

The Prevalence of Resident-to-Resident Elder Mistreatment in Nursing Homes

Mark S. Lachs, MD, MPH; Jeanne A. Teresi, EdD, PhD; Mildred Ramirez, PhD; Kimberly van Haitsma, PhD; Stephanie Silver, MPH; Joseph P. Eimicke, MS; Gabriel Boratgis, MPH; Gail Sukha, BA; Jian Kong, MS; Alexandra M. Besas, RN; Maria Reyes Luna, AS; and Karl A. Pillemer, PhD

Background: Resident-to-resident elder mistreatment (R-REM) in nursing homes can cause physical and psychological injury and death, yet its prevalence remains unknown.

Objective: To estimate the prevalence of physical, verbal, and sexual R-REM in nursing home residents and subgroups.

Design: 1-month observational prevalence study.

Setting: 5 urban and 5 suburban New York state nursing homes.

Participants: 2011 residents in 10 facilities randomly selected on the basis of size and location; 83% of facilities and 84% of eligible residents participated.

Measurements: R-REM was identified through resident interviews, staff interviews, shift coupons, observation, chart review, and accident or incident reports.

Results: 407 of 2011 residents experienced at least 1 R-REM event; the total 1-month prevalence was 20.2% (95% CI, 18.1% to 22.5%). The most common forms were verbal (9.1% [CI, 7.7%

to 10.8%]), other (such as invasion of privacy or menacing gestures) (5.3% [CI, 4.4% to 6.4%]), physical (5.2% [CI, 4.1% to 6.5%]), and sexual (0.6% [CI, 0.3% to 1.1%]). Several clinical and contextual factors (for example, lower vs. severe levels of cognitive impairment, residing on a dementia unit, and higher nurse aide caseload) were associated with higher estimated rates of R-REM.

Limitations: Most facilities were relatively large. All R-REM cases may not have been detected; resident and staff reporting may be subject to recall bias.

Conclusion: R-REM in nursing homes is highly prevalent. Verbal R-REM is most common, but physical mistreatment also occurs frequently. Because R-REM can cause injury or death, strategies are urgently needed to better understand its causes so that prevention strategies can be developed.

Primary Funding Source: National Institute on Aging.

Ann Intern Med. 2016;165:229-236. doi:10.7326/M15-1209 www.annals.org
For author affiliations, see end of text.

This article was published at www.annals.org on 14 June 2016.

Growing indirect evidence suggests that verbal and physical conflict between nursing home residents may be a large and pervasive problem. Media coverage regularly documents serious assaults of nursing home residents by other residents (1-3). The only empirical study of cases of physical aggression between nursing home residents (4) included cases reported to a state ombudsman program over 1 year. Although this was an important early contribution to the field, the cases were not systematically identified by using research methods. No study has used standardized and validated case-finding methodology expressly developed for estimating the prevalence of resident-to-resident elder mistreatment (R-REM) in the nursing home; indeed, a recent systematic review on the topic concluded that individual studies could not produce a prevalence rate on the basis of their design, nor could the results be meaningfully pooled because of heterogeneity (5).

We provide prevalence estimates from what we believe is the first large-scale, systematic study of R-REM in the nursing home. Our goal was to estimate the prevalence of R-REM, including verbal, physical, and sexual mistreatment, and examine the prevalence according to location and timing of events and patient-, environment-, and facility-level characteristics.

METHODS

Definition of R-REM

The following definition guided the gold-standard consensus classification in adjudicating R-REM "case-ness" (Supplements 1 and 2, available at www.annals.org): Negative and aggressive physical, sexual, or verbal interactions between long-term care residents that in a community setting would likely be construed as unwelcome and have high potential to cause physical or psychological distress in the recipient.

Study Design

This was an observational prevalence study. The protocol was reviewed and approved by the institutional review board at Weill Cornell Medical College.

Study Population

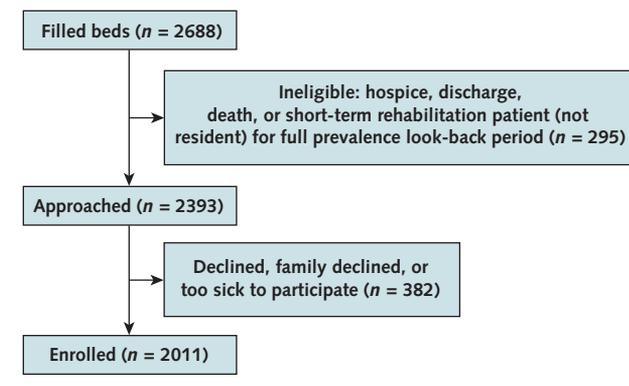
Recruitment of Facilities

Twelve nursing homes in New York state were selected at random by using a pseudo-random number generator procedure; 6 were selected from among the

See also:

Editorial comment 288

Web-Only
Supplement

Figure 1. Study flow diagram.

21 nursing homes with 250 or more beds in urban regions, and 6 from among the 13 large nursing homes (200 or more beds) in suburban regions. Facilities were offered incentives for participation: a \$2000 stipend as compensation for administrative and staff time, and training in R-REM detection and a training package on R-REM at study end. Ten of the 12 facilities agreed, yielding a participation rate of 83%. With rolling enrollment, data were collected between July 2009 and September 2011 in the urban facilities and between September 2011 and June 2013 in the suburban facilities.

