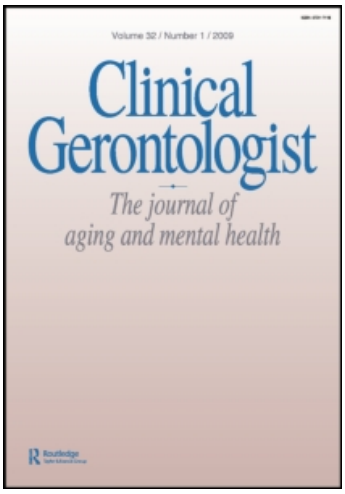

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An Innovative Approach to Behavioral Assessment and Intervention in Residential Care: A Service Evaluation

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An Innovative Approach to Behavioral Assessment and Intervention in Residential Care: A Service Evaluation

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During the first 18 months after establishment of the Behaviour Assessment and Intervention Service (BAsIS), 31 clients living in Sydney Residential Aged Care Facilities were referred. Following comprehensive assessment, the BAsIS team recommended primarily psychosocial and environmental interventions that were case-specific and causality-focused. Behavioral observations and standardized measures of mood, behavior, and carer stress in relation to caring for the resident were collected at initial assessment, and at 6 to 8 weeks after implementation of the BAsIS program. Twenty-two residents completed BAsIS programs. Following BAsIS interventions, there was a significant improvement in resident mood and a significant reduction in carer stress. The results support the feasibility of a case-specific, causality-focused approach in addressing challenging behaviors in long-term care, and suggest that improved mood for nursing home residents and reduced carer stress can be achieved with relative cost effectiveness.

KEYWORDS challenging behavior, case-specific, causality-focused, aged care, rating scales, service evaluation, long-term care

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INTRODUCTION

The incidence and prevalence of mental health issues and behavior problems in residential elder care facilities are well documented (Snowdon, Miller, & Vaughn, 1996; Brodaty et al., 2001). Innovative and effective non-pharmacological treatments for depression and challenging behaviors have become more widespread in recent years (Camp, Cohen-Mansfield, & Capezuti, 2002; Landreville et al., 2006; Turner, 2005). In a comprehensive review, Opie, Doyle, and O'Connor (2002) concluded that there is evidence to support the efficacy of non-pharmacological interventions for behavioural disorders in dementia. In a recent review of non-pharmacological interventions for aggressive behavior in older adults in long-term care, Landreville et al. (2006) found that 66% of the studies reviewed showed a statistically significant reduction of aggressive behavior.

Recent research has espoused the benefits of a case-specific, causality-focused, approach to the management of challenging behaviors (Bird, Llewellyn-Jones, Korten, & Smithers, 2007; Fossey et al., 2006; Kunik et al., 2003). Bird et al. (2007) showed that a causality-focused approach using individualized psychosocial interventions in nursing homes was as effective in reducing challenging behaviors as the more common pharmacological approach to treatment. Importantly, the causality-focused approach was found to have a lower financial cost (Bird et al., 2007). In addition to clinical interventions, research has shown that increased staff education and clinical supervision can lead to reductions in challenging behaviors and to positively altered staff perceptions of the problem (Hallberg & Norberg, 1993; Hallberg, Hansson, & Alexson, 1994; Landreville et al., 2006).

In the United States, the Nursing Home Reform Act, passed as part of the 1987 Omnibus Budget and Reconciliation Act (OBRA 87), stipulates that non-pharmacological interventions should be first-line responses to challenging behaviors associated with dementia. Likewise in Australia, it has been acknowledged that best practice consists of individualized behavior management plans based on a case specific approach where interventions are targeted at causes of the behavior (Bird et al., 2007; Llewellyn-Jones, et al. 1999).

The New South Wales (NSW) Department of Health decided to develop a new service model, known as the Behaviour Assessment and Intervention Services (BAsIS), the first being established in a health service catchment area (Central Sydney). The principal functions of the new service were the provision of consultation, liaison, assessment, and where appropriate, case management, to older people in residential care facilities, who had been referred because of challenging behaviors, and to perform a gatekeeping function to specialist services, such as recommending admission to an acute psychogeriatric unit.

The new model established in Central Sydney was based on a case-specific, causality-focused approach, utilising primarily psychosocial and

environmental strategies in the management of challenging behaviors in older people living in residential care facilities. Challenging behaviour has been defined as "any behaviour associated with the dementing illness which causes distress or danger to the person with dementia and/or others" (Bird et al., 1998).

