

APPENDICIES

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Appendix A

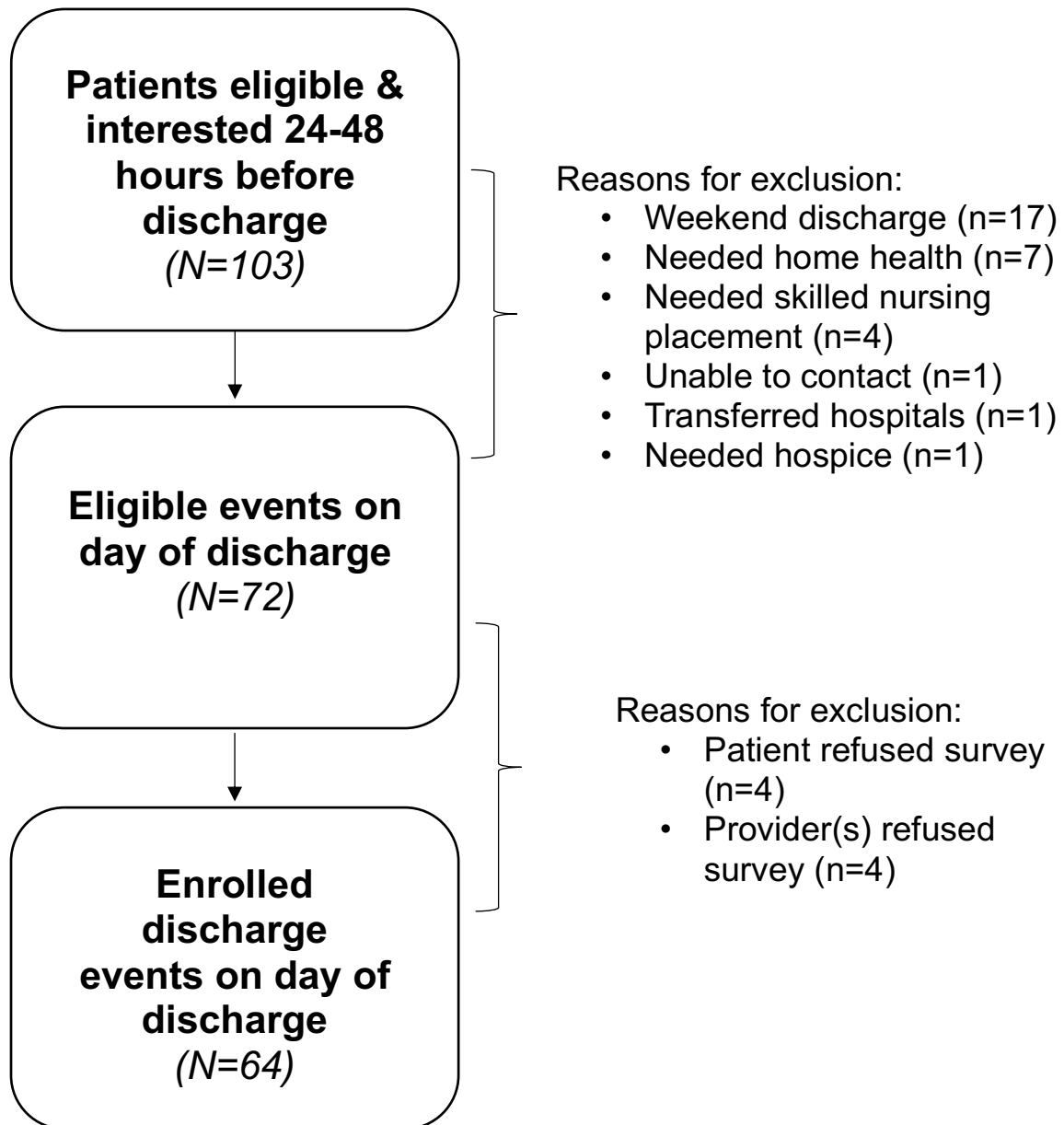


Figure A.1 Recruitment diagram of discharge events¹³

Appendix B

Table B. The domains, definitions, and affiliated variables Weiss' Readiness for Hospital Discharge Scale (RHDS) short version.*

Readiness Domain	Definition	Readiness variable
Personal status	<ul style="list-style-type: none">• How the patient feels on the day of discharge.	<ul style="list-style-type: none">• Physical readiness• Energy on day of discharge
Knowledge	<ul style="list-style-type: none">• How much the patient knows about care of self at home after discharge.	<ul style="list-style-type: none">• Knowledge of complications• Knowledge of restrictions
Perceived coping ability	<ul style="list-style-type: none">• How the patient will be able to cope at home after discharge.	<ul style="list-style-type: none">• Ability to handle demands• Ability to perform self-care
Expected support	<ul style="list-style-type: none">• How much help the patient will have if/when needed at home after discharge.	<ul style="list-style-type: none">• Help with care at home• Help with medical care

*Weiss ME. Readiness for Hospital Discharge Scale (RHDS).