Eligible Residents

All long-stay residents except those in hospice, subacute, or short-term care (whose expected length of stay would be less than the prevalence look-back period) were invited to participate. For residents who could not complete the consent process (for example, owing to cognitive impairment, language barrier, or health impairment), consent was sought by designated proxies (families or legal guardians). Residents who could not respond were excluded from self-reported measures; however, chart review, staff informant, and observational measures were performed for individuals with proxy approval. Residents who met the above exclusion criteria or who died or were discharged before enrollment were excluded from the denominator in prevalence estimates. The final analytical sample included 2011 residents, for a participation rate of 84% (Figure 1).

Procedures

The research team entered each facility for 2 to 3 months and enrolled residents sequentially. First, a 2-stage screening instrument on cognitive capacity was administered to determine the resident's ability to provide consent for participation in noninvasive research. A second-stage screening instrument was used to determine his or her ability to provide an extended R-REM interview.

Because the protocol was to interview staff first, and then residents as soon as possible after the staff

interview (usually within 2 weeks), we specified a 1-month period during which we included reports from both staff and residents. The index date was defined as the earlier of the date of the R-REM staff interview or the resident interview (which asked about events in the prior 2 weeks). The index period included the 2 weeks before and after the index date. This interval was defined as the 1-month prevalence period.

The staff interview was nearly always used to set the index date. For the 26 cases in which only a resident interview was available, that date was set as the index date. Accordingly, shift coupons, incident reports, and event log data collected during this same 4-week period were selected as potential R-REM events by a computer algorithm if they were in the specified date range.

When R-REM involved nonparticipating residents, those residents were not interviewed and no clinical or other information was collected. However, it was recorded that an event was reported, so that an estimate could be made of the number of possible R-REM events among nonparticipants.

R-REM Measures and Case Finding

Pilot research indicated that episodes of R-REM can be sudden, may occur in private areas, or may involve residents with significant memory impairment. Therefore, a single methodology (such as only direct observation of events or only interviews) is inadequate to identify cases. Instead, we used triangulation for identification, each component of which contributed to case finding and overall prevalence. Potential cases of R-REM were identified through 6 methods: resident interviews, staff interviews, shift coupons, observation, chart review, and accident or incident reports. An R-REM event was defined as that identified by any of these 6 methods during the 1-month prevalence period.

R-REM Interview Instruments

Residents. Residents with sufficient cognition were administered an R-REM instrument that asked about 22 forms of physical, verbal, or sexual events in the prior 2 weeks (6, 7) (Supplement 3, available at www.annals.org).

Staff. For all residents who gave consent (regardless of their cognitive status), the primary certified nursing assistant (CNA) for the resident was interviewed with the staff version of the instrument (7) (Supplements 3 and 4, available at www.annals.org).

R-REM Shift Coupons

Shift coupon methodology was adopted from nursing studies of brief but important events that are difficult to capture in a busy health setting (8). As events were observed, staff completed an R-REM event form on a preprinted, prescription-sized pad that had detachable sheets with basic information about events. These shift coupons were deposited in a box at the nursing station (Supplement 5, available at www.annals.org).

Observation

A small number of events were directly observed by research staff members who were continuously stationed in each facility during the study period.

Chart Review

Chart reviews were performed by using a standardized, computerized abstraction protocol to determine whether episodes of R-REM were reported in the medical record.

Accident or Incident Reports

Facility incident reports were reviewed over the prevalence period for episodes of R-REM.

Covariates

We collected covariate data to explore whether selected resident, environmental, and facility characteristics were associated with R-REM. Respondents were administered the Care Dementia Diagnostic assessment (9, 10). This 14-item measure permits 5 classifications of cognitive impairment: none, mild, moderate, severe, and very severe. The Cronbach α coefficient estimated for this sample was 0.875, and the McDonald Ω total estimate from a single common factor model was 0.95. A standardized battery assessing mood, behaviors, functional status, and a variety of other covariates was used to measure contextual factors of R-REM incidents.

Case Conference and Adjudication Process**Cases**

All R-REM events, regardless of reporting source, underwent a case conference and adjudication process developed for the study. The purpose of this process was 1) to achieve consensus on cases of R-REM that were deemed by 1 or more investigators to be equivocal and 2) to designate a "primary" (most egregious, serious action, with the highest risk for harm) form when multiple types of R-REM occurred over the prevalence period. An electronic template was created to aggregate all available deidentified resident-level individual and environmental data to ensure a comprehensive review of each participant's data. All facets of potential R-REM events (such as location of incident, reporting source, residents involved, witnesses, and a description of the event) gathered via the 6 R-REM reporting methods were included in this template.

All potential cases of R-REM from any source were reviewed and adjudicated in a case-conferencing process involving 7 experts in clinical geriatrics, long-term care nursing, psychology, law, and social gerontology with specific interest and experience in the field of elder abuse. An additional random sample of non-R-REM cases from the study population was similarly reviewed.