Goals (Expected Outcomes)

For the referred residents the goals of the BAsIS team were to a) reduce levels of distress by improving mood, and b) reduce the frequency and/or intensity of challenging behaviors that were adversely impacting quality of life. These goals would be achieved by implementing case-specific, causality-focused management plans. The goals for the staff were to a) provide on-site support through education, collaboration, and liaison; b) to improve staff understanding and knowledge of the causes and management of challenging behaviors; c) to increase staff confidence and competence in managing challenging behaviors; and d) to reduce staff stress in relation to managing challenging behavior. The final goal of the BAsIS team was to provide a cost effective service.

In order to evaluate the new service model, data were collected to allow examination of changes that followed the causality-focused BAsIS interventions. This paper describes an analysis of a pilot study examining the outcomes and costs of the first 18 months of the BAsIS operation.

METHODS

The Service Model

The service began in November 2006 with the employment of a part-time senior clinical psychologist at 20 hours per week. Processes and evaluation methods were designed, and contact was established with relevant stakeholders, including a letter of introduction to Directors of Nursing in local nursing homes and meetings with Dementia Advisory Service workers, geriatric psychiatrists, geriatricians, and aged care departments. Following this comprehensive consultation process, clinical service began in January 2007.

Figure 1 shows a schematic overview of the BAsIS model and process following initial referral at the tertiary level. Referrals came from the geriatric psychiatry services or geriatricians, who performed their usual psychiatric and geriatric assessments. This meant that the referrals were screened for appropriateness. All residents referred were expected to have been assessed by their General Practitioner (G.P) for any treatable medical conditions and treated if appropriate. The senior clinical psychologist and geriatric psychiatrist held regular meetings to discuss ongoing cases.

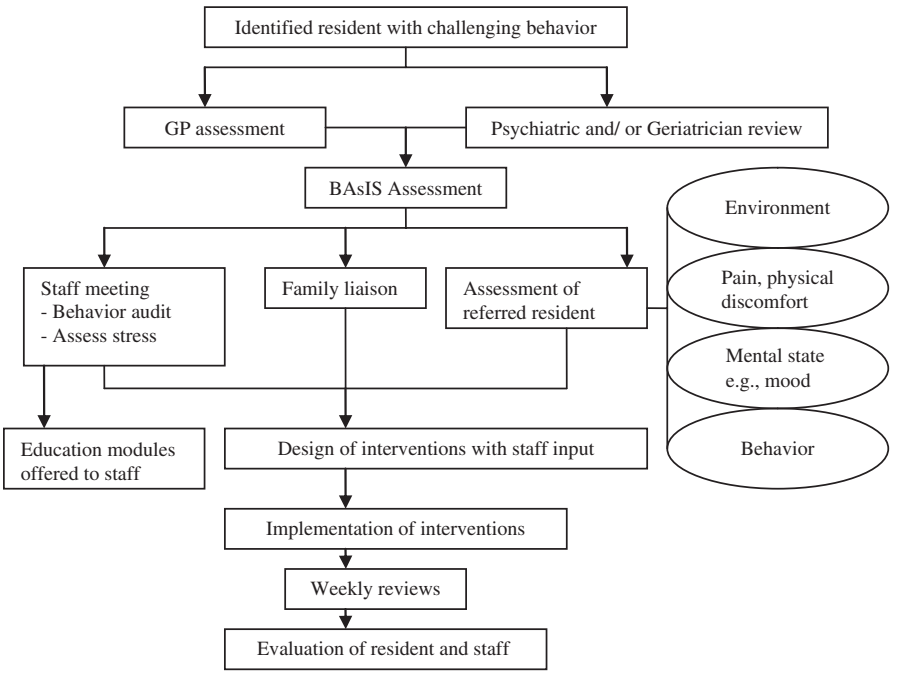

FIGURE 1 Flowchart showing the BAsIS model and process.

Following acceptance of the referral, the BAsIS clinical psychologist liaised with the Director of Nursing of the facility to explain the nature of the service. Prior to the assessment of the resident, an initial staff focus group, a "behavior audit," was mandatory. The behavior audit was designed by the clinical psychologist and its purpose was twofold. Firstly, it provided the opportunity for initial engagement with staff; secondly, it functioned as a needs analysis by establishing a baseline of staff understanding of challenging behaviors and thus the educational needs of the staff, and indirectly the mental health needs of the residents within the facility. Education modules were offered following the behavior audit; these included, but were not limited to, "Understanding and Managing Challenging Behaviors" and "Dementia and Communication."

Clinical assessment of the referred resident included behavior monitoring by staff, a battery of standardized measures, and discussion with the resident's family member if possible. The nursing home was requested to nominate a staff member to act as "Key Worker" for the referred resident, who would act as the primary liaison person and take on some degree of responsibility for the resident.

Individualized causality-focused interventions were designed in consultation with staff, based upon assessment information, case formulation and hypothesized causal factors. A variety of interventions were adapted as

appropriate to the individual case profile, usually using multiple methods. The most common interventions were addressing medical/physical problems, changing care practices, modifying the social or physical environment, and support and education for nursing staff.

