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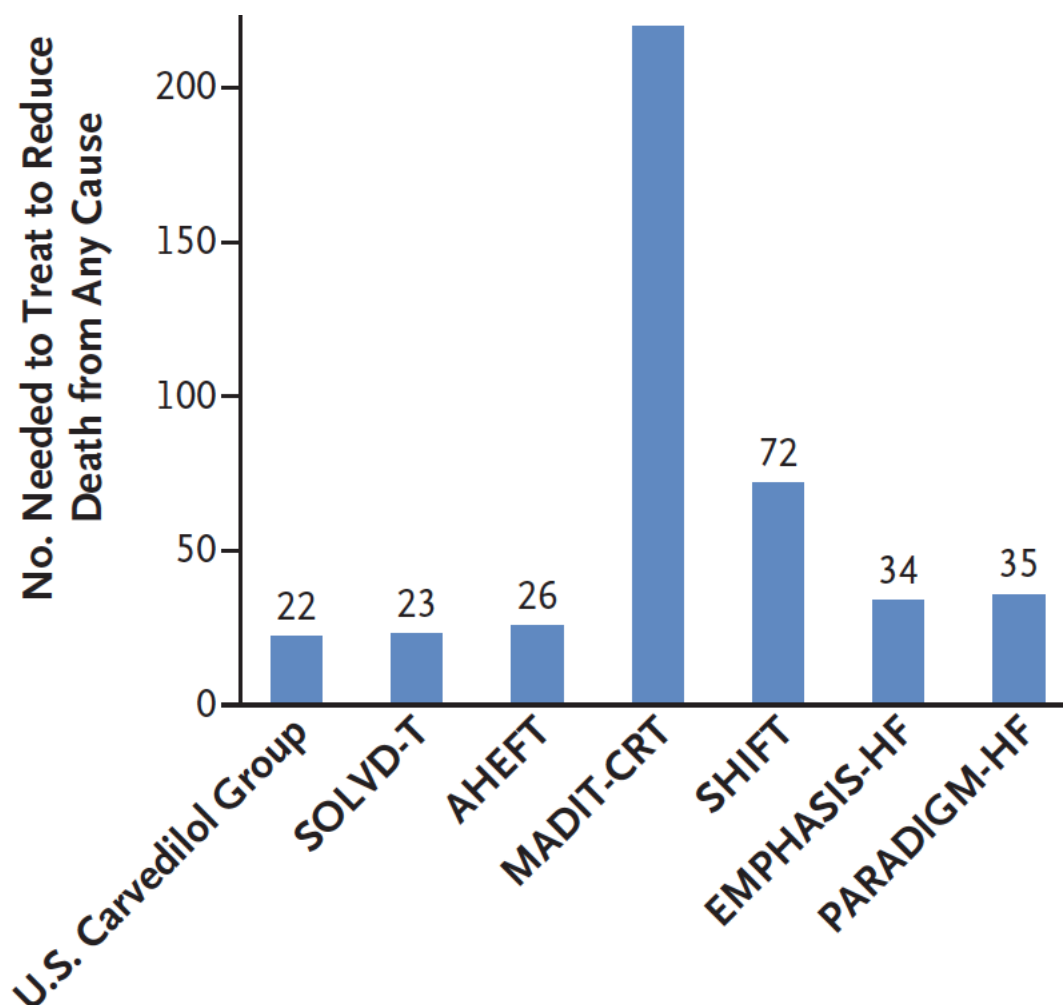
Achieving Optimal Therapy in Heart Failure

