lawton & Katz 1995; Cohen-Mansfied & Marx, 1993, Parmelee, Katz & Lawton, 1991). Antidepressants are commonly used in response to subjective reports of pain in older adults (Burris, 2004; Maizels & McCarberg, 2005).

How Does Symptom Presentation Relate to the Likelihood of Diagnosis and Treatment of Depression in Long-Term Care?

It was hypothesized that anhedonia, which manifests as a quieter, less typical, picture of depression relative to dysphoria, would pose a unique challenge for the diagnosis and treatment of depression in elderly nursing home residents. Specifically, it was predicted that residents who were exhibiting the symptoms of withdrawal and/or reduced social interaction would be less likely to have a diagnosis of depression or to receive treatment than those with a more typical presentation of depressive symptoms (e.g., depressed mood, tearfulness, statements of distress). Although previous reports have suggested that "depression without sadness" is a form of depression more prevalent in the elderly (Baker et al., 1995; Gallo, Anthony, & Muthén, 1994; Lawton et al., 1996), and particularly in the nursing home population (Steffens et al., 2000), the diagnosis and treatment patterns relative to anhedonia and dysphoria have not been evaluated. This study represents the first controlled evaluation of these associations.

The evidence derived from logistic regression analyses of the predictors of depression diagnosis support the hypotheses. Only residents who presented with symptoms of dysphoria (either alone or in combination with anhedonia) were more likely to receive a depression diagnosis. A presentation of anhedonia in the absence of dysphoria did not predict a depression diagnosis. These findings support previous assertions (Gallo, Rabins & Hopkins, 1999; Stones & Kirkpatrick, 2002; U.S. Department of Health and Social Services, 1999) that residents particularly at risk for the under-recognition of depression are those with an anhedonic profile of depression. It appears that residents who are exhibiting "quieter" symptoms of depression, whereby

they may be quietly withdrawing from activities and interacting less with other residents and staff, are less likely to be identified as depressed. Those residents, however, who are behaving or communicating in a manner that indicates a depressed mood (e.g., with crying, sad facial expression, negative statements) are significantly more likely to be identified as depressed. Using the cut-offs deployed in the present study, these residents included approximately one-third of all residents with symptoms of depression in both samples.

With respect to the predictors of antidepressant treatment, different results emerged for each sample. In Sample 1, only dysphoria (either alone or in combination with anhedonia) predicted the receipt of antidepressants. In Sample 2, both dysphoria and anhedonia, and a combination of these symptoms, predicted antidepressant use. These findings may suggest that the anhedonia was not viewed as indicative of a depressive disorder, but in need of treatment.

Combinations of depression diagnosis and treatment. The most frequent depression diagnosis and treatment categories among residents in both samples were treatment without a diagnosis (16% and 17%), and diagnosis with concurrent treatment (24% and 11%). These results are similar to previous reports (Weintraub et al., 2002) that 19% of residents had clinically significant depressive symptoms that were being treated with antidepressants, and 27% of residents on antidepressants without having significant depressive symptoms. The authors interpreted the latter findings as indicative of the successful treatment of symptoms with antidepressants. An interpretation as such applied to the current data, in addition to the findings that at least 70% of depressed residents were on antidepressants, paints a more positive picture of antidepressant treatment

practices than that reported in other research (e.g., Heston et al., 1992; Brown, Lapane, & Luisi, 2002).

Findings regarding the relationship shared by anhedonia and dysphoria with diagnosis-treatment categories differed between the samples. The most notable difference existed in the predictors of the scenario in which a depression diagnosis was present in the absence of antidepressant treatment. This scenario was predicted only by anhedonia in sample 1, whereas dysphoria was the only significant predictor of this combination in sample 2. A greater likelihood of this combination associated with dysphoria in sample 2 may reflect a tendency for only the more severe presentations of dysphoria to be treated with antidepressants. This practice would be consistent with best practice guidelines (AGS & AAGP, 2003), which recommend that milder forms of depression be treated with non-pharmacological treatment, rather than antidepressants. However, the influence of severity of symptoms on treatment practices cannot be confirmed with the current data. It is also noteworthy that this diagnosis-treatment combination (i.e., concurrent diagnosis and treatment) was infrequent in both samples (6% and 5% in samples 1 and 2, respectively).

Limitations of the Present Study

The present study relied on the documentation recorded on the resident's MDS as an indication of a depression diagnosis. Although the MDS has been found to have excellent reliability (Hawes et al., 1995), with adequate internal consistent estimates among its depression measures (Koehler et al., 2005), potential problems may exist in the way that the depression diagnosis item is recorded. MDS assessors are instructed to complete this item in consultation with a physician and on the basis of documentation by

a physician in the resident's medical record. It is possible, however, in light of time constraints and the limited availability of physicians for consultation, that this item was completed based on the clinical judgment of the assessor (typically a member of nursing staff). A further concern related to this is the possible lack of independence between the predictor items and the diagnosis (dependent variable) if they were both assessed and documented by the same nurse assessor.

In addition, in other than the Veterans' facility included in sample 1 (in which there is likely better access to mental health professionals), it is highly unlikely that most of the residents included in the current study were evaluated by psychologists or psychiatrists trained in mental health diagnosing. Clinicians who do not have specialized training in the diagnosis of mood disorders in the elderly may be more likely to misinterpret symptom clusters, overinterpret transient states, or underdetect atypical presentations. It has also been suggested that the completion of the MDS by caregivers who are not directly involved in the care of the resident could have serious implications for the accuracy of depression recognition (Hendrix, Sakauye, Karabatsos, & Daigle, 2003). Therefore, the present method of assessing depression diagnosis may be less reliable than other approaches using more rigid diagnostic criteria to determine the prevalence of depressive disorders. However, the approach used in the present study is consistent with general long-term care practices. In addition, the determination of absolute prevalence estimates was not the main focus of the current research. The present study is the first to evaluate the patterns of diagnosis and treatment relative to differences in symptom presentation among older nursing home residents. Further, unlike previous investigations (e.g., Brown, Lapane, & Luisi, 2002), the present study used clinically

significant depressive symptomatology (i.e., according to cut-offs on the MDS-DRS and MDS-Anhedonia Index), rather than exclusively relying on a documented diagnosis to evaluate the likelihood of antidepressant treatment. Subsyndromal depression is believed to be considerably more frequent in nursing home residents (Koenig et al., 1998; Parmelee, Katz, & Lawton, 1989), and just as disabling as major depression (Gallo et al., 1997; Rosen, Mulsant, & Pollock, 2000).

A further limitation is the fact that the presence/absence of treatment for depression was not based on a specific assessment and recording of all medications received by the resident in the past week. Thus, the current data do not permit evaluations of the adequacy of the antidepressant treatment received. Other reports have documented that depressed nursing home residents often receive doses less than the medication's minimal effective dose recommended by its manufacturer for the treatment of depression (Brown, Lapane, & Luisi, 2002). Thus, although approximately 75% of the depressed residents in the current sample were receiving antidepressants, it is possible that some of the residents may have been receiving inadequate doses.

Finally, interpretations of some of the inconsistencies in the findings between sample 1 and sample 2 in the present study were based on speculations of proposed differences in facility-type characteristics. For example, it was proposed that higher staff-resident ratios and a better-resourced health care team in the Veterans' facility may have influenced the higher rate of identified depression in sample 1. However, the current data do not allow a controlled evaluation of the effect of facility characteristics on diagnosis and treatment practices. There is previous research to suggest that facility-level characteristics can influence MDS-documented diagnoses of depression (Schnelle, Wood,

Schnelle, & Simmons, 2001). Multivariate analyses of resident and facility characteristics, and the interactions between these variables, represent an important area for future research.

Implications and Future Directions

The findings of the present research suggest possible implications for the use of the MDS in evaluating diagnosis and treatment patterns in long-term care. First, the present investigation provided support for the criterion validity and internal consistency of an Anhedonia Index derived from the data. This index had utility in evaluating important relationships between affective profiles and diagnosis-treatment practices. Future research should focus on providing additional support for this index as a reliable and valid method of assessing anhedonic presentations of depression in nursing home populations. In addition, in light of previous concerns about the reliability of the MDS diagnosis item related to the process in which depression diagnosis is assessed (Hendrix et al., 2003), the literature could benefit from future investigations of the procedures used to assess and document a depression diagnosis among nursing home residents (e.g., whether or not assessor consulted with physician or professional trained in diagnosis, if clinical judgment was based on an evaluation of symptoms, the level of direct care assessor has with resident).

Previous investigations have suggested the value of supplementing MDS assessments with formal assessment tools of depression symptomatology (Boyle et al., 2004; Cohen, Hyland, & Kimhy, 2003). For example, Cohen and colleagues (2003) evaluated the outcome of depression screening using the Cornell Scale for Depression in Dementia (Alexopoulos, Abrams, Young, & Shamoian, 1988) on the recognition and

treatment of depressed residents with dementia from four nursing homes who were due for their quarterly MDS re-assessment. Their results showed that whereas only 16% of residents scoring above the cutoff point on the Cornell Scale (i.e., ≥5) were prescribed antidepressants before the screening program was implemented, 36% of these residents were given prescriptions after the screening was introduced. The benefits and feasibility of such practices need to be investigated further.

The low frequencies of non-pharmacological mood treatments in the present study precluded evaluations of the predictors of these modes of intervention. The infrequent provision of these types of intervention is consistent with general practice in nursing home settings where limited resources often prevent the availability of other therapeutic interventions, as well as best practice guidelines stating that antidepressants are the treatment of choice for most cases of geriatric depression (AGS & AAGP, 2003). However, it is possible that different relationships between affective profiles and the likelihood of depression diagnosis and treatment may have emerged if non-pharmacological interventions could have been analyzed. For example, it is possible that anhedonic presentations of depression would be more likely attended to with activity programming (e.g., recreation therapy) to foster more social interaction and participation in activities of interest. The research could benefit from future investigations of these relationships. It would also be useful to investigate the differential responsiveness of variations in symptom presentation to different types of interventions. For example, it is possible that strategies employing behavioural activation techniques may be more effective for anhedonia, whereas cognitive therapy focusing on negative or dysfunctional thought patterns may be more helpful for dysphoria.

The present research suggested that specific subgroups of nursing home residents (e.g., cognitively impaired, older, male residents) may be at a greater risk for unrecognized depression. The literature could benefit, therefore, from a closer inspection of long-term care residents stratified on the basis of these characteristics to determine differential rates of diagnosis and treatment.

Finally, the findings derived from the present study showing that residents who presented with an anhedonic presentation of depression in the absence of dysphoria were less likely to have a depression diagnosis and treatment, underscore the need for the continued implementation of educational interventions with clinicians on the unique characteristics of late-life depression. There is also the need for well-controlled evaluations of the effectiveness of these interventions in improving current care practices. Unfortunately, research to date has shown that these interventions have not led to long-term changes in practice patterns post-intervention (Callahan, 2001). Additional well-controlled evaluations could help to inform more effective approaches to improving practice patterns among those assessing and treating the depressed elderly.

Final Remarks

The rapidly growing numbers of older adults over the next several decades places an unprecedented importance on the accurate detection and treatment of late-life depression. The significance of this need is even more compelling in nursing home settings, where depression is more prevalent, complicated, and devastating. There is evidence that depression in older adults is unique in its symptom presentation, with a greater tendency for anhedonic symptoms in the absence of dysphoria. General practitioners have identified this presentation of depression, which has been described as

"depression without sadness", as the most significant challenge in accurately diagnosing and treating late-life depression. The present study provided support for this assertion. Only nursing home residents who presented with dysphoria were more likely to be identified as depressed .on their MDS assessments. Anhedonia did, however, contribute to the likelihood of treatment. These findings underscore the need for continued evaluations of the diagnosis and treatment practices in long-term care relative to affective profiles.

