

Supplementary Online Content

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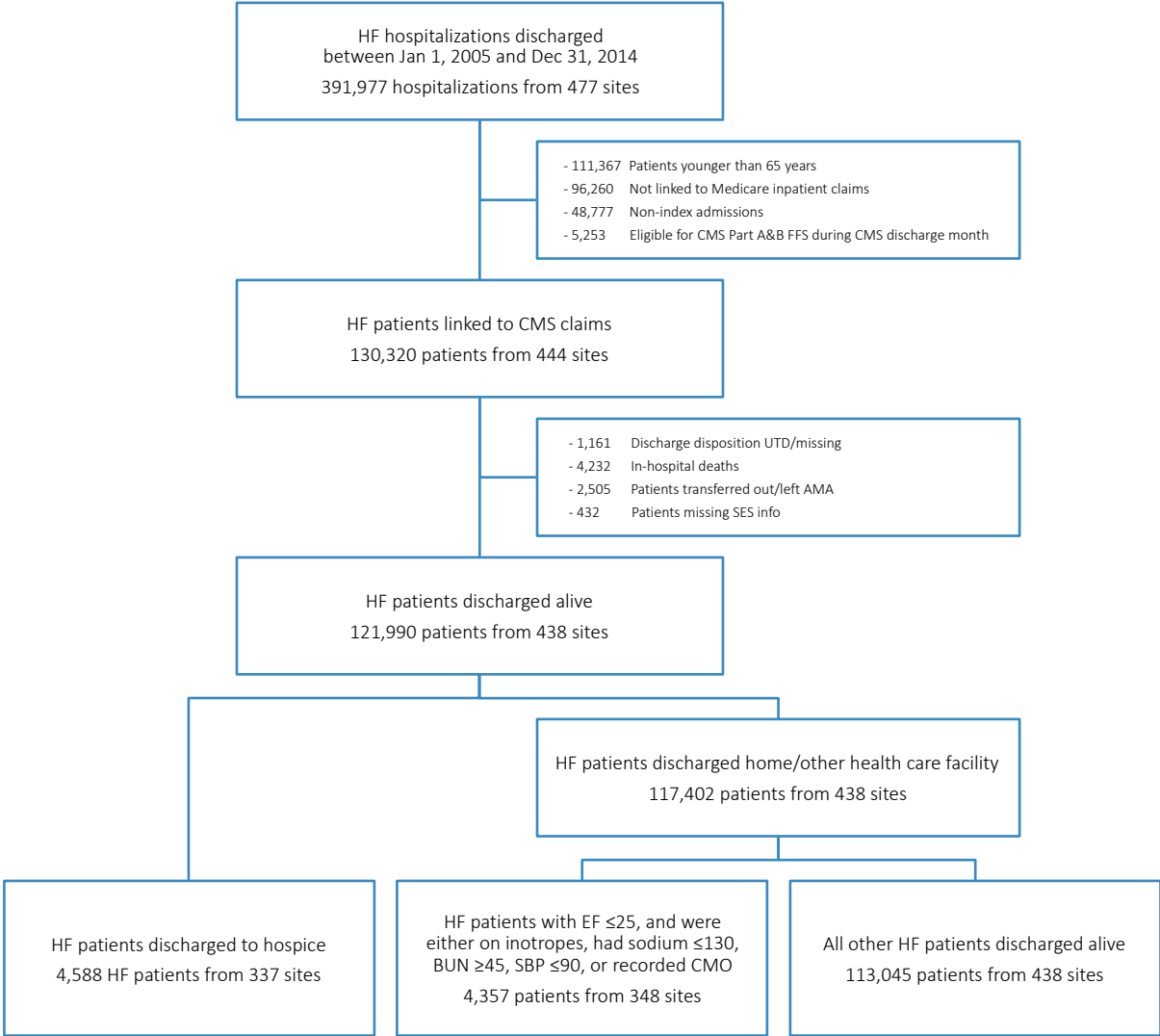
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This supplementary material has been provided by the authors to give readers additional information about their work.

eFigure. Study population



eTable 1. Variable missing rates in overall study population

Variables	Overall N=121,990	Hospice N=4,588	Advanced HF N=4,357	Other HF N=113,045	Hospice Destination	
					Home	HCF
					N=2,424	N=2,164
Demographics						
Age	0	0	0	0	0	0
Sex	0	0	0	0	0	0
Race	2.05	2.16	1.70	2.06	2.43	1.85
Insurance	17.80	21.29	8.74	18.01	20.46	22.23
Median household income, in 2015 dollars	0	0	0	0	0	0
Median home value, in 2015 dollars	0.01	0	0	0.01	0	0
% High school degree	0.01	0	0	0.01	0	0
% College degree	0.01	0	0	0.01	0	0
Unemployment rate	39.09	28.31	48.75	39.16	30.16	26.25
Year of index discharge	0	0	0	0	0	0
LVEF Source	4.17	8.48	0	4.16	8.46	8.50
EF, %	9.45	14.84	0	9.59	14.44	15.30
EF groups	4.17	8.48	0	4.16	8.46	8.50
Medical History	6.98	6.45	2.62	7.17	6.35	6.56
Medical History - Smoking	1.35	7.35	0.50	1.14	7.47	7.21
Meds Prior to Admission	37.46	44.68	15.26	38.03	44.02	45.43
Meds Prior to Admission - Diabetic Meds (Any)	53.00	52.94	38.17	53.57	52.93	52.96
Measures on Admission						
Heart Rate, bpm	19.26	22.17	3.88	19.73	21.62	22.78
SBP, mmHg	19.41	22.62	4.22	19.87	22.15	23.15
DBP, mmHg	19.38	22.62	4.34	19.83	22.15	23.15
BMI	44.25	49.28	21.94	44.91	48.18	50.51
Total Cholesterol, mg/dL	79.87	86.79	71.36	79.92	86.14	87.52
HDL, mg/dL	80.33	86.94	71.75	80.39	86.51	87.43
LDL, mg/dL	80.22	87.23	72.96	80.22	87.13	87.34
Triglycerides, mg/dL	80.23	86.79	71.65	80.29	86.43	87.20
Serum sodium, mEq/L	44.86	49.41	15.47	45.81	49.17	49.68
Hemoglobin, g/dL	48.04	52.55	19.53	48.95	52.31	52.82
Serum creatinine, mg/dL	29.59	32.02	9.32	30.27	31.85	32.21
BUN, mg/dL	44.94	49.56	15.26	45.90	49.30	49.86
HbA1C, %	90.78	93.11	84.09	90.94	92.53	93.76
Symptoms						
Admission Symptoms	49.52	54.66	23.98	50.30	53.55	55.91
Discharge Symptoms	50.68	54.40	24.97	51.51	54.21	54.62
Risk Interventions: Symptoms Worsening	5.42	19.92	3.67	4.90	17.49	22.64
HF Reporting: Symptoms Worsening Instruction	31.32	100	34.75	28.40	100	100
Parental Therapy	28.96	32.17	8.40	29.62	31.44	32.99
Advanced Care						
Advanced Care Plan/Surrogate Decision Maker	60.69	52.20	70.71	60.65	53.30	50.97
Advance Directive Executed	89.55	96.75	92.15	89.16	97.19	96.26
HF Reporting: Advanced Care Plan	0.03	0.02	0	0.03	0.04	0
In- hospital Procedures	32.88	37.01	11.61	33.54	36.76	37.29
Hospital Characteristics						
Number of Beds	3.35	3.49	2.73	3.36	2.97	4.07
Rural Location	5.31	2.77	5.99	5.39	2.85	2.68
Teaching Status	1.88	2.03	1.56	1.88	2.23	1.80
Heart Transplant Hospital	34.06	27.83	35.92	34.24	27.27	28.47

Shaded variables are modelcovariates.

eTable 2. Admission and discharge therapies of heart failure patients discharged to hospice