Speaker Disclosures for Larry Allen

Research Grant: NIH, PCORI

Consultant/Advisory Board: Novartis, Janssen

For patients with heart failure, medications improve health outcomes

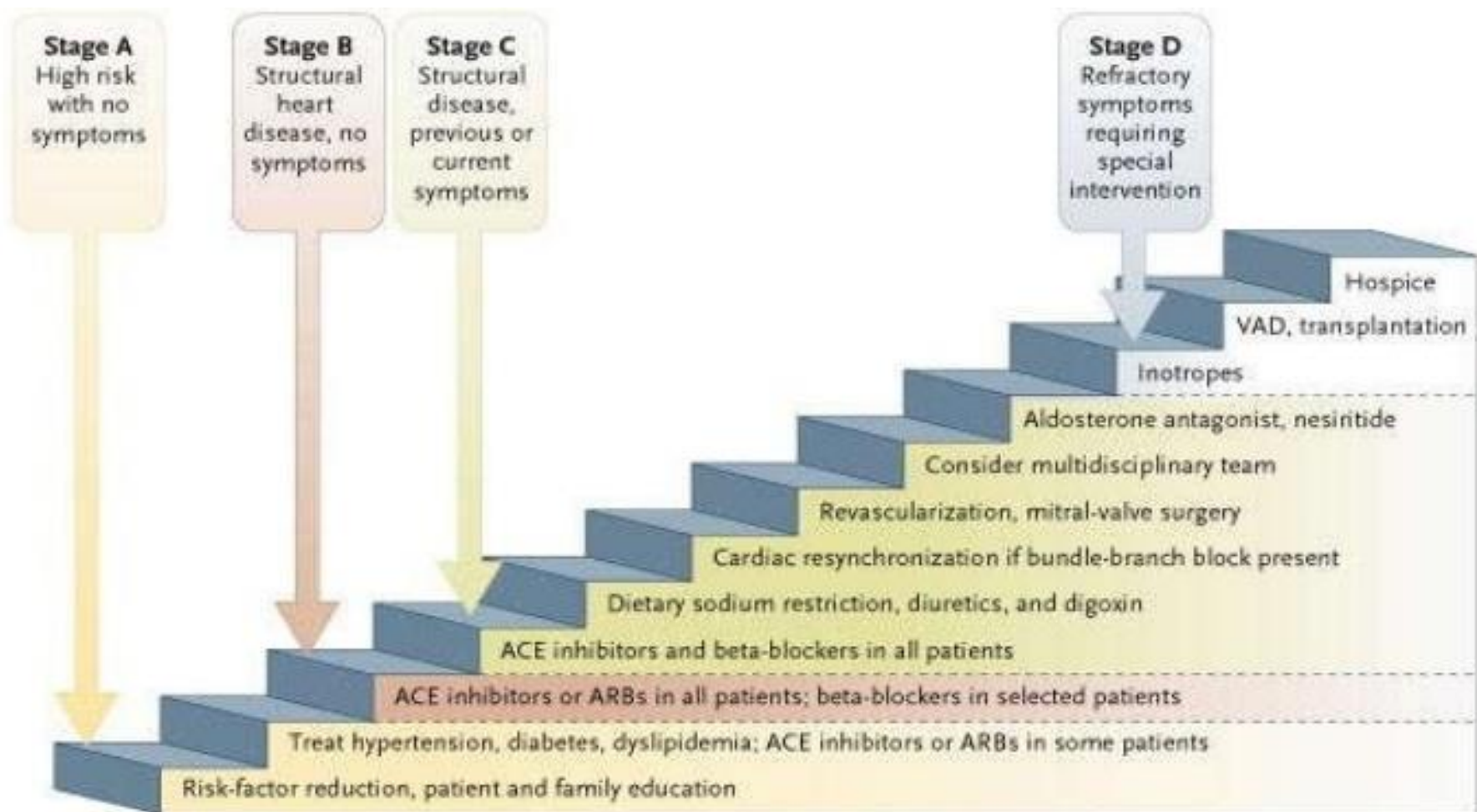




Many treatments have been incorporated into HF process measures

Mandatory as of January 1, 2015	Encouraged but not Required
ACHF Measures	ACHFOP Measures
ACHF-01: Beta-Blocker Therapy Prescribed at Discharge	ACHFOP-01: Hospital Outpatient Beta-Blocker Therapy Prescribed for LVSD
ACHF-02: Post-Discharge Appointment for Heart Failure Patients	ACHFOP-02: Hospital Outpatient ACEI or ARB Prescribed for LVSD
ACHF-03: Care Transition Record Transmitted	ACHFOP-03: Hospital Outpatient Aldosterone Receptor Antagonist for LVSD
ACHF-04: Discussion of Advance Directives/Advanced Care Planning	ACHFOP-04: Hospital Outpatient NYHA Classification Assessment
ACHF-05: Advance Directive Executed	ACHFOP-05: Hospital Outpatient Activity Recommendations
ACHF-06: Post Discharge Evaluation for Heart Failure Patients	ACHF-06: Discussion of Advance Directives/Advanced Care Planning
	ACHFOP-07: Advance Directive Executed