The Health Department agreed that brokerage funding could be made available if it was deemed necessary to contract extra staffing for implementation of some of the interventions. It was also anticipated that some referred residents would require referral to more intensive mental health or other services.

Staff education and training in the implementation of individualised strategies were a crucial part of the BAsIS interventions. Staff education drew heavily upon research by Burgio et al. (2002) that showed that care staff could be taught therapeutic communication skills. The referred residents had ongoing evaluation via behavior monitoring, staff feedback, and observation. This included weekly visits by the BAsIS clinical psychologist to liaise closely with the nursing home staff whilst the programme was in progress. At these visits, regular feedback was provided to staff regarding changes in behavior, using visual methods where possible, such as frequency graphs, and time was spent with staff troubleshooting any difficulties. Feedback included positive reinforcement for staff effort and achievement.

Participants

There were a total of 31 residents referred to the BAsIS service from 28 residential care facilities in the 18 months between December 2006 and June 2008. Of the 31 individuals referred, all had been referred to the Aged Care and/or Geriatric Psychiatry Services by the residential aged care facilities, usually via the General Practitioner. Of the 31 referrals, 3 did not require assessment due to their behavioral disturbance resolving between referral and initial contact; 2 were transferred for admission to an acute psychogeriatric unit, as advised by the clinical psychologist, following the initial assessment.

There were 26 residents who commenced programs, but one was withdrawn after 2 weeks because of poor staff compliance; and one died following 2 weeks of the program. At the time of writing this report, 2 were still in the program (one in the assessment phase, and one 3 weeks into the program), and thus were not included in the analysis of outcomes. Twenty-two residents completed programs and had repeat measures available at the time of writing.

Of the 26 residents who had commenced their programs, 13 were men and 13 women. Ages ranged from 56 to 92, with an average age of 75.8 years (SD = 10.1). Diagnoses included: Alzheimer's disease, strokes, vascular dementia, fronto-temporal dementias including Pick's Disease, alcoholic

dementia, developmental disability, chronic psychosis and personality disorder. All 26 participants resided in aged care facilities. Some 60% were moderately to severely cognitively impaired, and a further 20% were mildly to moderately impaired as assessed using the Clinical Dementia Rating Scale (Morris, 1993).

Some referrals described more than one type of disturbed behavior. The most frequent behavior triggering referral was physical aggression (38.5%). This was followed by verbal aggression (23.1%), vocally disruptive behavior (19.2%), resistiveness to care (11.5%), chronic psychotic behaviors such as responding to hallucinations and/or delusions (11.5%), and intrusiveness (11.5%). Other less frequent behaviors included repetitive questions, crawling on the floor, severe sleep disturbance with overactivity, over-eating, hoarding, pacing, spitting, inappropriate urinating and defaecating, and throwing colostomy bags.

Procedure

Behavioral observations and standardised measures of mood and behavior were collected on referred residents at initial assessment, and at 6 to 8 weeks after implementation of the BAsIS intervention programmes. Nursing home staff completed assessment measures to rate perceived stress in relation to caring for the referred resident at baseline and at 6 to 8 weeks.

Measures

A range of instruments were selected for assessing referred residents, the problem behavior, and care staff stress. All the measures had adequate psychometric properties (Alexopoulos, Abrams, Young, & Shamoian, 1988; Bird et al., 2002; Cohen-Mansfield, Marx, & Rosenthal, 1989; Finkel, Lyons & Anderson, 1992; Kurlowicz, Evans, Strumpf, & Maislin, 2002; Morris, 1993).

Clinical Dementia Rating Scale

The Clinical Dementia Rating Scale (CDR; Morris, 1993) allows for the staging of a subject's dementia. Six domains are assessed; memory, orientation, judgment, and problem-solving; functioning in social activities; home and hobbies; and personal care.

The Cohen-Mansfield Agitation Inventory

The Cohen-Mansfield Agitation Inventory (CMAI; Cohen-Mansfield et al., 1989) is a 29 item, widely used, clinician rated measure designed to assess different agitated behaviors in individuals with cognitive impairment. It is

sensitive to the effects of intervention allowing tracking of behavior over time. Finkel, Lyons and Anderson (1992) reported internal consistency reliability (Cronbach's alpha) of .88. Validity of the CMAI was established by significant associations (Pearson product-moment correlation) of .43 and .52 between the CMAI and two other scales designed to measure behavioural disturbance in dementia (Finkel, Lyons & Anderson, 1992).

