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Dementia and use of psychotropic medication in non-'Elderly Mentally Infirm' nursing homes in South East England

ALASTAIR J. D. MACDONALD, G. IAIN CARPENTER[1], OWEN BOX, ALICE ROBERTS, SUNITA SAHU

Section of Old Age Psychiatry, Department of Psychological Medicine, Institute of Psychiatry, Guy's, King's and St. Thomas' Schools of Medicine, Dentistry and Biomedical Sciences, King's College, London, UK
[1]Department of Health Care of the Elderly, Centre for Health Service Studies, University of Kent at Canterbury, Canterbury, UK

Address correspondence to: A. J. D. Macdonald, Academic Department, Ladywell Unit, Lewisham Hospital, London SE13 6LH, UK. Email: alastair.macdonald@kcl.ac.uk

Abstract

Background: there is concern about inappropriate use of psychotropic medication in nursing homes in the UK. Older people with advanced dementia, who might need such medication, are supposed to be admitted to specialist 'Elderly Mentally Infirm' homes.
Objectives: to estimate the prevalence of dementia and psychotropic medication use in UK non-Elderly Mentally Infirm homes.
Design: a) Probability sample of non-elderly mentally infirm places in nursing-homes in South-East England then b) two-stage survey of a probability sample of residents in these places
Setting: non-Elderly Mentally Infirm nursing homes for older people in SE England.
Subjects: residents registered non-Elderly Mentally Infirm homes.
Methods: assessment using mini mental state examination for cognitive impairment, the Behave-AD for behavioural problems and the Cornell Scale for depression. Mini mental state examination scores were validated against independent psychiatric assessment in a sub-sample of residents. We gathered medication data from prescription sheets.
Results: of the 445 residents 74% assessed had probable clinical dementia. Of all the residents 38% had severe cognitive impairment, with a three-fold higher rate of behavioural disturbance than others. Psychotropic medication was strongly associated with cognitive impairment. Antipsychotic drugs were prescribed for only 15% of all residents.
Conclusions: if nearly three-quarters of non-Elderly Mentally Infirm nursing home residents have dementia, many with behavioural disturbance, then dementia care is not a 'specialist' area of nursing home care. This study offers no support for the hypothesis that use of antipsychotic drugs in nursing homes is excessive. Questions are raised about policy, staffing and training in nursing homes.

Keywords: *antipsychotic agents, dementia, mental disorders, nursing homes, prevalence, psychotropic drugs*

Introduction

There are no reported prevalence studies of dementia in the residents of UK nursing homes. Figures of between 72 and 94% are reported from USA, Sweden and Australia [1–6]. In the UK, McGrath & Jackson [7] found a high rate of prescription of psychotropic medication in Glasgow nursing homes, but did not attempt to assess the prevalence of dementia. Power [8] found a prevalence of 50% of 'marked degree of mental impairment'—assessed without direct resident testing—in new entrants to nursing homes. Jagger & Lindesay [9] asked nursing-home staff three questions about residents and produced an estimated prevalence

of 57% of 'cognitive impairment'—again, they did not attempt to validate this by direct resident assessment, allowing a strong possibility of under-recognition. At present, registration authorities classify homes into Elderly Mentally Infirm (EMI) for residents with dementia, and the 'frail elderly' (here called 'non-EMI') for those who are not demented. More than 80% of nursing home places for older people in the UK are in the second category. If, as the evidence from abroad suggests, the prevalence of dementia in homes for frail elderly people is very high, then this distinction is irrational. We directly investigated the prevalence of dementia in people in non-specialist nursing homes, and its relationship to psychotropic drug prescription.

Methods

The study area was in the 6 most easterly Health Authorities (HAs) in the former South Thames Region; a quadrant of South East England bounded by Westminster Bridge in Central London, Dover and Brighton. The study population was nursing home residents in places not designated for the care of dementia, as categorized by the health authority, irrespective of whether they were in nursing homes, or dual-registered (Health and Local Authority) homes. Sampling was in two steps—the sampling of places and sampling of residents. The sampling frame was all places in non-EMI homes (rather than all homes). We used lists provided by HAs. Places in private hospitals and clinics, in homes where the whole home was designated for people with dementia (as defined by the health authority), for short-term care, or for residents under 65 were excluded. A random sample of eligible places was taken. Over the 10-month period of recruitment, we sent letters to all homes from which places had been selected by the sampling procedure, with a supporting letter from the local HA Registration and Inspection Department. We offered no financial reward for participation.