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Table 1

Prevalence Estimates of Major Depressive Disorder in Elderly Community and Institutional Samples

	Authors	Sample	N	Measures	Estimates
Community Samples	Baltes et al. (1993)	Random sample in West Berlin (70+ yrs)	156	DSM-III-R (APA, 1987)	4.8% with major depression
	Beekman et al. (1995)	Random sample in the Netherlands (55-85 yrs)	3056	DIS (Robins et al., 1981)	2.0% with major depression; 12.9% with minor depression
	Blazer et al. (1987)	Urban and rural North Carolina (65+ yrs)	1304	DIS	0.8% with major depression
	Copeland et al. (1987a)	Random sample from London and New York	841	AGECAT GMS-A (Copeland et al., 1976)	2.5% with major depression
	Copeland et al. (1987b)	Random sample from Liverpool (65+ yrs)	1070	GMS-A	2.9% with major depression; 8.3% with minor depression
	Kessler et al. (2003)	National Community sample in the U.S. (21% 60+)	5554	CIDI (Robins et al., 1988)	Persons aged 30-44 yrs were 1.8 times more likely to be diagnosed with major depression than those 60+ yrs

Table 1 (Continued)

	Authors	Sample	N	Measures	Estimates
	O'Hara, Kohout, &Wallace (1985)	All persons 65+ in two rural counties in Iowa	3159	Research Diagnostic Criteria and the CES-D (Radloff, 1977)	1.9% with major depression; 9.0% with minor depression
Institutional Samples	Brown et al. (2002)	1,492 nursing homes in the U.S.	42,901	Depression diagnosis documented on the MDS	11% with documented diagnosis of major depression
	Jones et al. (2003)	Nursing homes across the U.S.	3710	Depression diagnosis documented on the MDS	20% with documented diagnosis of major depression
	Jongenelis et al. (2004)	14 nursing homes in the Netherlands	333	DSM-IV	8.1% with major depression
	Koenig et al. (1988)	Veterans inpatient sample in U.S.	171	DIS	11.5% with major depression
	Parmelee et al. (1989)	Nursing home and congregate apartments in U.S.	277 nursing home residents; 529 apartment residents	DSM-III-R Checklist	12.4% with major depression
	Phillips & Henderson (1991)	24 nursing homes in Australia	323	DSM-III-R ICD-10	9.7% with major depression
	Rovner et al. (1990)	8 nursing homes in U.S.	454 consecutive admissions	DSM-III-R	12.6% with major depression

Table 2

Prevalence Estimates of Clinically Significant Depressive Symptoms in Elderly Community and Institutional Samples

	Authors	Sample	N	Measures	Estimates (above cutoff)
Community Samples	Blazer et al. (1991)	Stratified random sample in North Carolina	4163	Modified CES-D ≥9 (Radloff, 1977)	9.0% with clinically significant depressive symptoms)
	Murrell et al. (1983)	Stratified probability sample from rural Kentucky (aged 55+)	2517	CES-D ≥ 20	16% with clinically significant depressive symptoms
	O' Hara et al. (1985)	Entire population of persons aged 65+ in two rural Iowa counties	3159	CES-D ≥ 16	9.0% with clinically significant depressive symptoms
	Stallones et al. (1990)	Stratified probability sample in the U.S.	1232	CES-D ≥ 16	9.9% with clinically significant depressive symptoms
Institutional Samples	Ames (1991)	12 nursing homes in the UK	271	Brief Assessment Schedule Depression Scale Score ≥7	34% with clinically significant depressive symptoms
	Jongenelis et al. (2004)	14 nursing homes in the Netherlands	333	Geriatric Depression Scale ≥ 11	24% with clinically significant depressive symptoms

Table 2 (Continued)

	Authors	Sample	N	Measures	Estimates (above cutoff)
	Katz et al. (1989)	1 nursing home	51	Geriatric Depression Scale $\geq$ 11	43% with clinically significant depressive symptoms
	Koenig et al. (1988)	Veterans inpatient sample in U.S.	171	DIS	23% with significant depressive symptoms
	Parmelee et al. (1989)	Nursing home and congregate apartments in U.S.	277 nursing home residents; 529 apartment residents	DSM-III-R Checklist	35% with significant depressive symptoms

Table 3

DSM IV-TR Criteria for Major Depressive Episode

1. Depressed mood most of the day, nearly every day;
2. Markedly diminished interest or pleasure in all, or almost all activities;
3. Significant weight loss, or decrease or increase in appetite nearly everyday;
4. Insomnia or hypersomnia;
5. Psychomotor agitation or retardation;
6. Fatigue or loss of energy;
7. Feelings of worthlessness or excessive or inappropriate guilt;
8. Diminished ability to think or concentrate, or indecisiveness;
9. Recurrent thoughts of death, suicidal ideation with or without a plan.

American Psychiatric Association (2000)

Table 4

Sociodemographic and Clinical Characteristics of Sample 1 (n=162)

Characteristic	% of Residents who have this characteristic	N
Gender		
Female	64.8	57
Male	35.2	105
Marital Status		
Married	25.3	41
Widowed	48.8	79
Never Married	12.3	20
Other	13.0	21
Age		
< 65 yrs	2.5	4
65-74 yrs	6.8	11
75-84 yrs	53.1	86
≥ 85 yrs	37.0	60
Cognitive Function		
Intact/ Mild Impairment	59.9	97
Moderate Impairment	22.2	36
Severe Impairment	17.9	29
Specific Diagnoses		
Alzheimer's Disease	16.7	27
Other Dementia	18.5	30
Parkinson's Disease	5.6	9
Cancer	9.3	15
Diabetes Mellitus	25.9	42
Cerebrovascular Accident	17.9	29
Heart Failure	11.7	19
Hypertension	32.1	52

Table 4 (Cont'd)

Characteristic	% of Residents who have this characteristic	N
Psychiatric Diagnoses		
Bipolar Disorder	1.9	3
Schizophrenia	2.5	4
Anxiety Disorder	5.6	9
Pain		
None	32.7	53
Mild	16.7	27
Moderate	42.0	68
Severe	13.0	8.0
Interventions Received		
Antidepressants	40.1	65
Psychological Therapy	2.5	4
Behavioural Symptom Eval'n	6.2	10
Eval'n by Mental Health Professional	6.8	11
Group Therapy	0.6	1
Environmental Changes	8.0	13

Table 5

Factor Loadings >.3 for 10 items on Two Main Factors (Sample 1)

Item	Factor 1	Factor 2
Negative statements	.664	
Persistent anger		
Unrealistic fears	.603	
Repetitive health complaints	.762	
Repetitive anxious complaints	.823	
Sad facial expression	.462	-.376
Crying, tearfulness	.395	
Withdrawal from activities		-.913
Reduced social interaction		-.912
Statements of lack of pleasure		-.544

Table 6

Convergent and Discriminant Validity Estimates for the Anhedonia and Dysphoria Measures Correlated Against Psychiatric and Neurological Disorders in Sample 1 (n=162)

Psychiatric or Neurological Diagnosis	Anhedonia	Dysphoria
Depression	0.19*	0.21**
Anxiety	.01	.06
Bipolar Disorder	.01	-.09
Schizophrenia	.15	.15
Cerebral Vascular Accident	-.01	.06
Dementia	.09	.01

*significant at .05 level **significant at .01 level

Table 7

Characteristics of Residents with a Diagnosis of Depression Documented on the MDS in Sample 1 (n=49)

	% of depressed Residents who have this characteristic	% of residents with this characteristic who are depressed	N
Gender			
Female	40.8	35.1	20
Male	59.2	27.6	29
Marital Status			
Married	27.1	31.7	13
Widowed	47.9	29.1	23
Never Married	8.3	20.0	4
Other	8.3	25.0	4
Age			
< 65 yrs	2.0	25.0	1
65-74 yrs	6.1	27.3	3
75-84 yrs	61.2	34.9	30
≥ 85 yrs	30.6	25.0	15
Cognitive Function			
Intact/ Mild Impairment	57.1	28.87	28
Moderate Impairment	22.4	30.6	11
Severe Impairment	14.3	34.8	7
Specific Diagnoses			
Alzheimer's Disease	18.4	33.3	9
Other Dementia	26.5	43.3	13
Parkinson's Disease	4.1	22.2	2
Cancer	4.1	13.3	2
Diabetes Mellitus	28.6	33.3	14
Cerebrovascular Accident	18.4	31.0	9
Heart Failure	10.2	26.3	5
Hypertension	32.7	30.8	16

Table 7 (Cont'd)

	% of depressed residents who have this Characteristic	% of residents with this characteristic who are depressed	N
Psychiatric Diagnoses			
Bipolar Disorder	0	0	0
Schizophrenia	0	0	0
Anxiety Disorder	6.1	33	3
Pain			
None	36.7	34	18
Mild	14.3	25.9	7
Moderate	12.2	26.1	6
Severe	10.2	38.5	5

Table 8

Treatments Received by Residents with a Diagnosis of Depression in Sample 1 (n=49)

Type of Treatment	%	N
Pharmacological		
Antidepressant	79.6	39
Antipsychotic	30.6	15
Antianxiety	28.6	14
Hypnotic	26.5	13
Non-Pharmacological Tx		
Psychological Therapy	2.0	1
Group Therapy	0	0
Behavioural Symptom Eval'n	10.2	5
Eval'n by mental health prof.	12.2	6
Resident Specific Environmental Changes	6.1	3

Table 9

Predictors of a Major Depressive Disorder Documented on the MDS in Sample 1 (n=159)

Predictor	OR	95% CI
Gender	2.00	.59-6.81
Age (continuous variable)	1.01	.96-1.07
Dysphoria only (n=27)	3.71*	1.33-10.34
Anhedonia only (n=26)	2.75	.98-7.75
Both Anh and Dys (n=25)	5.34**	1.66-17.20
Insomnia	1.12	.47-2.67
MDS-PN	.90	.72-1.13
MDS-CPS	.98	.78-1.22
Site of Data Collection	1.04	.29-3.79

*significant at .05 level **significant at .01 level

Table 10

Predictors of the Receipt of Antidepressant Treatment in Sample 1 (n=162)

Predictor	OR	95% CI
Gender	.88	.29-2.68
Age (continuous variable)	1.02	.97-1.07
Dysphoria only (n=27)	2.75*	1.04-7.24
Anhedonia only (n=26)	2.02	.76-5.39
Both Anh and Dys (n=25)	4.96**	1.59-15.50
Insomnia	1.28	.53-3.08
MDS-PN	.92	.74-1.13
MDS-CPS	.83	.67-1.02
Site of Data Collection	1.27	.41-3.97

*significant at .05 level **significant at .01 level

Table 11

Predictors of Diagnosis and Treatment Categories Among All Residents in Sample 1 (n=159)

Diagnosis/ Treatment Category	Predictor	OR	95% CI
Depression Dx and Treatment	Gender	1.36	.34-5.44
	Age	.98	.92-1.04
	Dysphoria only	4.52**	1.46-13.98
	Anhedonia only	2.14	.57-7.96
	Both Anh & Dys	9.09**	2.32-35.70
	Insomnia	1.29	.46-3.56
	CPS Score	.83	.63-1.09
	MDS Pain Score	.89	.68-1.15
	Site of Data Collection	.91	.21-3.96
Diagnosis but no Treatment	Gender	1.78	.20-16.05
	Age	1.04	.91-1.20
	Dysphoria only	2.01	.15-27.67
	Anhedonia only	7.79*	1.04-58.55
	Both Anh & Dys	4.53	.34-60.10
	Insomnia	1.37	.19-9.76
	CPS Score	1.37	.84-2.22
	MDS Pain Score	.73	.44-1.23
	Site of Data Collection	2.67	.19-36.84
Treatment without a Diagnosis	Gender	.32	.04-2.31
	Age	1.00	.92-1.09
	Dysphoria only	1.12	.25-5.11
	Anhedonia only	3.83*	1.02-14.42
	Both Anh & Dys	2.73	.55-13.64
	Insomnia	1.71	.47-6.14
	CPS Score	.90	.68-1.19
	MDS Pain Score	.86	.64-1.15
	Site of Data Collection	2.99	.56-15.83

*significant at .05 level **significant at .01 level

Table 12

Sociodemographic and Clinical Characteristics of Sample 2 (n=1147)

Characteristic	% of Residents who have this characteristic	N
Gender		
Female	76.2	1125
Male	23.5	347
Marital Status		
Married	19.4	286
Widowed	57.5	849
Never Married	14.6	215
Other	5.4	80
Age		
65-74 yrs	14.1	208
75-84 yrs	37.4	552
≥ 85 yrs	48.5	717
Cognitive Function		
Intact/ Mild Impairment	44.7	513
Moderate Impairment	23.9	353
Severe Impairment	53.3	611
Specific Diagnoses		
Alzheimer's Disease	20.2	298
Other Dementia	35.7	528
Parkinson's Disease	6.6	98
Cancer	8.8	130
Diabetes Mellitus	17.6	260
Cerebrovascular Accident	21.3	315
Heart Failure	12.0	177
Hypertension	27.6	407

Table 12 (Cont'd)

Characteristic	% of Residents who have this characteristic	N
Psychiatric Diagnoses		
Depression	16.0	237
Bipolar Disorder	1.4	21
Schizophrenia	5.1	75
Anxiety Disorder	4.9	72
Pain		
None	51.3	758
Mild	21.7	321
Moderate	21.1	311
Severe	5.2	77
Interventions Received		
Antidepressants	27.7	409
Psychological Therapy	0.7	10
Behavioural Symptom Eval'n	3.9	58
Eval'n by Mental Health Prof.	3.2	47
Group Therapy	0.7	10
Environmental Changes	4.9	72