<https://www.marquette.edu/nursing/readiness-hospital-discharge-scale.php>. Accessed April 10, 2020.

Appendix C

Table C.1. Patient level variables (with operationalized definitions, supporting evidence and data sources) used as potential predictors for teams' shared mental models of discharge readiness

Variable	Source	Operationalized	Evidence
Principal diagnosis	Electronic Medical Records (EMR)	Hospital admission diagnosis (heart failure, acute myocardial infarction, pneumonia, hip replacement, knee replacement, chronic obstructive pulmonary disease) as identified from EMR via admission or after visit summary note.	3, 22, 41-46
Age	Patient Survey	Number of years alive	30, 42-43, 46
Gender	Patient Survey	Male, female	42, 44, 46
Marital status	Patient Survey	Patient reported marital status (Married, unmarried)	28, 42, 44
Educational attainment	Patient Survey	Patient reported highest level of education completed (Some high school; High school degree; Some college or greater education)	2, 28, 45-46
Employment status	Patient Survey	Patient reported employment status (Working, Not working/retired)	2, 28, 44, 49
Insurance type(s)	Patient Survey	Patient reported insurance payer (Medicare only; Dual Medicaid and Medicare; Private/group plan only; Private/group plan and Medicare)	41-43, 46
Number of recent hospital admissions	Patient Survey	Patient reported number of hospital admissions in the last 12 months	41-43, 46
Length of hospital stay	EMR, Patient Survey	Duration of days admitted during index hospitalization	43, 47
Number of medications at discharge	EMR	Number of medications recorded on patient's home instruction medication list	47-48
Number of comorbidities	EMR	Number of comorbidities on physician's discharge summary note problem list	43, 48
Cognitive status	Patient Survey	Pfeiffer's Short portable mental status (SPMSQ) was used to measure patient level of cognition; ranges from 0 (<i>intact</i>) to 10 (<i>severe</i>) on day of discharge ²⁹	45

Table C.2. System level variables (with operationalized definitions, supporting evidence and data sources) used as potential predictors for teams' shared mental models of discharge readiness

Variable	Sources	Operationalized	Evidence
Teams' professional experience	Clinician Surveys	The number of years post-professional school of the teams' nurse, coordinator, physician- respectively .	10, 32-33, 50
Teams' RN educational background	Nurse Survey	Education level of nurse in the discharge team (Associate's Degree in Nursing [ADN], Bachelor of Science in Nursing [BSN]).	31, 49
Teams' DC educational background	Coordinator Survey	Education level of the coordinator in the discharge team (ADN, BSN, Master of Social Work [MSW]).	13, 49
Number of float staff	Triangulated via Clinician Surveys	Count of the number of providers who do not work on a dedicated unit that were on the discharge team.	13, 51
Team member communication	Triangulated via Clinician Surveys	For each discharge event the providers were asked to indicate how many times they communicated with the following individuals on the day of hospital discharge: patient, family, RN, DC, and MD. Responses were triangulated to determine if all team members (RN, MD, DC) communicated with each other on the day of discharge (Yes = Full team communication /No = Not full team communication).	1-4, 8, 13
Patient-team communication	Triangulated via Clinician and Patient Surveys	For each discharge event the providers were asked to indicate how many times they communicated with the following individuals on the day of hospital discharge: patient, family, RN, DC, and MD. Responses were triangulated to determine if all team members communicated directly with the patient on the day of hospital discharge (Yes/No).	1-3, 10, 13, 41, 23, 64
Quality of communication on day of discharge	Triangulated via Clinician Surveys	Adapted from the Team Survey ³³ Likert scale (<i>strongly disagree</i> [1] to <i>strongly agree</i> [7]) to answer: "overall, the team communicated appropriately while discharging this patient from the hospital." Aggregated to the team level by averaging the RN, MD, and DC scores.	4-6, 13, 47
Quality of teamwork on day of discharge	Triangulated via Clinician Surveys	Adapted from Millward and Jeffries Team Survey ³³ Likert scale (<i>strongly disagree</i> [1] to <i>strongly agree</i> [7]) to answer: "I feel that we worked together as a team to prepare this patient for hospital discharge." Aggregated to team level by averaging the RN, MD, and DC scores.	4-6, 13, 47
New day of discharge team	Triangulated via Clinician Surveys	For each event clinicians reported how many days they had worked with the patient. If all providers had worked with the patient for more than one day, then the team was determined to be an experienced discharge team. If there was at least one member of the discharge team for whom it was their first day working with the patient, then the team was determined to be a new day of discharge team. ⁹	40, 49
Teams' perception of unit safety	Triangulated via Clinician Surveys	Team's average score of unit safety using the Global Patient Safety Grade ⁵² scale; 1 (<i>falling</i>) to 5 (<i>excellent</i>) unit culture of patient safety	52-53