If the home agreed, a preliminary meeting with the home manager was arranged before resident sampling took place. At this meeting, a sampling frame of all residents occupying a long-term placement (not designated for care of dementia) was established and a random sample of residents equalling the number of places selected by the sampling procedure for that home was drawn. The residents were asked for consent for a brief interview. Interviewers were G-grade psychiatric nurses who had experience of older adults with mental health problems. If the resident refused, another resident was randomly sampled and approached, until the number of residents assessed equalled the number of places selected by the sampling procedure for that home. If a home refused, or prevaricated beyond the survey period of 9 months, no substitution of homes took place. All random sampling was by computer-generated random numbers with clock seed.

Cognitive impairment was assessed using the Mini-Mental State Examination (MMSE) [10]. If residents could not complete certain items because of visual, auditory or physical impairment, scores were adjusted to a maximum of 30 by multiplying 30 by the number of correct responses divided by the number that they could possibly have completed, and rounding the result to the nearest whole number. Impairment was assessed as a MMSE score of 23 or less and severe impairment as a MMSE score of 15 or less. Validation of the MMSE was determined by an independent interview using the Geriatric Mental State interview (GMS) [11] by old age psychiatric specialist registrars in 10% of sampled residents scoring less than 24 on the MMSE and 30% of those scoring higher than 23. Positive and negative predictive values were then applied to the main sample to derive a probable prevalence of dementia in the whole sample, with confidence intervals calculated according to the method recommended by Dunn *et al.* [12].

Staff were also asked about residents' health and well-being, items from the Minimum Data Set Resident Assessment Instrument (MDS) [13], the Cornell Scale for Depression in Dementia [14] and the Behave-AD [15]. The latter consists of 7 subscales of which 2 (affective disturbance and anxiety/phobias) were treated as 'negative' (indicating the absence of usually desirable behaviour) and the rest (including aggression and delusions) as 'positive' behavioural problems—representing the presence of usually undesirable behaviour. Medication charts were reviewed, and antipsychotic dosage converted to mg. equivalents of chlorpromazine according to British National Formulary guidelines [16]. Ethical approval was granted by the South Thames East Multi-Centre Ethics Committee; consent was obtained using MRC Guidelines [17]. Analysis was carried out using SPSS v10 and EpiInfo2000. All Cornell, MDS behavioural and Behave-AD items were cross-tabulated against prescription of antipsychotic and antidepressant medication. Those with a lower 95% confidence of the odds ratio (using the maximum likelihood estimate method) over 1.0 were considered to have a significant relationship of symptoms with prescription of the medication.

Results

We identified 9,394 non-specialist places from HA lists of 305 homes in April 1999. A random sample of 750 places was identified in 270 homes. By the end of the study, 157 homes had agreed to participate with records indicating 5,056 non-specialist places. Only 3 of the remaining homes refused; many more agreed to participate and then prevaricated indefinitely by agreeing to appointments which were not kept. This unanticipated phenomenon led to a number of homes with sampled

Table 1. Sampling of homes and residents

	All non-specialist places	Homes where places sampled	Homes visited (% of sampled)	Residents in homes visited
No. of homes	305	270	157 (58.1)	157
Median no. of places	27[a]	29[a]	30[a]	24[b]
Total places	9394[a]	8640[a]	5056[a] (58.5)	4243[b]
	Not sampled *n*=3779	Refused *n*=19	Agreed *n*=445	Total *n*=4243
% women	78.2	78.9	78.2	78.2
Mean age on birthday in 1999 (SD)	85.7 (7.4)	85.5 (9.1)	85.1 (7.2)	85.6 (7.4)
Median length of stay in home months (Interquartile range)	20 (7–41)	32 (18–60)	18 (8–39)	20 (7–41)

[a]The number of places as recorded in Health Authority records.
[b]Number of residents actually present when the home was visited.

places not being approached. Table 1 compares the homes at the various stages of the sampling. In three homes, no list of residents was available or feasible to collect, and in many homes the actual number of residents in non-specialist placements was greater or less than that indicated in the HA records for the home. Of the 4,243 residents in non-EMI places at the time of the visit 445 (10.5%) were randomly sampled. Nineteen residents refused assessment and substitute residents were randomly sampled. There was no difference in age or sex between those who were not sampled, agreed or refused interview (Table 1). Individual residents refusing assessment tended to have lived for longer in the home than those who accepted or were not sampled, but no more than by chance. There was no difference in refusal rates between health authority areas, interviewer nor in size of home.