The Cornell Scale for Depression in Dementia

The Cornell Scale for Depression in Dementia (CSDD; Alexopoulos et al., 1988) consists of 19 items within five categories. It is rated primarily by observations and is designed for administration by clinicians. The scale is completed based upon both caregiver and clinician observations, and ratings are of behavior during the week prior to the interview. No score is given if symptoms result from physical disability or illness. A score of eight or more indicates a depressive disorder (Alexopoulos et al., 1988). The scale has been found to be reliable (with an inter-rater reliability of .63 and an internal consistency coefficient alpha of .84), and valid (concurrent validity of .83) (Alexopoulos et al., 1988; Kurlowicz et al., 2002).

Carer Stress Scale

The Carer Stress Scale (CSS; Bird et al., 2007) is a 7-point Likert scale designed and used to assess the carer's perception of stress related to caring for the person with challenging behavior. Staff were asked to rate how much stress the behavior caused them (high score = more stress). The scale has excellent test-retest reliability after an interval of 8 weeks (Bird et al. 2002).

Design

This was a referral-based pilot study which used repeated measures to assess outcome. As it was a pilot study examining case-specific interventions, there was no control group. A program evaluation design was used to evaluate the benefits of the service model over time. A preliminary cost of the service was calculated in order to contribute to a cost-effectiveness analysis.

Statistical Analysis

All the statistical analyses were done using SPSS 10 for Windows. The within-subjects data were analysed with three two-tailed paired *t*-tests. Using a Bonferroni correction, the p value was reduced to .017 (.05/3), given that three tests were performed (Kleinbaum, Kupper, & Muller, 1988).

RESULTS

In the statistical analyses of the within subject data, 22 individuals (M = 75.3 years, SD = 10.6) had completed programs and had data available for analysis. The number of residents available varied for the dependent variables due to missing data. For the different dependent variables the number of residents available varied between 20 and 22 for the primary analysis. Table 1 shows the pre and post intervention descriptive data and statistical analyses.

Medications

It was noted that 10 (45.5%) of the 22 had been on unchanging doses of antipsychotic medications for many weeks before commencing the programmes, and 5 (22.7%) were receiving anti-depressants. Of the 10, one had haloperidol ceased, and one had the dose reduced; one had the dose of trifluoperazine doubled by the GP. None was commenced on new antipsychotic medication while on the programmes, whilst 5 (22.7%) commenced on anti-depressants.

Behavior

Twenty-two individuals were measured on the Cohen-Mansfield Agitation Inventory at baseline and again at 6 to 8 weeks to compare scores pre and post BAsIS interventions (see Table 1). At baseline the group was moderately behaviorally disturbed with a mean score of 73.43 (SD = 22.05). Following the BAsIS interventions there was an average decrease of 10.13 points (SD = 21.48). This difference was not statistically significant, $t(21) = 2.15$, p = .043 (two-tailed Bonferroni corrected), but there was a trend toward improvement.

Patterns of change for individuals were examined. Figure 2 shows the trajectory of behavior change (measured by the CMAI score) for each person. Although there is variability in the data as shown in Figure 2, individuals generally improved on the CMAI. Statistical non-significance was likely due to low power, and may reach significance in a better powered study.

TABLE 1 Pre- and Post-BAsIS Intervention Results

	Pre-intervention		Post-intervention			
Scale	*M*	*SD*	*M*	*SD*	*t*	*p* value (2-tailed)
Behavior CMAI (N = 22)	73.43	22.05	63.30	21.48	2.15	.043
Mood CSDD (N = 21)	10.91	5.96	7.43	4.26	2.87	.009
Staff Measure CSS (N = 20)	5.35	1.14	3.78	1.21	5.04	<.0001

