Supplemental Appendix

Supplemental content provided for:

Taylor SP, Murphy S, Rios A, et al. Effect of a Multicomponent Sepsis Transition and Recovery Program on Mortality and Readmissions Among Sepsis Survivors: The IMPACTS Randomized Clinical Trial

Supplemental Appendix

Effect of a Multicomponent Sepsis Transition and Recovery Program on Mortality and Readmissions Among Sepsis Survivors: The IMPACTS Randomized Clinical Trial

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Figure S1. Description of automated process for identification and enrollment of eligible patients into IMPACTS trial.

Separate risk prediction scores were applied to assess the probability of 30-day hospital readmission and 30-day mortality using previously developed logistic regression models. Each model was derived from readily captured variables collected as part of routine clinical care during the first 24 hours after emergency department presentation, such as physiologic measurements, laboratory values, basic sociodemographic characteristics, and personal medical history (PMHX). All model covariates were sourced from a patient's clinical data during hospitalization and billing history at the time of hospital admission for near real-time application. Each weekday (i.e., Monday–Friday), an automated list of eligible patients at high risk for 30-day mortality or readmission was generated, as identified by our previously developed risk models. Patients were randomly assigned to STAR or usual care arms. For those patients allocated to receive care via STAR, their information was sent by secure e-mail to the STAR navigator. For patients in both arms, data from the automated, daily patient list were sent to the study database for tracking via a computer-based process. At any point, patients were able to decline participation in STAR or any components of usual care.

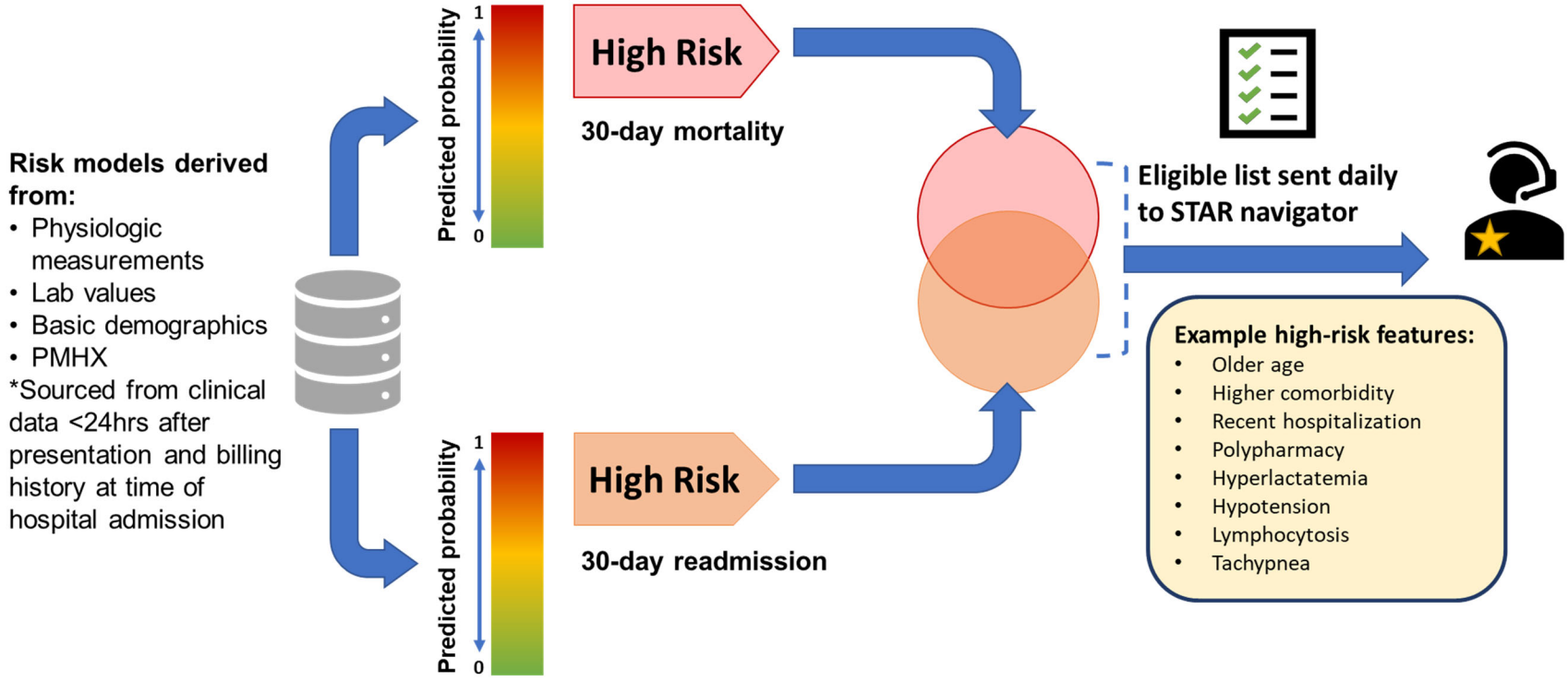
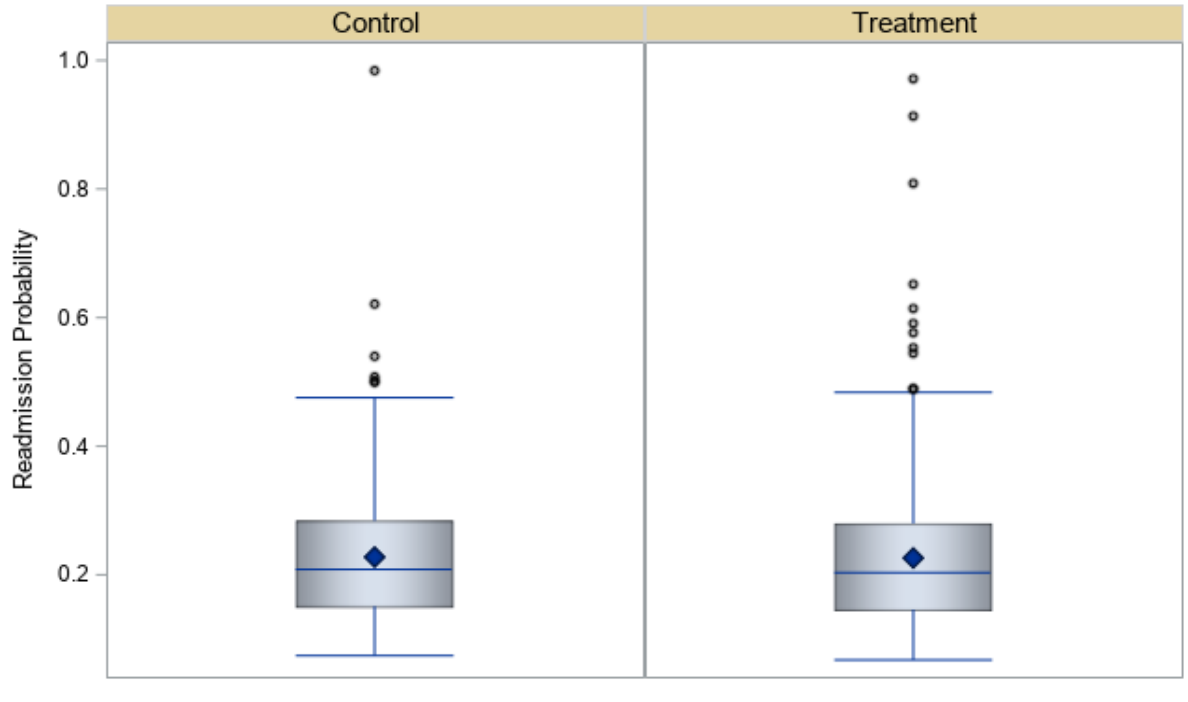
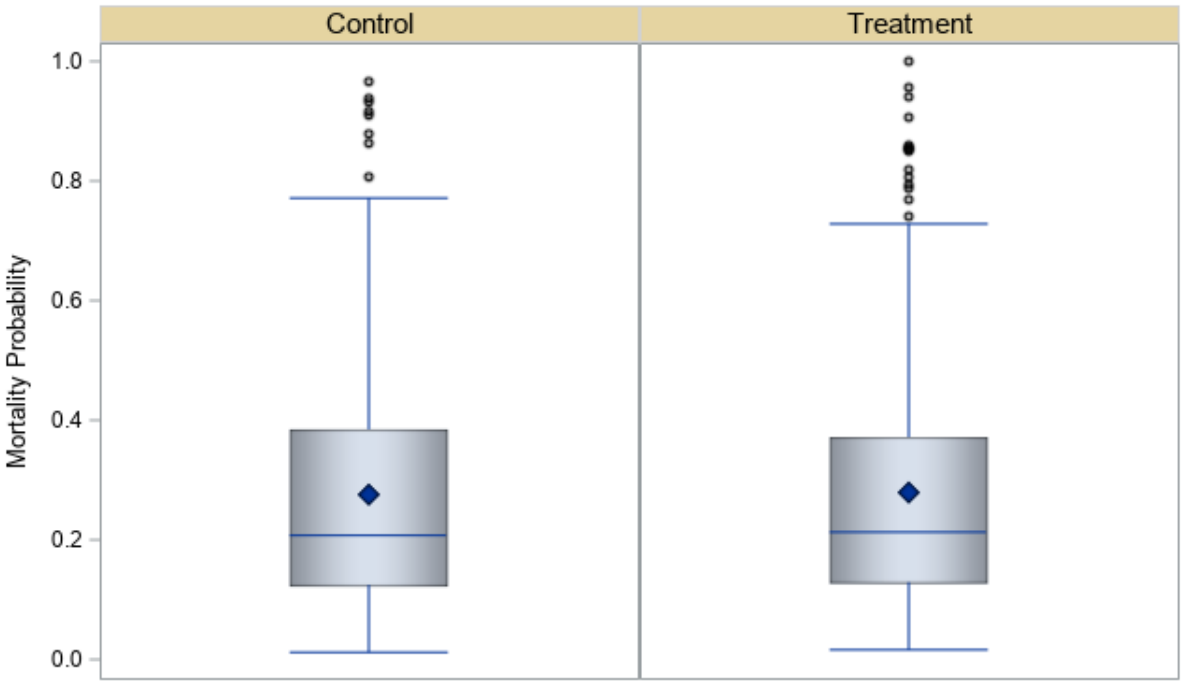