Table 13

Factor Loadings >.3 for 9 items on Two Main Factors (Sample 2)

Item	Factor 1	Factor 2
Negative statements	.578	
Persistent anger	.573	
Unrealistic fears	.605	
Repetitive health complaints	.630	
Repetitive anxious complaints	.730	
Sad facial expression	.559	
Crying, tearfulness	.507	
Withdrawal from activities		.929
Reduced social interaction		.921

Table 14

Convergent and Discriminant Validity Estimates for the Anhedonia and Dysphoria Measures Correlated Against Psychiatric and Neurological Disorders in Sample 2 (n=1147)

Psychiatric or Neurological Diagnosis	Anhedonia	Dysphoria
Depression	0.10**	0.20**
Anxiety	.19**	.07**
Bipolar Disorder	.01	.01
Schizophrenia	.06*	.02
Cerebral Vascular Accident	-.01	.04
Dementia	.02	.04

*significant at .05 level **significant at .01 level

Table 15

Characteristics of Residents with a Diagnosis of Depression Documented on the MDS in Sample 2 (n=237)

	% of Depressed Residents who have this Characteristic	% of Residents with this characteristic who are depressed	N
Gender			
Female	79.2	16.8	187
Male	20.8	14.3	49
Marital Status			
Married	21.1	17.3	49
Widowed	62.9	17.4	146
Never Married	10.8	11.8	25
Other	4.3	14.29	60
Age			
65-74 yrs	16.0	18.4	38
75-84 yrs	41.4	18.0	98
≥ 85 yrs	42.6	14.2	101
Cognitive Function			
Intact/ Mild Impairment	47.2	22.0	112
Moderate Impairment	25.3	17.2	60
Severe Impairment	17.7	10.82	42
Number of Medical Diagnoses †			
≤ 3 diagnoses	64.6	14.8	133
4-5 diagnoses	23.3	18.5	48
≥ 6 diagnoses	12.1	17.1	25
Specific Diagnoses			
Alzheimer's Disease	12.0	9.4	28
Other Dementia	35.9	16.2	84
Parkinson's Disease	7.7	18.4	18

†11.8% missing data for Number of Medical Diagnoses

Table 15 (Cont'd)

	% of Depressed Residents who have this Characteristic	% of Residents with this characteristic who are depressed	N
Cancer	7.3	13.1	17
Diabetes Mellitus	22.2	20.1	52
Cerebrovascular Accident	23.2	18.0	55
Heart Failure	13.2	17.7	31
Hypertension	28.2	16.4	66
Psychiatric Diagnoses			
Bipolar Disorder	1.3	14.3	3
Schizophrenia	3	9.3	7
Anxiety Disorder	12	38.9	28
Pain			
None	32.9	10.4	78
Mild	30.0	22.2	71
Moderate	30.4	23.4	72
Severe	6.8	20.8	16

Table 16

Treatments Received by Residents with a Diagnosis of Depression in Sample 2 (n=237)

Type of Treatment	%	N
Pharmacological		
Antidepressant	69.5	164
Antipsychotic	26.7	62
Antianxiety	29.8	70
Hypnotic	6.0	14
Non-Pharmacological Tx		
Psychological Therapy	1.3	3
Group Therapy	0	0
Behavioural Symptom Eval'n	3.9	9
Eval'n by mental health prof.	8.6	20
Resident Specific Environmental Changes	5.6	13

Table 17

Predictors of a Major Depressive Disorder Documented on the MDS in Sample 2 (n=1477)

Predictor	OR	95% CI
Gender	1.69*	1.12-2.56
Age (continuous variable)	.97**	.95-.99
Dysphoria only (n=246)	2.45**	1.61-3.73
Anhedonia only (n=236)	1.60	1.00-2.57
Both Anh and Dys (n=170)	4.83**	3.06-7.61
Insomnia	1.04	.76-1.43
MDS-PN	1.14	.96-1.35
MDS-CPS	.81**	.74-.88
# of Medical Diagnoses	1.0	.79-1.26
Length of Stay	1.0	.99-1.0
Site of Data Collection	1.0	.99-1.0

*significant at .05 level **significant at .01 level

Table 18

Predictors of the Receipt of Antidepressant Treatment in Sample 2 (n=1477)

Predictor	OR	95% CI
Gender	1.25	.91-1.72
Age (continuous variable)	.96**	.94-.97
Dysphoria only (n=246)	2.14**	1.51-3.04
Anhedonia only (n=236)	1.84**	1.28-2.65
Both Anh & Dys (n=170)	2.89**	1.93-4.35
Insomnia	1.11	.85-1.46
MDS-PN	1.26**	1.10-1.45
MDS-CPS	.88**	.82-.94
Number of Medical	.97	.80-1.18
Diagnoses		
Length of Stay	1.00	.99-1.00
Site of Data Collection	1.00	.99-1.00

**significant at p<.01

Table 19

Predictors of Diagnosis and Treatment Categories Among All Residents in Sample 2 (n=1271)

Diagnosis/ Treatment Category	Predictor	OR	95% CI
Depression Dx and Treatment	Gender	1.74*	1.07-2.84
	Age	.95**	.93-.97
	Dysphoria only	3.04**	1.84-5.02
	Anhedonia only	2.31**	1.35-3.98
	Both Anh & Dys	6.10**	3.47-10.70
	Insomnia	.97	.65-1.47
	CPS Score	.76**	.69-.84
	MDS_Pain Score	1.28*	1.05-1.56
	# Medical Diagnoses	.91	.69-1.21
	Length of Stay	.99	.99-1.00
	Site/Facility	.99	.99-1.00
Diagnosis but no Treatment	Gender	1.82	.88-3.79
	Age	.97	.94-1.00
	Dysphoria only	3.44**	1.96-6.04
	Anhedonia only	1.56	.87-2.80
	Both Anh & Dys	5.68**	2.79-11.56
	Insomnia	1.49	.93-2.37
	CPS Score	.88*	.77-1.02
	MDS_Pain Score	1.07	.80-1.44
	# Medical Diagnoses	1.25	.86-1.81
	Length of Stay	.99	.99-1.00
	Site/Facility	.99	.99-1.00
Treatment without a Diagnosis	Gender	1.11	.76-1.61
	Age	.96**	.94-.98
	Dysphoria only	1.95**	1.28-2.98
	Anhedonia only	1.61*	1.04-2.48
	Both Anh & Dys	2.48**	1.48-4.14
	Insomnia	1.30	.95-1.78
	CPS Score	.94	.86-1.01
	MDS_Pain Score	1.26**	1.06-1.50
	# Medical Diagnoses	1.05	.83-1.32
	Length of Stay	.99	.99-1.00
	Site/Facility	.99	.99-1.00

*significant at p<.05
**significant at p<.01

Table 20

A Comparison of the Results for Sample 1 and Sample 2

	Sample 1 (Thunder Bay/London Data)	Sample 2 (RAI-HIP Long-term Care Data)
Prevalence of Identified Depression	30% of residents were identified as having a Depression Diagnosis on the MDS.	16% of residents were identified as having a Depression Diagnosis on the MDS.
Prevalence of Antidepressant Treatment	40% of all residents were receiving an antidepressant; 80% of all residents with a Depression diagnosis were receiving an antidepressant.	28% of all residents were receiving an antidepressant; 70% of all residents with a Depression diagnosis were receiving an antidepressant.
Characteristics of Depressed Residents	Depression was more prevalent among residents who were female, less than 85 years old, with pain. Highest rates of depression comorbidity with the medical diagnoses of dementia, hypertension, and diabetes. The most common comorbid psychiatric diagnosis was anxiety, although the prevalence was low (6%). Rate of depression was fairly stable across levels of cognitive impairment.	Depression was more prevalent among residents who were female, less than 85 years old, with pain. Highest rates of depression comorbidity with the medical diagnoses of dementia, hypertension, and diabetes. The most common comorbid psychiatric diagnosis was anxiety, although the prevalence was low (12%). Depression more prevalent among residents with less cognitive impairment.
Predictors of Diagnosis of Depression documented on the MDS	Only dysphoria was related to a greater likelihood of having a Depression Dx. Age, gender, cognitive impairment, pain, insomnia, and anhedonia were not significant predictors.	Residents were more likely to have a Dx of depression if they were female, younger, less cognitively impaired, and had clinically significant levels of dysphoria.

Table 20 (Cont'd)

	Sample 1 (Thunder Bay/London Data)	Sample 2 (RAI-HIP Long-term Care Data)
Predictors of the Receipt of Antidepressant Medication	Dysphoria was the only significant predictor of antidepressant treatment. Age, gender, cognitive impairment, pain, insomnia, and anhedonia were not significant predictors.	Residents were more likely to receive antidepressants if they were younger, had less cognitive impairment, had more pain, and had dysphoria and/or anhedonia. Gender and insomnia were not significant predictors.
Prevalence of Different Combinations of Depression Diagnosis and Antidepressant Treatment	The most common diagnosis-treatment combination, other than no diagnosis or treatment (54%) was diagnosis with treatment (24%). The next most prevalent was treatment without diagnosis (16%) and diagnosis without treatment (6.2%).	The most common diagnosis-treatment combination, other than no diagnosis or treatment (65.4%), was treatment without a diagnosis (16.5%). The next most prevalent was diagnosis with treatment (11%), and diagnosis without treatment (5%).
Anhedonia and Dysphoria as Predictors of Depression Diagnosis and Antidepressant Treatment Combinations	The combination of Depression Dx and Antidepressant Treatment was predicted only by Dysphoria; Treatment without Dx was predicted only by Anhedonia; Having a Dx without receiving treatment predicted by only Anhedonia.	The combination of Depression Dx and Antidepressant Treatment was predicted by both Anhedonia and Dysphoria; Treatment without Dx was predicted by both Dysphoria and Anhedonia; Having a Dx without receiving treatment predicted by only Dysphoria.

Figure 1. Percentage of residents falling within diagnosis-treatment combinations (Sample 1)

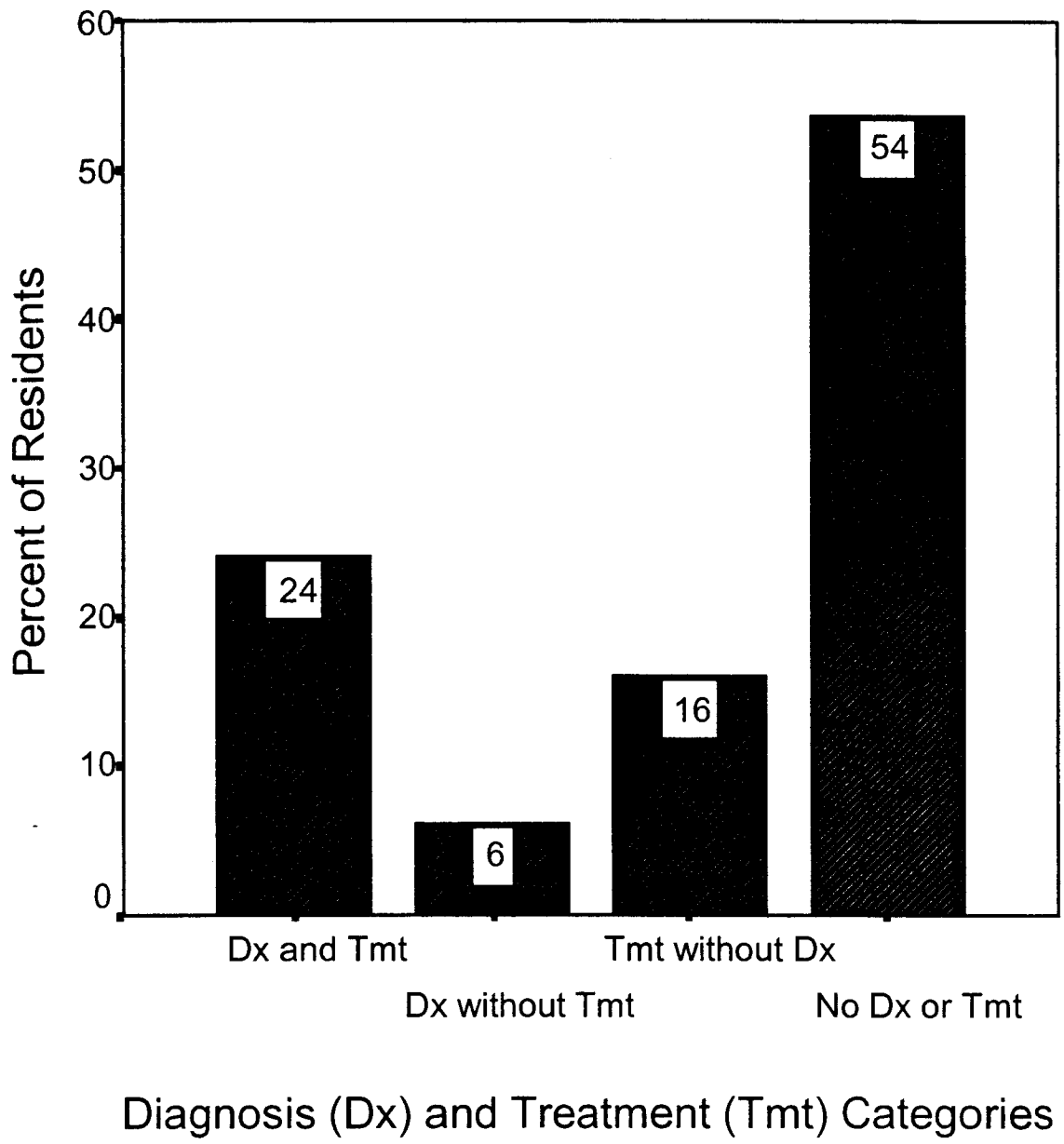


Figure 2. Number of residents within diagnosis-treatment categories presenting with different symptom profiles of dysphoria and anhedonia (Sample 1)