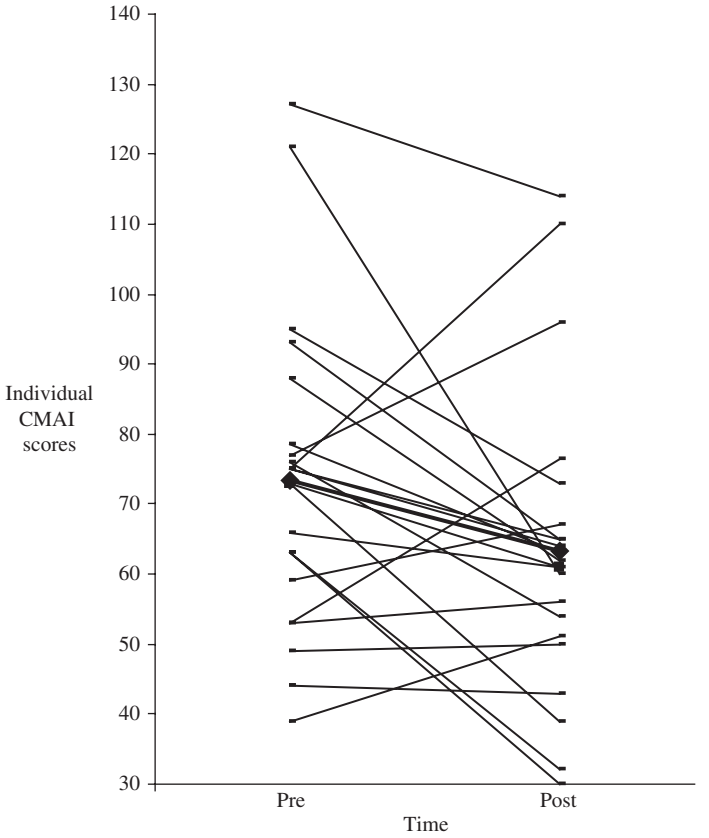

FIGURE 2 Individual trajectories for the Cohen-Mansfield Agitation Inventory, with the mean values superimposed in bold.

Mood

Twenty-one individuals had their mood assessed using the Cornell Scale for Depression in Dementia. At baseline the group had a mean score of 10.91 (*SD* = 5.96) (see Table 1) indicative of depression (i.e., a score of 8 or more; Alexopoulos, 1988). Following the BAsIS interventions there was a statistically significant reduction of 3.48 points in the average score on the CSDD, $t(20) = 2.87$, $p = .009$ (two-tailed). Of the 21 patients, 14 scored eight or more at baseline, indicating a 67% prevalence of depression in this sample. After BAsIS interventions, six of those 14 who were originally depressed scored less than 8. Of these six, two had been commenced on anti-depressant medication as suggested by the BAsIS clinical psychologist, two had already been on anti-depressants for some time, and two were not taking anti-depressants. Individual trajectories are shown in Figure 3, as the average value cannot capture the complexity of change in individual scores.

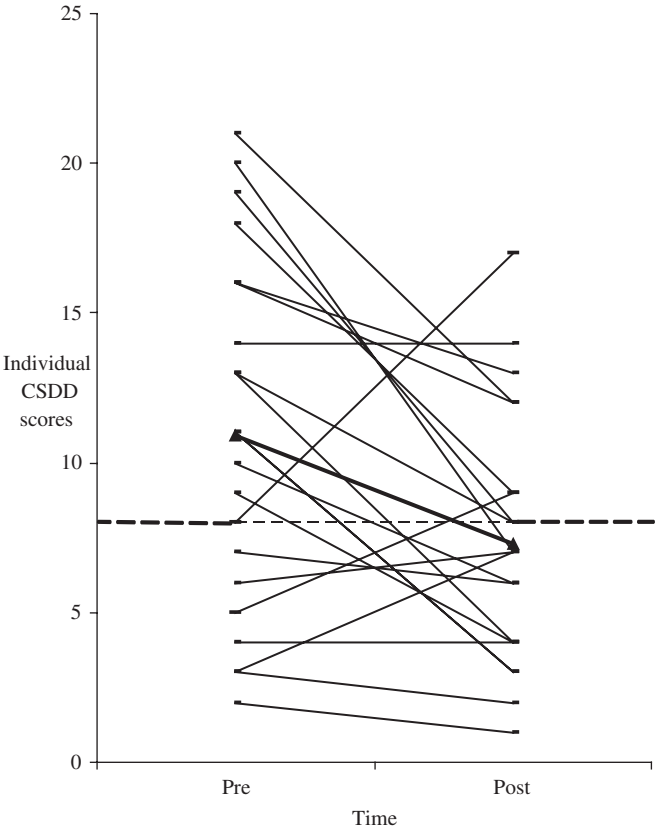

FIGURE 3 Individual trajectories for the Cornell Scale for Depression in Dementia, with the mean values superimposed in bold, and the cut-off line at 8.

Carer Response

Stress levels, measured on the Carer Stress Scale, fell significantly after BAsIS interventions, see Table 1. At baseline carer stress was moderately high at 5.35 (*SD* = 1.14). This level fell significantly by an average of 1.57 points after BAsIS interventions, $t(19) = 5.04$, $p < .0001$ (two-tailed).

Illustrative Case Study

Bill (not his real name) was an 88-year-old widower with stroke related cognitive impairment. He was referred for vocally disruptive behavior, specifically loud calling out of "help," and was occasionally physically aggressive toward nursing staff; with hitting, grabbing, and biting during personal care. Bill was on an anti-psychotic medication, haloperidol 0.5 mg twice daily, at the time of referral. Nursing staff said they had tried everything, including

attending to him every time he called out; attending to him intermittently; giving PRN analgesia; leaving him in bed every other day; changing his chair and mattress; and wheeling him to another area when noisy.