Figure S2. Distribution of 30 day readmission risk probability at time of IMPACTS trial enrollment. Box and whisker plots depict the baseline readmission probability separately for patients randomly assigned to the Usual Care (Control) and Sepsis Transition and Recovery program (Treatment) arms. Count, mean and standard deviation (SD), and median and interquartile range (IQR) estimates are shown below the plot for each group.



Count	342	349
Mean ± SD	0.23 ± 0.11	0.23 ± 0.12
Median, IQR	0.21, 0.15-0.28	0.20, 0.14-0.28

Figure S3. Distribution of 30 day mortality risk probability at time of IMPACTS trial enrollment. Box and whisker plots depict the baseline mortality probability separately for patients randomly assigned to the Usual Care (Control) and Sepsis Transition and Recovery program (Treatment) arms. Count, mean and standard deviation (SD), and median and interquartile range (IQR) estimates are shown below the plot for each group.



Count	342	349
Mean ± SD	0.28 ± 0.20	0.28 ± 0.21
Median, IQR	0.21, 0.12-0.38	0.21, 0.13-0.37

Figure S4. Incidence of hospital readmission and mortality events within 30 days by assigned treatment arm. The bar chart shows the incidence of the overall composite outcome and its components, with the most severe outcome depicted for each patient (i.e., death prioritized over hospital readmission among patients who experienced both events). The percent incidence of events is presented separately for patients randomly assigned to receive Usual Care (Control) and the Sepsis Transition and Recovery programs (Treatment) and included in the intention-to-treat analysis.

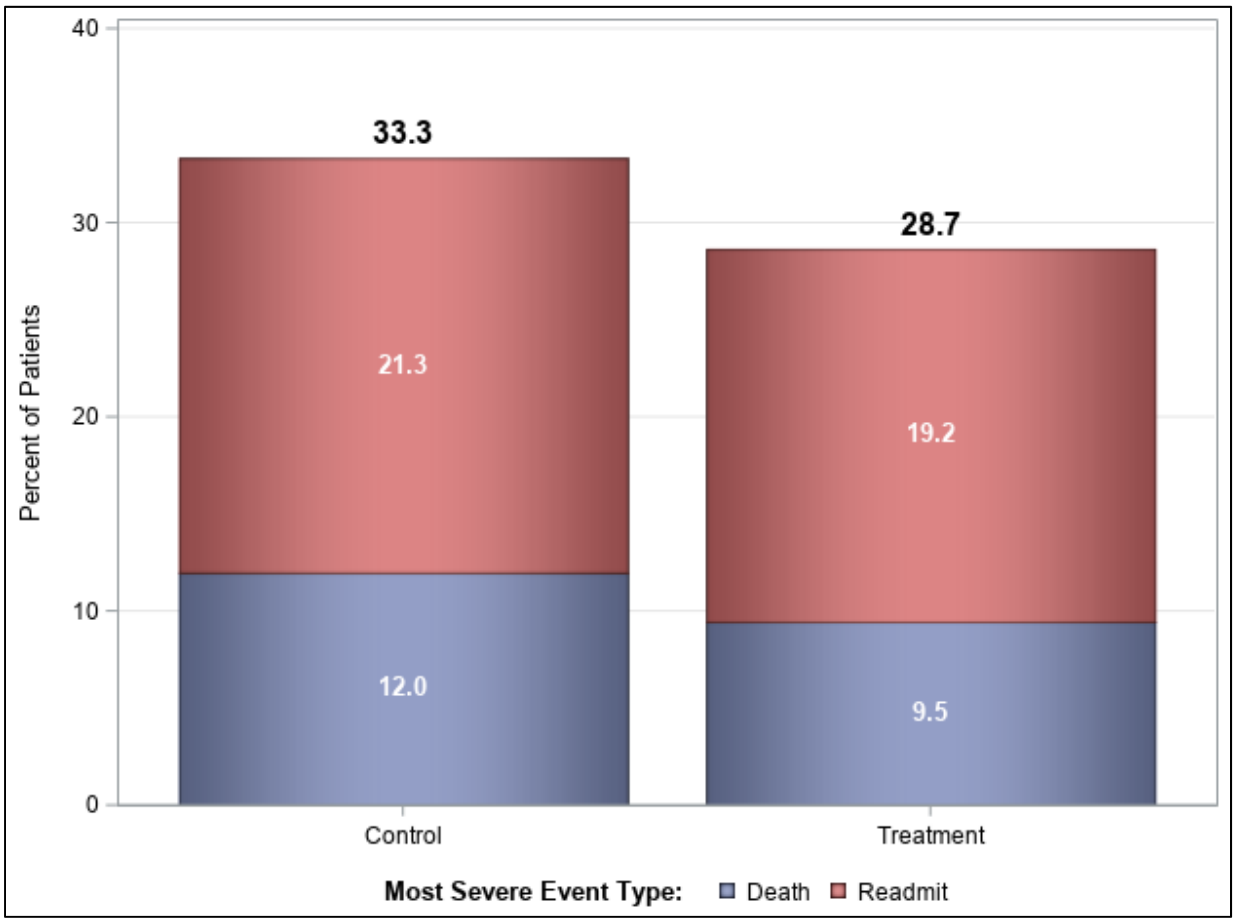


Figure S5. Examining heterogeneity of STAR program effect on 30 day mortality and readmission in pre-specified subgroups. Overall and subgroup-specific odds ratio estimates are depicted for composite mortality and readmission at 30 days after index hospitalization. Subgroups are defined by characteristics known at trial enrollment: age, Charlson Comorbidity Index (CCI) score, and presence of shock. The number of events and total patients in each group are listed. The position of each circle represents the point estimate of the odds ratios (OR). Error bars are presented to depict lower (LCL) and upper (UCL) bounds of the 95% confidence intervals. Point estimates are found to the left of the midline when outcome benefit favors patients who received care through the Sepsis Transition and Recovery (STAR) program, compared to Usual Care (UC), within each subgroup. There were no statistically significant interaction effects (*p**) observed across the pre-specified subgroups.