The cumulative burden for individual patients is unknown



Predictors of poor medication adherence

- Psychological problems, particularly depression
- Cognitive impairment
- Asymptomatic disease
- Inadequate follow-up or discharge planning
- Side effects to medications
- Lack of belief in treatment benefit
- Lack of insight into illness
- Poor patient-provider relationship
- Barriers to care or medications
- Missed appointments
- ***Complexity of treatment***
- Cost of medications, copayments, or both

Objective

- Quantify the medication initiation burden required to meet quality measures for patients being discharged following heart failure hospitalization.



Heart Failure

Medication Initiation Burden Required to Comply With Heart Failure Guideline Recommendations and Hospital Quality Measures

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Method

- We analyzed the Get With The Guidelines–Heart Failure prospective national quality-improvement registry 2008-2013, which includes detailed capture of:
 - medication indications
 - contraindications, and
 - prescribing at admission and discharge



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HEART FAILURE

5 Possible Measures

1. Angiotensin-converting enzyme inhibitors or angiotensin receptor blockers (HFrEF)
2. Beta-blockers (HFrEF)
3. Aldosterone antagonists (HFrEF)
4. Hydralazine/isosorbide dinitrate (HFrEF)
5. Anticoagulants (for AF)

	Total (n=1581922)
Patient characteristics	
Age, y	75 (63, 84)
Female, %	48.3
Black, %	18.8
Medicare insured, %	60.2
Atrial fibrillation, chronic, %	35.1
ICD, %	10.3
LVEF <40% or moderately to severely reduced, %	43.4
Heart rate, bpm	82 (70, 97)
Systolic blood pressure, mmHg	140 (121, 161)
Length of stay, d	4 (3, 6)

	Total (n=1581922)	New Medications Recommended*			P Value	
		Not Eligible for Any HF Medications (n=611034)	Receiving All Indicated Medications at Admission (n=231792)	1–2 Medications (n=521171)		3–5 Medications (n=211925)
Patient characteristics						
Age, y	75 (63, 84)	75 (63, 85)	77 (66, 84)	75 (64, 84)	67 (55, 79)	<0.0001
Female, %	48.3	58.2	46.4	43.3	34.7	<0.0001
Black, %	18.8	18.0	8.0	17.7	35.5	<0.0001
Medicare insured, %	60.2	61.8	61.0	62.3	49.4	<0.0001
Atrial fibrillation, chronic, %	35.1	12.7	64.2	47.8	31.3	<0.0001
ICD, %	10.3	2.7	13.6	14.8	16.9	<0.0001
LVEF <40% or moderately to severely reduced, %	43.4	1.2	48.1	67.0	100	<0.0001
Heart rate, bpm	82 (70, 97)	80 (69, 93)	80 (70, 94)	84 (71, 99)	91 (77, 106)	<0.0001
Systolic blood pressure, mmHg	140 (121, 161)	148 (128, 172)	135 (117, 154)	135 (117, 155)	136 (118, 156)	<0.0001
Length of stay, d	4 (3, 6)	4 (3, 6)	4 (3, 6)	4 (3, 7)	4 (3, 6)	<0.0001

