The Imperative To Move To Value-Based Cardiovascular Care

Nihar R. Desai, MD, MPH
Associate Professor of Medicine, Yale School of Medicine
Vice Chief, Section of Cardiovascular Medicine
Investigator, Center for Outcomes Research and Evaluation

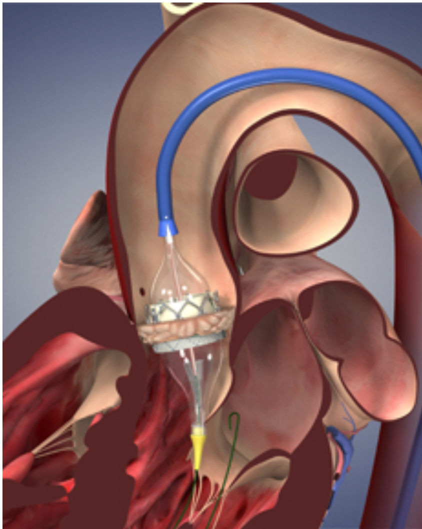
Disclosures

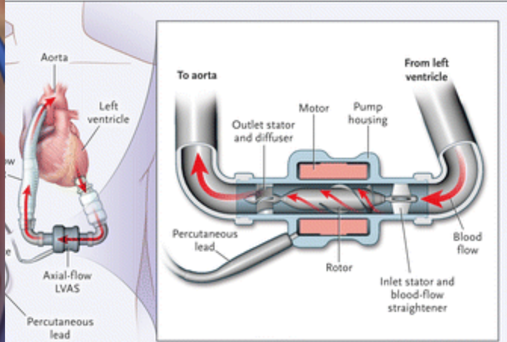
- Support from the Centers for Medicare and Medicaid Services to develop and maintain performance measures that are used for public reporting and payment programs.
- Research support and consulting from Amgen, Astra Zeneca, Bayer, Boehringer Ingelheim, Bristol Myers Squibb, CSL Behring, Cytokinetics, Merck, Novartis, SC Pharmaceuticals, Vifor.
- Medical review committee for Anthem.

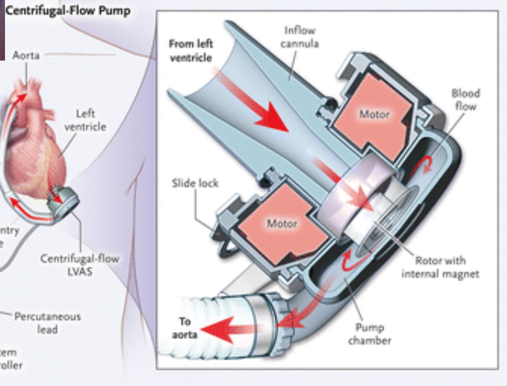
First Things First

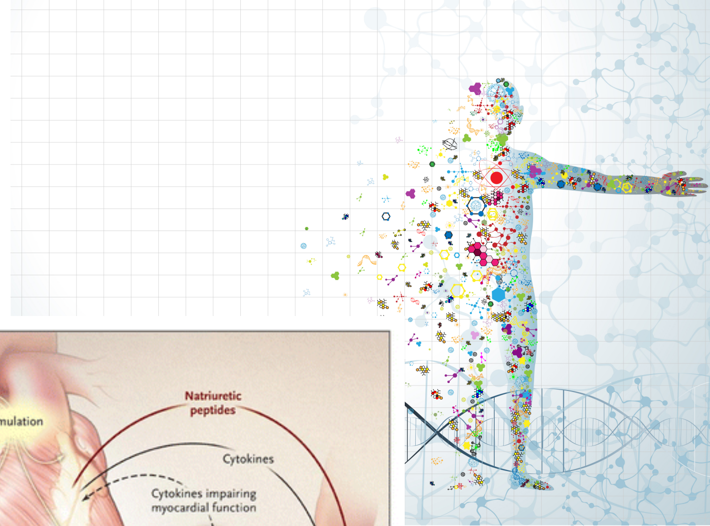
- We are in the midst of a remarkable period of scientific, technological, and therapeutic advances.