Variable	Overall N=121,990	Hospice N=4,588	Advanced HF N=4,357	Other HF N=113,045	P Value
Meds Prior to Admission					
ACEi/ARB [D]	36,169 (47.4)	927 (36.5)	1,822 (49.3)	33,420 (47.7)	<.0001
Aldosterone antagonist	6,017 (7.9)	244 (9.6)	692 (18.7)	5,081 (7.3)	<.0001
Anticoagulation therapy	21,074 (27.6)	621 (24.5)	1,222 (33.1)	19,231 (27.4)	<.0001
Aspirin	35,726 (46.8)	1,175 (46.3)	2,012 (54.5)	32,539 (46.4)	<.0001
Beta-Blocker	39,842 (52.2)	1,360 (53.6)	2,122 (57.5)	36,360 (51.9)	<.0001
Diabetic Medications (Any) [D]	16,631 (29.0)	461 (21.4)	843 (31.3)	15,327 (29.2)	<.0001
Hydralazine	4,597 (6.0)	140 (5.5)	309 (8.4)	4,148 (5.9)	<.0001
Lipid lowering agent (Any)	42,655 (55.9)	1,121 (44.2)	2,116 (57.3)	39,418 (56.3)	<.0001
Total of prior medications (max=8)*	3 (2 - 4)	2 (1 - 3)	3 (2 - 4)	3 (1 - 4)	<.0001
Total of prior medications (max=8)					<.0001
	8	8 (0.0)	0 (0.0)	5 (0.0)	
	7	158 (0.2)	2 (0.1)	136 (0.2)	
	6	1,631 (2.1)	33 (1.3)	1,452 (2.0)	
	5	6,579 (8.5)	140 (5.5)	6,015 (8.5)	
	4	13,770 (17.9)	396 (15.5)	12,529 (17.7)	
	3	18,320 (23.8)	600 (23.4)	16,797 (23.7)	
	2	17,392 (22.6)	608 (23.7)	16,108 (22.7)	
	1	14,036 (18.2)	537 (21.0)	13,022 (18.4)	
	0	5,225 (6.8)	247 (9.6)	4,778 (6.7)	
Ace inhibitor	25,328 (33.2)	676 (26.6)	1,325 (35.9)	23,327 (33.3)	<.0001
Angiotensin receptor blocker	11,819 (15.5)	260 (10.2)	535 (14.5)	11,024 (15.7)	<.0001
Antiarrhythmic	6,822 (8.9)	239 (9.4)	587 (15.9)	5,996 (8.6)	<.0001
Antiplatelet agent (excluding aspirin)	12,365 (16.2)	369 (14.5)	639 (17.3)	11,357 (16.2)	0.0143
Ca channel blocker	16,838 (22.1)	542 (21.4)	317 (8.6)	15,979 (22.8)	<.0001
Digoxin	10,794 (14.1)	397 (15.6)	912 (24.7)	9,485 (13.5)	<.0001
Nitrate	12,368 (16.2)	427 (16.8)	765 (20.7)	11,176 (16.0)	<.0001
Diuretic	46,885 (61.5)	1,640 (64.6)	2,793 (75.7)	42,452 (60.6)	<.0001
Thiazide/Thiazide-like	5,958 (7.8)	187 (7.4)	320 (8.7)	5,451 (7.8)	0.1032
Loop	42,565 (55.8)	1,542 (60.8)	2,647 (71.7)	38,376 (54.8)	<.0001
Statin	35,410 (46.4)	1,009 (39.8)	1,867 (50.6)	32,534 (46.4)	<.0001
Other lipid lowering agent	4,675 (6.1)	89 (3.5)	270 (7.3)	4,316 (6.2)	<.0001
Omega-3 fatty acid supplement	2,516 (3.3)	58 (2.3)	139 (3.8)	2,319 (3.3)	0.0047
Renin Inhibitor	210 (0.3)	4 (0.2)	4 (0.1)	202 (0.3)	0.0651
Other	36,489 (47.8)	1,291 (50.9)	1,725 (46.7)	33,473 (47.8)	0.0036
Meds Prior to Admission are Missing? [D]	45,701 (37.5)	2,050 (44.7)	665 (15.3)	42,986 (38.0)	<.0001
Discharge Meds					
ACEi/ARB [D]	67,092 (57.4)	518 (21.5)	2,380 (54.9)	64,194 (58.3)	<.0001
Aldosterone Antagonist prescribed/contraindicated [D]	16,988 (15.2)	253 (7.8)	1,268 (29.8)	15,467 (14.8)	<.0001
Anticoagulation Therapy prescribed/contraindicated [D]	38,449 (33.9)	410 (12.7)	1,605 (37.6)	36,434 (34.4)	<.0001
ASA prescribed/contraindicated [D]	52,013 (60.4)	501 (38.8)	2,574 (65.3)	48,938 (60.5)	<.0001
Beta Blocker prescribed/contraindicated [D]	93,179 (78.7)	1,159 (46.9)	3,633 (83.6)	88,387 (79.2)	<.0001
Diabetic Tx prescribed/contraindicated [D]	21,395 (40.3)	389 (21.4)	1,086 (42.3)	19,920 (40.9)	<.0001
Hydralazine Nitrate prescribed/contraindicated [D]	12,681 (11.9)	174 (5.5)	650 (16.1)	11,857 (11.9)	<.0001
Lipid Lowering Med(s) prescribed/contraindicated [D]	47,971 (57.6)	328 (27.1)	2,283 (58.7)	45,360 (58.1)	<.0001
Total of discharge medications (max=8)*	3 (2 - 4)	0 (0 - 1)	4 (3 - 5)	3 (2 - 4)	<.0001
Total of discharge medications (max=8)					<.0001
	8	28 (0.0)	0 (0.0)	26 (0.0)	
	7	615 (0.5)	0 (0.0)	552 (0.5)	
	6	4,298 (3.5)	18 (0.4)	3,950 (3.5)	
	5	13,341 (10.9)	69 (1.5)	12,525 (11.1)	
	4	23,926 (19.6)	170 (3.7)	22,583 (20.0)	
	3	28,786 (23.6)	316 (6.9)	27,471 (24.3)	
	2	27,457 (22.5)	451 (9.8)	26,332 (23.3)	
	1	15,770 (12.9)	749 (16.3)	14,751 (13.0)	
	0	7,769 (6.4)	2,815 (61.4)	4,855 (4.3)	
ACEI prescribed/contraindicated [D]	48,875 (41.9)	373 (15.5)	1,860 (42.9)	46,642 (42.4)	<.0001
ARB prescribed/contraindicated [D]	19,473 (16.8)	149 (6.2)	537 (12.4)	18,787 (17.2)	<.0001
Clopidogrel prescribed/contraindicated [D]	15,069 (18.5)	183 (10.0)	728 (19.1)	14,158 (18.7)	<.0001
OMEGA-3 fatty acid supplement prescribed/contraindicated [D]	3,433 (6.9)	36 (2.4)	170 (7.4)	3,227 (7.0)	<.0001
ICD Therapy prescribed/contraindicated [D]	5,835 (6.0)	172 (5.8)	526 (19.2)	5,137 (5.6)	<.0001
CRT-D or CRT-P prescribed/contraindicated [D]	7,192 (9.2)	162 (6.0)	759 (29.3)	6,271 (8.6)	<.0001

eTable 3. Characteristics of patients discharged to hospice: home vs health care facility

Variable	Health Care Facilities N=2,164	Home N=2,424	P-value	Standardized Differences, %
Demographics				
Age*	87 (81 - 91)	85 (79 - 90)	<.0001	20.2
Female	1,263 (58.4)	1,292 (53.3)	0.0006	10.2
Race			0.0001	
White	1,906 (89.7)	2,051 (86.7)		9.4
Black	104 (4.9)	159 (6.7)		7.8
Hispanic (any race)	44 (2.1)	93 (3.9)		10.9
Asian	21 (1.0)	23 (1.0)		0.2
Other (includes UTD)	49 (2.3)	39 (1.6)		4.7
Insurance			0.8157	
No Insurance/ND/UTD	4 (0.2)	6 (0.3)		1.4
Medicare	1,293 (76.8)	1,463 (75.9)		2.2
Medicaid	77 (4.6)	84 (4.4)		1.1
Other	309 (18.4)	375 (19.5)		2.8
Median household income, ×\$1,000, in 2015 dollars*	51.8 (46.1 - 60.7)	51.1 (44.4 - 60.6)	0.0014	8.2
Median home value, ×\$1,000, in 2015 dollars*	163.5 (131.9 - 240.1)	161.3 (124.5 - 232.5)	0.0017	3.2
% High school degree*	88.5 (85.1 - 91.2)	87.8 (84.4 - 90.7)	<.0001	15.3
% College degree*	28.8 (23.2 - 34)	27.4 (19.8 - 33.4)	<.0001	13.6
Unemployment rate*	7 (5.8 - 8.1)	7.1 (5.9 - 8.3)	0.0133	9.4
Year of index discharge*			0.0210	6.7
2014	477 (22.0)	491 (20.3)		
2013	447 (20.7)	489 (20.2)		
2012	340 (15.7)	363 (15.0)		
2011	273 (12.6)	300 (12.4)		
2010	191 (8.8)	221 (9.1)		
2009	131 (6.1)	166 (6.8)		
2008	95 (4.4)	126 (5.2)		
2007	77 (3.6)	110 (4.5)		
2006	74 (3.4)	108 (4.5)		
2005	59 (2.7)	50 (2.1)		
LVEF Source			0.2579	3.5
Quantitative LVEF	1,833 (92.6)	2,074 (93.5)		
Qualitative LVEF	147 (7.4)	145 (6.5)		
EF, %*	45 (26 - 58)	39 (25 - 55)	<.0001	15.7
EF groups*			<.0001	16.3
HFpEF, Preserved	924 (46.7)	873 (39.3)		
HFpEF, Borderline	240 (12.1)	255 (11.5)		
HFrEF, Reduced	816 (41.2)	1,091 (49.2)		
EF Group Missing	184 (8.5)	205 (8.5)	0.9558	0.2
Medical History				
Atrial Flutter/Fibrillation	929 (45.9)	1,045 (46.0)	0.9526	0.2
COPD or Asthma	595 (29.4)	716 (31.5)	0.1331	4.6
Diabetes	677 (33.5)	743 (32.7)	0.6020	1.6
Hyperlipidemia	886 (43.8)	979 (43.1)	0.6489	1.4
Hypertension	1,500 (74.2)	1,636 (72.1)	0.1193	4.8
Peripheral Vascular Disease	291 (14.4)	295 (13.0)	0.1837	4.1
CAD	987 (48.8)	1,197 (52.7)	0.0104	7.8
Prior MI	351 (17.4)	464 (20.4)	0.0102	7.9
CVA/TIA	403 (19.9)	394 (17.4)	0.0304	6.6
ICD only	117 (5.8)	191 (8.4)	0.0009	10.2
Heart failure	1,336 (66.1)	1,580 (69.6)	0.0134	7.6
Anemia	509 (25.2)	565 (24.9)	0.8307	0.7
Pacemaker	305 (15.1)	377 (16.6)	0.1729	4.2
Dialysis, chronic	34 (1.7)	41 (1.8)	0.7557	1.0
Renal insufficiency, chronic (SCr>2.0)	575 (28.4)	634 (27.9)	0.7121	1.1
Depression	281 (13.9)	264 (11.6)	0.0260	6.8
Valvular Heart Disease	460 (22.7)	582 (25.6)	0.0276	6.7
CRT-P	13 (0.6)	28 (1.2)	0.0471	6.1
CRT-D	59 (2.9)	97 (4.3)	0.0179	7.3
Ischemic Etiology	1,108 (54.8)	1,342 (59.1)	0.0043	8.7