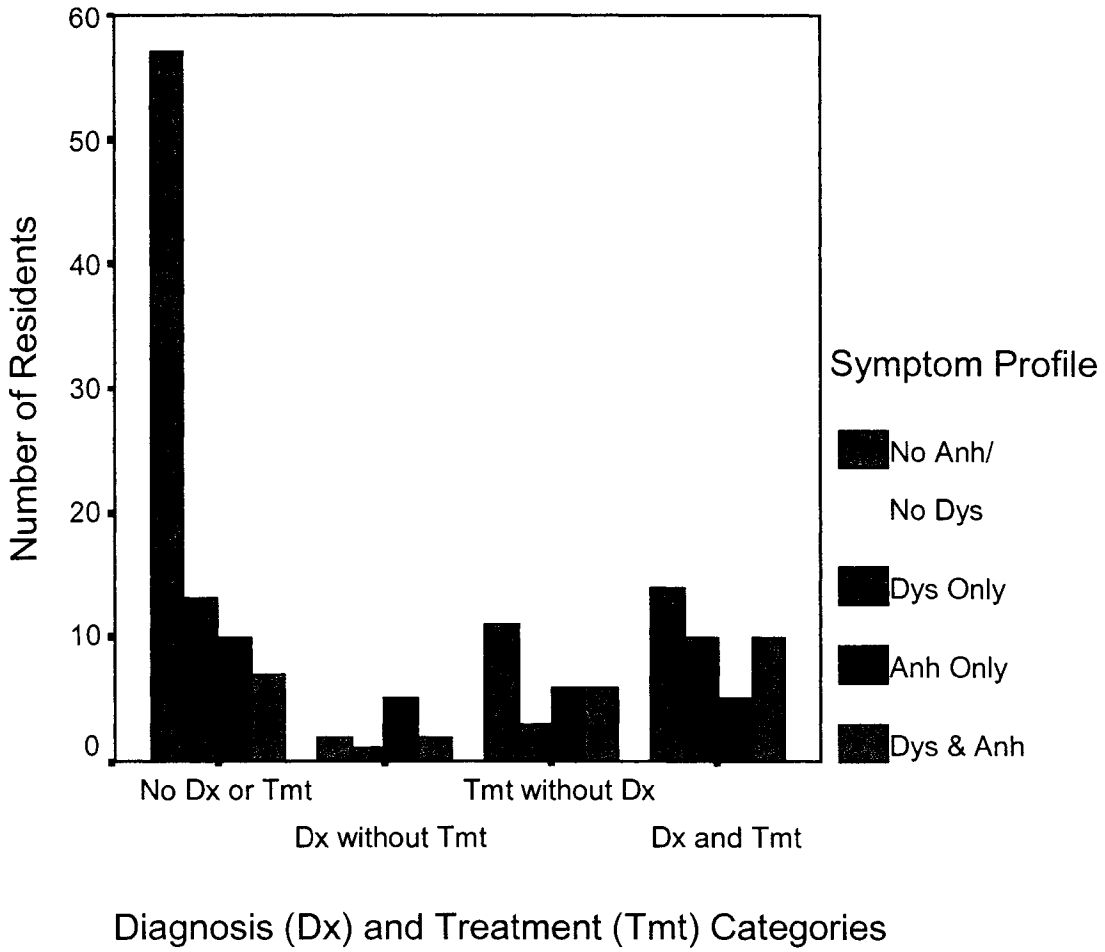


Figure 3. Percentage of residents falling within diagnosis-treatment combinations (Sample 2)

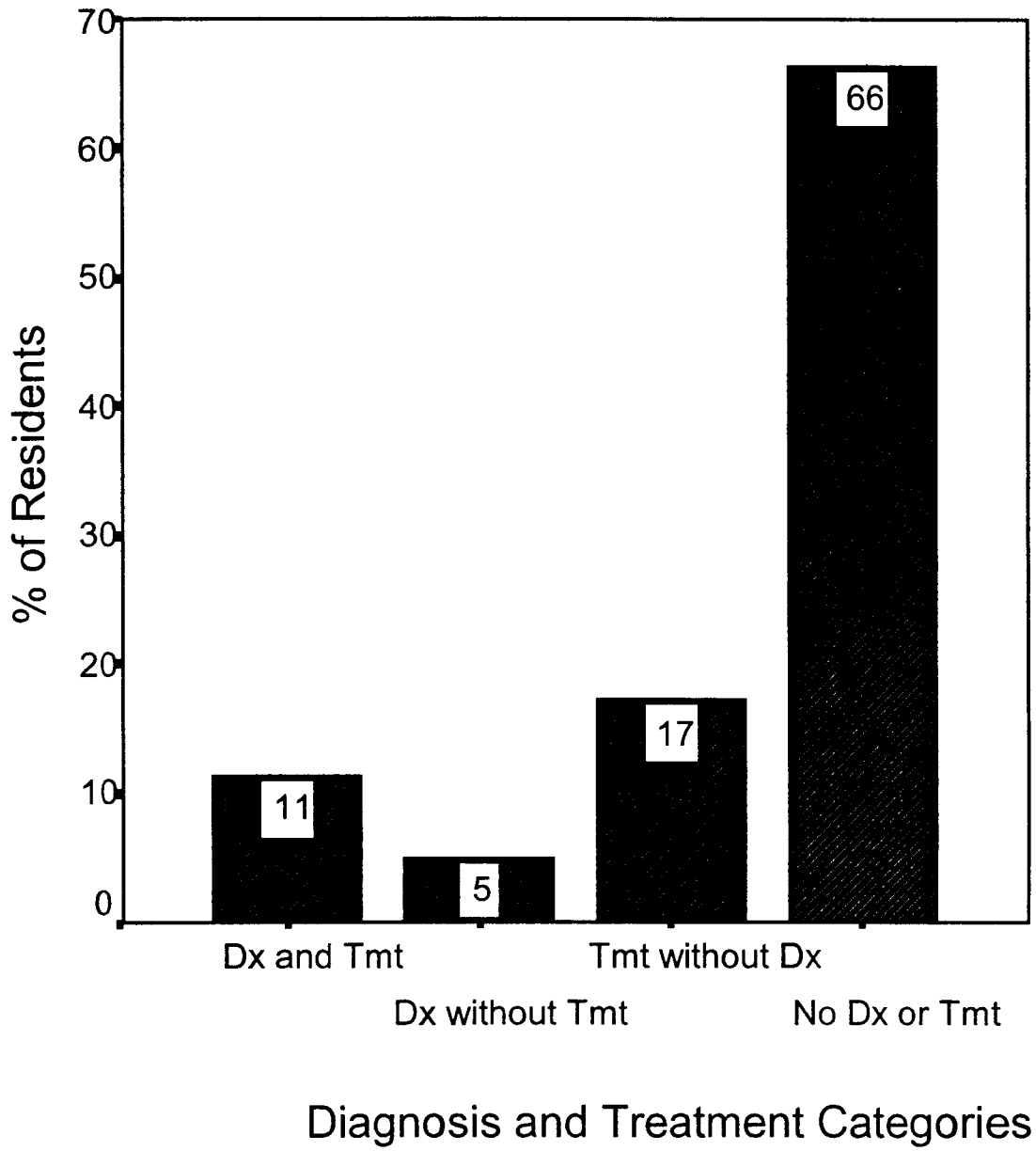
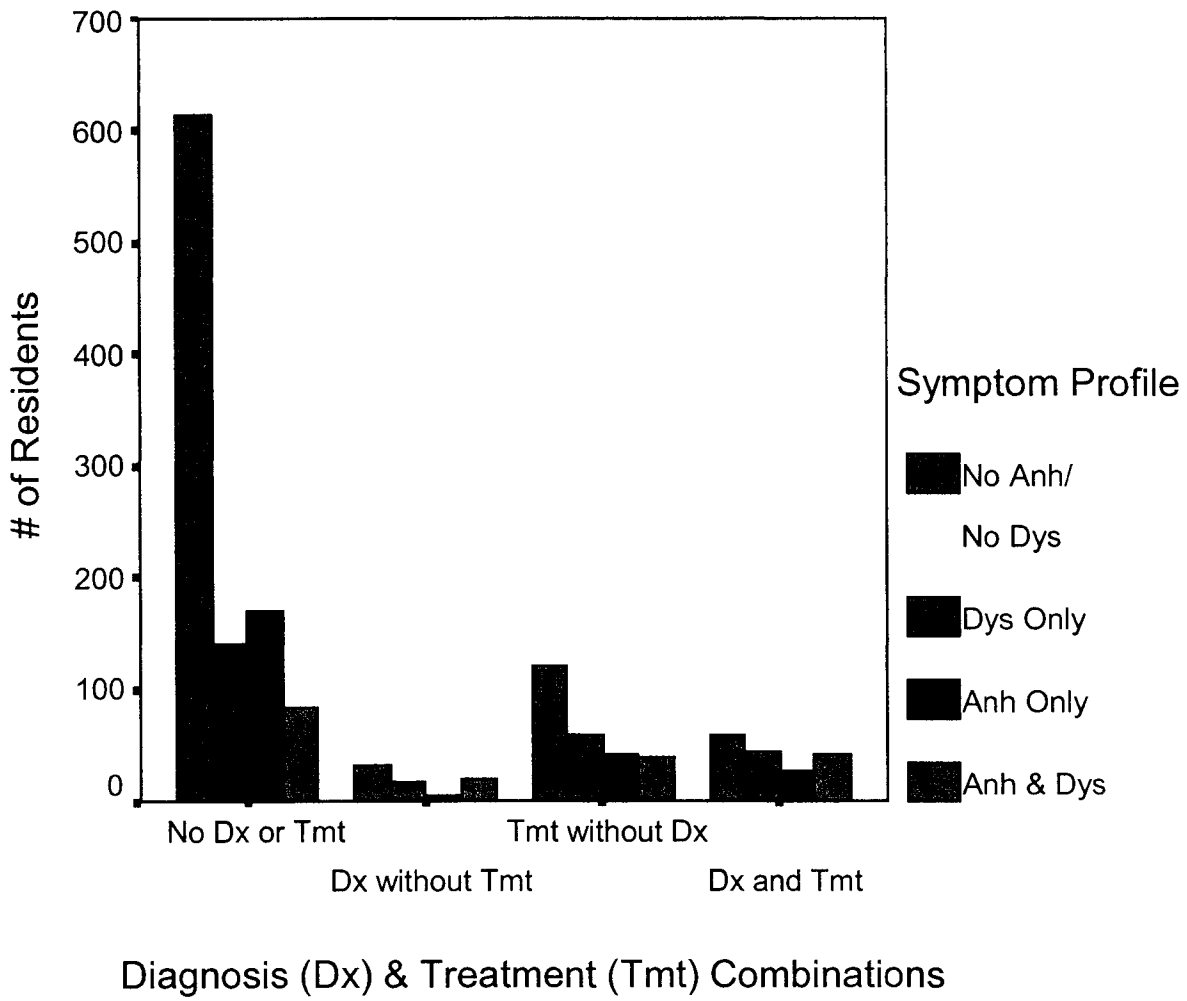


Figure 4. Number of residents within diagnosis-treatment categories presenting with different symptom profiles of dysphoria and anhedonia (Sample 2)