The case conference and adjudication process is described in **Supplements 1, 2, and 6** (available at www.annals.org). As shown in **Figure 2**, a total of 771 potential R-REM cases and noncases among 2011 residents were adjudicated. All cases identified by any source were adjudicated ($n = 508$).

Adjudication of Noncases

A random sample of 263 residents without indication of R-REM was selected. The goal was to have a minimum of 30 per facility in the larger urban facilities and 1 noncase per case in the smaller suburban facilities.

Statistical Analysis**Estimation of Prevalence**

Prevalence rates and 95% CIs were estimated by using SPSS survey software (IBM), which allowed us to adjust for clustering of CNAs within units. Variance across region was estimated at or close to 0, and thus we did not adjust for clustering by region. Details of the sampling and statistical approach are given in **Supplement 7** (available at www.annals.org).

Subtypes of R-REM (physical, verbal, and sexual) were similarly calculated with adjustments for clustering. Two sets of rates are provided: One is unduplicated and based on the adjudicated cases, and the other was culled across sources to determine any instance of each subtype, regardless of primacy. The latter rates for verbal subtypes are somewhat higher because some residents engaged in verbal in addition to physical, sexual, or other R-REM.

Comparison of Rates by Resident Characteristics and Contextual Variables

For each R-REM event, several contextual characteristics, including time of day and location, were examined; these are presented as simple frequency counts. Rates were estimated for the total sample and by urban or suburban facility, sex, age, cognitive status, vision, hearing, ambulation, wheelchair use, unit type, type of room, CNA caseload, and season. On the basis of prior literature on R-REM, these factors were considered likely to affect the prevalence of R-REM. Rates were compared by subgroup while accounting for clustering (SPSS command *CSTABULATE*). There were modest amounts of missing data (2% to 6%) for some resident characteristics. Residents with missing data were excluded from subgroup analyses. Rates for urban and suburban nursing homes did not meaningfully differ; thus, the pooled sample was used in subgroup analyses. All analyses were done by using IBM SPSS Statistics software for Windows, version 23.0.