Note: RN=Nurse, DC=Coordinator, MD=Physician

Additional References for Appendix C

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Appendix D

Measuring Teams' SMM Convergence of Discharge Readiness

Degree of SMM Convergence. SMM convergence was used to identify how knowledge is distributed among the discharge team by examining the level of agreement between providers. To determine the teams' convergence on patient discharge readiness, we calculated an adjusted interrater agreement index ($r_{wg(j)}^*$)³⁵⁻³⁶ for each team using their clinicians' individual scores on the RHDS/SF. The $r_{wg(j)}^*$ index determines the amount of overlap between individual providers' responses to a questionnaire question by creating a comparison between the observed variance in ratings to the variances of a null distribution (i.e., a theoretical distribution representing maximum dissensus).³⁵⁻³⁶ Lindell et al.'s³⁵ interrater agreement equation is as follows:

$$r_{wg(j)}^* = 1 - (\overline{S_x^2} / \sigma_{mv}^2) \quad \text{[Equation 1]}$$

where J is the number of scale items, $\overline{S_x^2}$ is the mean observed variance in rating on J items, and σ_{mv}^2 is variance of a null with maximum possible disagreement (Equation 2).

The variance of a null distribution with maximum possible disagreement is as follows:

$$\sigma_{mv}^2 = 0.5 (X_U^2 + X_L^2) - [0.5(X_U - X_L)]^2 \quad \text{[Equation 2]}$$

where X_U and X_L are the upper and lower discrete Likert categories. Maximum dissensus occurs when all judges are distributed evenly at the scale endpoints. When using the variance of a null distribution with maximum possible disagreement values, $r_{wg(j)}^*$ ranges from 0 to 1.0; where the value of 1 is maximum or complete agreement; 0.5 indicates agreement equal to uniform null distributions; and 0 indicates maximum disagreement.³⁶ These convergence values were categorized into four agreement levels: low (<0.7), moderate (0.7-0.79), high (0.8-0.89), and very high (0.9-1).

Strengths of using $r_{wg(j)}^*$ is that this approach circumvents problems with inadmissible values, allows for meaningful interpretation for values when the mean observed variance $\overline{S_x^2}$ exceeds the variance of a null distribution with maximum possible disagreement, and is scale invariant which makes it comparable across different response scales or samples.³⁵⁻³⁶

Appendix E– Additional Data Results

Table E.1. Predictive variables of the teams' assessment of patient Readiness for Hospital Discharge* for 64 discharge events

Variable	<i>b</i> [†]	<i>SE</i>	<i>p</i>	<i>t</i>	<i>95% CI</i>
Patient length of hospital stay	-0.09	0.52	0.10	-1.68	[-0.19, 0.02]
Patient cognitive status [‡]	-0.24	0.88	0.008*	-2.75	[-0.42, -0.07]
Patient married (vs. non-married)	0.72	0.18	<0.001*	3.94	[0.36, 1.09]
Discharge Communication Quality [§]	0.46	0.15	0.004*	3.02	[0.16, 0.77]

Notes: *Team Assessment of Discharge Readiness = average of clinicians' scores on the Readiness for Hospital Discharge Scale/Short Form (RHDS/SF)^{29,35}; scores range from 0 to 10. †Beta-coefficients represent the change in teams' assessment of RHDS score when the predictor variable increase by 1-unit, and all other variables are held constant. ‡Level of Cognition was measured using the Short Portable Mental Status exam: ranges from 0 (*intact*) to 10 (*severe impairment*). §Adapted measures from Millward and Jeffries (2001) Team Survey measured Communication Quality (ranging from 0 [*poor*] to 7 [*excellent*]).