Appendix A: Abbreviated Version of MDS 2.0 Used with Sample 1

MINIMUM DATA SET (MDS) VERSION 2.0: Abbreviated Version

SECTION A: IDENTIFICATION INFORMATION

1	GENDER	1. Male 2. Female	
2	BIRTHDATE	☐☐☐☐ - ☐☐ - ☐☐ Year Month Day	
3	MARITAL STATUS	1. Never 3. Widowed 5. Divorced 2. Married 4. Separated 9. Unknown	
4	FIRST 7 DIGITS OF HEALTH CARE NUMBER	a. Health care number. Enter the first 7 digits of the resident's health care number. ☐☐☐☐☐☐☐	
5	INSTITUTION NAME	_____	
6	DATE OF ENTRY	☐☐☐☐ - ☐☐ - ☐☐ Year Month Day	

SECTION B: COGNITIVE PATTERNS

1	COMATOSE	*(Persistent vegetative state or no discernible consciousness)* 0. No 1. Yes	
2	MEMORY	*(Recall of what was learned or known)* a. Short-term memory OK—seems or appears to recall after 5 minutes 0. Memory OK 1. Memory problem	
		b. Long-term memory OK—seems or appears to recall 0. Memory OK 1. Memory problem	

4	**COGNITIVE SKILLS FOR DAILY**	*(Made decisions regarding tasks of daily life.)* 0. INDEPENDENT–decisions consistent and reasonable 2. MODERATELY IMPAIRED—decisions poor; cues 3. SEVERELY IMPAIRED—never/rarely made decisions	
4	**MAKING SELF UNDERSTOOD**	*(Expressing information content—however able)* 0. UNDERSTOOD 2. SOMETIMES UNDERSTOOD—ability is limited to 3. RARELY OR NEVER UNDERSTOOD	

SECTION C: MOOD AND BEHAVIOUR PATTERNS

INDICATORS OF DEPRESSION, ANXIETY, SAD MOOD	*(Code for indicators observed in LAST 30 DAYS, irrespective of the assumed cause.)* 0. Indicator not exhibited in last 30 days 1. Indicator of this type exhibited up to 5 days a week 2. Indicator of this type exhibited daily or almost daily (6, 7 days)	
	VERBAL EXPRESSIONS OF DISTRESS	
	a. Resident made negative statements (e.g. "Nothing matters; Would rather be dead; What's the use; Regrets having lived so long; Let me die.")	
	b. Repetitive questions: (e.g. "Where do I go? What	
	c. Repetitive verbalizations (e.g. Calling out for help;	
	d. Persistent anger with self or others (e.g. easily annoyed, anger at placement in facility; anger at care received)	
	e. Self deprecation (e.g. "I am nothing, of no use to anyone.")	
	f. Expressions of what appear to be unrealistic fears (e.g. fear of being abandoned, left alone, being with others)	
	g. Recurrent statements that something terrible is about to happen (e.g. believes is about to die, have a heart attack)	

	h. Repetitive health complaints (e.g. persistently seeks medical attention, obsessive concern with body functions)	
	i. Repetitive anxious complaints or concerns—non-health (e.g. persistently seeks attention or reassurance regarding schedules, meals, laundry or clothing, relationship issues)	
	SLEEP-CYCLE ISSUES	
	j. Unpleasant mood in morning	
	k. Insomnia or change in usual sleep pattern	
	SAD, APATHETIC, ANXIOUS APPEARANCE	
	l. Sad, pained, worried facial expressions (e.g.	
	m. Crying, tearfulness	
	n. Repetitive physical movements (e.g. pacing, hand	
	LOSS OF INTEREST	
	o. Withdrawal from activities of interest (e.g. no interest in longstanding activities or being with	
	p. Reduced social interaction	

SECTION D: ANHEDONIA

(Code for indicators observed in the **last 3 days**)

0. Indicator not exhibited in the **last 3 days**

1. Indicator exhibited **up to 2 days of the last 3 days**

2. Indicator exhibited **daily in the last 3 days**

1	**ANHEDONIA**	Statements that indicate a general lack of pleasure in life (e.g., "I don't enjoy anything anymore"	

SECTION E: PSYCHOSOCIAL WELL-BEING

1	**SENSE OF INITIATIVE/ INVOLVE-MENT**	a. At ease interacting with others	A
		b. At ease doing planned or structured activities	B
		c. At ease doing self-initiated activities	C
		d. Establishes own goals	D
		e. Pursues involvement in life of facility (e.g. makes and keeps friends; involved in group activities;	E
		f. Accepts invitations into most group activities	F
		g. *NONE OF ABOVE*	G

SECTION F: INVOLVEMENT IN ACTIVITIES

2	**AVERAGE TIME INVOLVED IN ACTIVITIES**	*(When awake and not getting treatment or ADL care)* 0. Most—more than 2/3 of time 1. Some—from 1/3 to 2/3 of time 2. Little—less than 1/3 of time 3. None	

SECTION G: EATING DEPENDENCE

1	**A. ADL SELF-PERFORMANCE** *(Code for resident's **PERFORMANCE OVER ALL SHIFTS** during last 7 days, not including setup)* **0. INDEPENDENT.** No help or oversight–OR–help/oversight provided only 1 or 2 times during last 7 days. **1. SUPERVISION.** Oversight, encouragement or cueing provided 3 or more times during last 7 days–OR–Supervision plus physical assistance provided only 1 or 2 times during last 7 days. **2. LIMITED ASSISTANCE.** Resident highly involved in activity; received physical help in guided maneuvering of limbs, or other nonweight-bearing assistance 3 or more times–OR–More help provided only 1 or 2 times during last 7 days. **3. EXTENSIVE ASSISTANCE.** Although resident performed part of activity, over last 7-day period, help of the following type(s) was provided 3 or more times: • weight-bearing support • full staff performance during part (but not all) of last 7 days. **4. TOTAL DEPENDENCE.** Full staff performance of activity during entire 7 days. **8. ACTIVITY DID NOT OCCUR** during entire 7 days.		
a	**EATING**	How resident eats and drinks (regardless of skill). Includes intake of nourishment by other means (e.g. tube feeding, total parenteral nutrition)	

SECTION H: DISEASE DIAGNOSES

(Check only those diseases that have a relationship to current ADL status, cognitive status, mood and behaviour status, medical treatments, nurse monitoring, or risk of death. Do not list inactive diagnoses.)

1	DISEASES	*(If none of I1a–I1qq apply, CHECK item I1rr, NONE OF ABOVE.)*			
		ENDOCRINE/METABOLIC/NUTRITIONAL			
		a. Diabetes mellitus	A	o. Osteoporosis	o
		b. Hyperthyroidism	B	p. Pathological bone fracture	p
		c. Hypothyroidism	C	**NEUROLOGICAL**	
		HEART/CIRCULATION		q. Alzheimer's disease	q
		d. Arteriosclerotic heart disease (ASHD)	D	r. Aphasia	r
		e. Cardiac dysrhythmia	E	s. Cerebral palsy	s
		f. Congestive heart failure	F	t. Cerebrovascular accident (stroke)	t
		g. Deep vein thrombosis	G	u. Dementia other than Alzheimer's disease	u
		h. Hypertension	H	v. Hemiplegia/ hemiparesis	v
		i. Hypotension	I	w. Multiple sclerosis	w
		j. Peripheral vascular disease	J	x. Paraplegia	x
		k. Other cardiovascular disease	K	y. Parkinson's disease	y
		MUSCULOSKELETAL		z. Quadriplegia	z
		l. Arthritis	L	aa. Seizure disorder	aa
		m. Hip fracture	M	bb. Transient ischemic attack (TIA)	bb
		n. Missing limb (e.g. amputation)	N	cc. Traumatic brain injury	cc

DISEASE DIAGNOSES CONT'D...

(Check only those diseases that have a relationship to current ADL status, cognitive status, mood and behaviour status, medical treatments, nurse monitoring, or risk of death. Do not list inactive diagnoses.)

1	**DISEASES (cont'd)**	*(If none of I1a–I1qq apply, CHECK item I1rr, NONE OF ABOVE.)*			
		PSYCHIATRIC/ MOOD		**SENSORY**	
		dd. Anxiety disorder	dd	jj. Cataracts	Jj
		ee. Depression	ee	kk. Diabetic retinopathy	Kk
		ff. Manic depressive (bipolar disease)	ff	ll. Glaucoma	Ll
				mm. Macular degeneration	Mm
		gg. Schizophrenia	gg	**OTHER**	
		PULMONARY		nn. Allergies	Nn
		hh. Asthma	hh	oo. Anemia	Oo
		ii. Emphysema/ COPD	ii	pp Cancer	Pp
				qq. Renal failure	Qq
				rr. *NONE OF ABOVE*	Rr

SECTION I: MEDICATIONS

1	**DAYS RECEIVED THE FOLLOWING MEDICATION**	*(Please check those medications that have been used during last 7 days.) If none of these were used, check NONE OF THE ABOVE.*			
		a. Antipsychotic	a	d. Hypnotic	D
		b. Antianxiety drug	b	e. Diuretic	E
		c. Antidepressant	c	f. NONE OF ABOVE	F

SECTION J: THERAPY

1	**THERAPY**	***THERAPY-Was psychological therapy (by any licensed mental health professional) administered with this resident for at least 15 minutes at any time*** 0. No 1. Yes	
2	**INTERVENTIO N PROGRAMS FOR MOOD, BEHAVIOUR, COGNITIVE LOSS**	*(Check all interventions or strategies used in the last 7 days, no matter where received.)*	
		a. Special behaviour symptom evaluation program	a
		b. Evaluation by a licensed mental health specialist in LAST 90 DAYS	b
		c. Group therapy	c
		d. Resident-specific deliberate changes in the environment to address mood or behaviour patterns (e.g. providing bureau in which to rummage)	d
		e. Reorientation (e.g. cueing)	e
		f. *NONE OF ABOVE*	f

SECTION K: PAIN

1	**PAIN SYMPTOMS**	*(Code for the highest level of pain present in last 7 days.)* **a. FREQUENCY** with which resident complains or shows evidence of pain: 0. No pain *(Skip to J4)* 1. Pain less than daily 2. Pain daily	
		b. INTENSITY of pain: 1. Mild pain 2. Moderate pain 3. Times when pain is horrible or excruciating	

Signature of Assessor: _____

Date Completed: _____

Appendix B: Minimum Data Set 2.0 Full Assessment

Addressograph

MINIMUM DATA SET (MDS) VERSION 2.0

Modified for Ontario Chronic Care Institutions

FULL ASSESSMENT

SECTION A: IDENTIFICATION AND BACKGROUND INFORMATION

1	RESIDENT NAME	a. First b. Middle Initial c. Last d. Jr/Sr	
2	ROOM NUMBER		
3	ASSESSMENT DATE	Last day of MDS observation period Year - Month - Day	
5	MARITAL STATUS	1. Never 3. Widowed 5. Divorced 2. Married 4. Separated 9. Unknown	
6a	CHART NUMBER		
6b	REGISTER NUMBER		
7	RESPONSIBILITY FOR PAYMENT	*(Check all that apply in LAST 30 DAYS.)* a. Resident of Canada (covered by OHIP or other provincial funding) b. Workers' Compensation Board (Workplace Safety and Insurance Board) c. Non-resident of Ontario, resident of Canada d. Self-pay e. Federal government (RCMP, Canadian Armed Forces, inmate of federal penitentiary, veteran, refugee) f. Other	a b c d e f
9	RESPONSIBILITY LEGAL GUARDIAN	*(Check all that apply. Use '9' if unknown.)* a. Legal guardian b. Durable power of attorney/financial c. Other legal oversight d. Family member responsible e. Durable power of attorney/health care f. Patient responsible for self g. *NONE OF ABOVE*	a b c d e f g
10	ADVANCED DIRECTIVES	*(For those items with supporting documentation in the medical record, check all that apply. Use '9' if unknown.)* a. Living will [a] b. Do not resuscitate [b] c. Do not hospitalise [c] d. Organ donation [d] e. Autopsy request [e] f. Feeding restrictions [f] g. Medication restrictions [g] h. Other treatment restrictions [h] i. *NONE OF ABOVE* [i]	

SECTION B: COGNITIVE PATTERNS

1	COMATOSE	*(Persistent vegetative state or no discernible consciousness)* 0. No 1. Yes (Skip to item G1)	

SECTION B: COGNITIVE PATTERNS (cont'd)