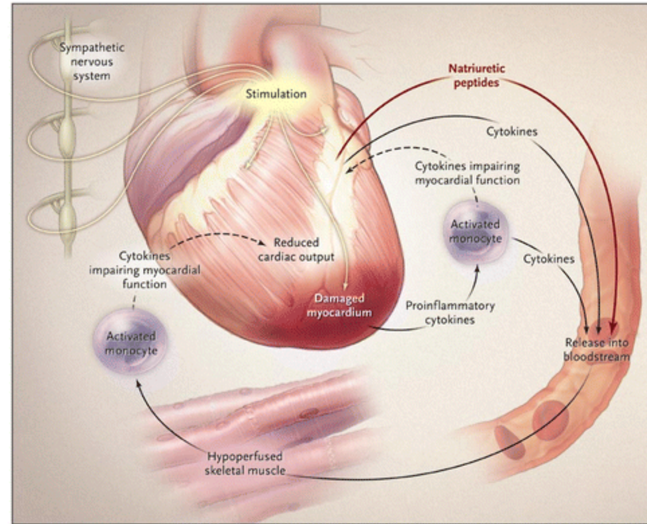
There Are Signs of Progress Everywhere











CENTER FOR OUTCOMES RESEARCH AND EVALUATION
CORE

Yale Cardiovascular Medicine

There Are Signs of Progress Everywhere

1958
Coronary arteriography developed (Sones)

1962
First beta-blocker developed (Black)

1976
First HMG CoA reductase inhibitor described (Endo)

2009
Left-ventricular assist device as destination therapy in advanced heart failure shown to be effective

2007
Benefit of cardiac resynchronization therapy in heart failure demonstrated

1969
First description of CABG (Favaloro)

1961
Risk factors defined

1980
First implantable cardioverter–defibrillator developed (Mirowski)

2009
Genomewide association in early-onset MI described

600
500
400
300
200
100

ths per 100,000 Population

1954
First open-heart procedure (Gibbon)

1961
Coronary care unit developed (Julian)

1972
NHBPEP

2002
Efficacy of drug-eluting vs. bare-metal stents determined

1985
TIMI 1

1992
SAVE

2009
Deep gene sequencing for responsiveness to cardiovascular drugs performed

1979