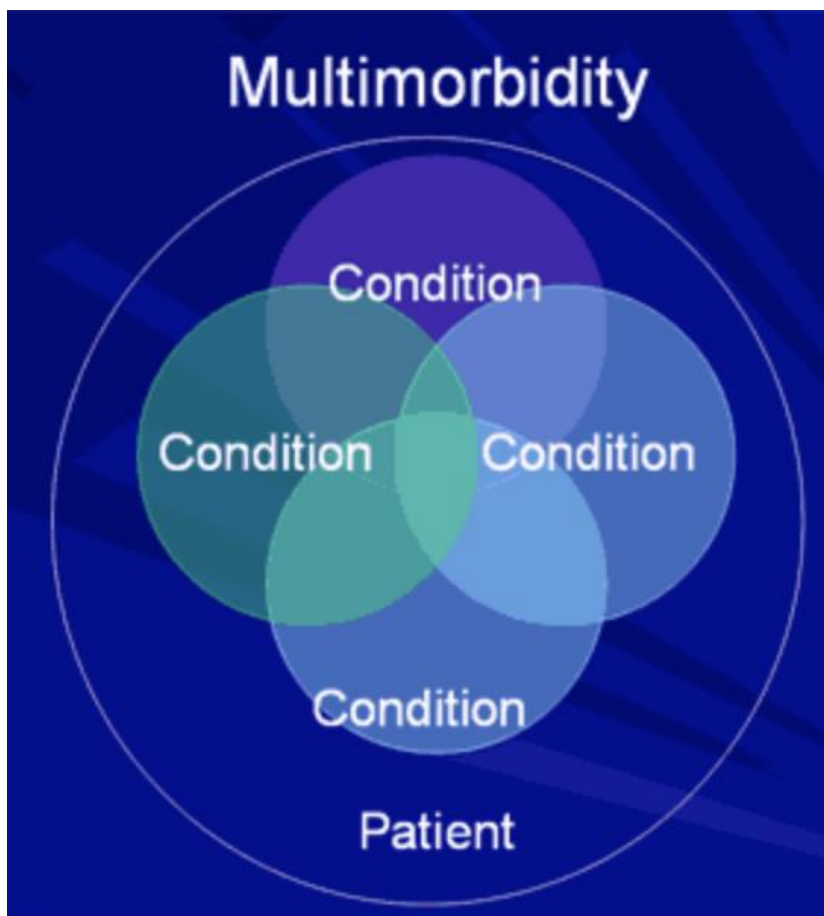
Medication	Eligible, n (of all patients; %)	Use Before admission, n (of eligible patients; %)	Newly Recommended, n (of eligible patients; %)	Total Prescribed at Discharge,* n (of eligible patients; %)	Newly Prescribed at Discharge, n (of newly recommended for patients; %)
ACEI/ARB	51 847 (32.62)	23 059 (44.48)	28 788 (55.52)	48 842 (94.20)	26 257 (91.21)
BB	63 878 (40.19)	31 595 (49.46)	32 283 (50.54)	61 532 (96.33)	30 370 (94.07)
AldA	43 780 (27.55)	5532 (12.64)	38 248 (87.36)	15 353 (35.07)	10 400 (27.19)
H/ISDN	14 742 (9.28)	1015 (6.89)	13 727 (93.11)	3480 (23.61)	2596 (18.91)
Warfarin	49 304 (31.02)	20 709 (42.00)	28 595 (58.00)	36 061 (73.14)	16 133 (56.42)

Take Home

Medications Patient Was Eligible to Initiate, n	All Patients*		LVEF <40% or Moderate to Severe Dysfunction		LVEF ≥40% or Normal to Mild Dysfunction	
	Patients, n	Percent of All Patients	Patients, n	Percent of All Patients	Patients, n	Percent of All Patients
5	566	0.4	566	0.8		
4	6496	4.1	6496	9.4		
3	141863	9.4	141863	21.5		
2	161067	10.1	161067	23.3		
1	361104	22.7	181884	27.4	161691	19.3
0	841826	53.3	121157	17.6	691761	80.7

Only scratching the surface?

- These numbers do **not** include additional medications indicated for **non-heart failure comorbidities**.