Staff reported that Bill was noted to look sad at times, and was rarely happy. Clinically, Bill presented a worried, non-reactive affect. He acknowledged being unhappy, bored and lonely. He said at times he was frightened and scared of the "women who do this, that and the other to me." He said his sleep was poor, denied any nightmares but said he had flashbacks to unpleasant war-time memories (he had been a Wellington bomber pilot in the Royal Air Force). He scored 16 on the CSDD. There was no evidence of any psychotic phenomena. He scored 6 out of 28 on the MMSE, and he scored in the moderately to severely impaired range on the CDR.

Bill was non-ambulant resulting from inactivity since admission to the nursing home, and he was incontinent of urine and feces. The GP had prescribed PRN analgesia for pain; the location and cause of which were not diagnosed. When assessed by the BAsIS clinical psychologist Bill scored 6 on the Abbey Pain Scale (Abbey et al., 2004), consistent with mild chronic pain.

Bill had significant hearing impairment and did not wear a hearing aid. His loud voice was thought to be related to his inability to hear himself or others. His hearing impairment meant that staff had difficulty communicating with him and in discussing or understanding his needs. This added to his social isolation and sensory deprivation. His daughter commented that she frequently found him in his room alone with the door and curtains closed.

A behavioral analysis revealed that Bill had learned that he could obtain staff attention for the behavior. An example of this was when asked "what's wrong Bill," he said "nothing, I just wanted to see you again." Staff reported that Bill's behavior caused severe problems for the facility and rated him as very stressful to care for. On the CMAI he was rated as moderately disturbed (total score, 75). The BAsIS team clinical psychologist attended one time when Bill was being showered. Clearly he was very distressed by the process and called out "help" 110 times during 30 minutes.

The *causative factors* in Bill's case were depression, pain and discomfort, sensory deprivation, cognitive and communication impairments, and inadvertent reinforcement by staff of the vocally disruptive behavior.

Interventions

The anti-psychotic was ceased; an anti-depressant was administered, as was regular analgesia. A program of activities was devised, including looking through a photo album that was put together by Bill's daughter; looking at books about airplanes; being seated near other residents for a short time

each day; and being taken for walks in the wheelchair outside the nursing home. Staff were asked to seek out Bill, and talk to him at hourly intervals, and to minimize attention to his calling out in between contacts. The showering procedure was changed; specifically, a standing hoist and shower chair were used instead of a swing hoist and a trolley; and staff were advised how best to communicate with him in a reassuring way. Reality orientation information was provided on a large print chart that he was prompted to read regularly, as a form of reassurance; and a hearing assessment was organized.

Outcomes

Bill's calling out reduced from one call every 20 seconds in the first week to two calls in 15 minutes by the fourth week; and calls for "help" in the shower reduced to 10 during 30 minutes. He was no longer aggressive in personal care situations. It then became possible to transfer Bill to another facility. He settled well into the new environment, wore a new hearing aid, and within 3 weeks had stopped calling out altogether. His CMAI score decreased to 47 and his CSDD score was down to 5.

Economic Evaluation

Length of visits and time spent by the senior clinical psychologist in relation to the 22 referred residents were recorded. This included face-to-face time, time liaising with direct care staff in the facility and family members, and indirect time such as report writing, designing clinical interventions, related phone calls, and travel time. The times were then converted to a dollar amount by multiplying by the hourly pay rate of the clinician. For the 22 residents, the cost for the clinical service delivery was $890 (Aust) on average per resident. For a complete cost effectiveness analysis this amount would need to be compared with the costs of what would have happened otherwise to each resident. Some of the likely events for this group of residents, without BAsIS intervention, could include general or psychiatric hospitalization, and/or prescription of psychotropic medications. Without BAsIS interventions, there would also be the likelihood of costs related to staff stress and burn-out in the residential care facility. However, we were unable to estimate these costs in the present study.

In addition to the direct client time, another time component that was not assessed economically was time spent in establishing the service, including literature reviews to determine assessment and evaluation protocols; essential liaison with stakeholders and others in related services; the initial behaviour audits and the ongoing educational in-services provided to the nursing homes.

DISCUSSION

The individuals referred to the BAsIS team in the first 18 months of operation were on average moderately to severely behaviorally disturbed, moderately to severely cognitively impaired, suffered from significant depressive symptoms, and were identified as causing significant stress to nursing staff. The current evaluation found that the BAsIS goals for the residents and staff were partially met in that significant improvement in mood was achieved for the residents, as were significant reductions in carer stress. The service was also found to be relatively cost-effective.