Coronary angioplasty developed (Grüntzig)

1983
CASS

1986
GISSI and ISIS-2

1993
Superiority of primary PCI vs. fibrinolysis in acute MI noted

1985
NCEP

2002
ALLHAT

950 1960 1970 1980 1990 2000 2010

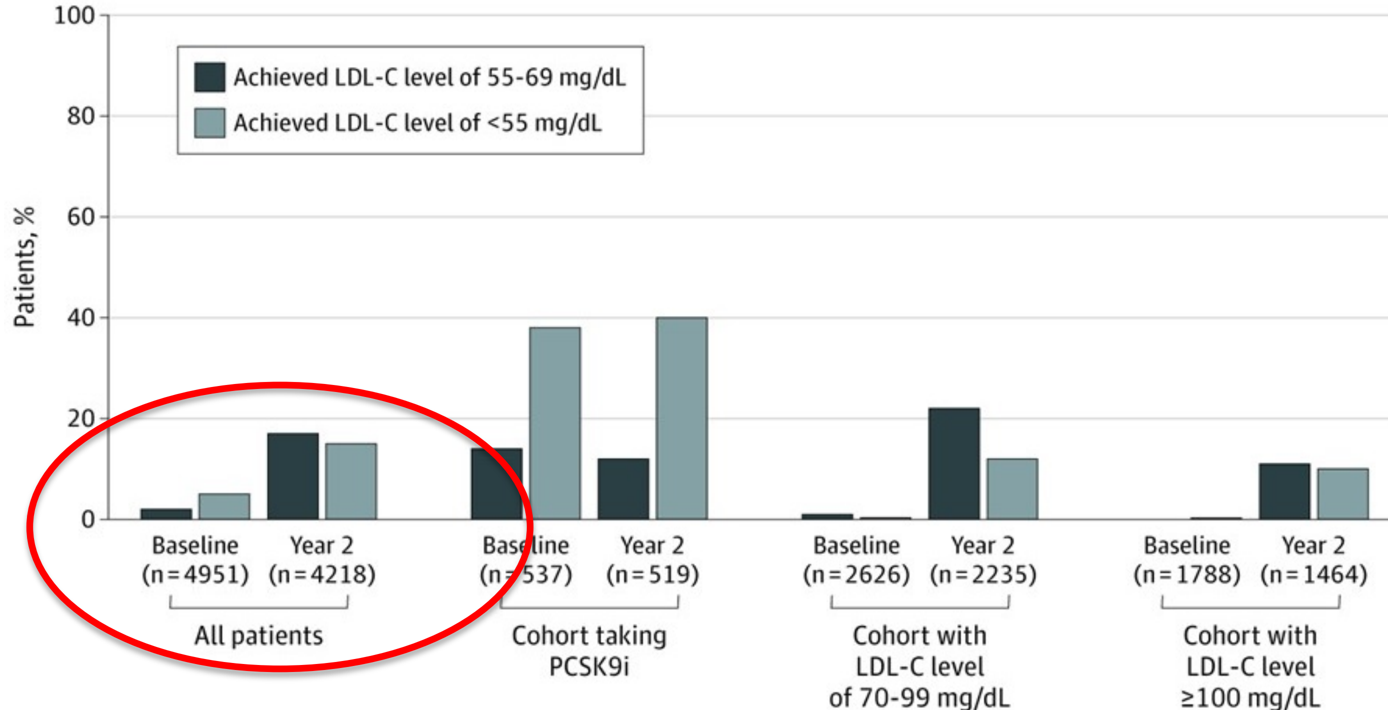
Year

Nabel E, Braunwald E. *N Engl J Med.* 2012;366:54-63.

The Other Side of the Coin

- We are in the midst of a remarkable period of scientific, technological, and therapeutic advances.
- We are in the midst of a remarkable period of payment and delivery reform catalyzed by substantial variation in quality and outcomes as well as rising health care expenditures.

Sobering Gaps in Care



CORE Center for Outcomes Research and Evaluation

Cannon CP et al. JAMA Cardiol. 2021

Yale Cardiovascular Medicine

Readmissions: Prevalent, Costly, (Preventable)

	Cumulative Percentage of Patients Rehospitalized
1 Month	21.1%
3 Months	36.6%
6 Months	47.9%
1 Year	59.4%

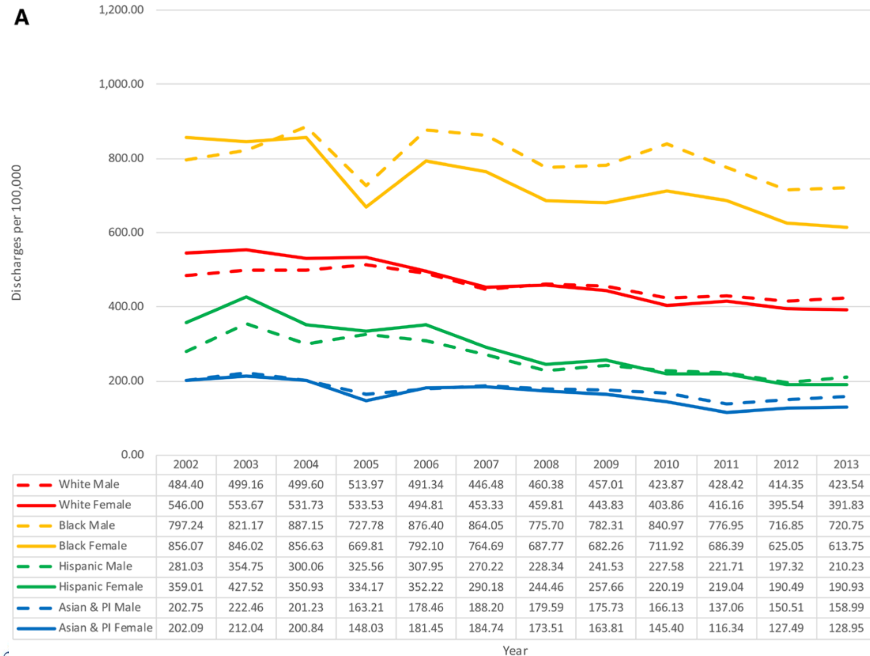
0% 20% 40% 60% 80% 100%

Cumulative Percentage of Patients Rehospitalized

Jencks SF, Williams MV, Coleman EA. *N Engl J Med* 2009;360:1418-28.