Variable	Health Care Facilities N=2,164	Home N=2,424	P-value	Standardized Differences, %
Medical History Panel Missing	142 (6.6)	154 (6.4)	0.7739	0.8
Smoking	89 (4.4)	141 (6.3)	0.0076	8.2
Meds Prior to Admission				
Ace inhibitor	312 (26.4)	364 (26.8)	0.8177	0.9
Aldosterone antagonist	97 (8.2)	147 (10.8)	0.0256	8.9
Angiotensin receptor blocker	113 (9.6)	147 (10.8)	0.2948	4.2
Antiarrhythmic	101 (8.6)	138 (10.2)	0.1641	5.6
Antiplatelet agent (excluding aspirin)	162 (13.7)	207 (15.3)	0.2733	4.4
Aspirin	538 (45.6)	637 (46.9)	0.4846	2.8
Beta-Blocker	610 (51.7)	750 (55.3)	0.0684	7.3
Ca channel blocker	275 (23.3)	267 (19.7)	0.0269	8.8
Diabetic Medications (Any)	223 (21.9)	238 (20.9)	0.5536	-
Digoxin	177 (15.0)	220 (16.2)	0.3969	3.4
Nitrate	187 (15.8)	240 (17.7)	0.2136	5.0
Anticoagulation therapy	278 (23.5)	343 (25.3)	0.3101	4.0
Diuretic	742 (62.8)	898 (66.2)	0.0786	7.0
Thiazide/Thiazide-like	92 (7.8)	95 (7.0)	0.4478	3.0
Loop	692 (58.6)	850 (62.6)	0.0375	8.3
Hydralazine	56 (4.7)	84 (6.2)	0.1110	6.4
Lipid lowering agent (Any)	518 (43.9)	603 (44.4)	0.7711	1.2
Statin	464 (39.3)	545 (40.2)	0.6539	1.8
Other lipid lowering agent	41 (3.5)	48 (3.5)	0.9286	0.4
Omega-3 fatty acid supplement	32 (2.7)	26 (1.9)	0.1821	5.3
Renin Inhibitor	2 (0.2)	2 (0.1)	0.8894	0.6
Other	625 (52.9)	666 (49.1)	0.0535	7.7
Meds Prior to Admission Missing	983 (45.4)	1,067 (44.0)	0.3387	2.8
Vitals on Admission				
Heart Rate, bpm*	85 (72 - 101)	83 (70 - 98)	0.0012	10.8
SBP, mmHg*	128 (110 - 147)	128 (109 - 149)	0.7149	2.4
DBP, mmHg*	69 (59 - 80)	70 (60 - 81)	0.1329	5.3
BMI*	24.97 (21.61 - 29.42)	24.78 (21.1 - 29.58)	0.3998	1.7
Lipids				
Total Cholesterol, mg/dL*	123 (100 - 152)	120 (100 - 149)	0.6438	2.7
HDL, mg/dL*	37.5 (28 - 48)	36 (28 - 48)	0.8260	2.6
LDL, mg/dL*	66.5 (50 - 90)	68 (51 - 91.5)	0.5624	4.9
Triglycerides, mg/dL*	84 (64 - 109)	79 (62 - 103)	0.2015	7.0
Lab Measures				
Serum sodium, mEq/L*	138 (134 - 141)	138 (134 - 141)	0.2918	3.5
Hemoglobin, g/dL*	11 (9.9 - 12.5)	11.4 (10 - 12.8)	0.0009	4.0
Serum creatinine, mg/dL*	1.4 (1 - 2.1)	1.5 (1 - 2.1)	0.2427	3.6
BUN, mg/dL*	33 (23 - 52)	32 (22 - 50)	0.3295	3.3
HbA1C, %*	6.6 (5.9 - 7.2)	6.4 (5.8 - 7.3)	0.6022	3.4
Symptoms				
Admission Symptoms				
- Chest pain	101 (10.6)	126 (11.2)	0.6604	1.9
- Decreased appetite/early satiety	87 (9.1)	99 (8.8)	0.7944	1.1
- Dizziness/lightheadedness/syncope	65 (6.8)	60 (5.3)	0.1558	6.2
- Dyspnea at rest	527 (55.2)	608 (54.0)	0.5701	2.5
- Dyspnea on exertion	496 (52.0)	673 (59.8)	0.0004	15.7
- Fatigue	237 (24.8)	297 (26.4)	0.4250	3.5
- Orthopnea	170 (17.8)	241 (21.4)	0.0409	9.0
- Palpitations	21 (2.2)	26 (2.3)	0.8691	0.7
- PND	71 (7.4)	93 (8.3)	0.4910	3.0
- Admission Symptoms Missing	1,210 (55.9)	1,298 (53.5)	0.1079	4.8
Discharge Symptoms				
Unable to determine	130 (13.2)	126 (11.4)		5.7
Better, asymptomatic	85 (8.7)	192 (17.3)		25.9
Better, symptomatic	305 (31.1)	517 (46.6)		32.3
Unchanged	206 (21.0)	159 (14.3)		17.5
Worse	256 (26.1)	116 (10.5)		41.3
Risk Interventions: Symptoms Worsening	1,142 (68.2)	1,735 (86.8)	<.0001	45.5
HF Reporting: Symptoms Worsening Instruction				-
Parental Therapy				
None	300 (20.7)	351 (21.1)	0.7689	1.1

Variable	Health Care Facilities N=2,164	Home N=2,424	P-value	Standardized Differences, %
Dopamine	75 (5.2)	58 (3.5)	0.0206	8.3
Milrinone	32 (2.2)	35 (2.1)	0.8465	0.7
Nesiritide	21 (1.4)	26 (1.6)	0.7911	1.0
Nitroglycerine	56 (3.9)	56 (3.4)	0.4618	2.6
Vasopressin antagonist	10 (0.7)	11 (0.7)	0.9247	0.3
Dobutamine	80 (5.5)	106 (6.4)	0.3124	3.6
Loop diuretics	1,075 (74.1)	1,225 (73.7)	0.7845	1.0
Intermittent bolus	963 (66.4)	1,110 (66.8)	0.8257	0.8
Continuous infusion	108 (7.4)	100 (6.0)	0.1108	5.7
Other IV vasodilator	32 (2.2)	26 (1.6)	0.1862	4.7
Parenteral Therapy Missing	714 (33.0)	762 (31.4)	0.2592	3.3
Advanced Care				
Advanced Care Plan/Surrogate Decision Maker	793 (74.7)	864 (76.3)	0.3884	3.7
Advance Directive Executed	61 (75.3)	45 (66.2)	0.2220	20.2
HF Reporting: Advanced Care Plan	1,140 (52.7)	1,233 (50.9)	0.2252	3.6
In-hospital Procedure				
No Procedures	1,196 (88.1)	1,364 (89.0)	0.4785	2.6
Cardiac Cath/Coronary angiography	23 (1.7)	52 (3.4)	0.0042	10.8
PCI				-
PCI with stent	2 (0.1)	3 (0.2)	0.7552	1.2
Coronary artery bypass graft	2 (0.1)	1 (0.1)	0.4938	2.5
Cardiac Valve Surgery	4 (0.3)	0 (0.0)	0.0334	-
Right Cardiac Catheterization	14 (1.0)	22 (1.4)	0.3292	3.7
Pacemaker	8 (0.6)	3 (0.2)	0.0862	6.3
CRT-D	5 (0.4)	7 (0.5)	0.7130	1.4
ICD only	3 (0.2)	4 (0.3)	0.8278	0.8
Cardioversion	7 (0.5)	8 (0.5)	0.9821	0.1
Dialysis or Ultrafiltration unspecified	17 (1.3)	6 (0.4)	0.0093	9.6
Intra-aortic balloon pump				-
Left Ventricular assist device	1 (0.1)	0 (0.0)	0.2878	-
Mechanical ventilation	58 (4.3)	44 (2.9)	0.0413	7.6
Transplant (Heart)	1 (0.1)	0 (0.0)	0.2878	-
Stress Testing	18 (1.3)	19 (1.2)	0.8354	0.8
Dialysis	26 (1.9)	28 (1.8)	0.8593	0.7
Ultrafiltration	5 (0.4)	5 (0.3)	0.8468	0.7
CRT-P	1 (0.1)	2 (0.1)	0.6363	1.8
Atrial Fibrillation Ablation or Surgery	1 (0.1)	0 (0.0)	0.2878	-
Procedures Missing	807 (37.3)	891 (36.8)	0.7081	1.1
Hospital Characteristics				
Number of Beds*	369 (221 - 520)	367 (221 - 508)	0.1632	3.9
Geographic Region			<.0001	
West	204 (9.4)	374 (15.4)		18.3
South	778 (36.0)	918 (37.9)		4.0
Midwest	649 (30.0)	561 (23.1)		15.5
Northeast	533 (24.6)	571 (23.6)		2.5
Rural Location	67 (3.2)	148 (6.3)	<.0001	14.7
Teaching Status	1,435 (67.5)	1,682 (71.0)	0.0125	7.5
Heart Transplant Hospital	181 (11.7)	144 (8.2)	0.0007	11.8

eTable 4. Trend of hospice rate in study population (121 990 patients from 438 sites)

Year	Hospice N (%)	Hospice Destination	
		Home N (%)	Health Care Facility N (%)
2005	109 (1.97)	50 (0.90)	59 (1.07)
2006	182 (2.09)	108 (1.24)	74 (0.85)
2007	187 (2.29)	110 (1.34)	77 (0.94)
2008	221 (2.61)	126 (1.49)	95 (1.12)
2009	297 (2.97)	166 (1.66)	131 (1.31)
2010	412 (3.34)	221 (1.79)	191 (1.55)
2011	573 (3.87)	300 (2.03)	273 (1.84)
2012	703 (4.33)	363 (2.24)	340 (2.09)
2013	936 (5.16)	489 (2.70)	447 (2.46)
2014	968 (4.94)	491 (2.51)	477 (2.43)
Total	4,588 (3.76)	2,424 (1.99)	2,164 (1.77)
Trend P	< 0.0001	< 0.0001	< 0.0001

% denotes proportion of patients discharged to hospice (total and by site of hospice) who experienced readmission event.

eTable 5. Characteristics of heart failure patients discharged to hospice over time

Variable	Overall N=4,588	2005-2008 N=699	2009-2011 N=1,282	2012-2014 N=2,607	P Value
Demographics					
Age*	86 (80 - 90)	85 (79 - 90)	85 (79 - 90)	86 (80 - 91)	<.0001
Female	2,555 (55.7)	402 (57.5)	716 (55.9)	1,437 (55.1)	0.2963
Race					0.8508
White	3,957 (88.1)	608 (89.0)	1,081 (87.4)	2,268 (88.3)	
Black	263 (5.9)	37 (5.4)	77 (6.2)	149 (5.8)	
Hispanic (any race)	137 (3.1)	20 (2.9)	37 (3.0)	80 (3.1)	
Asian	44 (1.0)	3 (0.4)	15 (1.2)	26 (1.0)	
Other (includes UTD)	88 (2.0)	15 (2.2)	27 (2.2)	46 (1.8)	
Insurance					0.4846
No Insurance/Not Documented/UTD	10 (0.3)	4 (0.6)	2 (0.2)	4 (0.2)	
Medicare	2,756 (76.3)	498 (75.5)	779 (75.6)	1,479 (77.0)	
Medicaid	161 (4.5)	26 (3.9)	54 (5.2)	81 (4.2)	
Other	684 (18.9)	132 (20.0)	196 (19.0)	356 (18.5)	
Median household income, in 2015 dollars*	51.4 (45.4 - 60.7)	52.5 (46.9 - 61.4)	50.5 (44.5 - 57.8)	52 (45.9 - 61.1)	0.5759
Median home value, in 2015 dollars*	162.4 (127.7 - 236.1)	185.1 (130.5 - 254.9)	159.8 (125.3 - 233.2)	161 (127.7 - 232.5)	0.0020
% High school degree*	88.1 (85 - 90.8)	85.3 (82.6 - 88.4)	87.4 (84.4 - 90.4)	89.0 (85.9 - 91.6)	<.0001
% College degree*	28.2 (21.6 - 33.4)	26.2 (19.6 - 31.8)	26.8 (20.4 - 31.2)	29.1 (22.8 - 35.8)	<.0001
Unemployment rate*	7 (5.8 - 8.2)	4.3 (4 - 5.3)	8.2 (7.4 - 9.4)	6.9 (5.8 - 7.8)	<.0001
LVEF Source					<.0001
Quantitative LVEF	3,907 (93.0)	538 (86.6)	1,076 (91.5)	2,293 (95.5)	
Qualitative LVEF	292 (7.0)	83 (13.4)	100 (8.5)	109 (4.5)	
EF, %*	40 (25 - 56)	38 (25 - 55)	40 (25 - 55)	43 (25 - 57)	0.0015
EF groups*					0.0270
HFpEF, Preserved	1,797 (42.8)	251 (40.4)	486 (41.3)	1,060 (44.1)	
HFpEF, Borderline	495 (11.8)	63 (10.1)	152 (12.9)	280 (11.7)	
HFrEF, Reduced	1,907 (45.4)	307 (49.4)	538 (45.7)	1,062 (44.2)	
EF groups missing	389 (8.5)	78 (11.2)	106 (8.3)	205 (7.9)	0.0253
Medical History					
Atrial Flutter/Fibrillation	1,974 (46.0)	244 (37.3)	496 (45.8)	1,234 (48.3)	<.0001
COPD or Asthma	1,311 (30.5)	194 (29.6)	320 (29.5)	797 (31.2)	0.2729
Diabetes	1,420 (33.1)	215 (32.8)	360 (33.2)	845 (33.1)	0.9641
Hyperlipidemia	1,865 (43.5)	202 (30.8)	453 (41.8)	1,210 (47.4)	<.0001
Hypertension	3,136 (73.1)	430 (65.6)	776 (71.7)	1,930 (75.6)	<.0001
Peripheral Vascular Disease	586 (13.7)	91 (13.9)	148 (13.7)	347 (13.6)	0.8551
CAD	2,184 (50.9)	314 (47.9)	534 (49.3)	1,336 (52.3)	0.0198
Prior MI	815 (19.0)	105 (16.0)	231 (21.3)	479 (18.8)	0.8307
CVA/TIA	797 (18.6)	103 (15.7)	191 (17.6)	503 (19.7)	0.0135
ICD only	308 (7.2)	50 (7.6)	72 (6.6)	186 (7.3)	0.8985
Heart failure	2,916 (67.9)	324 (49.5)	766 (70.7)	1,826 (71.5)	<.0001
Anemia	1,074 (25.0)	148 (22.6)	273 (25.2)	653 (25.6)	0.2049
Pacemaker	682 (15.9)	96 (14.7)	167 (15.4)	419 (16.4)	0.2343
Dialysis, chronic	75 (1.7)	13 (2.0)	24 (2.2)	38 (1.5)	0.1508
Renal insufficiency, chronic (SCr>2.0)	1,209 (28.2)	181 (27.6)	292 (27.0)	736 (28.8)	0.3003
Depression	545 (12.7)	81 (12.4)	134 (12.4)	330 (12.9)	0.6058
Valvular Heart Disease	1,042 (24.3)	86 (13.1)	269 (24.8)	687 (26.9)	<.0001
CRT-P (cardiac resynchronization therapy-pacing only)	41 (1.0)	0 (0.0)	12 (1.1)	29 (1.1)	0.0463
CRT-D (cardiac resynchronization therapy with ICD)	156 (3.6)	0 (0.0)	36 (3.3)	120 (4.7)	<.0001
Ischemic Etiology: Med Hx of CAD, MI, prior PCI, prior CABG, or prior PCI/CABG	2,450 (57.1)	354 (54.0)	613 (56.6)	1,483 (58.1)	0.0742
Medical History Panel Missing	296 (6.5)	44 (6.3)	199 (15.5)	53 (2.0)	<.0001
Smoking	230 (5.4)	35 (6.2)	79 (6.8)	116 (4.6)	0.0108
Meds Prior to Admission					
ACEi/ARB [D]	927 (36.5)	224 (38.8)	299 (34.5)	404 (36.9)	0.7640
Aldosterone antagonist	244 (9.6)	59 (10.2)	77 (8.9)	108 (9.9)	0.9772
Anticoagulation therapy	621 (24.5)	127 (22.0)	189 (21.8)	305 (27.9)	0.0015
Aspirin	1,175 (46.3)	220 (38.1)	397 (45.8)	558 (51.0)	<.0001
Beta-Blocker	1,360 (53.6)	160 (27.7)	506 (58.4)	694 (63.4)	<.0001
Diabetic Medications (Any) [D]	461 (21.4)	34 (19.1)	167 (19.0)	260 (23.6)	0.0109
Hydralazine	140 (5.5)	29 (5.0)	47 (5.4)	64 (5.9)	0.4710