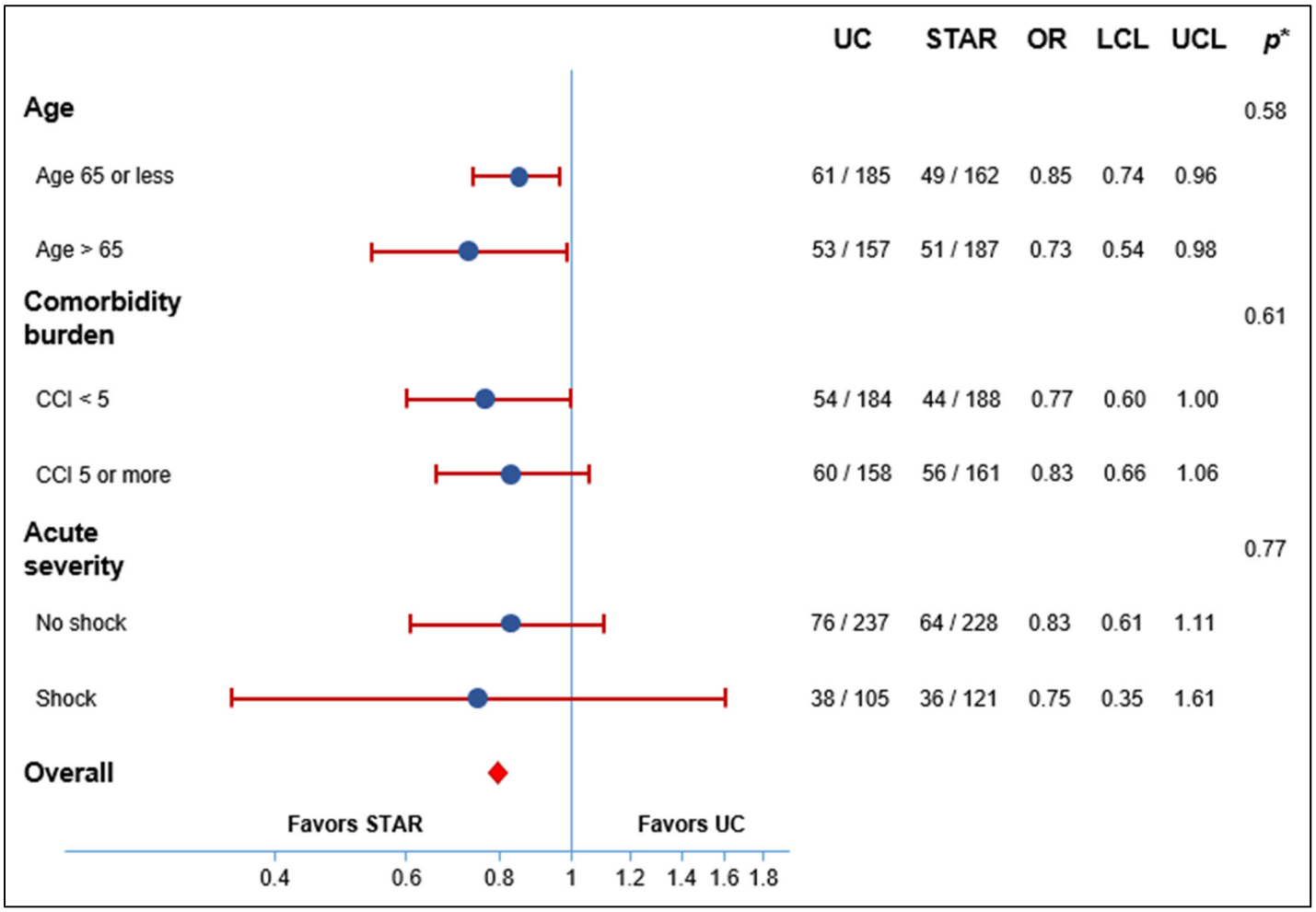


Figure S6. Histograms of days alive and outside the hospital to day 30 by assigned treatment. The plots depict the distribution of the continuous composite outcome of days alive and not hospitalized among patients randomly assigned to the Usual Care (Control) and Sepsis Transition and Recovery program (Treatment) arms and included in the intention-to-treat analysis. In the IMPACTS trial, the outcome ranges from 0 days (most severe) to 30 days (least severe).

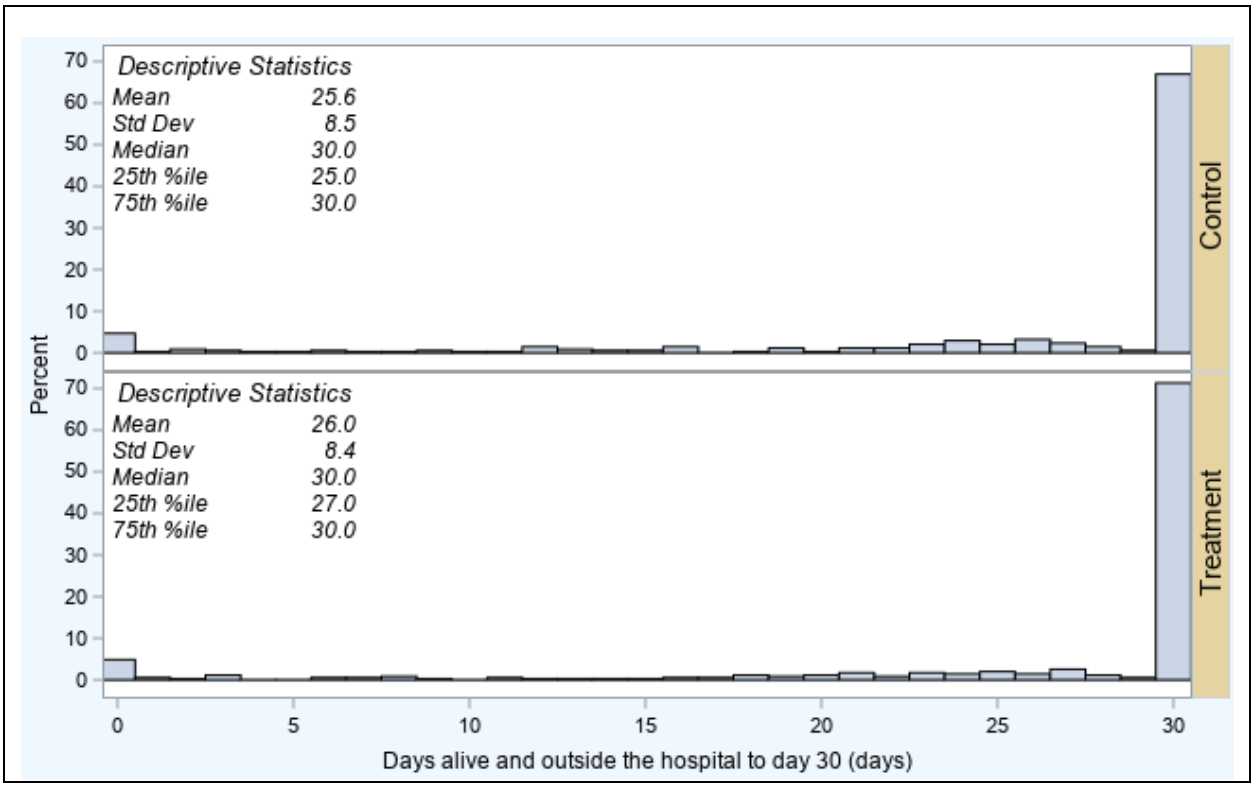
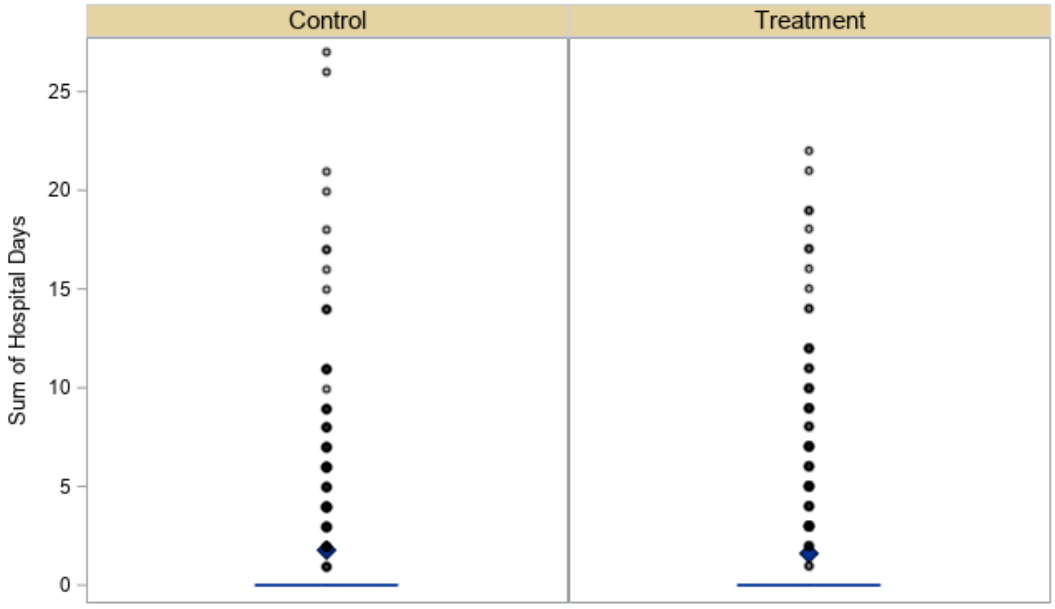