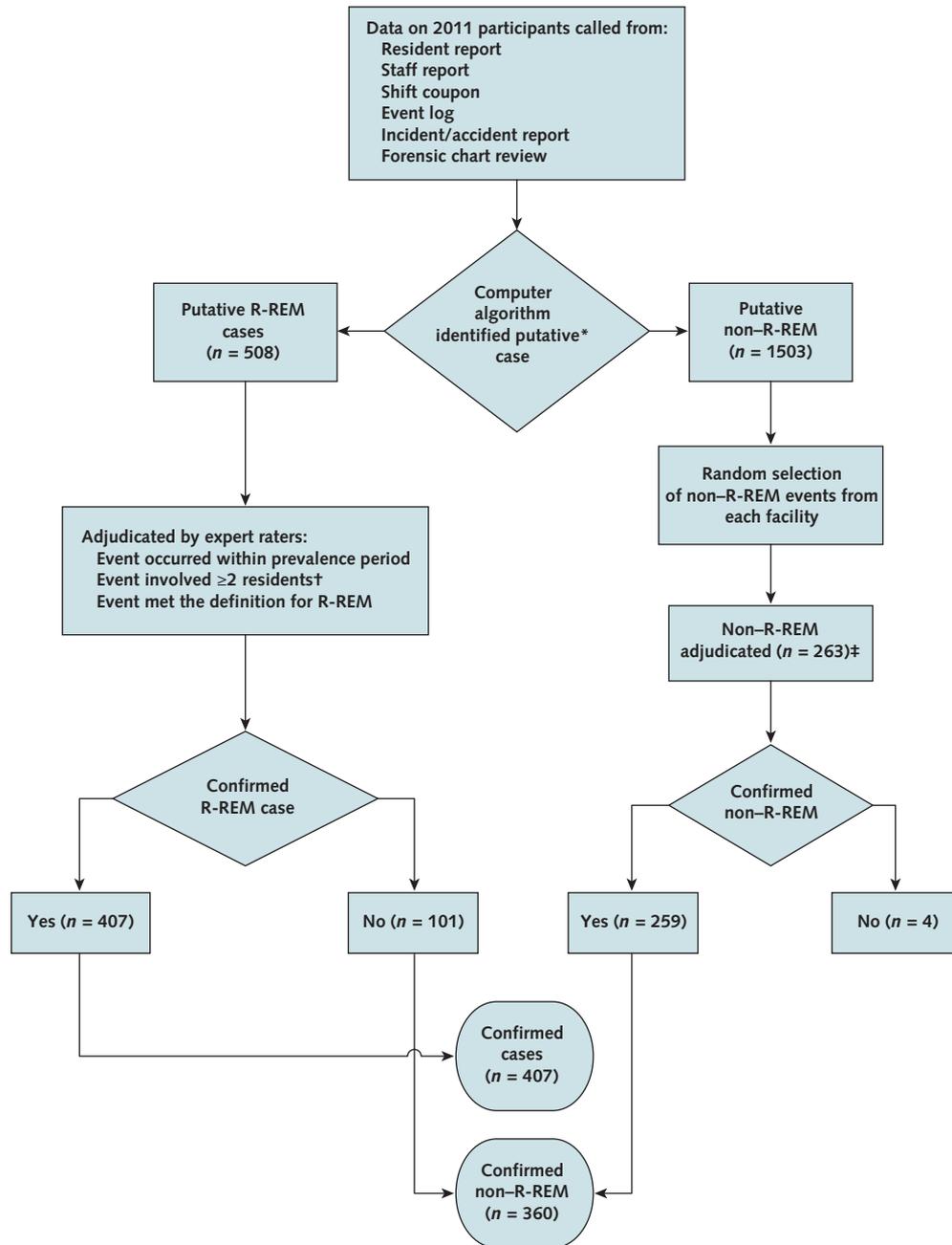
Role of the Funding Source

This work was supported in part by the National Institute on Aging, National Institute of Justice, New York State Department of Health Dementia Grant Program, and an Edward R. Roybal Center grant from the National Institute on Aging. The funding sources were not involved in the design or conduct of the study, its analyses, or the decision to submit the manuscript for publication.

RESULTS

Table 1 shows the characteristics of the 2011 residents in the sample. Participants were mostly female

Figure 2. Adjudication process.



R-REM = resident-to-resident elder mistreatment.

* Instances of R-REM were identified on the basis of at least 1 report from any of 6 sources.

† Events adjudicated as R-REM had to involve at least 2 residents; events involving staff or family members were excluded.

‡ For urban facilities, there was random selection of 30 residents per facility; for suburban facilities, there was 1 person for each R-REM case per facility.

and white, with a mean age of 84.1 years. Nearly three quarters of the participants resided in urban facilities. A minority of residents (16.3%) lived on a dementia unit.

Among the 2011 residents (or their proxies) who gave consent to participate, 407 were determined to have been involved in at least 1 episode of R-REM (Table 2). The total prevalence of R-REM across all facilities

over the 4 week-prevalence period was 20.2% (95% CI, 18.1% to 22.5%).

Table 2 also shows the estimated rates of R-REM by the primary (most prominent or egregious) subtype, as adjudicated in the case conferences. Among these mutually exclusive primary R-REM subtypes, 9.1% of events were verbal; 5.2% were physical; 0.6% were sexual; and 5.3% were classified as "other," which included invasion

Table 1. Sample Characteristics

Characteristic	Value
Participants, <i>n</i>	2011
Mean age (SD), <i>y</i> *	84.14 (10.41)
Mean level of education (SD), <i>y</i> *	12.09 (3.81)
Women, <i>n</i> (%)	1458 (72.5)
Ethnicity, <i>n</i> (%)	
White	1367 (68.0)
Black	367 (18.2)
Hispanic	297 (14.8)
Marital status, <i>n</i> (%)	
Married	252 (12.9)
Never married	318 (16.3)
Region, <i>n</i> (%)	
Suburban	549 (27.3)
Urban	1462 (72.7)
Residing on a dementia unit, <i>n</i> (%)	328 (16.3)

* Data were available for 1648 participants.

of privacy (4.0%), menacing gestures (0.9%), and other categories, such as damaging belongings. Overall prevalence estimates ranged from 10.4% to 31.2% in the urban facilities and 11.6% to 28.1% in the suburban facilities.

Many residents experienced multiple forms of R-REM or multiple episodes of the same type (Table 3). Rates of verbal R-REM were highest (16.0% of residents). The estimates for physical, sexual, and other R-REM were 5.7%, 1.3%, and 10.5%, respectively. Because the same resident was involved in multiple types of R-REM over the prevalence period (either during the same episode or in separate episodes), the sum of subtype prevalence exceeds the aggregate prevalence for all forms combined.

The most common types of verbal aggression were screaming at another resident (46.9%) and using bad words (44.7%). The most common types of physical aggression were hitting (11.3%) and pushing (10.3%) another resident. The most common other forms of R-REM were going into another resident's room without permission (23.8%) and taking or touching another resident's property (19.2%). Qualitative descriptions of common event types are provided elsewhere (11).

Table 2. Prevalence Estimates of R-REM

R-REM Occurrence and Type	Adjusted Value [95% CI], <i>n</i> (%)*
Residents involved in R-REM over the observation period	407 (20.2 [18.1-22.5])
Primary subtype of incident	
Verbal	184 (9.1 [7.7-10.8])
Physical	104 (5.2 [4.1-6.5])
Sexual	12 (0.6 [0.3-1.1])
Other	107 (5.3 [4.4-6.4])
Other subtype of R-REM incident	
Inappropriate caregiving	7 (0.3 [0.2-0.7])
Menacing gestures or facial expressions	18 (0.9 [0.6-1.4])
Invasion of privacy	80 (4.0 [3.2-5.0])
Other	2 (0.1 [0.0-0.4])

R-REM = resident-to-resident elder mistreatment.

* Values are adjusted for clustering within certified nursing assistant and unit. Overall prevalence estimates ranged from 10.4% to 31.2% in the urban facilities and 11.6% to 28.1% in the suburban facilities.