Variable	Overall N=4,588	2005-2008 N=699	2009-2011 N=1,282	2012-2014 N=2,607	P Value
Lipid lowering agent (Any)	1,121 (44.2)	206 (35.6)	400 (46.2)	515 (47.1)	<.0001
Total of prior medications (max=8)*	2 (1 - 3)	2 (1 - 3)	2 (1 - 3)	3 (2 - 4)	<.0001
Total of prior medications (max=8)					<.0001
7	2 (0.1)	0 (0.0)	1 (0.1)	1 (0.1)	
6	33 (1.3)	2 (0.3)	9 (1.0)	22 (2.0)	
5	140 (5.5)	12 (2.1)	40 (4.5)	88 (8.0)	
4	396 (15.5)	41 (7.0)	144 (16.3)	211 (19.2)	
3	600 (23.4)	112 (19.2)	217 (24.6)	271 (24.6)	
2	608 (23.7)	166 (28.5)	202 (22.9)	240 (21.8)	
1	537 (21.0)	155 (26.6)	190 (21.6)	192 (17.5)	
0	247 (9.6)	94 (16.2)	78 (8.9)	75 (6.8)	
Ace inhibitor	676 (26.6)	169 (29.2)	229 (26.4)	278 (25.4)	0.1147
Angiotensin receptor blocker	260 (10.2)	61 (10.6)	70 (8.1)	129 (11.8)	0.1425
Antiarrhythmic	239 (9.4)	45 (7.8)	81 (9.4)	113 (10.3)	0.0988
Antiplatelet agent (excluding aspirin)	369 (14.5)	78 (13.5)	134 (15.5)	157 (14.4)	0.8469
Ca channel blocker	542 (21.4)	111 (19.2)	164 (18.9)	267 (24.4)	0.0031
Digoxin	397 (15.6)	125 (21.6)	141 (16.3)	131 (12.0)	<.0001
Nitrate	427 (16.8)	114 (19.7)	142 (16.4)	171 (15.6)	0.0531
Diuretic	1,640 (64.6)	378 (65.4)	562 (64.9)	700 (64.0)	0.5418
Thiazide/Thiazide-like	187 (7.4)	47 (8.1)	73 (8.4)	67 (6.1)	0.0660
Loop	1,542 (60.8)	347 (60.0)	530 (61.2)	665 (60.8)	0.8429
Statin	1,009 (39.8)	174 (30.1)	337 (38.9)	498 (45.5)	<.0001
Other lipid lowering agent	89 (3.5)	27 (4.7)	37 (4.3)	25 (2.3)	0.0045
Omega-3 fatty acid supplement	58 (2.3)	0 (0.0)	23 (2.7)	35 (3.2)	0.0002
Renin Inhibitor	4 (0.2)	0 (0.0)	0 (0.0)	4 (0.4)	0.0343
Other	1,291 (50.9)	303 (52.4)	435 (50.2)	553 (50.5)	0.5647
Meds Prior to Admission are Missing? [D]	2,050 (44.7)	121 (17.3)	416 (32.4)	1,513 (58.0)	<.0001
Vitals on Admission					
Heart Rate, bpm*	84 (71 - 100)	84 (71 - 100)	84 (70 - 100)	84 (71 - 99)	0.8236
SBP, mmHg*	128 (110 - 148)	124 (108 - 145)	129 (111 - 149)	128 (110 - 148)	0.1280
DBP, mmHg*	69 (59 - 80)	68 (58 - 80)	70 (60 - 80)	69 (59 - 80)	0.4365
BMI*	24.93 (21.33 - 29.53)	24.36 (21.09 - 29.13)	24.92 (21.61 - 29.34)	25.21 (21.46 - 29.86)	0.0468
Discharge Meds					
ACEi/ARB [D]	518 (21.5)	0 (NA)	14 (29.8)	504 (21.3)	0.1617
Aldosterone Antagonist prescribed/contraindicated [D]	253 (7.8)	14 (5.9)	28 (5.1)	211 (8.7)	<.0001
Anticoagulation Therapy prescribed/contraindicated [D]	410 (12.7)	22 (9.0)	37 (6.7)	351 (14.4)	<.0001
ASA prescribed/contraindicated [D]	501 (38.8)	0 (NA)	3 (50.0)	498 (38.7)	0.8163
Beta Blocker prescribed/contraindicated [D]	1,159 (46.9)	0 (NA)	33 (60.0)	1,126 (46.6)	0.0742
Diabetic Tx prescribed/contraindicated [D]	389 (21.4)	37 (28.5)	133 (21.4)	219 (20.5)	0.0012
Hydralazine Nitrate prescribed/contraindicated [D]	174 (5.5)	14 (7.3)	21 (3.8)	139 (5.8)	<.0001
Lipid Lowering Med(s) prescribed/contraindicated [D]	328 (27.1)	0 (NA)	2 (33.3)	326 (27.1)	0.7907
Total of discharge medications (max=8)*	0 (0 - 1)	0 (0 - 0)	0 (0 - 0)	1 (0 - 2)	<.0001
Total of discharge medications (max=8)					<.0001
6	18 (0.4)	0 (0.0)	0 (0.0)	18 (0.7)	
5	69 (1.5)	0 (0.0)	2 (0.2)	67 (2.6)	
4	170 (3.7)	0 (0.0)	2 (0.2)	168 (6.4)	
3	316 (6.9)	2 (0.3)	8 (0.6)	306 (11.7)	
2	451 (9.8)	7 (1.0)	30 (2.3)	414 (15.9)	
1	749 (16.3)	67 (9.6)	169 (13.2)	513 (19.7)	
0	2,815 (61.4)	623 (89.1)	1,071 (83.5)	1,121 (43.0)	
ACEi prescribed/contraindicated [D]	373 (15.5)	0 (NA)	9 (19.1)	364 (15.4)	0.2452
ARB prescribed/contraindicated [D]	149 (6.2)	0 (NA)	5 (10.9)	144 (6.1)	0.3314
Clopidogrel prescribed/contraindicated [D]	183 (10.0)	10 (4.2)	23 (6.3)	150 (12.2)	<.0001
OMEGA-3 fatty acid supplement prescribed/contraindicated [D]	36 (2.4)	0 (0.0)	5 (1.4)	31 (2.7)	<.0001
ICD Therapy prescribed/contraindicated [D]	172 (5.8)	2 (1.1)	14 (2.8)	156 (6.9)	<.0001
CRT-D or CRT-P	162 (6.0)	0 (0.0)	19 (5.5)	143 (6.1)	<.0001