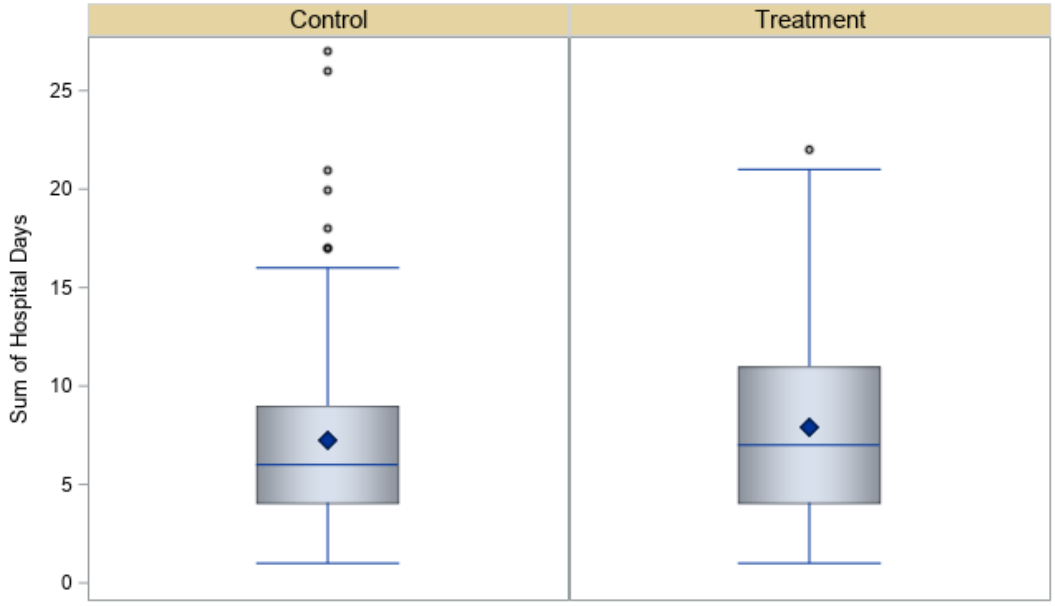
Figure S7. Distribution of hospital days to day 30 by assigned treatment. Box and whisker plots depict the number of hospital days between index hospital discharge and day 30 separately for patients randomly assigned to the Usual Care (Control) and Sepsis Transition and Recovery program (Treatment) arms and a) included in the intention-to-treat analysis; and b) the subset of patients readmitted within 30 days of index hospital discharge. Count, mean and standard deviation (SD), and median and interquartile range (IQR) estimates are shown.

a) Distribution of Hospital Days to Day 30 among all patients in the intention-to-treat analysis



	Control	Treatment
Count	342	349
Mean ± SD	1.78 ± 4.11 days	1.61 ± 3.93 days
Median, IQR	0, 0-0 days	0, 0-0 days

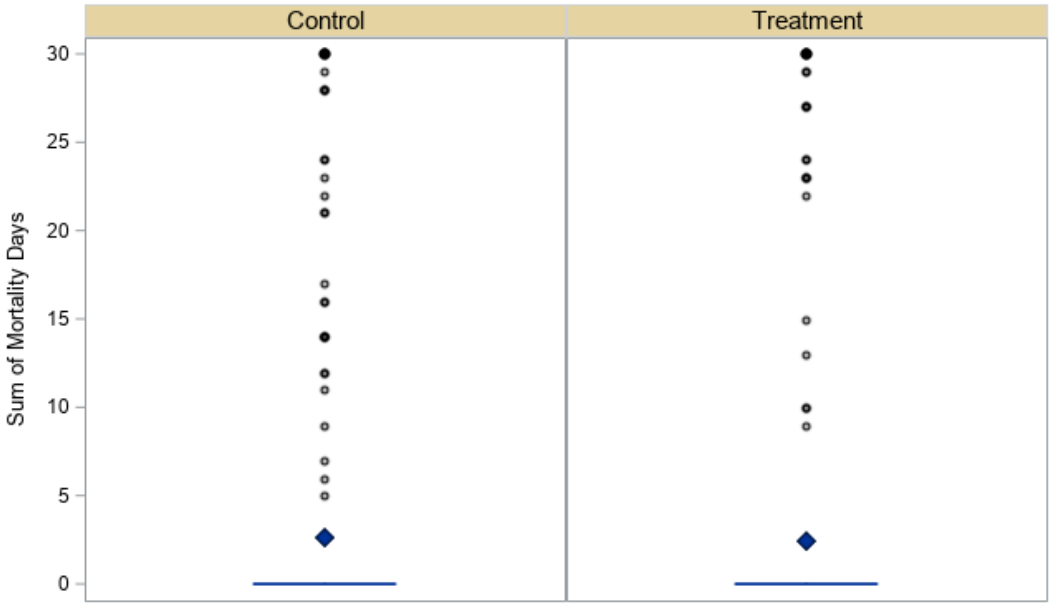
b) Distribution of Hospital Days to Day 30 among readmitted patients only



	Control	Treatment
Count	84	71
Mean ± SD	7.24 ± 5.43 days	7.90 ± 5.12 days
Median, IQR	6, 4-9 days	7, 4-11 days