Table 3. Type of R-REM

Occurrence of Primary R-REM Incident	Adjusted Value [95% CI], <i>n</i> (%)*
Resident involved in any verbal R-REM incident	322 (16.0 [14.2-18.0])
Resident involved in any physical R-REM incident	115 (5.7 [4.5-7.2])
Resident involved in any sexual R-REM incident	27 (1.3 [0.9-2.0])
Resident involved in any other R-REM incident	212 (10.5 [9.0-12.3])

R-REM = resident-to-resident elder mistreatment.

* Based on the full sample of 2011 participants. Estimates may include more than 1 type of R-REM for each resident and are not mutually exclusive. Values are adjusted for clustering within certified nursing assistant and unit.

The frequency of location and time of day were examined across all reporting sources. Given that cases were reported by more than 1 source, there could be multiple times and locations for an R-REM incident. For residents involved in at least 1 R-REM incident, 40.3% occurred in a resident's room, followed by 37.1% in the dining area and 23.8% in an activity room or common area. With respect to time of day, among residents involved in R-REM, 40.8% experienced at least 1 incident during the afternoon, 37.8% in the morning, 14.5% during lunch, 4.7% during the evening meal, 5.2% during the evening, and 7.4% at night.

In almost one half (48.9%) of the R-REM cases, residents were identified as the perpetrators in at least 1 event. Among the case-finding methodologies, the majority of cases were reported by cognitively capable residents (60.1% of reports), followed by primary CNA reports (49.9%), event logs (31.7%), and shift coupons (18.4%). Of note, only 3 of the 407 cases were detected by chart entries in the medical record, and none of the incident reports indicated R-REM over the study despite its high prevalence over the 1-month surveillance period. Because there were 143 cases reported by more than 1 source, the sum of the reporting sources exceeds 100%.

Table 4 shows R-REM rates by a variety of demographic, clinical, and environmental characteristics; several patterns emerge. A similar proportion of men and women were involved in R-REM. Significantly more participants younger than 65 years (26.3%) than the oldest cohort (aged 95 years or older) (15.0%) were involved in R-REM. In terms of cognitive impairment, 25.8% of those without cognitive impairment and 25.0% of those with mild, 21.1% of those with moderate, and 14.7% of those with severe impairment were involved in R-REM episodes; only 6.6% of those with very severe cognitive impairment were involved in R-REM.

The length of stay was calculated from date of admission; there was no significant difference between residents who engaged and those who did not engage in R-REM. Both groups had been residents for about 3 years. The prevalence was lower in the summer than in the other seasons (15.7% vs. 22.3% to 23.8%; $P < 0.001$) (Table 4). As expected, the prevalence of R-REM is higher in dementia units (29.0%) than in other units

Table 4. Case Conference Adjudication Prevalence Estimates, by Resident, Region, Facility, and Unit Characteristics

Characteristic	Adjusted Value [95% CI], n (%) [*]
Resident	
Sex	
Male	553 (22.2 [18.6-26.3])
Female	1458 (19.5 [17.2-22.0])
Age [†]	
<65 y	114 (26.3 [17.8-37.0])
65-74 y	206 (22.3 [17.0-28.7])
75-84 y	532 (20.5 [16.9-24.6])
85-94 y	906 (20.3 [17.5-23.4])
≥95 y	253 (15.0 [11.3-19.7])
Age (dichotomized)	
<85 y	852 (21.7 [18.6-25.1])
≥85 y	1159 (19.2 [16.6-21.9])
Categorized Care Dementia Diagnostic assessment category	
No cognitive impairment (0-3)	449 (25.8 [21.9-30.2])
Mild cognitive impairment (4-6)	420 (25.0 [20.9-29.6])
Moderate cognitive impairment (7-10)	558 (21.1 [17.6-25.2])
Severe cognitive impairment (11-15)	334 (14.7 [11.0-19.2])
Very severe impairment with communication problem (nontestable; ≥16)	212 (6.6 [3.5-12.0])
Collapsed Care Dementia Diagnostic assessment category [†]	
No or mild cognitive impairment	869 (25.4 [22.4-28.8])
Moderate cognitive impairment	558 (21.1 [17.6-25.2])
Severe or very severe cognitive impairment	546 (11.5 [8.8-15.0])
Vision [†]	
No or slight impairment	903 (25.0 [22.2-28.1])
Moderate or severe impairment, or blind	410 (22.7 [18.3-27.8])
Could not be assessed	576 (12.0 [9.2-15.5])
Hearing [†]	
No or slight impairment	1345 (22.5 [20.1-25.2])
Moderate or severe impairment, or deaf	251 (24.7 [19.3-31.0])
Could not be assessed	296 (7.8 [4.7-12.5])
In wheelchair during interview [†]	
No	1000 (23.3 [20.3-26.6])
Yes	895 (17.4 [15.0-20.2])
Ambulation status [†]	
Unable to ambulate	808 (11.9 [9.6-14.6])
Can ambulate	1138 (26.4 [23.6-29.3])
Region, facility, and unit	
Region	
Urban	1462 (21.1 [18.6-24.0])
Suburban	549 (17.9 [14.4-21.9])
Residing on dementia unit vs. elsewhere [†]	
No	1683 (18.5 [16.4-20.9])
Yes	328 (29.0 [22.7-36.1])
Residing on short-term rehabilitation unit vs. elsewhere [†]	
No	1961 (21.7 [19.1-24.6])
Yes	50 (7.0 [2.8-16.7])
Type of room [†]	
Private	279 (28.3 [23.1-34.2])
Shared	1732 (18.9 [16.7-21.4])
Number of residents assigned to CNA [†]	
<10	1654 (18.6 [16.5-21.0])
≥11	357 (27.7 [21.9-34.4])

(18.5%) and lower (7.0%) in rehabilitation units than other units (21.7%) (Table 4).