Variable	Overall N=4,588	2005-2008 N=699	2009-2011 N=1,282	2012-2014 N=2,607	P Value
prescribed/contraindicated [D]					
Lipids					
Total Cholesterol, mg/dL*	122 (100 - 150)	122 (104 - 150)	120.5 (100 - 150)	122 (99 - 149)	0.6761
HDL, mg/dL*	37 (28 - 48)	35 (26 - 45)	38 (28 - 49)	37.5 (29 - 48)	0.1390
LDL, mg/dL*	67.5 (51 - 91)	72 (55 - 91)	68 (52 - 91)	64.5 (49 - 90)	0.0752
Triglycerides, mg/dL*	82 (62 - 107)	85 (65 - 104)	77 (59 - 102)	82.5 (62 - 111)	0.6617
Lab Measures					
Serum sodium, mEq/L*	138 (134 - 141)	137 (134 - 140)	138 (134 - 141)	138 (135 - 141)	0.0007
Hemoglobin, g/dL*	11.3 (10 - 12.7)	11.5 (10.1 - 13)	11.2 (9.9 - 12.6)	11.1 (9.9 - 12.5)	0.0029
Serum creatinine, mg/dL*	1.5 (1 - 2.1)	1.5 (1.1 - 2.2)	1.5 (1.1 - 2.1)	1.4 (1 - 2)	0.0030
BUN, mg/dL*	33 (22 - 51)	34 (23 - 54)	32 (22 - 52)	32 (22 - 48)	0.1704
HbA1C, %*	6.5 (5.85 - 7.25)	6.55 (6 - 7.5)	6.6 (6.1 - 7.4)	6.3 (5.6 - 7.2)	0.0072
Symptoms					
Admission Chest pain	227 (10.9)	65 (12.4)	76 (11.2)	86 (9.8)	0.1178
Admission Decreased appetite/early satiety	186 (8.9)	45 (8.6)	60 (8.8)	81 (9.2)	0.6886
Admission Dizziness/lightheadedness/syncope	125 (6.0)	28 (5.4)	44 (6.5)	53 (6.0)	0.7182
Admission Dyspnea at rest	1,135 (54.6)	289 (55.3)	342 (50.4)	504 (57.3)	0.1879
Admission Dyspnea on exertion	1,169 (56.2)	272 (52.0)	404 (59.6)	493 (56.1)	0.3297
Admission Fatigue	534 (25.7)	121 (23.1)	188 (27.7)	225 (25.6)	0.5054
Admission Orthopnea	411 (19.8)	97 (18.5)	131 (19.3)	183 (20.8)	0.2781
Admission Palpitations	47 (2.3)	9 (1.7)	19 (2.8)	19 (2.2)	0.7885
Admission PND	164 (7.9)	44 (8.4)	45 (6.6)	75 (8.5)	0.6878
Admission Symptoms are Missing? [D]	2,508 (54.7)	176 (25.2)	604 (47.1)	1,728 (66.3)	<.0001
Discharge Symptoms					0.0243
Unable to determine	256 (12.2)	52 (10.4)	91 (13.3)	113 (12.5)	
Better, asymptomatic	277 (13.2)	65 (13.0)	96 (14.0)	116 (12.8)	
Better, symptomatic	822 (39.3)	203 (40.6)	248 (36.2)	371 (40.9)	
Unchanged	365 (17.4)	105 (21.0)	126 (18.4)	134 (14.8)	
Worse	372 (17.8)	75 (15.0)	124 (18.1)	173 (19.1)	
Risk Interventions: Symptoms Worsening	2,877 (78.3)	438 (73.5)	798 (76.7)	1,641 (80.5)	<.0001
Parental Therapy					
None	651 (20.9)	432 (77.0)	125 (10.7)	94 (6.8)	<.0001
Dopamine	133 (4.3)	38 (6.8)	54 (4.6)	41 (3.0)	0.0002
Milrinone	67 (2.2)	7 (1.2)	30 (2.6)	30 (2.2)	0.4893
Nesiritide	47 (1.5)	31 (5.5)	15 (1.3)	1 (0.1)	<.0001
Nitroglycerine	112 (3.6)	0 (0.0)	56 (4.8)	56 (4.0)	0.0033
Vasopressin antagonist	21 (0.7)	0 (0.0)	8 (0.7)	13 (0.9)	0.0362
Dobutamine	186 (6.0)	46 (8.2)	76 (6.5)	64 (4.6)	0.0016
Loop diuretics	2,300 (73.9)	20 (3.6)	1,010 (86.5)	1,270 (91.8)	<.0001
Intermittent bolus	2,073 (66.6)	18 (3.2)	901 (77.2)	1,154 (83.4)	<.0001
Continuous infusion	208 (6.7)	0 (0.0)	102 (8.7)	106 (7.7)	<.0001
Other IV vasodilator	58 (1.9)	13 (2.3)	14 (1.2)	31 (2.2)	0.4782
Parenteral Therapy Missing [D]	1,476 (32.2)	138 (19.7)	115 (9.0)	1,223 (46.9)	<.0001
Advanced Care					
Advanced Care Plan/Surrogate Decision Maker Documented Or Discussed?	1,657 (75.6)	0 (NA)	98 (58.0)	1,559 (77.0)	<.0001
Advance Directive Executed	106 (71.1)	0 (NA)	0 (NA)	106 (71.1)	-
HF Reporting: Advanced Care Plan In-hospital Procedure	2,373 (51.7)	0 (0.0)	185 (14.4)	2,188 (83.9)	<.0001
No Procedures	2,560 (88.6)	571 (92.5)	815 (86.7)	1,174 (88.1)	0.0429
Cardiac Cath/Coronary angiography	75 (2.6)	12 (1.9)	22 (2.3)	41 (3.1)	0.1152
PCI with stent	5 (0.2)	0 (0.0)	2 (0.2)	3 (0.2)	0.3482
Coronary artery bypass graft	3 (0.1)	0 (0.0)	1 (0.1)	2 (0.2)	0.3701
Cardiac Valve Surgery	4 (0.1)	0 (0.0)	1 (0.1)	3 (0.2)	0.2004
Right Cardiac Catheterization	36 (1.2)	6 (1.0)	11 (1.2)	19 (1.4)	0.3813
Pacemaker	11 (0.4)	3 (0.5)	5 (0.5)	3 (0.2)	0.2629
CRT-D (cardiac resynchronization therapy with ICD)	12 (0.4)	2 (0.3)	7 (0.7)	3 (0.2)	0.3604
ICD only	7 (0.2)	4 (0.6)	1 (0.1)	2 (0.2)	0.1012
Cardioversion	15 (0.5)	2 (0.3)	5 (0.5)	8 (0.6)	0.4683
Dialysis or Ultrafiltration unspecified	23 (0.8)	18 (2.9)	4 (0.4)	1 (0.1)	<.0001
Left Ventricular assist device	1 (0.0)	0 (0.0)	1 (0.1)	0 (0.0)	0.6431
Mechanical ventilation	102 (3.5)	11 (1.8)	43 (4.6)	48 (3.6)	0.2166
Transplant (Heart)	1 (0.0)	0 (0.0)	1 (0.1)	0 (0.0)	0.6431

Variable	Overall N=4,588	2005-2008 N=699	2009-2011 N=1,282	2012-2014 N=2,607	P Value
Stress Testing	37 (1.3)	0 (0.0)	10 (1.1)	27 (2.0)	0.0002
Dialysis	54 (1.9)	0 (0.0)	26 (2.8)	28 (2.1)	0.0264
Ultrafiltration	10 (0.3)	0 (0.0)	5 (0.5)	5 (0.4)	0.3888
CRT-P (cardiac resynchronization therapy-pacing only)	3 (0.1)	0 (0.0)	1 (0.1)	2 (0.2)	0.3701
Atrial Fibrillation Ablation or Surgery	1 (0.0)	0 (0.0)	0 (0.0)	1 (0.1)	0.3137
Procedures are Missing? [D]	1,698 (37.0)	82 (11.7)	342 (26.7)	1,274 (48.9)	<.0001
Hospital Characteristics					
Number of Beds*	368 (221 - 508)	372 (217 - 571)	374 (221 - 539)	367 (221 - 493)	0.0959
Geographic Region					0.0459
West	578 (12.6)	106 (15.2)	160 (12.5)	312 (12.0)	
South	1,692 (36.9)	277 (39.6)	445 (34.7)	970 (37.2)	
Midwest	1,210 (26.4)	153 (21.9)	342 (26.7)	715 (27.4)	
Northeast	1,108 (24.1)	163 (23.3)	335 (26.1)	610 (23.4)	
Rural Location	215 (4.8)	46 (6.9)	68 (5.5)	101 (3.9)	0.0005
Teaching Status	3,117 (69.3)	432 (63.3)	867 (69.0)	1,818 (71.1)	0.0004
Heart Transplant Hospital	325 (9.8)	46 (14.8)	98 (11.5)	181 (8.4)	<.0001

eTable 6. Survival times in heart failure patients

Group	N	Survival Times in Years*			Survival < 3 Days		Survival ≥ 6 Months	
		Median	Q1	Q3	N	%	N	%
Other HF	113,045	2.066	0.605	4.888	425	0.38	88,086	77.92
Advanced HF	4,357	0.871	0.214	3.000	45	1.03	2,649	60.80
Hospice	4,588	0.030	0.008	0.173	1,034	22.54	690	15.04
- Home	2,424	0.068	0.016	0.362	295	12.17	516	21.29
- Health Care Facility	2,164	0.014	0.005	0.055	739	34.15	174	8.04

* Median survival times were based on product-limit estimates.

eTable 7. Trends in observed median survival in hospice

Year	Group	N	Median	Q1	Q3
2005	Other	5100	2.186	0.642	5.055
	Advanced	319	0.871	0.219	2.438
	Hospice	109	0.022	0.008	0.121
2006	Other	8088	2.182	0.658	5.174
	Advanced	431	1.175	0.247	3.641
	Hospice	182	0.055	0.011	0.266
2007	Other	7641	2.351	0.710	5.216
	Advanced	354	0.866	0.211	2.896
	Hospice	187	0.027	0.008	0.186
2008	Other	7872	2.310	0.710	5.090
	Advanced	378	1.119	0.238	3.422
	Hospice	221	0.030	0.005	0.173
2009	Other	9259	2.145	0.666	5.036
	Advanced	429	0.937	0.203	3.096
	Hospice	297	0.025	0.008	0.123
2010	Other	11408	2.071	0.597	4.818
	Advanced	532	0.837	0.253	2.970
	Hospice	412	0.036	0.008	0.225
2011	Other	13689	2.011	0.584	>4
	Advanced	543	0.745	0.189	2.866
	Hospice	573	0.027	0.005	0.164
2012	Other	15059	1.956	0.573	>3
	Advanced	479	0.855	0.211	>3
	Hospice	703	0.038	0.011	0.181
2013	Other	16753	1.948	0.573	>2
	Advanced	446	0.841	0.189	>2
	Hospice	936	0.036	0.008	0.227
2014	Other	18176	>1	0.553	>1
	Advanced	446	0.773	0.184	>1
	Hospice	968	0.022	0.008	0.126

eTable 8. Characteristics of patients discharged to hospice who survived <7 days, 7 days-1 year, and >1 year