Prevalence of dementia

Prevalence rates of cognitive impairment using MMSE scores and probable dementia (estimated by generalising the positive and negative predictive values from the validation data to the whole sample) are shown in Table 2. The prevalence of probable dementia in these residents of non-specialist nursing homes was 74.0% (95% CI 62–83%). At least one third of residents had severe cognitive impairment. There was no relationship between health authority area or length of stay and MMSE score.

Prevalence of depression and depressive symptoms

Of residents 11.9% scored more than the usual cut-point of 8/9 on the Cornell Scale for Depression in Dementia—even though a significant proportion of residents were reported by staff to have depressive symptoms (Table 2). There was no relationship between depression scale score and MMSE.

Table 2. Dementia, depression and staff report of symptoms of depression and behavioural problems

	Percent (95% CI)
Dementia	
MMSE score (*n*=445)	
0–15	37.8
16–23	27.6
24+	34.6
0–23	65.4 (61.0–69.8)
Validation	
Positive predictive value (*n*=61)	95.8 (MMSE cut 23/24)
Negative predictive value	67.6
Probable prevalence of clinical dementia (*n*=445)	74.0 (62–83)
Depression	
Cornell Depression in Dementia Scale score	mean 3.8 (3.4–4.2)
Proportion of population with score >8	11.9 (8.9–14.9)
Staff report of symptoms of depression	
Behave-AD score	mean 5.01 (4.46–5.59)
Anxiety	42.5 (37.9–47.1)
Depressed mood	41.6 (37.0–46.2)
Agitation	41.6 (37.0–46.2)
Tearfulness	33.0 (28.6–37.4)
Suicidal thoughts	8.1 (5.5–10.6)
Distractibility	30.0 (26.0–34.0)
Staff report of behavioural problems	
Verbal outbursts	29.6 (25.4–33.9)
Purposeless activity	20.7 (16.9–24.5)
Sleep disturbance	20.0 (16.3–23.7)
Day/Night inversion	18.7 (15.0–22.3)
Threats of or physical violence	12.6 (9.5–15.7)
Appetite or weight decline	11.9 (8.9–14.9)
Wandering around home	8.3 (5.7–11.0)

Prevalence of behavioural problems

Of residents 58.2% had at least one positive problem such as a persecutory belief, hallucination, aggressive behaviour or wandering. The prevalence of specific

behavioural problems is shown in Table 2. The mean number of behavioural problems in those with no/mild, moderate or severe cognitive impairment was 1.6, 3.6 and 4.5 respectively. The total Behave-AD, the Cornell Depression Scale and the MDS have a number of very similar items and the former two were highly correlated (Pearson's $r=0.55$). Total Behave-AD scores were strongly associated with cognitive impairment (Figure 1). Positive (presence of usually undesirable behaviour) but not negative (absence of usually desirable behaviour) Behave-AD subscales were associated with MMSE score (see Method).

Use of psychotropic medication

The proportion of residents taking antidepressants (25%) or benzodiazepines (24.1%—mostly as hypnotic) was greater than the proportion taking any antipsychotic medication (15.3%) (Table 3). The mean Cornell scale score for residents on antidepressants was 4.8 (95% CI 3.9–5.6) compared with 3.5 (95% CI 3.0–3.9) for those not taking them. There was a strong association between antipsychotic use and both MMSE score (Table 3), and Behave-AD Total and positive subscales (Figure 2). Mean antipsychotic dose levels expressed as daily equivalents of chlorpromazine were 16.4 mg (95% CI 9.9–22.9), 8.0 mg (95% CI 3.0–13.1) and 2.6 mg (95% CI 0–5.8) for residents with severe, moderate and mild/no cognitive impairment respectively.

Figure 3 shows the items from the Cornell, MDS and Behave-AD scales that were most strongly associated with the use of antipsychotic and antidepressant medication. Agitation, diurnal mood variation and feeling abandoned were associated with both antipsychotics and antidepressant prescription but symptoms generally reflected current indications for use of these medications.

Discussion

Data from this survey were gathered in SE England, which may not be typical of England as a whole. However, our prevalence rates are similar to those found in other countries. The number of homes refusing to take part outright was smaller than the number who agreed and then prevaricated; altogether they represented 42% of the homes originally identified. Many of them were from a health authority whose inspection department sent out a letter insisting that people without dementia were not to be admitted to non-EMI nursing homes at the same time as we approached the homes with a letter of support from the same department for this study of dementia! If this partially explains the ultimate home refusal rate, it also suggests

Table 3. Psychotropic medication use ($n=445$)