- CAD
- DM
- COPD

Medication	Eligible, n (of all patients; %)	Use Before admission, n (of eligible patients; %)	Newly Recommended, n (of eligible patients; %)	Total Prescribed at Discharge,* n (of eligible patients; %)	Newly Prescribed at Discharge, n (of newly recommended for patients; %)
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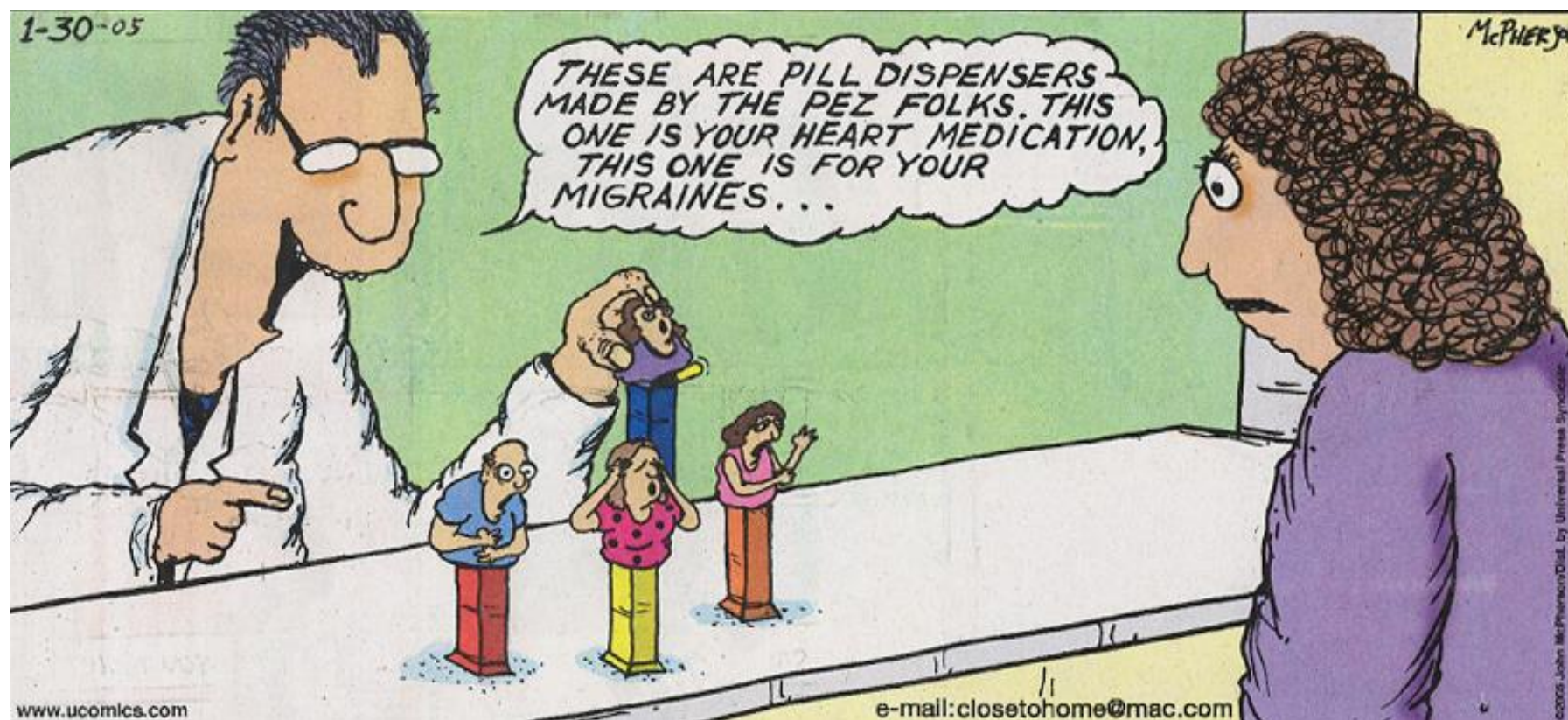
Table 4. Multivariable Model for Factors Associated With Prescribed Medication Among the Newly Recommended Medications From Admission to Discharge