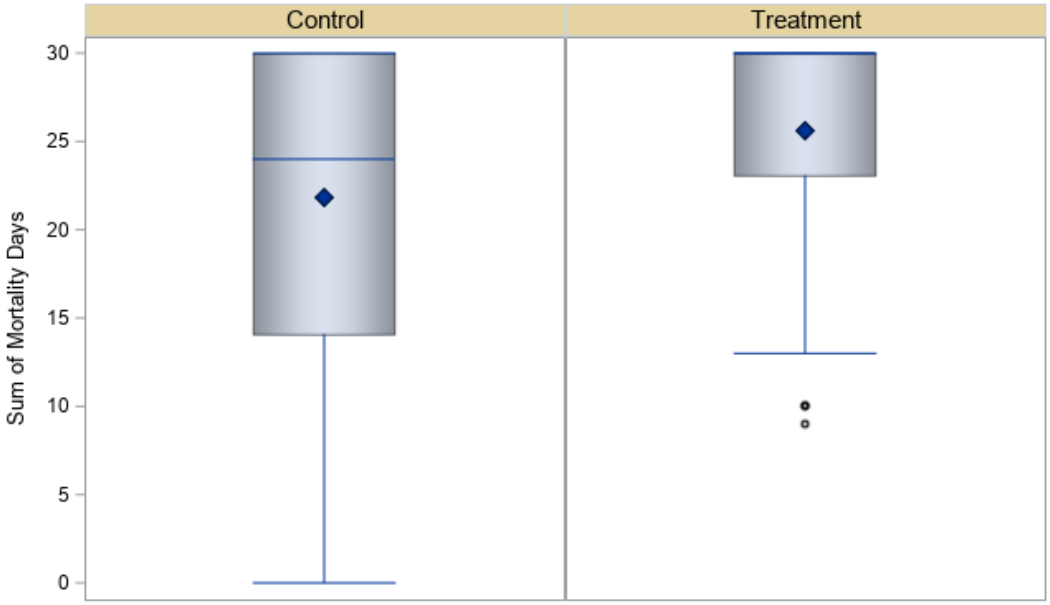
Figure S8. Distribution of mortality days to day 30 by assigned treatment. Box and whisker plots depict the number of hospital days between index hospital discharge and day 30 separately for patients randomly assigned to the Usual Care (Control) and Sepsis Transition and Recovery program (Treatment) arms and a) included in the intention-to-treat analysis; and b) the subset of patients who died within 30 days of index hospital discharge. Count, mean and standard deviation (SD), and median and interquartile range (IQR) estimates are shown.

a) Distribution of Mortality Days to Day 30 among all patients in the intention-to-treat analysis



	Control	Treatment
Count	342	349
Mean ± SD	2.62 ± 7.75 days	2.42 ± 7.77 days
Median, IQR	0, 0-0 days	0, 0-0 days

b) Distribution of Mortality Days to Day 30 among decedents only



	Control	Treatment
Count	41	33
Mean ± SD	21.83 ± 9.07 days	25.61 ± 6.68 days
Median, IQR	24, 14-30 days	30, 23-30 days

Figure S9. Distribution of emergency department visit counts to day 30 by assigned treatment. Box and whisker plots depict the number of emergency department (ED) visits among patients randomly assigned to the Usual Care (Control) and Sepsis Transition and Recovery program (Treatment) arms and included in the intention-to-treat analysis.

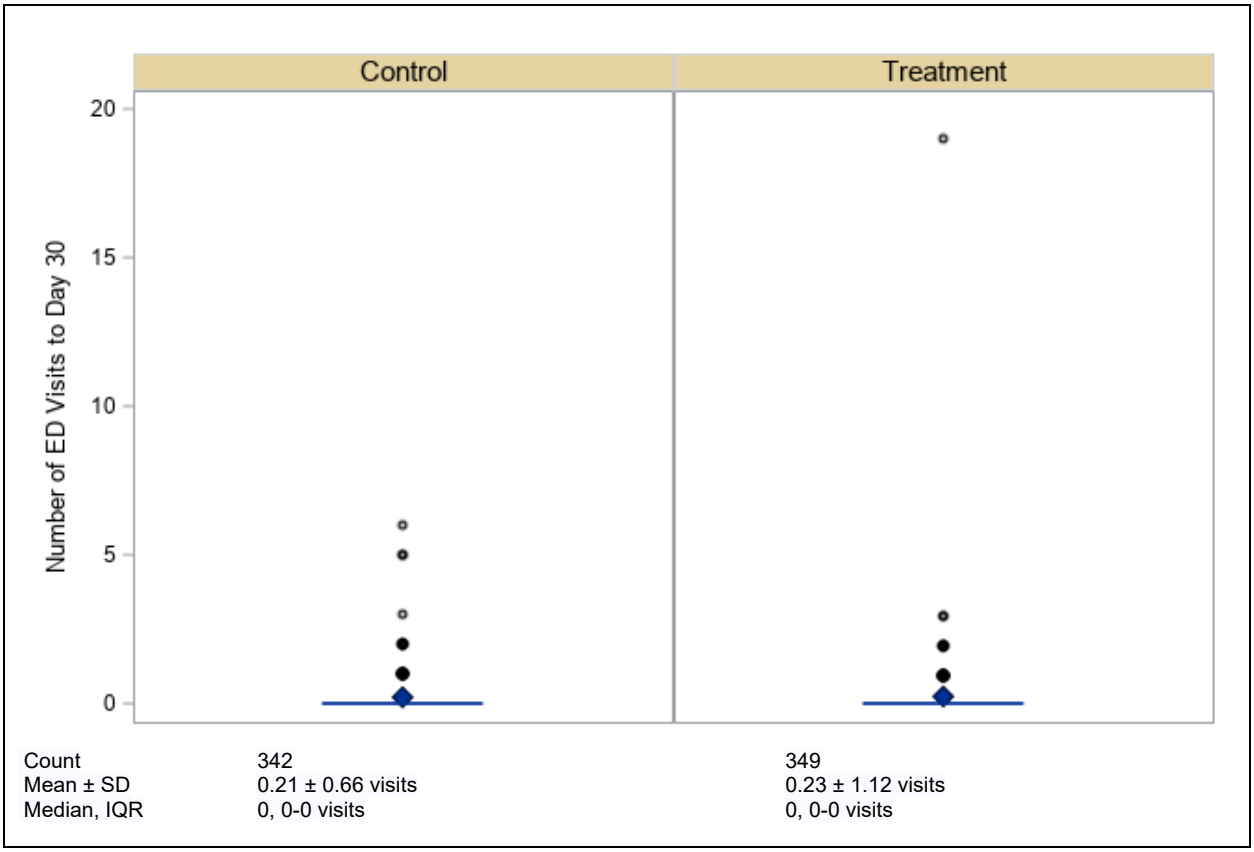


Table S1. Description of 30-day hospital readmission and mortality risk prediction models used to automate daily enrollment into IMPACTS trial

Measure Name	Measure Description	Data Source
Sociodemographic factors		
Age	Age in years at Admission	EHR; Patient Registration
Sex	Male or Female	EHR; Patient Registration
Race	Categorical Race Description	EHR; Patient Registration
Marital status	Marital status at Admission	EHR; Patient Registration
Insurance status	Insurance status at Admission	EHR; Patient Registration
Prior medical history		
Physician office visit count	Number of Ambulatory Visits during 6 Months Prior to Admission	EHR; Administrative Data
Outpatient visit count	Number of Outpatient Visits during 6 Months Prior to Admission	EHR; Administrative Data
Emergency Department visit count	Number of ED Visits during 6 Months Prior to Admission	EHR; Administrative Data
Observation visit count	Number of OBS Visits during 6 Months Prior to Admission	EHR; Administrative Data
Inpatient hospitalization count	Number of IP Hospitalizations during 6 Months Prior to Admission	EHR; Administrative Data
Charlson Comorbidity Index	Score Calculated from Diagnoses during 12 Months Prior to Admission	EHR; Administrative Data
Total Medications	Number of Medications Ordered during 12 Months Prior to Admission	EHR
Chemotherapy agent	Indicator of Chemotherapy Agent Ordered in Last 90 Days	EHR
Cardiovascular disease agent	Indicator of Cardiovascular Agent Ordered in Last 90 Days	EHR
Antidiabetic agent	Indicator of Antidiabetic Agent Ordered in Last 90 Days	EHR
Anti-infective agent	Indicator of Anti-Infective Agent Ordered in Last 90 Days	EHR
Respiratory agent	Indicator of Respiratory Agent Ordered in Last 90 Days	EHR
Index hospital admission factors		
Admitting Hospital	Name of Admitting Hospital	Administrative Data
Admitting Month	Month of Hospital Admission	Administrative Data
Emergency Severity Index	Categorical Acuity Score at Time of ED Triage	EHR
Maximum qSOFA	qSOFA Calculated within 24 Hours of presentation	EHR
Maximum lactate	Lactate Measured within 24 Hours of Presentation	EHR
Maximum White Blood Cell Count	White Blood Cell Count Measured within 24 Hours of Presentation	EHR
Maximum Respiratory Rate	Respiratory Rate Measured within 24 Hours of Presentation	EHR
Minimum Diastolic Blood Pressure	Diastolic Blood Pressure Measured within 24 Hours of Presentation	EHR
Minimum Systolic Blood Pressure	Systolic Blood Pressure Measured within 24 Hours of Presentation	EHR
Minimum Mean Arterial Pressure	Mean Arterial Pressure Measured within 24 Hours of Presentation	EHR
Minimum Glasgow Coma Scale	Glasgow Coma Scale Calculated within 24 hours of Presentation	EHR
Maximum Temperature	Temperature Measured within 24 Hours of Presentation	EHR
Required ICU care	Indicator of ICU Admission within 24 Hours of Presentation	EHR
Required invasive MV support	Indicator of MV Use within 24 Hours of Presentation	EHR

