Supplemental Figure S1. Example of Manual RoC Observation Notes on Livescribe Dot Paper

**Note.** “B” indicates the beginning of the behavior and “E” indicates the end of a behavior.
Supplemental Figure S2. Recruitment and Enrollment in the Nurse Talk Study
Supplemental Table S1. Characteristics of Patients with Dementia and Nursing Staff

| Characteristic                                      | Patients with Dementia (n=16) | n   | %   |
|-----------------------------------------------------|-------------------------------|-----|-----|
| Gender                                              |                               |     |     |
| Female                                              | 7                             | 43.8%|
| Male                                                | 9                             | 56.3%|
| Dementia diagnosis                                  |                               |     |     |
| Alzheimer’s disease                                 | 5                             | 31.3%|
| Other<sup>a</sup>                                    | 5                             | 31.3%|
| Unspecified                                         | 6                             | 37.5%|
| Race                                                |                               |     |     |
| White                                               | 15                            | 93.8%|
| American Indian/Alaska Native                       | 1                             | 6.3% |
| Ethnicity                                           |                               |     |     |
| Not Hispanic or Latinx                              | 16                            | 100.0%|
| Level of Education                                  |                               |     |     |
| Highschool or less                                  | 10                            | 62.5%|
| Post-secondary or higher                            | 6                             | 37.5%|
| Age (years)                                         | 16                            | 81.6 (6.6)|
| Dementia severity: FAST score (0–8)                 | 16                            | 6.0 (1.0) |
| Comorbidity index: CIRS score (0–56)                | 16                            | 19.9 (5.2) |
| Pain level by observation: PAINAD score (0–10)      | 88                            | 2.6 (2.9) |
| Delirium severity by observation: CAM-S score (0–7) | 88                            | 1.8 (1.5) |

Nursing Staff (n=53)

| Characteristic                                      | Nursing Staff (n=53) | n   | %   |
|-----------------------------------------------------|----------------------|-----|-----|
| Nursing Staff Role                                  |                      |     |     |
| Nurse                                               | 27                   | 50.9%|
| Nursing Assistant                                   | 26                   | 49.1%|
| Gender of Nursing Staff                             |                      |     |     |
| Female                                              | 45                   | 84.9%|
| Male                                                | 8                    | 15.1%|
| Race of nursing staff<sup>b</sup>                   |                      |     |     |
| White                                               | 43                   | 81.1%|
| Black or African American                           | 2                    | 3.8% |
| Asian                                               | 4                    | 7.6% |
| Unknown                                             | 4                    | 4 (7.6%)|
| Ethnicity nursing staff                             |                      |     |     |
| Hispanic or Latinx                                  | 4                    | 47.6%|
| Not Hispanic or Latinx                              | 49                   | 92.5%|
| Age (years)                                         | 49                   | 29.7 (10.9) |

<sup>Note</sup>.  
<sup>a</sup> “Other” includes vascular dementia (n=2), Lewy body dementia (n=1), and mixed dementia (n=2).  
<sup>b</sup> Race options also included Asian, Black or African American and Native Hawaiian or Other Pacific Islander, but these were not represented in the sample.
## Supplemental Table S2. Characteristics of the Care Encounters (N=88)

| Characteristic                                                                 | n (%)     |
|-------------------------------------------------------------------------------|-----------|
| **Level of stimulation: number of staff in observation**                      |           |
| 1 staff member                                                                | 53 (60.2%)|
| 2 staff members                                                               | 31 (35.2%)|
| 3 staff members                                                               | 4 (4.6%)  |
| **Time of observation**                                                       |           |
| 0500–1059                                                                     | 57 (64.8%)|
| 1100–1659                                                                     | 31 (35.2%)|
| **Care activity**                                                             |           |
| Activities of daily living (ADLs) care                                        | 51 (58.0%)|
| General morning cares                                                         | 37 (42.0%)|
| **Sedative medication in previous six hours**                                 |           |
| Yes                                                                           | 27 (30.7%)|
| No                                                                            | 61 (69.3%)|
| **Pain present (PAINAD ≥ 2)**                                                 |           |
| Yes                                                                           | 43 (49.9%)|
| No                                                                            | 45 (51.5%)|
| **Delirium present (short-CAM-S)**                                            |           |
| Yes                                                                           | 12 (13.6%)|
| No                                                                            | 76 (86.4%)|
| **Mean (SD)**                                                                 |           |
| Familiarity with caregiver: number of days of caring for the patient           | 1.3 (0.5) |
| Familiarity with environment: length of stay in days                          | 5.6 (3.1) |


### Supplemental Table S3. Characteristics of Enrolled, Eligible, and Ineligible Patients with Dementia

|                          | Enrolled (n = 16) | No Enrollment Eligible (n = 20) | Not Eligible (n = 36) | p^a |
|--------------------------|-------------------|---------------------------------|-----------------------|-----|
| **Sex**                  |                   |                                 |                       |     |
| Male                     | 9 (56.3%)         | 8 (38.1%)                       | 8 (22.2%)             | .051|
| Female                   | 7 (43.8%)         | 13 (61.9%)                      | 28 (77.8%)            |     |
| **Race/Ethnicity**       |                   |                                 |                       |     |
| Non-Hispanic White       | 15 (93.8%)        | 19 (90.5%)                      | 29 (80.6%)            | .489|
| Other race and/or ethnicity\(^b\) | 1 (6.3%)         | 2 (9.5%)                        | 7 (19.4%)             |     |
| **Dementia Diagnosis**   |                   |                                 |                       | .543|
| Alzheimer’s Disease      | 5 (31.3%)         | 4 (19.0%)                       | 8 (22.2%)             |     |
| Other dementia           | 5 (31.3%)         | 10 (47.6%)                      | 10 (27.8%)            |     |
| Unspecified dementia     | 6 (37.5%)         | 7 (33.3%)                       | 18 (50.0%)            |     |
| **Age - years**          | 81.6 (6.6)        | 79.8 (8.1)                      | 79.9 (9.8)            | .783|

*Note.*

^a p-value calculated with Fisher’s Exact Test.

^b Other race/ethnicity includes the following: Asian (n = 3), Black or African American (n = 3), Hispanic/Latinx of any race (n = 3), and American Indian (n = 1).

^c p-value calculated with ANOVA.
Supplemental Methods S1

Recruitment

Hospitalized patients with dementia were identified daily by ICD-10 dementia diagnoses in the electronic medical record (EMR) and screened for eligibility via their EMR and through consultation with their primary nurse to determine status of RoC and dementia severity. If the PLWD was deemed eligible, their legal representative was approached for consent and the patient was approached for assent. The patient’s assigned nursing staff were consented prior to the recording and observation. Nursing staff were assigned to patients per existing unit policy and the research team had no influence over nursing staff assignment. The PLWD and nursing staff had the right to refuse participation. A $25 honorarium was provided to participating PLWD. All procedures were approved by the institutional review board. The primary investigator (first author) completed all recruitment and data collection procedures.

Analysis

The hurdle model coefficients were given Normal priors with mean zero and a large uninformative standard deviation of 100. The subject-specific effects were given a multivariate normal prior with mean zero and variance-covariance matrix following a vague inverse Wishart distribution. Three chains were run for 150,000 iterations after a burn-in period, with convergence indicated by all parameters achieving a Gelman-Rubin statistic less than 1.05.