Variable	OR (95% CI)	P Value
Age (per 10 y)	0.82 (0.81–0.83)	<0.0001
Female (vs male)	0.96 (0.93–0.99)	0.0039
Race: black (vs white)	0.90 (0.83–0.99)	0.022
Hispanic ethnicity (vs not)	0.78 (0.74–0.83)	<0.0001
Race: other (vs white)	0.79 (0.75–0.83)	<0.0001
Insurance: None (vs private/HMO/other insurance)	1.01 (0.94–1.08)	0.87
Insurance: Medicaid (vs private/HMO/other insurance)	0.87 (0.82–0.92)	<0.0001
Insurance: Medicare (vs private/HMO/other insurance)	1.11 (1.07–1.15)	<0.0001
PMHX: pulmonary	0.97 (0.93–1.00)	0.055
PMHX: diabetes mellitus	1.01 (0.98–1.04)	0.48
PMHX: hyperlipidemia	1.14 (1.10–1.17)	<0.0001
PMHX: hypertension	1.01 (0.98–1.05)	0.50
PMHX: PVD	0.93 (0.89–0.98)	0.0074
PMHX: CVA/TIA	1.03 (0.99–1.08)	0.14
PMHX: ICD	1.09 (1.04–1.14)	0.0003
PMHX: anemia	0.95 (0.91–0.99)	0.023
PMHX: pacemaker	0.94 (0.90–0.98)	0.0084
PMHX: dialysis, long term	0.51 (0.46–0.57)	<0.0001
PMHX: renal insufficiency	1.08 (1.04–1.13)	0.0002
PMHX: depression	0.89 (0.85–0.94)	0.0001
PMHX: smoker	0.95 (0.91–0.99)	0.012
Prior HF history (vs new HF)	1.01 (0.98–1.05)	0.48
LVSD (vs not)	0.51 (0.46–0.56)	<0.0001
Atrial fibrillation, chronic/recur history or during this hospitalization	0.97 (0.91–1.03)	0.27
Systolic BP at admission (per 10 U)	1.00 (0.99–1.00)	0.22
Heart rate at admission (per 10 U)	1.03 (1.02–1.04)	<0.0001

Implications

- The results illustrate how layering evidence-based guideline recommendations can cumulatively lead to a high number of newly recommended medications.
- Creating systems and measures that allow for initiation of medications over time (rather than by discharge) may offer advantages over the current approach . . . BUT
 - Beware of the lessons on IMPACT-HF (ie never initiating)
 - Will require improved outpatient quality improvement registries

The Pez method to improve adherence



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Rethinking the Focus of Heart Failure Quality Measures

E. Wilson Grandin, MD, MPH; Mariell Jessup, MD

Table. Quality Improvement Programs for the Treatment of Patients With Heart Failure

Performance Metrics and Clinical Outcomes	Inpatient			Outpatient
	CMS/JCAHO 2002–2014	OPTIMIZE-HF 2003–2004	GWTG-HF 2005–Present	IMPROVE-HF 2007–Present
Medications				
ACEi or ARB for LVSD	✓	✓	✓	✓
BB for LVSD		✓	✓	✓
AldA for LVSD		✓	✓	✓
H-ISDN for blacks with LVSD			✓	
Anticoagulation for patients with atrial fibrillation/flutter		✓	✓	✓
Statin for patients with vascular disease (CAD, PAD, CVD)		✓		
Devices				
CRT for LVEF≤35% and appropriate QRS duration/morphology			✓	✓
ICD for eligible patients with LVEF≤35%			✓	✓
Process measures				
Evaluation of LV systolic function	✓	✓	✓	
Discharge instructions provided	✓	✓	✓	
Postdischarge follow-up appointment scheduled at discharge			✓	
Pneumococcal vaccination			✓	
Influenza vaccination during flu season			✓	
Heart failure education for patients			✓	✓
Smoking cessation	✓	✓		
Blood pressure control (SBP<140 and DBP<90 mm Hg)			✓	
Clinical outcomes*				
Decreased readmissions	No ^{21, 22}	No ²¹	Yes ^{7 †}	?
Decreased short-term (30–90 days) mortality	No ^{19, 21}	No ²¹	No ^{7, 8}	?



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