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| **Table DS.1** |
| **Variable** | **Definition** | **Categories/ Range of values** | **Source** |
| Outcomes |
| ReadmissionED visit | All-cause same-hospital readmission within 30 days following the date of discharge. Same-hospital ED visit (with/without observation stay); no readmission within 30 days following the date of discharge. | No/ YesNo/ Yes | Hospital Financial Records |
| Discharge readiness | 8 item patient self-assessed RHDS  | 0-10 with higher values indicating higher readiness | RHDS surveya |
| Individual Nurse Productivity  |
| Productivity  Productivity grouping | Adjusted average discharge readiness (as defined under “Discharge readiness”) of the nurse’s patients.Tertile of the nurse’s individual productivity (as defined under “Productivity”) in the sampling distribution of nurse productivities of all study nurses | Continuous variable with higher values indicating higher performance Low/ Medium/ High | Authors’ calculations in Aim 1Derived from the continuous productivity variable  |
| Control variables: Patient characteristics |
| AgeGenderRaceEthnicityMarital status Diagnosis Severity Length of stay | Patient age, in yearsPatient genderRace of patientHispanic of LatinoMarital status of patientICD9/10 diagnosis codesSeverity IndexLength of hospital stay, in days | 18+Male/ Fem.Am Indian, AK Native/ Asian/ African American/ Native Hawaiian, Pacific Islander/ White/ UnknownNo/ YesMarried/ Not Married/ UnknownSet of DX indicators Continuous rangeContinuous range | Hospital Electronic Medical records |
| a Collected via RHDS 8-item questionnaires. RHDS was administered by discharging nurse to patient on the last day of discharge. Higher values indicate higher readiness. b Collected at baseline via the Discharge Model of Care Survey from site PIs.c Transitional Care.  |

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| **Table DS.2. Tests of associations between individual nurse productivity in discharge preparation in the testing sample and patient characteristics in the validation sample (11,083 patients, 741 nurses)** |
|   | Mean | Standard Error | Joint F-test  |
| Patient gender: |   |   | 0.71 |
| Male | 8.38 | 0.00 |   |
| Female | 8.35 | 0.00 |   |
| Patient age |   |   | 0.03 |
| 18-44.9 | 8.23 | 0.01 |   |
| 45-54.9 | 8.35 | 0.01 |   |
| 55-64.9 | 8.41 | 0.01 |   |
| 65-74.9 | 8.41 | 0.01 |   |
| 75+ | 8.42 | 0.01 |   |
| Patient race: |   |   | 0.94 |
| American Indian or Alaska Native | 8.33 | 0.03 |   |
| Asian  | 8.35 | 0.02 |   |
| Black or African American  | 8.46 | 0.01 |   |
| Native Hawaiian or Other Pacific Island  | 8.17 | 0.06 |   |
| White  | 8.49 | 0.00 |   |
| Unknown  | 7.91 | 0.01 |   |
| Patient ethnicity:  |   |   | 0.26 |
| Non-Hispanic  | 8.47 | 0.00 |   |
| Hispanic  | 7.87 | 0.01 |   |
| Unknown  | 8.52 | 0.01 |   |
| Patient Marital Status: |   |  | 0.50 |
| Not Married  | 8.43 | 0.00 |   |
| Married  | 8.31 | 0.00 |   |
| Unknown | 8.34 | 0.01 |   |
| Patient insurance: |   |   | 0.07 |
| Private  | 8.52 | 0.01 |   |
| Medicare | 8.48 | 0.00 |   |
| Medicaid  | 8.35 | 0.01 |   |
| Uninsured  | 8.48 | 0.02 |   |
| Other  | 7.87 | 0.01 |   |
| Length of hospital stay, days |   |   | 0.11 |
| 2 | 8.38 | 0.01 |   |
| 3 | 8.38 | 0.01 |   |
| 4 | 8.39 | 0.01 |   |
| 5 | 8.39 | 0.01 |   |
| 6 to 9 | 8.35 | 0.01 |   |
| 9+ | 8.28 | 0.01 |   |
| Patient had an ICU Stay: |   |   | 0.45 |
| No  | 8.35 | 0.00 |   |
| Yes  | 8.40 | 0.01 |   |
| Patient MDC: |   |   | 0.99 |
| Nervous System N | 8.50 | 0.03 |   |
| Eye  | 8.41 | 0.17 |   |
| ENT  | 7.97 | 0.06 |   |
| Respiratory | 8.51 | 0.02 |   |
| Circulatory | 8.56 | 0.02 |   |
| Digestive  | 8.30 | 0.02 |   |
| Hepatobiliary & Pancreatic  | 8.36 | 0.03 |   |
| Musculoskeletal  | 8.29 | 0.03 |   |
| Skin & Subcutaneous  | 8.50 | 0.04 |   |
| Endocrine & Metabolic  | 8.16 | 0.03 |   |
|  Kidney & Urinary  | 8.15 | 0.03 |   |
| Female Reproductive | 8.12 | 0.10 |   |
| Female Reproductive | 8.55 | 0.06 |   |
| Pregnancy  | 8.78 | 0.10 |   |
|  Blood & Immunological  | 8.46 | 0.05 |   |
| Meloproliferative DD  | 8.44 | 0.13 |   |
| Infectious & Parasitic DD  | 8.48 | 0.02 |   |
| Mental  | 7.84 | 0.17 |   |
| Alcohol & Drug  | 8.38 | 0.06 |   |
|  Injury, Poison, & Toxin  | 8.49 | 0.06 |   |
| Multiple Trauma  | 8.44 | 0.12 |   |
| HIV  | 8.40 | 0.13 |   |
| Transplants  | 8.09 | 0.17 |   |
| Unrelated  | 8.56 | 0.11 |   |
| Other  | 8.41 | 0.08 |   |
| Missing | 8.19 | 0.02 |   |
| Patient type of service: |   |   | 0.45 |
| Medical | 8.44 | 0.00 |   |
| Surgical  | 8.33 | 0.01 |   |
| Unknown  | 7.22 | 0.02 |   |
| Patient had a hospitalization prior 30 days: |   |   | <0.0001 |
| No | 8.37 | 0.00 |   |
| Yes | 8.55 | 0.01 |   |
| Unknown  | 8.12 | 0.01 |   |
| Patient's Elixhauser Comorbitity Index |   |   | 0.45 |
| <0 | 8.40 | 0.01 |   |
| 0-4.9 | 8.21 | 0.01 |   |
| 5-9.9 | 8.46 | 0.01 |   |
| 10-14.9 | 8.44 | 0.01 |   |
| 15-19.9 | 8.41 | 0.01 |   |
| 20+ | 8.40 | 0.01 |   |
| For each patient characteristic, the table shows subgroup means and standard errors of individual nurse productivity, and the P value of the F-test of joint significance of individual nurse productivity with the subgroups. |