Table E.2. Predictive variables of team SMM convergence on patient readiness for hospital discharge for 64 discharge events

Variable	<i>b</i>	<i>SE</i>	<i>p</i>	<i>t</i>	95% <i>CI</i>
Principal diagnosis (vs. CHF§)					
Acute myocardial infarction	-0.02	0.03	0.55	-0.60	[-0.09, 0.05]
Hip replacement	0.08	0.04	0.08	1.78	[-0.01, 0.17]
Knee replacement	<0.01	0.04	0.84	-0.20	[-0.09, 0.07]
Pneumonia	-0.05	0.04	0.15	-1.44	[-0.12, 0.02]
COPD	-0.08	0.03	0.02*	-2.24	[-0.15, -0.05]
Patient number of comorbidities	<0.01	<0.01	0.13	-1.56	[-0.01, <.01]
Patient married (vs. non-married)	0.10	0.02	<0.01*	4.08	[0.05, 0.15]
Patient female (vs. male)	0.03	0.02	0.16	1.44	[-0.01, 0.07]
Teams' RN experience	<0.01	<0.01	0.11	-1.56	[-0.01, <0.01]
Patient-team communicated [#] (vs. incomplete communication)	0.05	0.03	0.11	1.65	[-0.01, 0.11]

Notes: *RHDS/SF* = Readiness for Hospital Discharge Scale/Short Form^{29,35}; scores range from 0 to 10.
[†] Team SMM Convergence = $r^*_{wg(i)}$ of individual clinicians' scores on the *RHDS/SF* and scores range from 0-1;
[§]*CHF* = Congestive Heart Failure; ^{||}*COPD* = Chronic Obstructive Pulmonary Disease; [#]All team members communicated with patient on day of discharge

Table E.3. Predictive variables of team-patient SMM convergence on patient readiness for hospital discharge for 64 discharge events

Variable	<i>b</i>	<i>SE</i>	<i>p</i>	<i>t</i>	95% <i>CI</i>
Principal diagnosis (vs. CHF§)					
AMI	-0.03	0.30	0.09	-0.60	[-0.56, 0.61]
Hip Replacement	-0.21	0.35	0.54	-0.61	[-0.91, 0.49]
Knee Replacement	0.45	0.32	0.17	1.40	[-0.20, 1.10]
Pneumonia	0.38	0.31	0.23	1.23	[-0.24, 1.00]
COPD	0.22	0.30	0.46	0.75	[-0.36, 0.79]
Patient Age [°]	0.02	0.01	0.07	1.85	[<0.01, 0.05]
Patient number of comorbidities	0.09	0.04	0.03*	2.24	[0.01, 0.17]
Patient number of medications	0.03	0.02	0.11	1.65	[-0.01, 0.07]
Patient length of hospital stay	0.08	0.06	0.15	1.48	[-0.03, 0.19]
Patient married (vs. non-married)	-0.66	0.19	0.001*	-2.48	[-1.04, -0.28]
Teams' RN has a BSN (vs. ADN)**	-0.83	0.19	<0.001*	-4.46	[-1.20, -0.46]
Teams' MD Experience (Years)	-0.01	0.01	0.11	-1.61	[-0.03, <0.01]
Quality of Teamwork††	0.41	0.16	0.01*	2.63	[0.10, 0.72]

Note: ‡Accuracy = absolute value of difference between the Patient-Readiness for Hospital Discharge Scale/Short Form (RHDS/SF) score and the Team Assessment of Discharge Readiness. In this study, scores ranged from 0 to 3.6; §CHF = Congestive Heart Failure; ||COPD = Chronic Obstructive Pulmonary Disease; °Centered to the Mean; **Discharge team nurse (RN) had a Bachelor of Science in Nursing (BSN) or an Associate's Degree in Nursing (ADN); ††Adapted measures from Millward and Jeffries Team Survey measured quality of teamwork on day of discharge (0 [poor] to 7 [excellent]), respectively.⁴⁶

Appendix F

Table F. Applying Shared Mental Model (SMM) properties to inform a team-based, patient-centered decision process for determining hospital discharge readiness

SMM Properties	Process Question	Targeted Exploration Question
Teams' assessment of discharge readiness	Does our team think the patient is <i>ready</i> to discharge?	<ul style="list-style-type: none"> • Is the patient medically ready? • Does the patient need support at home or higher level of post-acute care? • Does the patient need additional education? • Did our team communicate well when preparing the patient for discharge? • How frequently does our team discharge patients with low readiness?
Team convergence	Do we all <i>agree</i> the patient is ready to discharge?	<ul style="list-style-type: none"> • Is there information that not all the team members know? • Would having that information change the plan of care? • Do we have the right team members on the team? • Who is the expert (or could be) about the content of disagreement? • Did we work as a team to discharge the patient? • How frequently does misalignment among the team occur?
Team-patient convergence	Does our teams' assessment of discharge readiness <i>match</i> the patient's perceptions?	<ul style="list-style-type: none"> • Does the patient think they are more or less ready to discharge compared to the team? • Is there information that the team and/or patient might not know? • If able, are we including the patient's caregiver in the conversation? • Has the team explained clearly the potential options for plan of care and tradeoffs between them? • Are we taking patient's literacy and language preferences into consideration? • How frequently does misalignment with the patient occur?