Abbreviations: qSOFA=quick Sequential Organ Failure Assessment; ICU=Intensive Care Unit; MV=Mechanical Ventilator; EHR=Electronic Health Record.

Logistic regression was used to construct independent risk prediction models for each of the 30-day hospital readmission and mortality outcomes. Both risk prediction models were trained and tested using hospital admissions for clinically suspected sepsis from January 2014 to September 2017 and included the measures listed in the above table. Laboratory values and vital signs captured as continuous variables were converted to categories based on quartiles and mean estimates in separate groups of hospital deaths and hospital survivors. We determined the frequency of missing data for each element. For selected continuous variables with less than 1% missing data, we imputed the mean value adjusted for age at admission, gender, race, and comorbidity score. To account for informative missingness, we converted variables with greater than 1% missing values to categorical format and classified missing values as “Not Available”. We tested the associations between variables with greater than 40% missing data and each outcome variable via chi-square tests. Performance of each risk model was evaluated prior to initiation of patient enrollment into the IMPACTS trial. Derived models were evaluated through *k*-fold cross-validation ($k = 10$) using the training dataset to resample and iteratively reestimate how accurately the prediction models perform using different, randomly assigned training and validation samples. The discrimination of each model to accurately differentiate between patients who did and did not have the indicated outcome was assessed using area under the receiver operating characteristic curve (AUC). The 30-day mortality model demonstrated AUC = 0.85 and negative predictive value (NPV) = 0.97. The 30-day hospital readmission model demonstrated AUC = 0.70 and NPV = 0.89.

Table S2. Essential Features and Actions of the Sepsis Transition and Recovery (STAR) Program

Stage of Intervention	Intervention Features	Intervention Follow up Actions
Patient Identification *[Within 24-72 hours after hospital admission]*	• STAR navigator receives daily list of eligible patients (Automated EHR based algorithms target high-risk patients and output into daily list)	1. Review patient EHR; 2. Alert care team of STAR program eligibility and follow up procedures.
Initial Assessment *[STAR navigator makes telephone-based contact with the patient or family/caregiver during hospitalization]*	• Introduce STAR program • Assess health literacy and conduct mental health screening using PHQ • Confirm consultations with physical and/or occupational therapy ordered or completed • Confirm antibiotic stewardship pharmacist review and infectious disease consultation if ongoing systemic inflammatory response syndrome criteria present > 48 hours after infection onset	1. Message results to care team; 2. If the patient has a serious, chronic illness and either failure to improve after 5 days or a previous hospital admission in the last 60 days, the STAR navigator recommends a goals of care discussion led by the care team or a palliative care consultation; 3. Ongoing review of patient EHR every 24-48 hours during remainder of hospital stay; engagement with patient/caregiver, care team for discharge planning.
Preparation for Hospital Discharge *[STAR navigator makes telephone-based contact with the patient or family/caregiver prior to hospital discharge]*	• Provide infection-specific education to the patient and family/caregiver, which also includes stoplight chart for self monitoring symptoms, what to expect during transition from the hospital and written information on scheduled outpatient appointments and planned telephone touchpoints • Review discharge orders and confirms inpatient pharmacist review of high-risk medications, including: appropriate indication if prescribed proton pump inhibitor, opioids, benzodiazapines, or antipsychotics; appropriate medications prescribed for chronic lung disease or chronic heart failure; and medication doses adjusted as needed if any new or worsening renal failure	1. Send STAR follow up schedule and care plan to providers, including patient's primary care provider (if present) and skilled nursing facility or home health provider (if applicable); 2. Request pharmacist review of high-risk medications if needed.
Immediate Post Acute *[STAR navigator follows patients regardless of discharge location (e.g., home, SNF) and remotely monitors via EHR-based and telephone-based review at < 48 hours, 72-96 hours, and 7-10 days post discharge]*	• Medication review, confirm all medications have been filled/received • Monitoring for fever (> 38 °C after recheck), new or worsening conditions or symptoms (e.g., dyspnea, diarrhea, or redness, swelling, or pain (for skin and soft tissue infection)), and new limitations in functional status (e.g., not out of bed, not eating) • Confirmation that patient can attend scheduled outpatient appointments and has necessary resources and support (e.g., access to appropriate psychosocial and community support)	1. Prompt pharmacist for medication review if needed; 2. Coordinate care for scheduled follow up with primary care provider or Hospital Medicine Transition Services and address any outstanding medication needs; 3. Escalation to an additional outpatient provider visit within 24 hours if any positive screen. Concerns identified through proactive monitoring prompt a primary care provider contact for follow-up within 24 h. If primary care provider cannot be reached after one attempt, the navigator contacts Transition Services to coordinate either a virtual visit with a physician facilitated by community paramedicine or an in-person physician visit.
Extended Post Acute *[STAR navigator maintains weekly touchpoints with patients who remain at high risk for poor outcome (i.e., any previous positive screen or high-risk comorbid condition and one additional third-week touchpoint with patients considered low risk after the first 10 days post discharge]*	• Review of any provider visit notes, available laboratory values (e.g., complete blood count, basic metabolic panel), and documented therapy plan • Monitoring for fever (> 38 °C after recheck), new or worsening conditions or symptoms (e.g., dyspnea, diarrhea, or redness, swelling, or pain (for skin and soft tissue infection)), and new limitations in functional status (e.g., not out of bed, not eating) • Revisit shared decision making around Goals of Care	1. Escalation to an additional outpatient provider visit within 24 hours if any positive screen. Concerns identified through proactive monitoring prompt a primary care provider contact for follow-up within 24 h. If primary care provider cannot be reached after one attempt, the navigator contacts Transition Services to coordinate either a virtual visit with a physician facilitated by community paramedicine or an in-person physician visit; 2. Educate on recovery trajectory and disease progression of chronic critical illness if appropriate.
Link to Next Care Setting *[30 days post discharge]*	• Complete STAR program closeout • Review any needs for ongoing support	1. Send documentation of program completion to primary care or Transition Services provider.

The STAR program employs a centrally located nurse navigator who has clinical knowledge of sepsis and its cognitive and functional sequelae, core competencies in navigating transitions of care (e.g., facilitating communication, coordinating care, assessing/addressing barriers to care, providing patient education and practical resource information/referrals), and works as an extension of Hospital Medicine Transition Services within the Division of Hospital Medicine, which is a multidisciplinary team providing acute care support during the peri-discharge interval. All outreach from the STAR navigator occurs virtually (e.g., synchronous and asynchronous communication via telephone, messaging, and electronic health record (EHR) systems) to provide proactive coordination and monitoring for patients. The targeted, evidence-based or best-practice care components include: identification of and referral for new physical, mental, and cognitive deficits; review and recommendation for adjustment of medications; surveillance of treatable conditions that commonly lead to poor outcomes; and referral to palliative care when appropriate.