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| **Table DS.3. Association of individual nurse productivity in discharge preparation with a patient's likelihood of post-discharge outcomes in the restricted sample of patients assigned to the same nurse on the last two days of hospitalization. (2,516 patients, 407 nurses)** |
|   | 30-day return to hospital  |
|   | Emergency Department visit | Readmissions |
| Model with a categorical nurse productivity variable |
| Absolute change | -0.38 | -0.81\*\* |
| (SE) | (0.22) | (0.12) |
| [95% CI] | [-.82 -.005] | [-1.06 -.56] |
| Model with a categorical nurse productivity variable |
| Low | [ref] | [ref] |
| Medium  |   |   |
| Absolute change | -3.91\*\* | -1.35\*\* |
| (SE) | (0.72) | (0.41) |
| [95% CI] | [-5.32 -2.50] | [-2.16 -.54] |
| High |   |   |
| Absolute change | 0.48 | -1.64\*\* |
| (SE) | (0.59) | (0.40) |
| [95% CI] | [-.68 1.64] | [-2.42 -.85] |
| Shown are the estimated absolute percentage point reductions in a patient’s likelihood of a 30-day return to hospital for an Emergency Department [ED] visit and readmission associated with an increase in the individual discharge preparation productivity of the discharging nurse. The estimates were obtained from a patient-level multinomial logistic regression model of the return to hospital outcome on individual nurse productivity adjusted for patient characteristics, unit fixed effects, and data clustering at the unit and nurse level. In the top panel, individual nurse productivity is modeled as a continuous range variable scaled to represent a one standard deviation (0.69 points on the Readiness for Hospital Discharge scores) change. In the bottom panel, individual nurse productivity is modeled as a categorical variable for the tertile of the individual nurse productivity distribution \*\* P < 0.01; \* P < 0.05. |

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| **Table DS.4. Association of individual nurse productivity in discharge preparation with a patient's likelihood of post-discharge outcomes in the restricted sample of US hospitals. (9,898 patients, 425 nurses)** |
|   | 30-day return to hospital  |
|   | Emergency Department visit | Readmissions |
| Model with a continuous nurse productivity variable |
|  |  |  |
| Absolute change | -0.48\*\* | -0.37\*\* |
| (SE) | (0.15) | (0.11) |
| [95% CI] | [-.77 -.19] | [-.58 -.15] |
| Model with a categorical nurse productivity variable |
| Low | [ref] | [ref] |
| Medium  |   |   |
| Absolute change | -2.26\*\* | -0.88\* |
| (SE) | (0.40) | (0.38) |
| [95% CI] | [-3.05 -1.47] | [-1.64 -.13] |
| High |   |   |
| Absolute change | 0.35 | -0.57\* |
| (SE) | (0.094) | (0.28) |
| [95% CI] | [-1.01 0.31] | [-1.13 -.10] |
| Shown are the estimated absolute percentage point reductions in a patient’s likelihood of a 30-day return to hospital for an Emergency Department [ED] visit and readmission associated with an increase in the individual discharge preparation productivity of the discharging nurse. The estimates were obtained from a patient-level multinomial logistic regression model of the return to hospital outcome on individual nurse productivity adjusted for patient characteristics, unit fixed effects, and data clustering at the unit and nurse level. In the top panel, individual nurse productivity is modeled as a continuous range variable scaled to represent a one standard deviation (0.69 points on the Readiness for Hospital Discharge scores) change. In the bottom panel, individual nurse productivity is modeled as a categorical variable for the tertile of the individual nurse productivity distribution \*\* P < 0.01; \* P < 0.05. |