The incidence of depression was 67% in the current sample referred for BAsIS interventions, higher than the recent estimate of prevalence in Australian nursing homes of 40.5% (Snowdon & Fleming, 2008). The high incidence accords with reports that depression amongst nursing home residents with dementia is underdetected and undertreated (Gruber-Baldini et al., 2005). It also suggests that depression is likely one of many causative factors of disturbed behavior in older people suffering from dementia. It is therefore recommended that nursing home residents exhibiting challenging behaviors be thoroughly assessed for depression, and treated appropriately. We support the need for continuous education regarding depression in residential aged care facilities, and closer links and educational initiatives with General Practitioners.

The significant reduction in carer stress suggests that staff felt supported by the BAsIS team clinicians. This is consistent with findings from a number of other studies that have shown that nursing home staff benefit from support provided by outreach services (e.g., Draper et al., 2003). Previous studies have shown that supporting staff and reducing distress related to caring for residents with challenging behaviour can produce positive outcomes, not only for the carers, but for the resident and the resident's behavior (Edberg, Hallberg, & Gustafson, 1996; Edberg, Norgerg & Hallberg, 1999).

Benefits

The BAsIS model is an example of the effective service models described by Bartels, Moak, & Dums (2002), as it blended clinical consultation with staff training and educational interventions. The benefits of the model were significant improvements in the mood of referred individuals, with a trend toward improvement in behavioral disturbance, and significant reduction in the stress levels of their carers. Other benefits that may have occurred but were not readily measured in this study were: i) increased staff motivation to try non-pharmacological interventions; ii) improvements in staff knowledge base; and iii) empowerment of staff to think about causative factors that might be contributing to behavioral problems, and the ways they might intervene.

Limitations

This study was an initial evaluation of a clinical approach piloting a case-specific, causality-focused new clinical service for managing challenging behaviors in residential care facilities; as such it was uncontrolled. It is therefore not possible to say unequivocally that the changes observed in the referred residents were due to BAsIS interventions. The design of the study does not permit any causal interpretation. Various factors, such as use of medications, may have influenced the outcomes. Another limitation exists in the possibility of examiner bias due to having non-blind assessments. Both the clinicians and nursing home staff doing the assessments were aware of the expected outcomes. Some residents fared worse with the interventions, and it is unclear why this was the case.

Future Directions

The future intentions of the BAsIS service are: i) to expend more time in modeling strategies for nursing home staff. It is anticipated that the soon to be recruited Clinical Nurse Consultant will be crucial in modelling interventions and working with direct care staff to change nursing work practices where necessary; ii) to access brokerage funds for implementation of time intensive interventions; iii) to conduct further evaluation of the BAsIS model and outcomes by conducting randomized controlled effectiveness studies, comparing the BAsIS approach with other existing service models, and/or using a wait-list control group; and iv) based on our informal observations of the relationship between good leadership and successful cases, the design of an assessment tool to measure both engagement and motivation of facility staff has commenced.

Our experience from the BAsIS work highlights the benefits, for both residents and care staff, of adopting a case-specific, causality-focused approach to managing challenging behaviours. Despite the limitations of this small clinical evaluation study, our results add to the scientific literature on the nature and effectiveness of psychosocial interventions; and provide encouragement for further research into approaches which identify the causal factors of challenging behaviors, and target individualized interventions accordingly.

REFERENCES

Abbey, J., Piller, N., Bellis de, A., Esterman, A., Parker, D., Giles, L., et al. (2004). The Abbey Pain Scale: A 1 minute numerical indicator for people with end stage dementia. *International Journal of Palliative Nursing*, *10*, 6–14.

Alexopoulos, A., Abrams, R., Young, R., & Shamoian, C. (1988). Cornell Scale for Depression in Dementia. *Biological Psychiatry*, *23*, 271–284.

Bartels, S., Moak, G., & Dums, A. (2002). Models of mental health services in nursing homes: A review of the literature. *Psychiatric Services*, *53*, 1390–1396.

Bird, M. (1998). Challenging behaviours in dementia: A project at Hornsby/Ku-ring-gai Hospital. *Australian Journal on Ageing*, *17*, 10–15.

Bird, M., Llewellyn-Jones, R., Smithers, H., & Korten, A. (2002). *Psychosocial approaches to challenging behaviour in dementia: A controlled trial*. Canberra: Commonwealth Department of Health and Ageing.

Bird, M., Jones, R. H., Korten, A., & Smithers, H. (2007). A controlled trial of a predominantly psychosocial approach to BPSD: Treating causality. *International Psychogeriatrics*, *19*, 874–891.

Brodaty, H., Draper, B., Saab, D., Richards, V., Paton, H., & Lie, D. (2001). Psychosis, depression and behavioural disturbance in Sydney Nursing home residents: Prevalence and predictors. *International Journal of Geriatric Psychiatry*, *16*, 504–512.