Although the rates of R-REM reported by residents in private rooms were higher than for those in shared

Table 4—Continued

Characteristic	Adjusted Value [95% CI], n (%) [*]
Season in which interview took place ^{†‡}	
Winter (12/21 to 03/19)	310 (22.3 [17.5-27.9])
Spring (03/20 to 06/19)	569 (22.7 [18.8-27.0])
Summer (06/20 to 09/22)	746 (15.7 [13.2-18.6])
Fall (09/23 to 12/20)	386 (23.8 [18.0-30.9])

CNA = certified nurse assistant.

* Percentages are nonduplicated cases and are adjusted for clustering within CNA and unit.

† Significant comparisons based on chi-square tests with adjustment for clustering are as follows: age <65 y vs. ≥95 y ($P = 0.021$); no or mild cognitive impairment vs. moderate, severe, or very severe cognitive impairment ($P < 0.001$) and no, mild, or moderate cognitive impairment vs. severe or very severe cognitive impairment ($P < 0.001$); no or slight impairment vs. moderate or severe impairment or blind ($P < 0.001$); no or slight impairment vs. moderate or severe impairment or deaf ($P = 0.001$); in wheelchair during interview vs. not in wheelchair ($P = 0.002$); ambulation status ($P < 0.001$); residing on dementia unit ($P = 0.002$); residing on short-term rehabilitation unit ($P = 0.002$); type of room ($P = 0.001$); number of residents assigned to CNA ($P = 0.004$); summer vs. winter, spring, or fall ($P < 0.001$).

‡ Proxy for event.

rooms, a higher proportion of the R-REM reported in shared rooms was physical aggression: 28.3% versus 18.9% for those in private rooms. The rates differed by CNA caseload; 27.7% of residents cared for by CNAs with a caseload of 11 or more residents as contrasted with 18.6% of those cared for by CNAs with a lower case-load (10 or fewer residents) were involved in R-REM.

DISCUSSION

In what we believe is the first prevalence study of mistreatment of nursing home residents by other residents, at least 20% of residents had experienced at least 1 form of R-REM over the 1-month observation period. Verbal aggression was the most common form, but the rate of physical R-REM between residents was substantial, and several episodes of sexual aggression were detected over the brief surveillance period. Many residents experienced multiple forms of R-REM. We expect that the annual prevalence would be higher than our prevalence estimate based on a 1-month observation period because reported R-REM incidents that occurred outside of the prevalence period were not included in these estimates. Thus, our data suggest that a sizable proportion of nursing home residents experience R-REM each year, once or repeatedly.

In addition to estimating prevalence rates of R-REM and its subtypes, this study uncovered clinical and environmental correlates of being involved in an episode. Findings suggest that ambulation-impaired residents may be less likely to be involved in R-REM. Perhaps mobility impairment precludes such residents from "getting in harm's way," in part because they may be segregated in unit sections for clinically complex residents. Conversely, higher rates of R-REM were observed on dementia units, where ambulatory residents with behavioral impairment are typically located. An unexpected finding relates to cognitive impairment:

Proportionately more residents with no or mild impairment were involved in R-REM compared with those with more severe impairment.

Other notable environmental findings were higher rates of R-REM on units with higher CNA caseloads and seasonal variations with higher R-REM rates in winter months, during which residents presumably are relegated to smaller indoor spaces in the northeastern United States. These findings should be interpreted with caution because they are cross-sectional; nonetheless, they may serve as the basis for potential intervention strategies.

Previous studies of R-REM in the nursing home have been methodologically limited by small or non-representative samples, surveillance methods that probably undercount cases, retrospective design, or a combination of these 3 factors. For example, the study by Shinoda-Tagawa and colleagues (4) sheds some light on the problem of R-REM, but cases were identified through the Massachusetts state ombudsman; thus, only cases severe enough to be reported to an official state mechanism (probably because they resulted in physical injury) were included. This underreporting bias is indirectly confirmed by our study, in that no cases of R-REM were found in incident reports over the surveillance period, and only 3 were documented in chart reviews. This latter finding may reflect in part the reluctance of facility staff to provide documentation that may be used in the state survey process that could result in sanctions; however, the lack of documentation and reporting could also indicate a normalization phenomenon in long-term care facilities, such that behaviors characteristic of R-REM are ubiquitous and thus may be considered merely part of the culture and perhaps ignored, unless they result in severe injury.

Our study improves upon the methodology of previous attempts to study R-REM, but it has limitations. First, the facilities in our sample were relatively large and may not be representative of smaller facilities, especially if larger facilities with more residents offer more opportunities for R-REM. The suburban facilities in our sample were smaller, and although the observed rates of R-REM were somewhat lower (17.9%) on average at these sites, they did not differ significantly from those in the larger, urban facilities.