Table S3. TIDieR (Template for Intervention Description and Replication) checklist for STAR program description

Item number	Item	Where located **	
		Primary paper (page or appendix number)	Other † (details)
	BRIEF NAME		
1.	Provide the name or a phrase that describes the intervention.	**5**	_____
	WHY		
2.	Describe any rationale, theory, or goal of the elements essential to the intervention.	**5**	_____
	WHAT		
3.	Materials: Describe any physical or informational materials used in the intervention, including those provided to participants or used in intervention delivery or in training of intervention providers. Provide information on where the materials can be accessed (e.g. online appendix, URL).	**Table 1**	_____
4.	Procedures: Describe each of the procedures, activities, and/or processes used in the intervention, including any enabling or support activities.	**5, Table 1**	_____
	WHO PROVIDED		
5.	For each category of intervention provider (e.g. psychologist, nursing assistant), describe their expertise, background and any specific training given.	**8**	_____
	HOW		
6.	Describe the modes of delivery (e.g. face-to-face or by some other mechanism, such as internet or telephone) of the intervention and whether it was provided individually or in a group.	**Table 1**	_____
	WHERE		
7.	Describe the type(s) of location(s) where the intervention occurred, including any necessary infrastructure or relevant features.	**6, Table 1**	_____

	WHEN and HOW MUCH		
8.	Describe the number of times the intervention was delivered and over what period of time including the number of sessions, their schedule, and their duration, intensity or dose.	**8, Table 1**	_____
	TAILORING		
9.	If the intervention was planned to be personalised, titrated or adapted, then describe what, why, when, and how.	**n/a**	_____
	MODIFICATIONS		
10.ǂ	If the intervention was modified during the course of the study, describe the changes (what, why, when, and how).	**n/a**	_____
	HOW WELL		
11.	Planned: If intervention adherence or fidelity was assessed, describe how and by whom, and if any strategies were used to maintain or improve fidelity, describe them.	**9**	_____
12.ǂ	Actual: If intervention adherence or fidelity was assessed, describe the extent to which the intervention was delivered as planned.	**12, Table S8**	_____

** **Authors** - use N/A if an item is not applicable for the intervention being described. **Reviewers** – use '?' if information about the element is not reported/not sufficiently reported.

† If the information is not provided in the primary paper, give details of where this information is available. This may include locations such as a published protocol or other published papers (provide citation details) or a website (provide the URL).

ǂ If completing the TIDieR checklist for a protocol, these items are not relevant to the protocol and cannot be described until the study is complete.

* We strongly recommend using this checklist in conjunction with the TIDieR guide (see *BMJ* 2014;348:g1687) which contains an explanation and elaboration for each item.

* The focus of TIDieR is on reporting details of the intervention elements (and where relevant, comparison elements) of a study. Other elements and methodological features of studies are covered by other reporting statements and checklists and have not been duplicated as part of the TIDieR checklist. When a **randomised trial** is being reported, the TIDieR checklist should be used in conjunction with the CONSORT statement (see www.consort-statement.org) as an extension of **Item 5 of the CONSORT 2010 Statement.** When a **clinical trial protocol** is being reported, the TIDieR checklist should be used in conjunction with the SPIRIT statement as an extension of **Item 11 of the SPIRIT 2013 Statement** (see www.spirit-statement.org). For alternate study designs, TIDieR can be used in conjunction with the appropriate checklist for that study design (see www.equator-network.org).

Table S4. Description of outcomes and measures included in IMPACTS trial data collection

Measure Domain	Measure Description	Measurement interval	Source
Patient demographics	Age, Gender, Race	Baseline	EHR; patient registration
Medical history	Charlson Comorbidity Index, Chronic lung disease, Chronic renal disease, Diabetes, Heart failure, Malignancy, Count of prior hospital admissions	Baseline	EHR; administrative data
Clinical characteristics	Bilirubin, Mean arterial pressure, Platelet count, Creatinine, Lactate	Baseline	EHR
Characteristics of index hospital care	Intensive care unit admission, Physical or occupational therapy consult, Speech therapy consult, Behavioral health consult, Hospital length of stay, Discharge disposition	Index hospital discharge	EHR
Characteristics of post sepsis follow up care	Outpatient physical or occupational therapy, Outpatient speech therapy, Behavioral health screening, Physician office visit, Documented medication review, Care Alignment Tool completion, Advance Directive completion, Any palliative care consult, Code Status	30 days after index hospital discharge	EHR
Outcome Measures	Composite of all-cause hospital readmission or mortality, All-cause hospital readmission, All-cause mortality, Days alive and outside hospital, Cause-specific hospital readmission, Count of ED visits	30 days after index hospital discharge	EHR; administrative data; National death master file

Outcome	Definition
30-day composite of all-cause hospital readmission or mortality	In the IMPACTS trial, the primary outcome was defined as a dichotomous, composite measure of all-cause hospital readmission or mortality assessed 30 days post index hospital discharge. Both contributors to the composite measure (i.e., mortality and hospital readmission) remain high after sepsis hospitalization and are uniformly captured from data contained in the AH enterprise data warehouse, minimizing non-differential assessment, outcome misclassification, and missing data. Patients who experience either mortality or hospital readmission outcomes within 30 days of index hospital discharge are defined as event-positive in IMPACTS.
30-day all-cause mortality	Patients met the mortality component of the composite primary outcome if they had a documented date of death for any cause after index hospital admission and within 30 days of index hospital discharge. Death inside or outside of the hospital was included in mortality assessment, including events from national death record data uploaded monthly into the AH enterprise data warehouse via our institutional subscription and death records captured in the electronic health record.
30-day all-cause hospital readmission	Patients met the hospital readmission component of the composite primary outcome if they were admitted inpatient or had an observation encounter for any cause to any of the 47 Atrium Health hospitals within the 30 days after index hospital discharge. The index hospitalization was defined by the Centers for Medicaid and Medicare Services (CMS) with additional inclusion of observation patients at any Atrium Health facility. Both inpatient and observation status hospitalizations were counted toward the readmission outcome because either status represents an adverse event important to patients and healthcare systems.
Days alive and outside hospital to day 30	The number of days alive and outside the hospital is a patient-centered, continuous measure of mortality and acute care utilization that ranged from zero [most severe outcome] to 30 days [least severe outcome]. Days alive without inpatient, observation, and emergency department encounters at any Atrium Health facility (rounded to full day for any day with acute care utilization) were counted during the 30 days after index hospital discharge. Patients who died during the index hospitallization were assigned 0 days alive and outside the hospital. Patients who died during follow up were assigned the number of days between hospital discharge and death, minus any additional days spent rehospitalized.
30-day cause-specific hospital readmission	Hospital readmissions (as defined above) to any Atrium Health facility during the 30 days after index hospital discharge with primary diagnoses (based on International Classification of Diseases, 10th revision diagnosis codes) related to sepsis or common infection (i.e., sepsis (A40–41, R65.20–21), pneumonia (J13–18), urinary tract infection (N30, N34, N39.0), skin and soft tissue infection (L00–08)), chronic lung disease (J40–47), heart failure (I50), and acute renal failure (N17).
30-day emergency department visits	The number of treat and release encounters at any Atrium Health hospital or free-standing emergency department within the 30 days after index hospital discharge.