	Percent (95% CI)
Antipsychotic medications	
Any regular or PRN	15.3 (11.9–18.6)
Any regular	14.0 (11.0–17.0)
Thioridazine	8.8 (6.1–11.0)
Chlorpromazine	0.5 (0–1.7)
Risperidone/Olanzapine	2.9 (1.4–4.5)
Haloperidol	0.7 (0–1.4)
Trifluoperazine	0.7 (0–1.4)
Any antipsychotic medication by MMSE score	
0–15 (severe impairment)	27.4 (20.6–34.2)
16–23 (moderate impairment)	13.0 (6.9–19.0)
24–30 (no or mild impairment)	3.9 (0.8–7.0)
Any benzodiazepine	
Regular or PRN	24.1 (20.1–28.0)
Regular	21.4 (17.5–25.2)
PRN only	3.6 (1.5–5.3)
Benzodiazepine hypnotics	
Regular or PRN	20.9 (17.1–24.7)
Regular	19.0 (15.0–22.0)
'PRN'	2.3 (0.9–3.6)
Antidepressants	
Regular	25.0 (21.0–29.0)

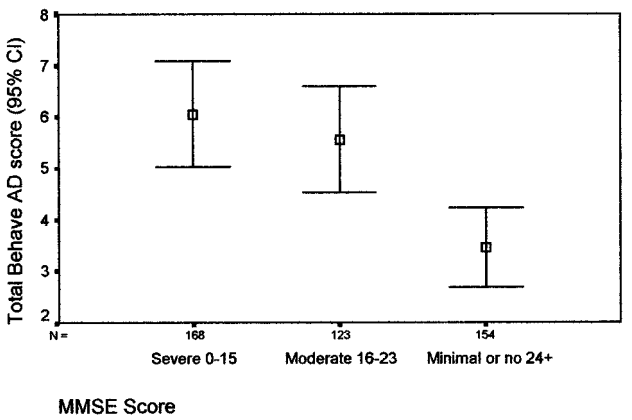

Figure 1. Behave-AD Scores by degree of cognitive impairment (95% CI).

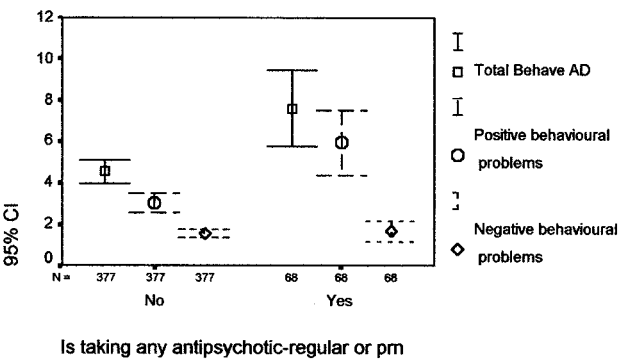

Figure 2. Mean Behave AD Total (95% CI) and positive and negative subscales by whether taking an antipsychotic.