Variable	Overall N=4,588	<=7d N=1,991	<=1y N=2,141	>1y N=456	P Value
Demographics					
Age*	86 (80 - 90)	86 (80 - 90)	86 (80 - 91)	86 (79 - 91)	0.9872
Female	2,555 (55.7)	1,070 (53.7)	1,195 (55.8)	290 (63.6)	0.0016
Race					0.0002
White	3,957 (88.1)	1,754 (89.9)	1,835 (87.5)	368 (83.3)	
Black	263 (5.9)	84 (4.3)	137 (6.5)	42 (9.5)	
Hispanic (any race)	137 (3.1)	54 (2.8)	67 (3.2)	16 (3.6)	
Asian	44 (1.0)	17 (0.9)	20 (1.0)	7 (1.6)	
Other (includes UTD)	88 (2.0)	41 (2.1)	38 (1.8)	9 (2.0)	
Insurance					0.0843
No Insurance/Not Documented/UTD	10 (0.3)	3 (0.2)	6 (0.4)	1 (0.3)	
Medicare	2,756 (76.3)	1,220 (77.3)	1,262 (75.5)	274 (75.7)	
Medicaid	161 (4.5)	57 (3.6)	81 (4.8)	23 (6.4)	
Other	684 (18.9)	298 (18.9)	322 (19.3)	64 (17.7)	
Median household income, in 2015 dollars*	51.4 (45.4 - 60.7)	51.7 (45.5 - 60.9)	51.2 (45.5 - 60.8)	50.9 (44.7 - 59)	0.0815
Median home value, in 2015 dollars*	162.4 (127.7 - 236.1)	163.7 (129.3 - 240.8)	161.6 (127.4 - 234.3)	161.4 (126.4 - 227.4)	0.1218
% High school degree*	88.1 (85 - 90.8)	88.1 (85 - 90.9)	88.2 (85 - 90.8)	88 (84.5 - 90.5)	0.4493
% College degree*	28.2 (21.6 - 33.4)	28.3 (21.7 - 33.3)	28.2 (21.7 - 34.1)	27.5 (20.4 - 33.2)	0.5062
Unemployment rate*	7 (5.8 - 8.2)	7 (5.8 - 8.1)	7.1 (5.9 - 8.3)	7.2 (5.9 - 8.1)	0.0700
Year of index discharge*					0.0636
2014	968 (21.1)	470 (23.6)	415 (19.4)	83 (18.2)	
2013	936 (20.4)	391 (19.6)	430 (20.1)	115 (25.2)	
2012	703 (15.3)	276 (13.9)	365 (17.0)	62 (13.6)	
2011	573 (12.5)	253 (12.7)	270 (12.6)	50 (11.0)	
2010	412 (9.0)	165 (8.3)	203 (9.5)	44 (9.6)	
2009	297 (6.5)	137 (6.9)	138 (6.4)	22 (4.8)	
2008	221 (4.8)	98 (4.9)	98 (4.6)	25 (5.5)	
2007	187 (4.1)	85 (4.3)	81 (3.8)	21 (4.6)	
2006	182 (4.0)	62 (3.1)	94 (4.4)	26 (5.7)	
2005	109 (2.4)	54 (2.7)	47 (2.2)	8 (1.8)	
LVEF Source					0.5564
Quantitative LVEF	3,907 (93.0)	1,688 (92.7)	1,835 (93.4)	384 (92.8)	
Qualitative LVEF	292 (7.0)	133 (7.3)	129 (6.6)	30 (7.2)	
EF, %*	40 (25 - 56)	45 (25 - 58)	39 (25 - 55)	45 (27 - 58)	0.0213
EF groups*					0.0069
HFpEF, Preserved	1,797 (42.8)	841 (46.2)	768 (39.1)	188 (45.4)	
HFpEF, Borderline	495 (11.8)	206 (11.3)	231 (11.8)	58 (14.0)	
HFrEF, Reduced	1,907 (45.4)	774 (42.5)	965 (49.1)	168 (40.6)	
EF groups missing	389 (8.5)	170 (8.5)	177 (8.3)	42 (9.2)	0.9338
Medical History					
Atrial Flutter/Fibrillation	1,974 (46.0)	900 (48.3)	901 (45.1)	173 (40.1)	0.0022
COPD or Asthma	1,311 (30.5)	592 (31.7)	580 (29.1)	139 (32.3)	0.3115
Diabetes	1,420 (33.1)	610 (32.7)	666 (33.4)	144 (33.4)	0.6580
Hyperlipidemia	1,865 (43.5)	822 (44.1)	870 (43.6)	173 (40.1)	0.2745
Hypertension	3,136 (73.1)	1,371 (73.5)	1,428 (71.5)	337 (78.2)	0.7412
Peripheral Vascular Disease	586 (13.7)	285 (15.3)	257 (12.9)	44 (10.2)	0.0023
CAD	2,184 (50.9)	959 (51.4)	1,012 (50.7)	213 (49.4)	0.4624
Prior MI	815 (19.0)	357 (19.1)	375 (18.8)	83 (19.3)	0.8863
CVA/TIA	797 (18.6)	353 (18.9)	365 (18.3)	79 (18.3)	0.6198
ICD only	308 (7.2)	129 (6.9)	155 (7.8)	24 (5.6)	0.9610
Heart failure	2,916 (67.9)	1,257 (67.4)	1,376 (68.9)	283 (65.7)	0.8253
Anemia	1,074 (25.0)	463 (24.8)	512 (25.7)	99 (23.0)	0.9091
Pacemaker	682 (15.9)	302 (16.2)	320 (16.0)	60 (13.9)	0.4290
Dialysis, chronic	75 (1.7)	46 (2.5)	24 (1.2)	5 (1.2)	0.0026
Renal insufficiency, chronic (SCr>2.0)	1,209 (28.2)	567 (30.4)	562 (28.2)	80 (18.6)	<.0001
Depression	545 (12.7)	224 (12.0)	271 (13.6)	50 (11.6)	0.4364
Valvular Heart Disease	1,042 (24.3)	433 (23.2)	514 (25.8)	95 (22.0)	0.3996
CRT-P (cardiac resynchronization therapy-pacing only)	41 (1.0)	15 (0.8)	21 (1.1)	5 (1.2)	0.3618
CRT-D (cardiac resynchronization therapy with ICD)	156 (3.6)	62 (3.3)	80 (4.0)	14 (3.2)	0.5051
Ischemic Etiology	2,450 (57.1)	1,070 (57.4)	1,145 (57.4)	235 (54.5)	0.5119

Variable	Overall N=4,588	≤7d N=1,991	≤1y N=2,141	>1y N=456	P Value
Medical History Panel Missing	296 (6.5)	126 (6.3)	145 (6.8)	25 (5.5)	0.9730
Smoking	230 (5.4)	94 (5.1)	111 (5.6)	25 (5.9)	0.3783
Meds Prior to Admission					
ACEi/ARB [D]	927 (36.5)	358 (33.2)	456 (38.3)	113 (42.0)	0.0013
Aldosterone antagonist	244 (9.6)	111 (10.3)	112 (9.4)	21 (7.8)	0.2312
Anticoagulation therapy	621 (24.5)	276 (25.6)	289 (24.3)	56 (20.8)	0.1482
Aspirin	1,175 (46.3)	503 (46.6)	545 (45.8)	127 (47.2)	0.8982
Beta-Blocker	1,360 (53.6)	572 (53.0)	646 (54.3)	142 (52.8)	0.7434
Diabetic Medications (Any) [D]	461 (21.4)	208 (22.5)	209 (20.6)	44 (20.0)	0.2715
Hydralazine	140 (5.5)	54 (5.0)	66 (5.5)	20 (7.4)	0.1886
Lipid lowering agent (Any)	1,121 (44.2)	470 (43.6)	527 (44.3)	124 (46.1)	0.4978
Total of prior medications (max=8)*	2 (1 - 3)	2 (1 - 3)	2 (1 - 3)	2 (1 - 3)	0.4247
Total of prior medications (max=8)					0.6375
7	2 (0.1)	1 (0.1)	0 (0.0)	1 (0.4)	
6	33 (1.3)	16 (1.5)	13 (1.1)	4 (1.5)	
5	140 (5.5)	53 (4.8)	68 (5.7)	19 (7.0)	
4	396 (15.5)	164 (15.0)	202 (16.8)	30 (11.1)	
3	600 (23.4)	264 (24.2)	263 (21.9)	73 (27.0)	
2	608 (23.7)	247 (22.6)	294 (24.5)	67 (24.8)	
1	537 (21.0)	242 (22.1)	247 (20.6)	48 (17.8)	
0	247 (9.6)	106 (9.7)	113 (9.4)	28 (10.4)	
Ace inhibitor	676 (26.6)	267 (24.7)	331 (27.8)	78 (29.0)	0.0601
Angiotensin receptor blocker	260 (10.2)	96 (8.9)	129 (10.8)	35 (13.0)	0.0305
Antiarrhythmic	239 (9.4)	98 (9.1)	116 (9.7)	25 (9.3)	0.6930
Antiplatelet agent (excluding aspirin)	369 (14.5)	167 (15.5)	159 (13.4)	43 (16.0)	0.4627
Ca channel blocker	542 (21.4)	248 (23.0)	242 (20.3)	52 (19.3)	0.0807
Digoxin	397 (15.6)	166 (15.4)	188 (15.8)	43 (16.0)	0.7525
Nitrate	427 (16.8)	163 (15.1)	222 (18.7)	42 (15.6)	0.1356
Diuretic	1,640 (64.6)	693 (64.2)	779 (65.5)	168 (62.5)	0.9727
Thiazide/Thiazide-like	187 (7.4)	84 (7.8)	78 (6.6)	25 (9.3)	0.8793
Loop	1,542 (60.8)	647 (60.0)	741 (62.3)	154 (57.2)	0.8622
Statin	1,009 (39.8)	422 (39.1)	478 (40.2)	109 (40.5)	0.5653
Other lipid lowering agent	89 (3.5)	40 (3.7)	38 (3.2)	11 (4.1)	0.8311
Omega-3 fatty acid supplement	58 (2.3)	31 (2.9)	23 (1.9)	4 (1.5)	0.0793
Renin Inhibitor	4 (0.2)	2 (0.2)	1 (0.1)	1 (0.4)	0.9516
Other	1,291 (50.9)	578 (53.6)	580 (48.7)	133 (49.4)	0.0318
Meds Prior to Admission are Missing? [D]	2,050 (44.7)	912 (45.8)	951 (44.4)	187 (41.0)	0.0914
Vitals on Admission					
Heart Rate, bpm*	84 (71 - 100)	84 (71 - 100)	84 (71 - 99)	83 (71 - 98.5)	0.2593
SBP, mmHg*	128 (110 - 148)	125 (108 - 144)	128 (111 - 149)	139 (118 - 160)	<.0001
DBP, mmHg*	69 (59 - 80)	68 (58 - 78)	70 (60 - 81)	72 (62 - 84)	<.0001
BMI*	24.93 (21.33 - 29.53)	24.99 (21.47 - 29.75)	24.58 (21.11 - 28.71)	26.01 (22.25 - 30.64)	0.8734
Discharge Meds					
ACEi/ARB [D]	518 (21.5)	126 (12.1)	284 (25.2)	108 (44.6)	<.0001
Aldosterone Antagonist prescribed/contraindicated [D]	253 (7.8)	63 (4.1)	152 (10.8)	38 (13.6)	<.0001
Anticoagulation Therapy prescribed/contraindicated [D]	410 (12.7)	130 (8.5)	224 (15.8)	56 (20.1)	<.0001
ASA prescribed/contraindicated [D]	501 (38.8)	142 (26.0)	271 (44.9)	88 (61.5)	<.0001
Beta Blocker prescribed/contraindicated [D]	1,159 (46.9)	346 (32.4)	648 (56.2)	165 (66.8)	<.0001
Diabetic Tx prescribed/contraindicated [D]	389 (21.4)	124 (16.3)	215 (24.5)	50 (27.5)	<.0001
Hydralazine Nitrate prescribed/contraindicated [D]	174 (5.5)	63 (4.2)	84 (6.1)	27 (9.7)	<.0001
Lipid Lowering Med(s) prescribed/contraindicated [D]	328 (27.1)	78 (15.3)	197 (34.6)	53 (40.5)	<.0001
Total of discharge medications (max=8)*	0 (0 - 1)	0 (0 - 1)	0 (0 - 2)	1 (0 - 2)	<.0001
Total of discharge medications (max=8)					<.0001
6	18 (0.4)	2 (0.1)	11 (0.5)	5 (1.1)	
5	69 (1.5)	15 (0.8)	35 (1.6)	19 (4.2)	
4	170 (3.7)	45 (2.3)	94 (4.4)	31 (6.8)	
3	316 (6.9)	78 (3.9)	188 (8.8)	50 (11.0)	
2	451 (9.8)	139 (7.0)	256 (12.0)	56 (12.3)	