2	MEMORY	*(Recall of what was learned or known)* a. Short-term memory OK—seems or appears to recall after 5 minutes 0. Memory OK 1. Memory problem b. Long-term memory OK—seems or appears to recall long past 0. Memory OK 1. Memory problem	
3	MEMORY/ RECALL ABILITY	*(Check all that resident was normally able to recall during the last 7 days.)* a. Current season [a] b. Location of own room [b] c. Staff names and faces [c] d. That he/she is in a facility [d] e. *NONE OF ABOVE* are recalled [e]	
4	COGNITIVE SKILLS FOR DAILY DECISION MAKING	*(Made decisions regarding tasks of daily life.)* 0. INDEPENDENT–decisions consistent and reasonable 1. MODIFIED INDEPENDENCE–some difficulty in new situations only 2. MODERATELY IMPAIRED—decisions poor; cues or supervision required 3. SEVERELY IMPAIRED—never/rarely made decisions	
5	INDICATORS OF DELIRIUM-PERIODIC DISORDERED THINKING/ AWARENESS	*(Code for behaviour in last 7 days.) Accurate assessment requires conversations with staff and family who have direct knowledge of resident's behaviour over this time.* 0. Behaviour not present 1. Behaviour present, not of recent onset 2. Behaviour present, over last 7 days appears different from resident's usual functioning (e.g. new onset or worsening)	
		a. EASILY DISTRACTED (e.g. difficulty paying attention, gets sidetracked)	
		b. PERIODS OF ALTERED PERCEPTION OR AWARENESS OF SURROUNDINGS (e.g. moves lips or talks to someone not present; believes he or she is somewhere else; confuses night and day)	
		c. EPISODES OF DISORGANIZED SPEECH (e.g. speech is incoherent, nonsensical, irrelevant, or rambling from subject to subject; loses train of thought)	
		d. PERIODS OF RESTLESSNESS (e.g. fidgeting or picking at skin, clothing, napkins, etc.; frequent position changes; repetitive physical movements or calling out)	
		e. PERIODS OF LETHARGY (e.g. sluggishness; staring into space; difficult to arouse; little bodily movement)	
		f. MENTAL FUNCTION VARIES OVER THE COURSE OF THE DAY (e.g. sometimes better, sometimes worse; behaviours sometimes present, sometimes not)	
6	CHANGE IN COGNITIVE STATUS	Resident's cognitive status, skills or abilities have changed as compared to status of 90 DAYS AGO (or since last assessment if less than 90 days). 0. No change 1. Improved 2. Deteriorated	

☐ = when box blank, must enter number or letter.

SECTION C: COMMUNICATION/HEARING PATTERNS

1	HEARING	*(With hearing appliance, if used)* 0. HEARS ADEQUATELY—normal talk, TV, phone 1. MINIMAL DIFFICULTY—when not in quiet setting 2. HEARS IN SPECIAL SITUATION ONLY—speaker has to adjust tonal quality and speak distinctly 3. HIGHLY IMPAIRED or absence of useful hearing 9. UNKNOWN (for cognitively impaired only)	
2	COMMUNICATION DEVICES/ TECHNIQUES	*(Check all that apply during last 7 days.)* a. Hearing aid, present and used b. Hearing aid, present and not used regularly c. Other receptive communication techniques used (e.g. lip reading) d. *NONE OF ABOVE*	a b c d
3	MODES OF EXPRESSION	*(Check all used by resident to make needs known.)* a. Speech [a] b. Writing messages to express or clarify needs [b] c. American sign language or Braille [c] d. Signs or gestures or sounds [d] e. Communication board f. Other g. *NONE OF ABOVE*	e f g
4	MAKING SELF UNDERSTOOD	*(Expressing information content—however able)* 0. UNDERSTOOD 1. USUALLY UNDERSTOOD—difficulty finding words or finishing thoughts 2. SOMETIMES UNDERSTOOD—ability is limited to making concrete requests 3. RARELY OR NEVER UNDERSTOOD	
5	SPEECH CLARITY	*(Code for speech in last 7 days.)* 0. CLEAR SPEECH—distinct, intelligible words 1. UNCLEAR SPEECH—slurred, mumbled words 2. NO SPEECH—absence of spoken words	
6	ABILITY TO UNDERSTAND OTHERS	*(Understanding verbal information content—however able)* 0. UNDERSTANDS 1. USUALLY UNDERSTANDS—may miss some part or intent of message 2. SOMETIMES UNDERSTANDS—responds adequately to simple, direct communication 3. RARELY OR NEVER UNDERSTANDS 9. UNKNOWN (for cognitively impaired only)	
7	CHANGE IN COMMUNICATION/ HEARING	Resident's ability to express, understand, or hear information has changed as compared to status of 90 DAYS AGO (or since last assessment if less than 90 days). 0. No Change 1. Improved 2. Deteriorated	

SECTION D: VISION PATTERNS

1	VISION	*(Able to see in adequate light and with glasses, if used)* 0. ADEQUATE—sees fine detail, including regular print in newspapers or books 1. IMPAIRED—sees large print, but not regular print in newspapers or books 2. MODERATELY IMPAIRED—limited vision; not able to see newspaper headlines, but can identify objects 3. HIGHLY IMPAIRED—object identification in question, but eyes appear to follow objects 4. SEVERELY IMPAIRED—no vision or sees only light, colours or shapes; eyes do not appear to follow objects 9. UNKNOWN (for cognitively impaired only)	

SECTION D: VISION PATTERNS (cont'd)

2	VISUAL LIMITATIONS/ DIFFICULTIES	a. Side vision problems—decreased peripheral vision (e.g. leaves food on one side of tray, difficulty travelling, bumps into people and objects, misjudges placement of chair when seating self) 0. No 1. Yes 9. Unknown (for cognitively impaired only) b. Experiences any of the following: sees halos or rings around lights, sees flashes of light, sees "curtains" over eyes 0. No 1. Yes 9. Unknown (for cognitively impaired only)	
3	VISUAL APPLIANCES	Glasses; contact lenses; magnifying glass 0. No 1. Yes	

SECTION E: MOOD AND BEHAVIOUR PATTERNS

1	INDICATORS OF DEPRESSION, ANXIETY, SAD MOOD	*(Code for indicators observed in LAST 30 DAYS, irrespective of the assumed cause.)* 0. Indicator not exhibited in last 30 days 1. Indicator of this type exhibited up to 5 days a week 2. Indicator of this type exhibited daily or almost daily (6, 7 days)	
		VERBAL EXPRESSIONS OF DISTRESS a. Resident made negative statements (e.g. "Nothing matters; Would rather be dead; What's the use; Regrets having lived so long; Let me die.") b. Repetitive questions: (e.g. "Where do I go? What do I do?" c. Repetitive verbalizations (e.g. Calling out for help; "God help me.") d. Persistent anger with self or others (e.g. easily annoyed, anger at placement in facility; anger at care received) e. Self deprecation (e.g. "I am nothing, of no use to anyone.") f. Expressions of what appear to be unrealistic fears (e.g. fear of being abandoned, left alone, being with others) g. Recurrent statements that something terrible is about to happen (e.g. believes is about to die, have a heart attack) h. Repetitive health complaints (e.g. persistently seeks medical attention, obsessive concern with body functions) i. Repetitive anxious complaints or concerns—non-health (e.g. persistently seeks attention or reassurance regarding schedules, meals, laundry or clothing, relationship issues)	
		SLEEP-CYCLE ISSUES j. Unpleasant mood in morning k. Insomnia or change in usual sleep pattern	
		SAD, APATHETIC, ANXIOUS APPEARANCE l. Sad, pained, worried facial expressions (e.g. furrowed brows) m. Crying, tearfulness n. Repetitive physical movements (e.g. pacing, hand wringing, restlessness, fidgeting, picking)	
		LOSS OF INTEREST o. Withdrawal from activities of interest (e.g. no interest in longstanding activities or being with family, friends) p. Reduced social interaction	
2	MOOD PERSISTENCE	One or more indicators of depressed, sad or anxious mood were not easily altered by attempts to "cheer up", console, or reassure the resident in last 7 days. 0. No mood indicators 1. Indicators present, easily altered 2. Indicators present, not easily altered	
3	CHANGE IN MOOD	Resident's mood status has changed as compared to status of 90 DAYS AGO (or since last assessment if less than 90 days). 0. No change 1. Improved 2. Deteriorated	

SECTION E: MOOD AND BEHAVIOUR PATTERNS (cont'd)

			A	B
4	BEHAVIOURAL SYMPTOMS	*(Code for behaviour in last 7 days.)* A. Behavioural symptom frequently in last 7 days 0. Behaviour not exhibited in last 7 days 1. Behaviour of this type occurred on 1 to 3 days in last 7 days 2. Behaviour of this type occurred 4 to 6 days, but less than daily 3. Behaviour of this type occurred daily B. Behavioural symptom alterability in last 7 days 0. Behaviour not present —OR—behaviour was easily altered 1. Behaviour was not easily altered		
		a. **WANDERING** (moved with no rational purpose, seemingly oblivious to needs or safety)		
		b. **VERBALLY ABUSIVE** behavioural symptoms (others were threatened, screamed at, cursed at)		
		c. **PHYSICALLY ABUSIVE** behavioural symptoms (others were hit, shoved, scratched, sexually abused)		
		d. **SOCIALLY INAPPROPRIATE or DISRUPTIVE** behavioural symptoms (made disruptive sounds, noisiness, screaming, self-abusive acts, sexual behaviour or disrobing in public, smeared or threw food or feces, hoarding, rummaged in others' belongings)		
		e. **RESISTS CARE** (resisted taking meds or injections, ADL assistance, or eating)		
5	CHANGE IN BEHAVIOURAL SYMPTOMS	Resident's behavioural status has changed as compared to status of 90 DAYS AGO (or since last assessment if less than 90 days). 0. No change 1. Improved 2. Deteriorated		

SECTION F: PSYCHOSOCIAL WELL-BEING

1	SENSE OF INITIATIVE/ INVOLVEMENT	a. At ease interacting with others	a
		b. At ease doing planned or structured activities	b
		c. At ease doing self-initiated activities	c
		d. Establishes own goals	d
		e. Pursues involvement in life of facility (e.g. makes and keeps friends; involved in group activities; responds positively to new activities; assists at religious services)	e
		f. Accepts invitations into most group activities	f
		g. *NONE OF ABOVE*	g
2	UNSETTLED RELATIONSHIPS	a. Covert/open conflict with or repeated criticism of staff	a
		b. Unhappy with roommate	b
		c. Unhappy with residents other than roommate	c
		d. Openly expresses conflict/anger with family/friends	d
		e. Absence of personal contact with family or friends	e
		f. Recent loss of close family member or friend	f
		g. Does not adjust easily to change in routines	g
		h. *NONE OF ABOVE*	h
3	PAST ROLES	a. Strong identification with past roles and life status 0. No 1. Yes 9. Unknown (for cognitively impaired only)	
		b. Expresses sadness, anger or empty feeling over lost roles or status 0. No 1. Yes 9. Unknown (for cognitively impaired only)	
		c. Resident perceives that daily life (customary routine, activities) is very different from prior pattern in the community 0. No 1. Yes 9. Unknown (for cognitively impaired only)	

SECTION G: PHYSICAL FUNCTIONING AND STRUCTURAL PROBLEMS

1 A. ADL SELF-PERFORMANCE *(Code for resident's **PERFORMANCE OVER ALL SHIFTS** during last 7 days, not including setup)*

0. **INDEPENDENT.** No help or oversight–OR–help/oversight provided only 1 or 2 times during last 7 days.
1. **SUPERVISION.** Oversight, encouragement or cueing provided 3 or more times during last 7 days–OR–Supervision plus physical assistance provided only 1 or 2 times during last 7 days.
2. **LIMITED ASSISTANCE.** Resident highly involved in activity; received physical help in guided maneuvering of limbs, or other nonweight-bearing assistance 3 or more times–OR–More help provided only 1 or 2 times during last 7 days.
3. **EXTENSIVE ASSISTANCE.** Although resident performed part of activity, over last 7-day period, help of the following type(s) was provided 3 or more times:
   - weight-bearing support
   - full staff performance during part (but not all) of last 7 days.
4. **TOTAL DEPENDENCE.** Full staff performance of activity during entire 7 days.
8. **ACTIVITY DID NOT OCCUR** during entire 7 days.