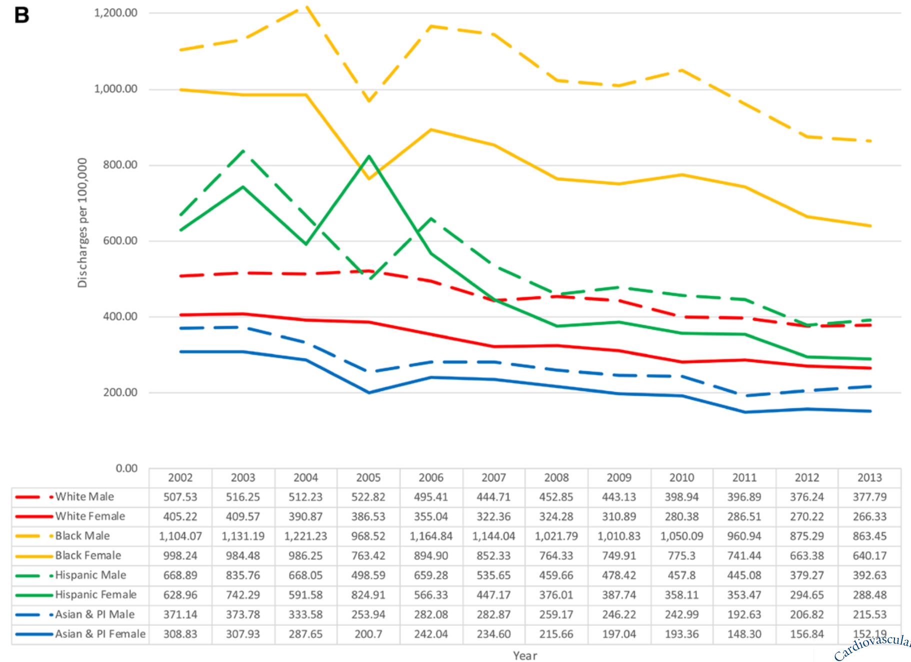
Disparities in Care

National crude hospitalization rate by race/ethnicity and sex



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
White Male	484.40	499.16	499.60	513.97	491.34	446.48	460.38	457.01	423.87	428.42	414.35	423.54
White Female	546.00	553.67	531.73	533.53	494.81	453.33	459.81	443.83	403.86	416.16	395.54	391.83
Black Male	797.24	821.17	887.15	727.78	876.40	864.05	775.70	782.31	840.97	776.95	716.85	720.75
Black Female	856.07	846.02	856.63	669.81	792.10	764.69	687.77	682.26	711.92	686.39	625.05	613.75
Hispanic Male	281.03	354.75	300.06	325.56	307.95	270.22	228.34	241.53	227.58	221.71	197.32	210.23
Hispanic Female	359.01	427.52	350.93	334.17	352.22	290.18	244.46	257.66	220.19	219.04	190.49	190.93
Asian & PI Male	202.75	222.46	201.23	163.21	178.46	188.20	179.59	175.73	166.13	137.06	150.51	158.99
Asian & PI Female	202.09	212.04	200.84	148.03	181.45	184.74	173.51	163.81	145.40	116.34	127.49	128.95