Second, although rates of facility and resident participation were very high, it is not known whether rates of refusal were higher among residents experiencing R-REM. Third, multiple mechanisms for R-REM case finding were used; no method can completely detect all cases because events can be ephemeral, may occur in private areas, and may be subject to recall bias on the part of both residents and staff. However, the primary direction of all these biases would probably tend toward underdetection, such that the overall rate of 20.2% is likely a conservative estimate.

Finally, the subgroup comparisons may be subject to error because some noncases may have experienced R-REM outside of the prevalence period; however, sensitivity analyses indicated that the effects on the estimates of excluding this group were small. Exam-

ination of rates of potential R-REM among nonparticipants supports the overall prevalence estimate of about 20%.

In terms of clinical significance, our findings suggest that nonambulatory (as contrasted with ambulatory) residents and severely cognitively impaired residents (as contrasted with individuals with no or mild cognitive impairment) have lower estimated rates of R-REM. As expected, persons in dementia units have higher rates of R-REM. Higher rates of R-REM (27.7%) were also observed among residents cared for by CNAs with higher caseloads. Examining the importance and role of frontline staff in prevention is a key area for future research.

Perhaps the most compelling ramification of these findings is that the traditional focus of violence mitigation in the nursing home—staff abuse of residents—may be disproportionate relative to the actual dyads involved in interpersonal mistreatment. Certainly, there should be zero tolerance of any form of abuse by staff in long-term care; however, physical and verbal aggression between nursing home residents can be equally eroding to quality of life, and cause mental and physical suffering. Indeed, reports of serious injuries and deaths due to R-REM now appear with regularity in the lay press, in the same way that reports of elder abuse of residents by staff slowly entered public consciousness in the 1970s. The result was widespread attempts at reform through legislative and other mechanisms (such as criminal background checks of employees).

Not long ago, residents who wandered in nursing homes were routinely restrained. Gradually, the deleterious effects of this practice were recognized, and innovative strategies were created to manage that behavior, such as the creation of designated areas where patients could ambulate freely and safely. Future research in R-REM should similarly focus on deleterious effects of these behaviors on residents and staff, and identify the specific provocateurs of R-REM at all levels—patient, context, staff, facility, and an overall societal acculturation to aggressive behaviors in the nursing home—so that successful interventions can be developed and tested to mitigate this understudied phenomenon.

From Weill Cornell Medical College and Columbia University Stroud Center at New York State Psychiatric Institute, New York; the College of Human Ecology, Cornell University, Ithaca, and Research Division, Hebrew Home at Riverdale, Riverdale, New York; College of Nursing, The Pennsylvania State University, University Park, and the Polisher Research Institute at the Madlyn and Leonard Abramson Center for Jewish Life, North Wales, Pennsylvania.

Acknowledgment: The investigators are indebted to the patients, families, and facilities who participated in this research and to Chelsie Burchett for assistance in preparation of the manuscript.

Grant Support: In part by the National Institute on Aging (AG014299-06A2 and R03AG049266), National Institute of

Justice (FYO 42USC3721), New York State Department of Health Dementia Grant Program (C-022657), and an Edward R. Roybal Center grant from the National Institute on Aging (P30 AG22845-01). Dr. Lachs received a National Institute on Aging mid-career mentoring award in patient-oriented research (K24AG022399).

Disclosures: Dr. Lachs reports grants from the National Institutes of Health during the conduct of the study, has served as both a paid and pro bono expert witness in criminal and civil cases related to elder abuse and neglect, and has testified before the U.S. Senate Committee on Aging on the topic of elder abuse. Ms. Silver reports grants from Hebrew Home at Riverdale during the conduct of the study. Mr. Eimicke reports grants from Research Division, Hebrew Home at Riverdale, during the conduct of the study. Ms. Sukha reports grants from the National Institute on Aging during the conduct of the study. Mr. Kong reports grants and programmed and analyzed data from Hebrew Home at Riverdale during the conduct of the study. Ms. Besas and Ms. Reyes Luna report grants from the National Institute on Aging during the conduct of the study. Authors not named here have disclosed no conflicts of interest. Disclosures can also be viewed at www.acponline.org/authors/icmje/ConflictOfInterestForms.do?msNum=M15-1209.

Reproducible Research Statement: *Study protocol:* Available from Dr. Lachs (e-mail, mslachs@med.cornell.edu). *Statistical code and data set:* Code for selected analyses and partial data are available at www.icpsr.umich.edu/icpsrweb/NACJD/archive.jsp.

Requests for Single Reprints: Mark S. Lachs, MD, MPH, Division of Geriatrics and Palliative Medicine, Weill Cornell Medical College, Cornell University, 1300 York Avenue, New York, NY 10065; e-mail, mslachs@med.cornell.edu.

Current author addresses and author contributions are available at www.annals.org.

References

1. Floyd A. Nursing home patient charged with murdering roommate. *Valdosta Daily Times*. 15 November 2014. Accessed at

www.valdostadailytimes.com/news/local_news/nursing-home-patient-charged-with-murdering-roommate/article_7ea27e86-6b60-11e4-9377-373f08de9ecf.html on 3 May 2016.