B. ADL SUPPORT PROVIDED *(Code for **MOST SUPPORT PROVIDED OVER ALL SHIFTS** during last 7 days; code regardless of resident's self-performance classification.)*

0. No setup or physical help from staff
1. Setup help only
2. One-person physical assist
3. Two+ persons physical assist
8. ADL activity did not occur during entire 7 days

			A (SELF-PERFORMANCE)	B (SUPPORT)
a	BED MOBILITY	How resident moves to and from lying position, turns from side to side, and positions body while in bed		
b	TRANSFER	How resident moves between surfaces–to and from: bed, chair, wheelchair, standing position (EXCLUDE to and from bath and toilet)		
c	WALK IN ROOM	How resident walks between locations in own room		
d	WALK IN CORRIDOR	How resident walks in corridor on unit		
e	LOCOMOTION ON UNIT	How resident moves between locations in own room and adjacent corridor on same floor. If in wheelchair, self-sufficiency once in chair		
f	LOCOMOTION OFF UNIT	How resident moves to and returns from off-unit locations (e.g. areas set aside for dining, activities or treatments). If facility has only one floor, how resident moves to and from distant areas on the floor. If in wheelchair, self-sufficiency once in chair		
g	DRESSNG	How resident puts on, fastens, and takes off all items of street clothing, including donning and removing prosthesis		
h	EATING	How resident eats and drinks (regardless of skill). Includes intake of nourishment by other means (e.g. tube feeding, total parenteral nutrition)		
i	TOILET USE	How resident uses the toilet room (or commode, bedpan, urinal); transfers on/off toilet, cleanses, changes pad, manages ostomy or catheter, adjusts clothes		
j	PERSONAL HYGIENE	How resident maintains personal hygiene, including combing hair; brushing teeth; shaving; applying makeup; washing and drying face, hands, and perineum (EXCLUDE baths and showers)		

SECTION G: PHYSICAL FUNCTIONING AND STRUCTURAL PROBLEMS (cont'd)

2 BATHING

How resident takes full-body bath or shower, sponge bath, and transfers in and out of tub or shower (EXCLUDE washing of back and hair). *(Code for most dependent in self-performance and support.)*

Bathing self-performance codes are:

0. Independent–No help provided
1. Supervision–Oversight help only
2. Physical help limited to transfer only
3. Physical help in part of bathing activity
4. Total dependence
8. Bathing did not occur during the entire 7 days

(Bathing support codes are as defined in item 1B above)

	A SELF-PERFORMANCE	B SUPPORT

3 TEST FOR BALANCE

(Code for ability during test in the last 7 days.)

0. Maintained position as required in test
1. Unsteady, but able to rebalance self without physical support
2. Partial physical support during test or doesn't follow directions
3. Not able to attempt test without physical help

a. Balance while standing
b. Balance while sitting–position, trunk control

4 FUNCTIONAL LIMITATION IN RANGE OF MOTION

(Code for limitations during last 7 days that interfered with daily functions or put resident at risk of injury.)

A. RANGE OF MOTION: 0. No limitation; 1. Limitation on 1 side; 2. Limitation on both sides

B. VOLUNTARY MOVEMENT: 0. No loss; 1. Partial loss; 2. Full loss

	A	B
a. Neck		
b. Arm—including shoulder or elbow		
c. Hand—including wrist or fingers		
d. Leg—including hip or knee		
e. Foot—including ankle or toes		
f. Other limitation or loss		

5 MODES OF LOCOMOTION

(Check all that apply during last 7 days.)

a. Cane, walker, or crutch	a
b. Wheeled self	b
c. Other person wheeled	c
d. Wheelchair primary mode of locomotion	d
e. *NONE OF ABOVE*	e

6 MODES OF TRANSFER

(Check all that apply during last 7 days.)

a. Bedfast all or most of the time	a
b. Bed rails used for bed mobility or transfer	b
c. Lifted manually	c
d. Lifted mechanically	d
e. Transfer aid (e.g. slide board, trapeze, cane, walker, brace)	e
f. *NONE OF ABOVE*	f

7 TASK SEGMENTATION

Some or all of ADL activities were broken into sub-tasks during last 7 days so that resident could perform them.

0. No 1. Yes

8 ADL FUNCTIONAL REHAB. POTENTIAL

(Check all that apply during last 7 days.)

a. Resident believes self to be capable of increased independence in at least some ADLs	a
b. Direct care staff believe resident is capable of increased independence in at least some ADLs	b
c. Resident able to perform tasks/activity but is very slow	c
d. Difference in ADL self-performance or ADL support, comparing mornings to evenings	d
e. *NONE OF ABOVE*	e

9 CHANGE IN ADL FUNCTION

Resident's ADL Self-Performance status has changed as compared to status of 90 DAYS AGO (or since last assessment if less than 90 days).

0. No change 1. Improved 2. Deteriorated

SECTION H: CONTINENCE IN LAST 14 DAYS

1 CONTINENCE SELF-CONTROL CATEGORIES *(Code for performance over all shifts.)*

0. CONTINENT–Complete control
1. USUALLY CONTINENT–BLADDER, incontinent episodes once a week or less; BOWEL, less than weekly
2. OCCASIONALLY INCONTINENT– BLADDER, 2+ times a week but not daily; BOWEL, once a week
3. FREQUENTLY INCONTINENT–BLADDER, tended to be incontinent daily, but some control present (e.g. on day shift); BOWEL, 2 or 3 times a week
4. INCONTINENT–Had inadequate control. BLADDER, multiple daily episodes; BOWEL, all (or almost all) of the time

a BOWEL CONTINENCE — Control of bowel movement, with appliance or bowel continence programs, if used

b BLADDER CONTINENCE — Control of urinary bladder function (if dribbles, volume insufficient to soak through underpants), with appliances (e.g. foley) or continence programs, if used

2 BOWEL ELIMINATION PATTERN

(Check all that apply in LAST 14 DAYS.)

a. Bowel elimination pattern regular—at least 1 movement every 3 days	a	c. Diarrhea	c
		d. Fecal impaction	d
b. Constipation	b	e. *NONE OF ABOVE*	e

3 APPLIANCES AND PROGRAMS

(Check all that apply in LAST 14 DAYS.)

a. Any scheduled toileting plan	a	f. Did not use toilet room, commode, urinal	f
b. Bladder retraining program	b	g. Pads or briefs used	g
c. External (condom) catheter	c	h. Enemas, irrigation	h
d. Indwelling catheter	d	i. Ostomy present	i
e. Intermittent catheter	e	j. *NONE OF ABOVE*	j

4 CHANGE IN URINARY CONTINENCE

Resident's urinary continence has changed as compared to status of 90 DAYS AGO (or since last assessment if less than 90 days).

0. No change 1. Improved 2. Deteriorated

SECTION I: DISEASE DIAGNOSES

(Check only those diseases that have a relationship to current ADL status, cognitive status, mood and behaviour status, medical treatments, nurse monitoring, or risk of death. Do not list inactive diagnoses.)

1 DISEASES

(If none of I1a–I1qq apply, CHECK item I1rr, NONE OF ABOVE.)

ENDOCRINE/METABOLIC/NUTRITIONAL

a. Diabetes mellitus	a	q. Alzheimer's disease	q
b. Hyperthyroidism	b	r. Aphasia	r
c. Hypothyroidism	c	s. Cerebral palsy	s

HEART/CIRCULATION

		t. Cerebrovascular accident (stroke)	t
d. Arteriosclerotic heart disease (ASHD)	d	u. Dementia other than Alzheimer's disease	u
e. Cardiac dysrhythmia	e	v. Hemiplegia/ hemiparesis	v
f. Congestive heart failure	f	w. Multiple sclerosis	w
g. Deep vein thrombosis	g	x. Paraplegia	x
h. Hypertension	h	y. Parkinson's disease	y
i. Hypotension	i	z. Quadriplegia	z
j. Peripheral vascular disease	j	aa. Seizure disorder	aa
k. Other cardiovascular disease	k	bb. Transient ischemic attack (TIA)	bb
		cc. Traumatic brain injury	cc

MUSCULOSKELETAL

l. Arthritis	l
m. Hip fracture	m
n. Missing limb (e.g. amputation)	n
o. Osteoporosis	o
p. Pathological bone fracture	p

(cont'd over)

SECTION I: DISEASE DIAGNOSES (cont'd)

(Check only those diseases that have a relationship to current ADL status, cognitive status, mood and behaviour status, medical treatments, nurse monitoring, or risk of death. Do not list inactive diagnoses.)

1 DISEASES (cont'd) — *(If none of I1a–I1qq apply, CHECK item I1rr, NONE OF ABOVE.)*

PSYCHIATRIC/ MOOD

dd. Anxiety disorder	dd
ee. Depression	ee
ff. Manic depressive (bipolar disease)	ff
gg. Schizophrenia	gg

PULMONARY

hh. Asthma	hh
ii. Emphysema/ COPD	ii

SENSORY

jj. Cataracts	jj
kk. Diabetic retinopathy	kk
ll. Glaucoma	ll
mm. Macular degeneration	mm

OTHER

nn. Allergies	nn
oo. Anemia	oo
pp Cancer	pp
qq. Renal failure	qq
rr. *NONE OF ABOVE*	rr

2 INFECTIONS — *(If none apply, CHECK the NONE OF ABOVE box.)*

a. Antibiotic resistant infection (e.g. Methicillin resistant staph)	a	h. Sexually transmitted diseases	h
b. Clostridium difficile	b	i. Tuberculosis (active)	i
c. Conjunctivitis	c	j. Urinary tract infection in LAST 30 DAYS	j
d. HIV infection	d		
e. Pneumonia	e	k. Viral hepatitis	k
f. Respiratory infection	f	l. Wound infection	l
g. Septicemia	g	m. *NONE OF ABOVE*	m

SECTION J: HEALTH CONDITIONS

1 PROBLEM CONDITIONS — *(Check all problems present in last 7 days UNLESS OTHER TIME FRAME IS INDICATED.)*

INDICATORS OF FLUID STATUS

a. Weight gain or loss of 1.5 or more kilograms in last 7 days (3 lbs.)	a
b. Inability to lie flat due to shortness of breath	b
c. Dehydrated; output exceeds intake	c
d. Insufficient fluid; did NOT consume all or almost all liquids provided during LAST 3 DAYS	d

OTHER

e. Delusions	e	k. Recurrent lung aspirations in LAST 90 DAYS	k
f. Dizziness/vertigo	f	l. Shortness of breath	l
g. Edema	g	m. Syncope (fainting)	m
h. Fever	h	n. Unsteady gait	n
i. Hallucinations	i	o. Vomiting	o
j. Internal bleeding	j	p. *NONE OF ABOVE*	p

2 PAIN SYMPTOMS — *(Code for the highest level of pain present in last 7 days.)*

a. FREQUENCY with which resident complains or shows evidence of pain:
0. No pain *(Skip to J4)*
1. Pain less than daily
2. Pain daily

b. INTENSITY of pain:
1. Mild pain
2. Moderate pain
3. Times when pain is horrible or excruciating

3 PAIN SITE — *(Check all sites where pain was present in last 7 days.)*

a. Back pain	a	f. Incisional pain	f
b. Bone pain	b	g. Joint pain (other than hip)	g
c. Chest pain during usual activities	c	h. Soft tissue pain (e.g. lesion, muscle)	h
d. Headache	d	i. Stomach pain	i
e. Hip pain	e	j. Other	j

SECTION J: HEALTH CONDITIONS (cont'd)

4 ACCIDENTS — *(Identify all that apply.)*

a. Fell in PAST 30 DAYS	a
b. Fell in PAST 31 to 180 DAYS	b
c. Hip fracture in LAST 180 DAYS	c
d. Other fracture in LAST 180 DAYS	d
e. *NONE OF ABOVE*	e

5 STABILITY OF CONDITIONS — *(Check all that apply.)*

a. Conditions or diseases make resident's cognitive, ADL, mood, or behaviour patterns unstable (fluctuating, precarious, or deteriorating)	a
b. Resident experiencing an acute episode or a flare-up of a recurrent or chronic problem	b
c. End-stage disease; 6 months or less to live	c
d. *NONE OF ABOVE*	d

SECTION K: ORAL/NUTRITIONAL STATUS

1 ORAL PROBLEMS — *(Check all that apply in last 7 days.)*

a. Chewing problem	a	c. Mouth pain	c
b. Swallowing problem	b	d. *NONE OF ABOVE*	d

2 HEIGHT AND WEIGHT

a. (Record height in centimetres) a. HEIGHT (cm.)

b. (Record weight in kilograms) b. WEIGHT (kg.)

Base weight on most recent measure in LAST 30 DAYS; measure weight consistently in accord with standard facility practice (e.g. in AM after voiding, before meal, with shoes off, and in nightclothes).