Burgio, L., Stevens, A., Burgio, K., Roth, D., Paul, P., & Gerstle, J. (2002). Teaching and maintaining behaviour management skills in the nursing home. *The Gerontologist*, *42*, 487–496.

Camp, C., Cohen-Mansfield, J., & Capezuti, E. (2002). Use of non-pharmacological interventions among nursing home residents with dementia. *Psychiatric Services*, *53*, 1397–1401.

Cohen-Mansfield, J., Marx, M.S., & Rosenthal, A. S. (1989). A description of agitation in a nursing home. *Journal of Gerontology: Medical Sciences*, *44*, 77–84.

Draper, B., Turner, J., McMinn, B., Gonski, P., McIntosh, H., Latham, L., et al. (2003). Outcomes of treatment of vocally disruptive behaviour. *Australasian Journal on Ageing*, *22*, 80–84.

Edberg, A. K., Hallberg, I., & Gustafson, L. (1996). Effects of clinical supervision on nurse-patient cooperation quality. *Clinical Nursing Research*, *5*, 127–149.

Edberg, A. K., Norberg, A., & Hallberg, I. (1999). Mood and general behaviour of patients with severe dementia during one year of supervised individualised planned care and systematic clinical supervision, compared with a similar control group. *Aging Clinical and Experimental Research*, *11*, 395–403.

Finkel, S., Lyons, J. S., & Anderson, R. L. (1992). Reliability and validity of the Cohen-Mansfield Agitation Inventory in institutionalized elderly. *International Journal of Geriatric Psychiatry*, *7*, 487–490.

Fossey, J., Ballard, C., Juszczak, E., James, I., Jacoby, R., & Howard, R. (2006). Effect of enhanced psychosocial care on anti-psychotic use in nursing home residents with severe dementia: Cluster randomised trial. *British Medical Journal*, *332*, 756–761.

Gruber-Baldini, A. L., Zimmermann, S., Boustani, M., Watson, L., Williams, C., & Reed, P. (2005). Characteristics associated with depression in long term care residents with dementia. *The Gerontologist*, *45*, 50–55.

Hallberg, I. R., & Norberg, A. (1993). Strain among nurses and their emotional reactions during a year of systematic clinical supervision combined with the implementation of individualized care in dementia care. *Journal of Advanced Nursing*, *18*, 1860–1875.

Hallberg, I. R., Hansson, U., & Alexson, K. (1994). Satisfaction with nursing care and work during a year of clinical supervision and individualized care: Comparison

between two wards for the care of severely demented patients. *Journal of Nursing Management*, *1*, 297–307.

Kleinbaum, D., Kupper, L., & Muller, K. (1988). *Applied regression analysis and other multivariate methods* (2nd ed.). Boston: PWS-Kent.

Kunik, M., Martinez, M., Snow, L., Beck, C., Cody, M., Rapp, C. G., et al. (2003). Determinants of behavioral symptoms in dementia patients. *Clinical Gerontologist*, *26*(3/4), 83–89.

Kurlowicz, L., Evans, L., Strumpf, N., & Maislin, M. (2002). A psychometric evaluation of The Cornell Scale for Depression in Dementia in a frail nursing home population. *American Journal of Geriatric Psychiatry*, *10*, 600–608.

Landreville, P., Bedard, A., Verreault, R., Desrosiers, J., Champoux, N., & Monette, J., et al. (2006). Non-pharmacological interventions for aggressive behaviour in older adults living in long term care facilities. *International Psychogeriatrics*, *18*, 47–73.

Llewellyn-Jones, R., Baikie, K., Smithers, H., Cohen, J., Snowdon, J. & Tennant, C. (1999). Multi-faceted shared care intervention for late life depression in residential care: Randomised controlled trial. *British Medical Journal*, *319*, 676–682.

Morris, J. (1993). The Clinical Dementia Rating Scale (CDR): Current version and scoring rules. *Neurology*, *43*, 48–55.

Opie, J., Doyle, C., & O'Connor, D. (2002). Challenging behaviours in nursing home residents with dementia: A randomized controlled trial of multi-disciplinary interventions. *International Journal of Geriatric Psychiatry*, *17*, 6–13.

Snowdon, J., Miller, R., & Vaughan, R. (1996). Behavioural problems in Sydney nursing homes. *International Journal of Geriatric Psychiatry*, *11*, 535–541.

Snowdon, J., & Fleming, R. (2008). Recognising depression in residential aged care facilities: An Australian challenge. *International Journal of Geriatric Psychiatry*, *23*, 295–300.

Turner, S. (2005). Behavioral symptoms of dementia in residential settings: A selective review of non-pharmacological interventions. *Aging & Mental Health*, *9*, 93–104.