2. Swanson K. Police: man beats roommate to death in nursing home. *KOAT Albuquerque*. 3 November 2014. Accessed at www.koat.com/news/police-man-beats-roommate-to-death-in-nursing-home/29511042 on 3 May 2016.

3. Hutchinson B. Nursing home resident, 67, sent to prison for beating roommate to death over partition. *New York Daily News*. 9 July 2014. Accessed at www.nydailynews.com/new-york/nyc-crime/nursing-home-resident-prison-killing-roommate-article-1.1860914 on 3 May 2016.

4. Shinoda-Tagawa T, Leonard R, Pontikas J, McDonough JE, Allen D, Dreyer PI. Resident-to-resident violent incidents in nursing homes. *JAMA*. 2004;291:591-8. [PMID: 14762038]

5. Ferrah N, Murphy BJ, Ibrahim JE, Bugeja LC, Winbolt M, LoGiudice D, et al. Resident-to-resident physical aggression leading to injury in nursing homes: a systematic review. *Age Ageing*. 2015;44:356-64. [PMID: 25630802] doi: 10.1093/ageing/afv004

6. Ramirez M, Watkins B, Teresi JA, Silver S, Sukha G, Bortagis G, et al. Using qualitative methods to develop a measure of resident-to-resident elder mistreatment in nursing homes. *Int Psychogeriatr*. 2013 Aug;25(8):1245-56. [PMID: 23506835] doi: 10.1017/S1041610213000264

7. Teresi JA, Ocepek-Welikson K, Ramirez M, Eimicke JP, Silver S, Van Haitsma K, et al. Development of an instrument to measure staff-reported resident-to-resident elder mistreatment (R-REM) using item response theory and other latent variable models. *Gerontologist*. 2014;54:460-72. [PMID: 23448960] doi: 10.1093/geront/gnt001

8. Kellogg VA, Havens DS. The shift coupon: an innovative method to monitor adverse events. *J Nurs Care Qual*. 2006;21:49-55. [PMID: 16340689]

9. Teresi JA, Kleinman M, Ocepek-Welikson K, Ramirez M, Gurland B, Lantigua, R, et al. Applications of item response theory to the examination of the psychometric properties and differential item functioning of the CARE Dementia Diagnostic Scale among samples of Latino, African-American and white non-Latino elderly. *Res Aging*. 2000;22:738-73.

10. Teresi JA, Morris JN, Mattis S, Reisberg B. Cognitive impairment among SCU and non-SCU residents in the United States: prevalence estimates from the National Institute on Aging Collaborative Studies of Special Care Units for Alzheimer's Disease. *Res Pract Alzheimers Dis*. 2000;4:117-38.

11. Pillemer K, Chen EK, Van Haitsma KS, Teresi J, Ramirez M, Silver S, et al. Resident-to-resident aggression in nursing homes: results from a qualitative event reconstruction study. *Gerontologist*. 2012; 52:24-33. [PMID: 22048811] doi: 10.1093/geront/gnr107

Annals of Internal Medicine

Current Author Addresses: Dr. Lachs: Division of Geriatrics and Palliative Medicine, Weill Cornell Medical College, Cornell University, 1300 York Avenue, New York, NY 10065.

Drs. Teresi and Ramirez, Ms. Silver, Mr. Eimicke, Mr. Boratgis, Ms. Sukha, Mr. Kong, Ms. Besas, and Ms. Luna: Research Division, Hebrew Home at Riverdale, 5901 Palisade Avenue, Riverdale, NY 10471.

Dr. van Haitsma: College of Nursing, The Pennsylvania State University, 203 Health and Human Development East, University Park, State College, PA 16801.

Dr. Pillemer: Department of Human Development, Cornell University, MVR Hall, Ithaca, NY 14853.

Author Contributions: Conception and design: M.S. Lachs, J.A. Teresi, M. Ramirez, K.A. Pillemer.

Analysis and interpretation of the data: M.S. Lachs, J.A. Teresi, M. Ramirez, K. van Haitsma, J.P. Eimicke, J. Kong, K.A. Pillemer.

Drafting of the article: M.S. Lachs, J.A. Teresi, K. van Haitsma, S. Silver, K.A. Pillemer.

Critical revision of the article for important intellectual content: M.S. Lachs, J.A. Teresi, M. Ramirez, K. van Haitsma, K.A. Pillemer.

Final approval of the article: M.S. Lachs, J.A. Teresi, M. Ramirez, S. Silver, J.P. Eimicke, K.A. Pillemer.

Provision of study materials or patients: M.S. Lachs, M. Ramirez.

Statistical expertise: M.S. Lachs, J.A. Teresi, J.P. Eimicke, J. Kong.

Obtaining of funding: M.S. Lachs, K.A. Pillemer.

Administrative, technical, or logistic support: G. Boratgis, K.A. Pillemer.

Collection and assembly of data: J.A. Teresi, S. Silver, G. Boratgis, G. Sukha, A.M. Besas, M. Reyes Luna, K.A. Pillemer.