3 WEIGHT CHANGE

a. Weight loss—5% or more in LAST 30 DAYS or 10% or more in LAST 180 DAYS.
0. No 1. Yes 9. Unknown

b. Weight gain—5% or more in LAST 30 DAYS or 10% or more in LAST 180 DAYS
0. No 1. Yes 9. Unknown

4 NUTRITIONAL PROBLEMS — *(Check all that apply in last 7 days.)*

a. Complains about the taste of many foods	a
b. Regular or repetitive complaints of hunger	b
c. Leaves 25% or more of food uneaten at most meals	c
d. *NONE OF ABOVE*	d

5 NUTRITIONAL APPROACHES — *(Check all that apply in last 7 days.)*

a. Parenteral/IV	a	f. Dietary supplement between meals	f
b. Feeding tube	b		
c. Mechanically altered diet	c	g. Plate guard, stabilized built-up utensil, etc.	g
d. Syringe (oral feeding)	d	h. On a planned weight change program	h
e. Therapeutic diet	e	i. NONE OF ABOVE	i

6 PARENTERAL OR ENTERAL INTAKE — *(Skip to Section L if neither 5a nor 5b is checked.)*

a. Code the proportion of total calories the resident received through parenteral or tube feedings in the last 7 days
0. None 2. 26% to 50% 4. 76% to 100%
1. 1% to 25% 3. 51% to 75%

b. Code the average fluid intake per day by IV or tube in the last 7 days
0. None 3. 1001 to 1500 cc/day
1. 1 to 500 cc/day 4. 1501 to 2000 cc/day
2. 501 to 1000 cc/day 5. 2001 or more cc/day

SECTION L: ORAL/DENTAL STATUS

1 ORAL STATUS AND DISEASE PREVENTION — *(Check all that apply in last 7 days.)*

a. Debris (soft, easily removable substances) present in mouth prior to going to bed at night	a
b. Has dentures and/or removable bridge	b
c. Some or all natural teeth lost—does not have or does not use dentures (or partial plates)	c
d. Broken, loose, or carious teeth	d
e. Inflamed gums (gingiva); swollen or bleeding gums; oral abscesses, ulcers, or rashes	e
f. Daily cleaning of teeth or dentures, or daily mouth care—by resident or staff	f
g. *NONE OF ABOVE*	g

SECTION M: SKIN CONDITION

1	**ULCERS (due to any cause)**	*(Record the **number** of ulcers at each ulcer stage—regardless of cause. If none present at a stage, record "0" (zero). Code all that apply in last 7 days. Code 9 = 9 or more.)* **Requires a full body exam.** a. **Stage 1**–A persistent area of skin redness (without a break in the skin) that does not disappear when pressure is relieved b. **Stage 2**–A partial thickness loss of skin layers that presents clinically as an abrasion, blister or shallow crater c. **Stage 3**–A full thickness of skin is lost, exposing the subcutaneous tissues—presents as a deep crater with or without undermining adjacent tissue d. **Stage 4**–A full thickness of skin and subcutaneous tissue is lost, exposing muscle or bone	
2	**TYPE OF ULCER**	*(For each type of ulcer, code for the **highest stage** in last 7 days using scale in item M1—i.e., 0 = none; stages 1, 2, 3, 4.)* a. Pressure ulcer—any lesion caused by pressure resulting in damage of underlying tissue b. Stasis ulcer—open lesion caused by poor circulation in the lower extremities	
3	**HISTORY OF RESOLVED ULCERS**	Resident has had a pressure ulcer that was resolved or cured in LAST 90 DAYS. 0. No 1. Yes	
4	**OTHER SKIN PROBLEMS OR LESIONS PRESENT**	*(Check all that apply during last 7 days.)* a. Abrasions, bruises b. Burns (second or third degree) c. Open lesions other than ulcers, rashes or cuts (e.g. cancer lesions) d. Rashes (e.g. intertrigo, eczema, drug/heat rash, herpes) e. Skin desensitized to pain or pressure f. Skin tears or cuts (other than surgery) g. Surgical wounds h. *NONE OF ABOVE*	a b c d e f g h
5	**SKIN TREATMENTS**	*(Check all that apply during last 7 days.)* a. Pressure relieving device(s) for chair b. Pressure relieving device(s) for bed c. Turning or repositioning program d. Nutrition or hydration intervention to manage skin problems e. Ulcer care f. Surgical wound care g. Application of dressings (with or without topical medications) other than to feet h. Application of ointments or medications (except to feet) i. Other preventative or protective skin care (except to feet) j. *NONE OF ABOVE*	a b c d e f g h i j
6	**FOOT PROBLEMS AND CARE**	*(Check all that apply during last 7 days.)* a. Resident has one or more foot problems (e.g. corns, callouses, bunions, hammer toes, overlapping toes, pain, structural problems) b. Infection of the foot (e.g. cellulitis, purulent drainage) c. Open lesions on the foot d. Nails or callouses trimmed during LAST 90 DAYS e. Received preventative or protective foot care (e.g. used special shoes, inserts, pads, toe separators) f. Application of dressings (with or without topical meds) g. *NONE OF ABOVE*	a b c d e f g

SECTION N: ACTIVITY PURSUIT PATTERNS

1	**TIME AWAKE**	*(Check appropriate time periods over last 7 days.)* Resident awake all or most of the time (i.e. naps no more than 1 hour per time period) in the: a. Morning [a] c. Evening [c] b. Afternoon [b] d. *NONE OF ABOVE* [d]	
		(If resident is comatose, skip to Section O.)	

SECTION N: ACTIVITY PURSUIT PATTERNS (cont'd)

2	**AVERAGE TIME INVOLVED IN ACTIVITIES**	*(When awake and not getting treatment or ADL care)* 0. Most—more than 2/3 of time 1. Some—from 1/3 to 2/3 of time 2. Little—less than 1/3 of time	
3	**PREFERRED ACTIVITY SETTINGS**	*(Check all settings in which activities are preferred.)* a. Own room [a] d. Outside facility [d] b. Day or activity room [b] e. *NONE OF ABOVE* [e] c. Inside facility/off unit [c]	
4	**GENERAL ACTIVITY PREFERENCES (adapted to resident's current abilities)**	*(Check all PREFERENCES whether or not activity is currently available to resident.)* a. Cards, other games [a] g. Trips or shopping [g] b. Crafts or arts [b] h. Walk/wheeling outdoors [h] c. Exercise or sports [c] i. Watching TV [i] d. Music [d] j. Gardening or plants [j] e. Reading, writing [e] k. Talking or conversing [k] f. Spiritual or religious activities [f] l. Helping others [l] m. *NONE OF ABOVE* [m]	
5	**PREFERS CHANGE IN DAILY ROUTINE**	*(Code for resident preferences in daily routine.)* 0. No change 1. Slight change 2. Major change a. Type of activities in which resident is currently involved b. Extent of resident involvement in activities	

SECTION O: MEDICATIONS

1	**NUMBER OF MEDICATIONS**	*(Record the NUMBER of different MEDICATIONS used in the last 7 days. Enter "0" if none used.)*	
2	**NEW MEDICATIONS**	Resident currently receiving medications that were initiated during the LAST 90 DAYS. 0. No 1. Yes 9. Unknown (admission only)	
3	**INJECTIONS**	*(Record the NUMBER OF DAYS injections of any type were received during the last 7 days. Enter "0" if none used.)*	
4	**DAYS RECEIVED THE FOLLOWING MEDICATION**	*(Record the NUMBER OF DAYS during last 7 days; enter "0" if not used. N.B. Enter "1" for long-acting meds used less than weekly.)* a. Antipsychotic [ ] c. Antidepressant [ ] b. Antianxiety drug [ ] d. Hypnotic [ ] e. Diuretic [ ]	

SECTION P: SPECIAL TREATMENTS AND PROCEDURES

1	**SPECIAL TREATMENTS, PROCEDURES, AND PROGRAMS**	***a. SPECIAL CARE***—*(Check treatments or programs received in LAST 14 DAYS.)* **TREATMENTS** A. Chemotherapy [A] B. Dialysis [B] C. IV medication [C] D. Intake/output [D] E. Monitoring acute medical condition [E] F. Ostomy care [F] G. Oxygen therapy [G] H. Radiation [H] I. Suctioning [I] J. Trach. Care [J] K. Transfusions [K] L. Ventilator or respirator [L] **PROGRAMS** M. Alcohol or drug treatment program [M] N. Alzheimer's or dementia special care unit [N] O. Hospice care [O] P. Pediatric care [P] Q. Respite care [Q] R. Training in skills to return to the community (e.g. taking medications, housework, shopping, transportation, ADLs) [R] S. *NONE OF ABOVE* [S]	
		b. THERAPIES—*(Record the number of days and total minutes each of the following therapies was administered (for at least 15 minutes a day) in the last 7 days. Enter "0" if none or less than 15 minutes daily.) Note: Count only post-admission therapies.* Box **A = # of days** administered for 15 minutes or more Box **B = total # of minutes** provided in last 7 days a. Speech—language pathology, audiology service [A] [B] b. Occupational therapy [A] [B] c. Physical therapy [A] [B] d. Respiratory therapy [A] [B] e. Psychological therapy (by any licensed mental health professional) [A] [B]	

SECTION P: SPECIAL TREATMENTS AND PROCEDURES (cont'd)

2 — INTERVENTION PROGRAMS FOR MOOD, BEHAVIOUR, COGNITIVE LOSS

(Check all interventions or strategies used in the last 7 days, no matter where received.)

a.	Special behaviour symptom evaluation program	a
b.	Evaluation by a licensed mental health specialist in LAST 90 DAYS	b
c.	Group therapy	c
d.	Resident-specific deliberate changes in the environment to address mood or behaviour patterns (e.g. providing bureau in which to rummage)	d
e.	Reorientation (e.g. cueing)	e
f.	*NONE OF ABOVE*	f

3 — NURSING REHABILITATION/ RESTORATIVE CARE

(Record the NUMBER OF DAYS each of the following rehabilitation or restorative techniques or practices was provided to the resident for more than or equal to 15 minutes per day in the last 7 days. Enter "0" if none or less than 15 minutes daily.)

a.	Range of motion (passive)	f.	Walking
b.	Range of motion (active)	g.	Dressing or grooming
c.	Splint or brace assistance	h.	Eating or swallowing
	Training and skill practice in:	i.	Amputation or prosthesis care
d.	Bed mobility	j.	Communication
e.	Transfer	k.	Other

4 — DEVICES AND RESTRAINTS

(Use the following codes for the last 7 days:)
0. Not used 1. Used less than daily 2. Used daily

	Bed Rails	c.	Trunk restraint
a.	Full bed rails on all open sides of bed	d.	Limb restraint
b.	Other types of side rails used (e.g. half rail, 1 side)	e.	Chair prevents rising

5 — HOSPITAL STAY(s)

(Record number of times resident was admitted to hospital in the LAST 90 DAYS [or since last assessment if less than 90 days]. Enter "0" if no admission.)

6 — EMERGENCY ROOM (ER) VISIT(s)

(Record number of times resident visited ER in the LAST 90 DAYS [or since last assessment if less than 90 days]. Enter "0" if no ER visits.)

SECTION P: SPECIAL TREATMENTS AND PROCEDURES (cont'd)

7 — PHYSICIAN VISITS

In the LAST 14 DAYS (or since admission, if less than 14 days in facility), how many days has the physician (or authorized assistant or practitioner) examined the resident? *(Enter "0" if none.)*

8 — PHYSICIAN ORDERS

In the LAST 14 DAYS (or since admission, if less than 14 days in facility), on how many days has the physician (or authorized assistant or practitioner) changed the resident's orders? *Do not include order renewals without change. (Enter "0" if none.)*

9 — ABNORMAL LAB VALUES

Has the resident had any abnormal lab values during the LAST 90 DAYS (or since admission)?
0. No 1. Yes

SECTION Q: DISCHARGE POTENTIAL AND OVERALL STATUS

1 — DISCHARGE POTENTIAL

a. Resident expresses or indicates preference to return to the community.
0. No 1. Yes

b. Resident has a support person who is positive towards discharge.
0. No 1. Yes

c. Stay projected to be of a short duration—Discharge projected WITHIN 90 DAYS. *(Do not include expected discharge due to death.)*
0. No 2. Within 31–90 days
1. Within 30 days 3. Discharge status uncertain

2 — OVERALL CHANGE IN CARE NEEDS

Resident's overall level of self-sufficiency has changed significantly as compared to status of 90 DAYS AGO (or since last assessment if less than 90 days).
0. No change
1. Improved—receives fewer supports, needs less restrictive level of care
2. Deteriorated—receives more support

SECTION R: ASSESSMENT INFORMATION

1 — PARTICIPATION IN ASSESSMENT

a. Resident: 0. No 1. Yes
b. Family: 0. No 1. Yes 2. No family
c. Significant other: 0. No. 1. Yes 2. None

2. SIGNATURES OF THOSE COMPLETING THE ASSESSMENT

a. Signature of RN Assessment Coordinator (sign on above line) — Provider Type — Assessor ID #

b. Date RN Assessment Coordinator signed as complete

Year ____ Month ____ Day ____

	Other Signatures	Title	Sections	Date	Provider Type	Assessor ID #
*c.						
d.						
e.						
f.						
g.						
h.						
i.						

*** most responsible physician**