Variable	Overall N=4,588	<=7d N=1,991	<=1y N=2,141	>1y N=456	P Value
1	749 (16.3)	293 (14.7)	382 (17.8)	74 (16.2)	
0	2,815 (61.4)	1,419 (71.3)	1,175 (54.9)	221 (48.5)	
ACEI prescribed/contraindicated [D]	373 (15.5)	98 (9.4)	208 (18.5)	67 (27.8)	<.0001
ARB prescribed/contraindicated [D]	149 (6.2)	30 (2.9)	77 (6.9)	42 (17.4)	<.0001
Clopidogrel prescribed/contraindicated [D]	183 (10.0)	58 (6.6)	97 (12.2)	28 (17.6)	<.0001
OMEGA-3 fatty acid supplement prescribed/contraindicated [D]	36 (2.4)	10 (1.5)	20 (3.0)	6 (4.4)	<.0001
ICD Therapy prescribed/contraindicated [D]	172 (5.8)	71 (5.1)	82 (6.4)	19 (7.4)	0.2041
CRT-D or CRT-P prescribed/contraindicated [D]	162 (6.0)	63 (5.1)	78 (6.3)	21 (8.2)	0.0305
Lipids					
Total Cholesterol, mg/dL*	122 (100 - 150)	120 (99 - 150)	121 (100 - 149)	136 (114 - 155)	0.1553
HDL, mg/dL*	37 (28 - 48)	37 (26 - 48)	36 (28 - 48.5)	39 (29 - 48)	0.2657
LDL, mg/dL*	67.5 (51 - 91)	64 (49 - 90)	67 (51 - 90)	79.5 (60.5 - 95)	0.0653
Triglycerides, mg/dL*	82 (62 - 107)	85 (64 - 111.5)	78 (60 - 105)	75.5 (62.5 - 98)	0.0341
Lab Measures					
Serum sodium, mEq/L*	138 (134 - 141)	138 (134 - 141)	138 (134 - 140)	138 (134 - 141)	0.5966
Hemoglobin, g/dL*	11.3 (10 - 12.7)	11 (9.9 - 12.5)	11.4 (10 - 12.8)	11.5 (10.3 - 13.1)	0.0027
Serum creatinine, mg/dL*	1.5 (1 - 2.1)	1.6 (1.1 - 2.2)	1.4 (1 - 2)	1.3 (1 - 1.8)	<.0001
BUN, mg/dL*	33 (22 - 51)	36 (25 - 55)	31 (22 - 49)	27 (19 - 42)	<.0001
HbA1C, %*	6.5 (5.85 - 7.25)	6.6 (6 - 7.2)	6.4 (5.8 - 7.4)	6.6 (6 - 7)	0.6098
Symptoms					
Admission Chest pain	227 (10.9)	77 (8.8)	117 (11.8)	33 (15.2)	0.0032
Admission Decreased appetite/early satiety	186 (8.9)	83 (9.5)	89 (9.0)	14 (6.5)	0.2714
Admission Dizziness/lightheadedness/syncope	125 (6.0)	55 (6.3)	55 (5.6)	15 (6.9)	0.8484
Admission Dyspnea at rest	1,135 (54.6)	469 (53.7)	550 (55.6)	116 (53.5)	0.6310
Admission Dyspnea on exertion	1,169 (56.2)	472 (54.0)	559 (56.5)	138 (63.6)	0.0249
Admission Fatigue	534 (25.7)	231 (26.4)	255 (25.8)	48 (22.1)	0.3174
Admission Orthopnea	411 (19.8)	164 (18.8)	209 (21.1)	38 (17.5)	0.6006
Admission Palpitations	47 (2.3)	13 (1.5)	30 (3.0)	4 (1.8)	0.1187
Admission PND	164 (7.9)	66 (7.6)	79 (8.0)	19 (8.8)	0.5638
Admission Symptoms are Missing? [D]	2,508 (54.7)	1,117 (56.1)	1,152 (53.8)	239 (52.4)	0.0723
Discharge Symptoms					
Unable to determine	256 (12.2)	94 (10.4)	136 (13.9)	26 (12.4)	<.0001
Better, asymptomatic	277 (13.2)	74 (8.2)	150 (15.3)	53 (25.4)	
Better, symptomatic	822 (39.3)	262 (29.0)	454 (46.4)	106 (50.7)	
Unchanged	365 (17.4)	204 (22.6)	143 (14.6)	18 (8.6)	
Worse	372 (17.8)	270 (29.9)	96 (9.8)	6 (2.9)	
Risk Interventions: Symptoms Worsening	2,877 (78.3)	1,103 (71.1)	1,435 (82.5)	339 (88.3)	<.0001
Parental Therapy					
None	651 (20.9)	296 (22.3)	283 (19.4)	72 (22.4)	0.2491
Dopamine	133 (4.3)	79 (5.9)	47 (3.2)	7 (2.2)	<.0001
Milrinone	67 (2.2)	31 (2.3)	29 (2.0)	7 (2.2)	0.6159
Nesiritide	47 (1.5)	26 (2.0)	17 (1.2)	4 (1.2)	0.1011
Nitroglycerine	112 (3.6)	53 (4.0)	44 (3.0)	15 (4.7)	0.6172
Vasopressin antagonist	21 (0.7)	8 (0.6)	12 (0.8)	1 (0.3)	0.9366
Dobutamine	186 (6.0)	88 (6.6)	87 (6.0)	11 (3.4)	0.0711
Loop diuretics	2,300 (73.9)	949 (71.5)	1,115 (76.3)	236 (73.3)	0.0286
Intermittent bolus	2,073 (66.6)	851 (64.1)	1,006 (68.8)	216 (67.1)	0.0240
Continuous infusion	208 (6.7)	99 (7.5)	96 (6.6)	13 (4.0)	0.0532
Other IV vasodilator	58 (1.9)	30 (2.3)	22 (1.5)	6 (1.9)	0.2321
Parenteral Therapy Missing [D]	1,476 (32.2)	663 (33.3)	679 (31.7)	134 (29.4)	0.0964
Advanced Care					
Advanced Care Plan/Surrogate Decision Maker Documented Or Discussed?	1,657 (75.6)	702 (73.8)	794 (77.8)	161 (72.5)	0.2920
Advance Directive Executed	106 (71.1)	56 (75.7)	40 (67.8)	10 (62.5)	0.2017
HF Reporting: Advanced Care Plan In-hospital Procedure	2,373 (51.7)	1,034 (52.0)	1,099 (51.3)	240 (52.6)	0.9214
No Procedures	2,560 (88.6)	1,063 (85.6)	1,229 (90.8)	268 (90.8)	<.0001
Cardiac Cath/Coronary	75 (2.6)	30 (2.4)	33 (2.4)	12 (4.1)	0.3151

Variable	Overall N=4,588	<=7d N=1,991	<=1y N=2,141	>1y N=456	P Value
angiography					
PCI with stent	5 (0.2)	2 (0.2)	2 (0.1)	1 (0.3)	0.7233
Coronary artery bypass graft	3 (0.1)	2 (0.2)	1 (0.1)	0 (0.0)	0.3683
Cardiac Valve Surgery	4 (0.1)	4 (0.3)	0 (0.0)	0 (0.0)	0.0288
Right Cardiac Catheterization	36 (1.2)	11 (0.9)	21 (1.6)	4 (1.4)	0.1771
Pacemaker	11 (0.4)	7 (0.6)	4 (0.3)	0 (0.0)	0.1207
CRT-D (cardiac resynchronization therapy with ICD)	12 (0.4)	6 (0.5)	6 (0.4)	0 (0.0)	0.4199
ICD only	7 (0.2)	4 (0.3)	3 (0.2)	0 (0.0)	0.3467
Cardioversion	15 (0.5)	5 (0.4)	10 (0.7)	0 (0.0)	0.8328
Dialysis or Ultrafiltration unspecified	23 (0.8)	14 (1.1)	8 (0.6)	1 (0.3)	0.0734
Left Ventricular assist device	1 (0.0)	1 (0.1)	0 (0.0)	0 (0.0)	0.2745
Mechanical ventilation	102 (3.5)	66 (5.3)	27 (2.0)	9 (3.1)	<.0001
Transplant (Heart)	1 (0.0)	0 (0.0)	1 (0.1)	0 (0.0)	0.5300
Stress Testing	37 (1.3)	19 (1.5)	13 (1.0)	5 (1.7)	0.5086
Dialysis	54 (1.9)	37 (3.0)	16 (1.2)	1 (0.3)	<.0001
Ultrafiltration	10 (0.3)	5 (0.4)	5 (0.4)	0 (0.0)	0.4617
CRT-P (cardiac resynchronization therapy-pacing only)	3 (0.1)	1 (0.1)	1 (0.1)	1 (0.3)	0.4683
Atrial Fibrillation Ablation or Surgery	1 (0.0)	1 (0.1)	0 (0.0)	0 (0.0)	0.2745
Procedures are Missing? [D]	1,698 (37.0)	749 (37.6)	788 (36.8)	161 (35.3)	0.3688
Hospital Characteristics					
Number of Beds*	368 (221 - 508)	368 (221 - 524)	367 (221 - 501)	364 (216 - 508)	0.1429
Geographic Region					0.0518
West	578 (12.6)	226 (11.4)	284 (13.3)	68 (14.9)	
South	1,692 (36.9)	726 (36.5)	795 (37.1)	171 (37.5)	
Midwest	1,210 (26.4)	542 (27.2)	566 (26.4)	102 (22.4)	
Northeast	1,108 (24.1)	497 (25.0)	496 (23.2)	115 (25.2)	
Rural Location	215 (4.8)	74 (3.8)	110 (5.3)	31 (6.9)	0.0030
Teaching Status	3,117 (69.3)	1,380 (70.8)	1,426 (67.9)	311 (69.6)	0.1199
Heart Transplant Hospital	325 (9.8)	157 (11.1)	140 (9.0)	28 (8.3)	0.0292

eTable 9. Left ventricular assist device implantation or heart transplantation at 1 year after index heart failure discharge