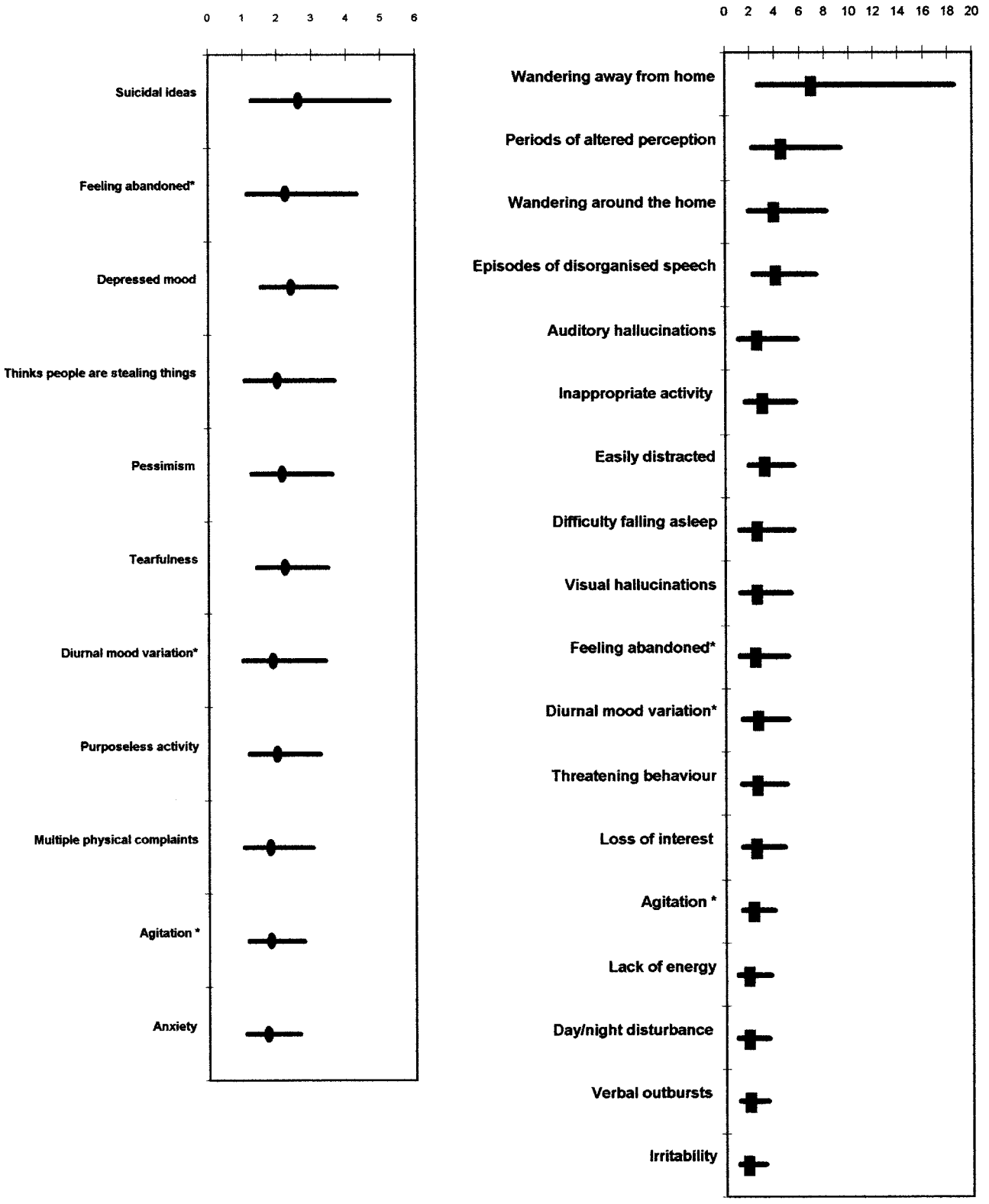

Figure 3. Odds ratios (95% CI) for reported behaviours by prescription of (a) antidepressants (n=111/445) and (b) antipsychotic medication (n=68/445). *Behaviour reported associated with both antidepressant and antipsychotic use.

that the prevalence of dementia in these homes was not low.

The main finding of this study of 445 residents in non-EMI nursing home places in South-East England was a prevalence of probable dementia of 74%. In over a third of these 'non-EMI' residents, cognitive impairment was severe and these residents were reported as showing almost three times as many positive behavioural problems as those with no or mild impairment. Cognitive impairment was strongly associated with behavioural problems and the use of antipsychotic medication. In this systematically gathered sample the prescription of antipsychotics was less than that reported by McGrath & Jackson [7] in their convenience sample. Dose levels were significantly lower than the mean daily chlorpromazine equivalent of 73.9 mg prescribed in specialist Domus nursing homes for people with dementia and behavioural problems [18]. It is impossible to assess appropriateness of medication from cross-sectional data, but the present study suggests that, in general, the use of antipsychotics and antidepressant medication in nursing homes was appropriate. Although in this exploratory analysis no account has been taken of the use of multiple statistical testing, which may lead to increased Type I error, attempts to assert that antipsychotic medication is inappropriate without examining the residents for whom it was prescribed, and the difficulties they pose, seems ill-founded.

This study strongly suggests that the distinction between 'EMI' and 'non-EMI' nursing homes is untenable, and, since dementia was no more prevalent in longer-staying residents, confirms the view held by many clinicians that dementia is a key determinant of need for nursing-home placement. Most nursing homes should be designed and run for optimal dementia care. This issue has hitherto been avoided (for example, when the Department of Health regards dementia care a 'specialist' function of nursing homes [19], or in judgements about adequate staffing levels in 'non-EMI' homes). A re-think of the function and staffing of all nursing homes is now required. The policy of using nursing homes for 'intermediate care' may need to be reviewed in the light of this study because of the possibly detrimental effect of multiple transfers on people with dementia—who constitute the majority of nursing home residents.

Key points

- Dementia affects almost three-quarters of older people in non-specialist nursing homes. It is often accompanied by behavioural problems.
- These homes are not designed or staffed for the care of dementia and behavioural problems, yet antipsychotic prescriptions were not frequent and did not seem inappropriate, given the residents' condition.
- The distinction between 'EMI' and other nursing homes needs reconsideration, as does the training and numbers of staff in all homes.

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