Table S5. Comparison of primary outcome events within 30 days in strata defined by baseline predicted risk probability

Predicted probability range*	UC				STAR			
	N	Deaths (%)	Readmits (%)	Composite (%)	N	Deaths (%)	Readmits (%)	Composite (%)
Q1, P | Mortality: 1% to 12%	86	2 (2.3)	18 (20.9)	18 (20.9)	88	3 (3.4)	22 (25.0)	25 (28.4)
Q2, P | Mortality: 13% to 21%	85	4 (4.7)	30 (35.3)	33 (38.8)	87	3 (3.5)	11 (12.6)	14 (16.1)
Q3, P | Mortality: 22% to 38%	85	15 (17.7)	22 (25.9)	33 (38.8)	87	8 (9.2)	15 (17.2)	23 (26.4)
Q4, P | Mortality: 39% to 99%	86	20 (23.3)	14 (16.3)	30 (34.9)	87	19 (21.8)	23 (26.4)	38 (43.4)
Predicted probability range, Mortality *AND* Readmission	N	Deaths (%)	Readmits (%)	Composite (%)	N	Deaths (%)	Readmits (%)	Composite (%)
Q1-3, P | Mortality: 1% to 38%	256	21 (8.2)	70 (27.3)	84 (32.8)	262	14 (5.3)	48 (18.3)	62 (23.7)
P | Readmission: ≤20%	119	4 (3.4)	20 (16.8)	24 (20.2)	134	3 (2.2)	22 (16.4)	25 (18.7)
P | Readmission: >20%	137	17 (12.4)	50 (36.5)	60 (43.8)	128	11 (8.6)	26 (20.3)	37 (28.9)
Q4, P | Mortality: 39% to 99%	86	20 (23.3)	14 (16.3)	30 (34.9)	87	19 (21.8)	23 (26.4)	38 (43.4)
P | Readmission: ≤20%	34	7 (20.6)	3 (8.8)	9 (26.5)	35	2 (5.7)	7 (20.0)	9 (25.7)
P | Readmission: >20%	52	13 (25.0)	11 (21.2)	21 (40.3)	52	17 (32.7)	16 (30.8)	29 (55.8)

*Predicted probability of outcome calculated at baseline enrollment using internal risk stratification models
Abbreviations: UC = Usual Care; STAR = Sepsis Transition and Recovery Program; RD = Risk Difference; CI = Confidence Interval; OR = Odds Ratio; Q = Quartile; P = Probability

Table S6. Comparison of eligible patients included versus excluded from randomization based on the resource-constrained randomization applied in IMPACTS trial

	Randomized	Excluded due to resource constraints
	N=712	N=988
Age at admission		
Mean years ± SD	63.8 ± 15.1	65.1 ± 16.9
Median years, IQR	66, 55-74	67, 54-76
30 day readmission risk probability		
Mean ± SD	0.23 ± 0.11	0.22 ± 0.11
Median, IQR	0.21, 0.14-0.28	0.19, 0.13-0.27
30 day mortality risk probability		
Mean ± SD	0.27 ± 0.20	0.26 ± 0.19
Median, IQR	0.21, 0.12-0.38	0.20, 0.12-0.33

Abbreviations: SD=Standard deviation; IQR=Interquartile range

Due to resource limitations that allowed for only one full-time STAR navigator, the total daily number of patients randomized into the IMPACTS trial was constrained to include up to six patients each weekday (from the daily list of eligible patients, sorted by time of presentation). The randomization constraint was reevaluated on a biweekly basis and adjusted as needed to match the STAR navigator's capacity. At the conclusion of the IMPACTS trial, the number of patients who were randomized each day was assessed (Median per day=4, IQR=3-5).

Table S7. STAR Program engagement among patients randomized to the Intervention Arm

Description of STAR patient engagement	N (%)
Patient chart review completed	349 (100.0)
Patient contact established via telephone	291 (83.4)
Patient accepted STAR program follow up	269 (77.1)
Median days of follow up, IQR	34, 30-37
Median number of follow up contacts, IQR	15, 11-19
Median minutes spent per patient, IQR	170, 121-240
Patient completed STAR program follow up thru 30 days	208 (59.6)
Median days of follow up	35, 33-40
Median number of follow up contacts	16, 12-20
Median minutes spent per patient	181, 139-260

STAR=Sepsis Transition and Recovery; IQR=interquartile range

Table S8. Baseline characteristics of patients included in per-protocol analysis

	Usual care (n=286)	STAR program (n=260)
Mean age at admission, years	62.1 ± 16.2	65.1 ± 15.2
Female sex	145 (50.7)	147 (56.5)
Race		
Black	96 (33.6)	64 (24.6)
White	170 (59.4)	184 (70.8)
Other	20 (7.0)	12 (4.6)
Mean Charlson Comorbidity Index	4.3 ± 3.1	4.5 ± 3.3
Comorbid conditions		
Chronic lung disease	105 (36.7)	90 (34.6)
Chronic renal disease	109 (38.1)	101 (38.9)
Diabetes	137 (47.9)	131 (50.4)
Heart failure	94 (32.9)	97 (37.3)
Malignancy	46 (16.1)	47 (18.1)
Prior hospital admission <6 months	157 (54.9)	136 (52.3)
Clinical Characteristics		
Mean number of organ dysfunction criteria at presentation	1.9 ± 1.1	1.9 ± 1.1
Mean arterial pressure, mmHg	62.7 ± 15.5	62.1 ± 14.4
Mean serum creatinine, mg/dL	2.3 ± 2.5	2.0 ± 2.4
Mean bilirubin, mg/dL	1.0 ± 1.3	1.2 ± 1.5
Mean platelet count, cells/μL	207.0 ± 114.2	213.6 ± 110.4
Mean serum lactate, mmol/L	3.0 ± 2.2	3.2 ± 2.7
Required ICU admission	118 (41.3)	97 (37.3)
Mean hospital length of stay, days	8.5 ± 8.5	8.3 ± 7.8
Discharge disposition		
Expired / Hospice	0 (0.0)	0 (0.0)
Home	197 (68.9)	194 (74.6)
Skilled nursing facility	69 (24.1)	51 (19.6)
Long term care facility or Inpatient rehabilitation	15 (5.2)	12 (4.6)
Other acute care hospital	5 (1.8)	3 (1.2)

Eligibility for inclusion in per-protocol analysis: patients who survived the index hospital admission and were not referred to hospice care and 1) patients randomized to Usual care (UC) who were not enrolled into an alternative care transitions or care management program at time of discharge; and 2) patients randomized to the Sepsis Transition and Recovery (STAR) program who accepted program follow up.

Mean values are presented with corresponding standard deviations (denoted as ±)
Abbreviations: ICU=Intensive Care Unit

Table S9. Adjusted analysis to estimate per-protocol effect of STAR on primary outcome and its components

Outcome measure	UC	STAR	Risk difference	Odds Ratio (95% CI)	*P* value
30-day all-cause mortality and readmission	79 (27.6)	56 (21.5)	-6.1%	0.72 (0.53-0.97)	0.03
Components of primary outcome					
30-day all-cause mortality	17 (5.9)	2 (0.8)	-5.1%	-	-
30-day all-cause readmission	73 (25.5)	55 (21.2)	-4.4%	-	-

Estimates are adjusted for baseline (age, comorbidity burden, and organ dysfunction at time of enrollment) and post-randomization (receipt of intensive care, hospital length of stay, and discharge disposition) covariates
Abbreviations: UC=Usual Care; STAR=Sepsis Transition and Recovery

Table S10. IMPACTS trial secondary outcome measures

Outcome measure	UC	STAR	Risk difference	Odds Ratio (95%CI)	*P* value
Days alive and outside hospital to day 30				1.01 (0.98-1.05)	0.38
Mean ± SD	25.6 ± 8.5	26.0 ± 8.4	+0.4		
Median (IQR)	30 (25-30)	30 (27-30)	0.0		
30-day cause-specific readmission					
Sepsis or other infection	42 (12.3)	41 (11.8)	-0.5	0.95 (0.60-1.51)	0.83
Chronic lung disease	26 (7.6)	21 (6.0)	-1.6	0.77 (0.42-1.41)	0.40
Heart failure	26 (7.6)	29 (8.3)	+0.7	1.07 (0.61-1.89)	0.81
Acute renal failure	29 (8.5)	29 (8.3)	-0.2	0.97 (0.56-1.67)	0.91
30-day emergency department visits				1.12 (0.71-1.78)	0.62
Mean ± SD	0.2 ± 0.7	0.2 ± 1.1	0.0		
Median (IQR)	0 (0-0)	0 (0-0)	0.0		

Abbreviations: UC=Usual Care; STAR=Sepsis Transition and Recovery
Mean values are presented with corresponding standard deviations (denoted as ±);
Median values are presented with corresponding interquartile ranges (IQR)