<i>Procedures at One Year</i>	<i>Groups</i>	<i>Cumulative Incidence</i>	<i>Gray's P</i>
LVAD	Hospice	1 (0.02)	<.0001
	Advanced HF	44 (1.02)	
	Other HF	106 (0.10)	
Heart Transplant	Hospice	0 (0.00)	<.0001
	Advanced HF	24 (0.56)	
	Other HF	32 (0.03)	
LVAD or Heart Transplant	Hospice	1 (0.02)	<.0001
	Advanced HF	67 (1.56)	
	Other HF	132 (0.12)	

eTable 10. Mortality, readmission, and composite outcomes in heart failure patients discharged to hospice by hospice destination

Outcomes	Cumulative Incidence	Unadjusted Analysis		Adjusted Analysis	
	N (%), P Value*	HR (95% CI)	P Value	HR (95% CI)	P Value
30 Day					
All- cause Mortality	<.0001				
Home	1,281 (52.85)	0.44 (0.40, 0.47)	<.0001	0.44 (0.40, 0.48)	<.0001
Health Care Facility	1,745 (80.64)	Reference		Reference	
All- cause Readmission	<.0001				
Home	136 (5.61)	2.29 (1.65, 3.19)	<.0001	2.06 (1.46, 2.90)	<.0001
Health Care Facility	53 (2.45)	Reference		Reference	
Composite of Mortality and Readmission	<.0001				
Home	1,372 (56.62)	0.46 (0.43, 0.50)	<.0001	0.46 (0.42, 0.50)	<.0001
Health Care Facility	1,771 (81.90)	Reference		Reference	
6 Months					
All- cause Mortality	<.0001				
Home	1,911 (78.84)	0.51 (0.47, 0.54)	<.0001	0.51 (0.48, 0.55)	<.0001
Health Care Facility	1,990 (91.96)	Reference		Reference	
All- cause Readmission	<.0001				
Home	294 (12.17)	2.53 (1.99, 3.22)	<.0001	2.33 (1.81, 3.00)	<.0001
Health Care Facility	107 (4.96)	Reference		Reference	
Composite of Mortality and Readmission	<.0001				
Home	2,034 (84.07)	0.53 (0.50, 0.57)	<.0001	0.53 (0.49, 0.57)	<.0001
Health Care Facility	2,028 (93.84)	Reference		Reference	
One Year					
All- cause Mortality	<.0001				
Home	2,079 (85.77)	0.52 (0.49, 0.56)	<.0001	0.52 (0.49, 0.56)	<.0001
Health Care Facility	2,053 (94.87)	Reference		Reference	
All- cause Readmission	<.0001				
Home	368 (15.28)	2.66 (2.17, 3.26)	<.0001	2.45 (1.98, 3.04)	<.0001
Health Care Facility	129 (6.00)	Reference		Reference	
Composite of Mortality and Readmission	<.0001				
Home	2,202 (91.12)	0.54 (0.51, 0.58)	<.0001	0.54 (0.51, 0.58)	<.0001
Health Care Facility	2,089 (96.70)	Reference		Reference	

* Under "Cumulative Incidences," log-rank P is shown for mortality and Gray's P is shown for other outcomes.

eTable 11. Hospital course of patients' first readmission within 1 year post index heart failure discharge

Variables	Hospice N=497	Advanced HF N=2,948	Other HF N=73,804	P-value	Std. Hospice vs Advanced HF	Diff, % Hospice vs Other HF
Age*	84 (76 - 89)	78 (71 - 83.5)	81 (74 - 87)	<.0001	59.71	27.42
Female	276 (55.5)	978 (33.2)	41,022 (55.6)	<.0001	46.19	0.10
Race				0.0092		
White	394 (80.7)	2,288 (78.8)	58,581 (81.0)		4.92	0.67
Black	60 (12.3)	351 (12.1)	7,484 (10.3)		0.65	6.15
Hispanic (any race)	18 (3.7)	138 (4.8)	3,395 (4.7)		5.28	5.02
Asian	10 (2.0)	40 (1.4)	906 (1.3)		5.18	6.25
Other (includes UTD)	6 (1.2)	88 (3.0)	1,954 (2.7)		12.49	10.62
LOS, day*	4 (2 - 7)	4 (3 - 8)	4 (3 - 7)	<.0001	6.09	1.87
Discharge Disposition				<.0001		
Left Against Medical Advice/AMA	2 (0.4)	16 (0.5)	210 (0.3)		2.02	2.04
Expired	59 (12.1)	266 (9.1)	4,428 (6.1)		9.61	20.94
Other Health Care Facility	119 (24.4)	649 (22.3)	21,119 (29.1)		4.96	10.67
Acute Care Facility	9 (1.8)	74 (2.5)	1,239 (1.7)		4.76	1.04
Hospice - Health Care Facility	44 (9.0)	81 (2.8)	1,440 (2.0)		26.70	31.22
Hospice - Home	87 (17.8)	99 (3.4)	1,372 (1.9)		48.18	55.48
Home	168 (34.4)	1,727 (59.3)	42,759 (58.9)		51.48	50.65
Primary diagnosis: CV	216 (43.5)	1,693 (57.4)	35,702 (48.4)	<.0001	28.21	9.87
Primary diagnosis: HF	141 (28.4)	1,246 (42.3)	21,837 (29.6)	<.0001	29.39	2.68
<i>First Readmitted before Oct 2015</i>	N=495	N=2,947	N=73,687			
Procedures: Cardiac	67 (13.5)	767 (26.0)	16,637 (22.6)	<.0001	31.75	23.67
Procedures: Respiratory	23 (4.6)	155 (5.3)	3,850 (5.2)	0.8433	2.83	2.67

eTable 12. Hospital course of patients' first readmission within 1 year post discharge by hospice destination at index heart failure discharge

Variable	Home N=368	Health Care Facilities N=129	P-value	Standardized Differences, %
Age*	83 (75 - 88)	86 (80 - 91)	0.0002	37.55
Female	204 (55.4)	72 (55.8)	0.9406	0.76
Race			0.0905	
White	281 (78.1)	113 (88.3)		27.59
Black	52 (14.4)	8 (6.2)		27.15
Hispanic (any race)	14 (3.9)	4 (3.1)		4.15
Asian	9 (2.5)	1 (0.8)		13.56
Other (includes UTD)	4 (1.1)	2 (1.6)		3.93
LOS, day*	4 (2 - 7)	4 (2 - 6)	0.5054	10.12
Discharge Disposition			<.0001	
Left Against Medical Advice/AMA	2 (0.6)	0 (0.0)		-
Expired	43 (11.9)	16 (12.5)		1.70
Other Health Care Facility	65 (18.1)	54 (42.2)		54.52
Acute Care Facility	9 (2.5)	0 (0.0)		-
Hospice - Health Care Facility	21 (5.8)	23 (18.0)		38.15
Hospice - Home	74 (20.6)	13 (10.2)		29.15
Home	146 (40.6)	22 (17.2)		53.37
Primary diagnosis: CV	168 (45.7)	48 (37.2)	0.0963	17.20
Primary diagnosis: HF	109 (29.6)	32 (24.8)	0.2972	10.83
<i>First Readmitted before Oct 2015</i>	N=367	N=128		
Procedures: Cardiac	53 (14.4)	14 (10.9)	0.3189	10.54
Procedures: Respiratory	19 (5.2)	4 (3.1)	0.3427	10.30

eTable 13. One-year cumulative incidence rate for readmission from hospice by year (4588 patients from 337 sites)

Year	Hospice N Events (%)	Hospice Destination	
		Home N Events (%)	Health Care Facility N Events (%)
2005	6 (5.50)	3 (6.00)	3 (5.08)
2006	28 (15.58)	24 (22.59)	4 (5.41)
2007	22 (11.76)	15 (13.64)	7 (9.09)
2008	25 (11.42)	19 (15.26)	6 (6.32)
2009	24 (8.25)	19 (11.58)	5 (4.05)
2010	51 (12.42)	39 (17.65)	12 (6.39)
2011	66 (11.55)	46 (15.39)	20 (7.33)
2012	81 (11.64)	59 (16.40)	22 (6.54)
2013	111 (11.90)	86 (17.67)	25 (5.59)
2014	83 (8.65)	58 (11.93)	25 (5.28)
Total	497 (10.90)	368 (15.28)	129 (6.00)

eTable 14. Factors associated with 1-year all-cause readmissions in heart failure patients readmitted from hospice

Variables	Adjusted HR (95 % CI)	P Value
Demographic		
Age, per 5 years	0.85 (0.79, 0.91)	<.0001 *
Sex		
Female	1.02 (0.82, 1.27)	0.8538
Male	Reference	
Race		
White	0.63 (0.46, 0.85)	0.0026 *
Other	Reference	
Median household income, per \$10k	1.02 (0.90, 1.17)	0.7289
Median home value, per \$10k	1.01 (0.99, 1.02)	0.4215
% High school degree, per 10%	1.00 (0.78, 1.28)	0.9775
% College degree, per 10%	0.92 (0.76, 1.13)	0.4395
Discharge Year, per year	1.00 (0.99, 1.01)	0.4525
EF groups		
HFrEF, Reduced	1.13 (0.90, 1.41)	0.3052
HFpEF, Borderline	1.09 (0.79, 1.51)	0.5958
HFpEF, Preserved	Reference	
Medical History		
Anemia	0.93 (0.73, 1.16)	0.5077
Sschemic etiology	1.05 (0.86, 1.27)	0.6374
CVA/TIA	0.81 (0.63, 1.05)	0.1164
Diabetes	0.85 (0.70, 1.03)	0.0993
Hyperlipidemia	1.01 (0.81, 1.27)	0.9214
Hypertension	1.18 (0.95, 1.47)	0.1401
COPD or Asthma	1.20 (0.97, 1.49)	0.0950
PVD	0.98 (0.71, 1.33)	0.8788
Renal insufficiency	0.92 (0.71, 1.19)	0.5221
Smoking	1.06 (0.74, 1.52)	0.7537
Measures, per 5 units		
Heart Rate, bpm	0.97 (0.95, 1.00)	0.0260 *
SBP, mmHg	1.03 (1.02, 1.05)	0.0002 *
BMI	1.04 (0.95, 1.13)	0.3783
Serum sodium, mEq/L	0.94 (0.85, 1.04)	0.2373
Serum creatinine, mg/dL	0.97 (0.80, 1.16)	0.7207
BUN, mg/dL	0.97 (0.94, 1.00)	0.0392 *
Hospital Characteristics		
Bed size, per 100 units	1.05 (0.98, 1.12)	0.1398
Geographic Region		
Midwest	0.89 (0.65, 1.23)	0.4924
South	1.10 (0.81, 1.49)	0.5411
West	1.04 (0.74, 1.45)	0.8369
Northeast	Reference	
Rural Location	0.85 (0.48, 1.48)	0.5611
Teaching Status	0.99 (0.74, 1.32)	0.9490

* P-values smaller than 0.05;

† Df =2 p-value for LVEF groups;

‡ Df =3 p-value for site region.

Note:

We tested an indicator variable on age older than 80y and its interaction with age continuous variable. Neither the interaction term nor the indicator alone were found significant in model, and hence were not included.