National age-standardized hospitalization rate by race/ethnicity and sex

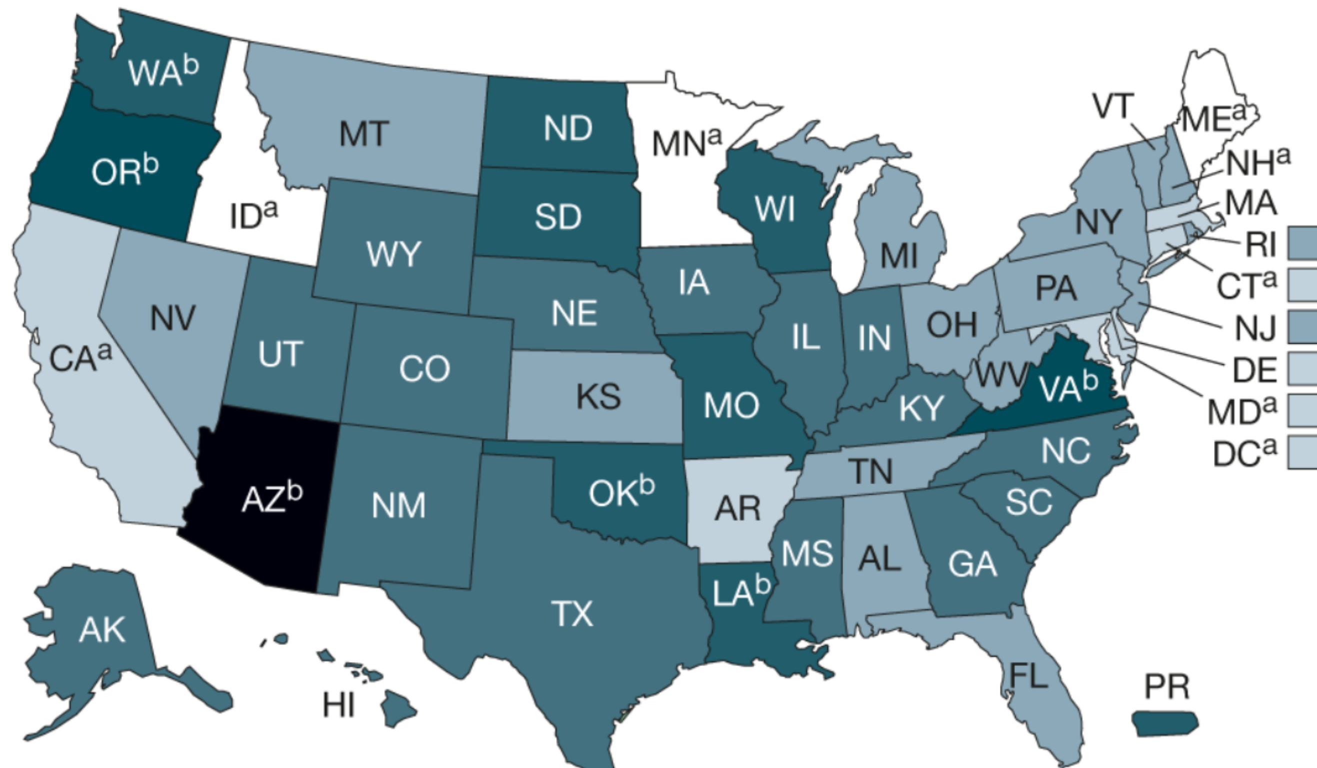


	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
White Male	507.53	516.25	512.23	522.82	495.41	444.71	452.85	443.13	398.94	396.89	376.24	377.79
White Female	405.22	409.57	390.87	386.53	355.04	322.36	324.28	310.89	280.38	286.51	270.22	266.33
Black Male	1,104.07	1,131.19	1,221.23	968.52	1,164.84	1,144.04	1,021.79	1,010.83	1,050.09	960.94	875.29	863.45
Black Female	998.24	984.48	986.25	763.42	894.90	852.33	764.33	749.91	775.3	741.44	663.38	640.17
Hispanic Male	668.89	835.76	668.05	498.59	659.28	535.65	459.66	478.42	457.8	445.08	379.27	392.63
Hispanic Female	628.96	742.29	591.58	824.91	566.33	447.17	376.01	387.74	358.11	353.47	294.65	288.48
Asian & PI Male	371.14	373.78	333.58	253.94	282.08	282.87	259.17	246.22	242.99	192.63	206.82	215.53
Asian & PI Female	308.83	307.93	287.65	200.7	242.04	234.60	215.66	197.04	193.36	148.30	156.84	152.19

PI, Pacific Islander.

Ziaeian B, et al. *Circ Cardiovasc Qual Outcomes*. 2017;10(7):e003552.

Substantial Variation in CV Outcomes



Chen J, et al. JAMA. 2011;306(15):1669-1678.

CORE
CENTER FOR OUTCOMES RESEARCH AND EVALUATION

Yale Cardiovascular Medicine

Spiraling Health Care Costs

Total U.S. health spending (public and private) is projected to rise to nearly one-fifth of the economy by 2025

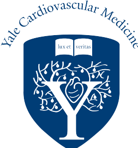
NATIONAL HEALTH EXPENDITURES (% OF GDP)

Year	% of GDP
1980	9%
1990	12%
2000	13%
2010	17%
2020 (Projected)	18%
2025 (Projected)	19%

SOURCE: Centers for Medicare and Medicaid Services, *National Health Expenditures*, March 2020.

© 2020 Peter G. Peterson Foundation

PGPF.ORG



Where Do We Want To Go?

Reduce Hospitalization & Readmissions

Reduce Spending & Increase Value

Clinical & Policy Objectives

Reduce Length of Stay

Improve Quality & Outcomes of Care

CENTER FOR OUTCOMES RESEARCH AND EVALUATION
CORE

Yale Cardiovascular Medicine
lux et veritas

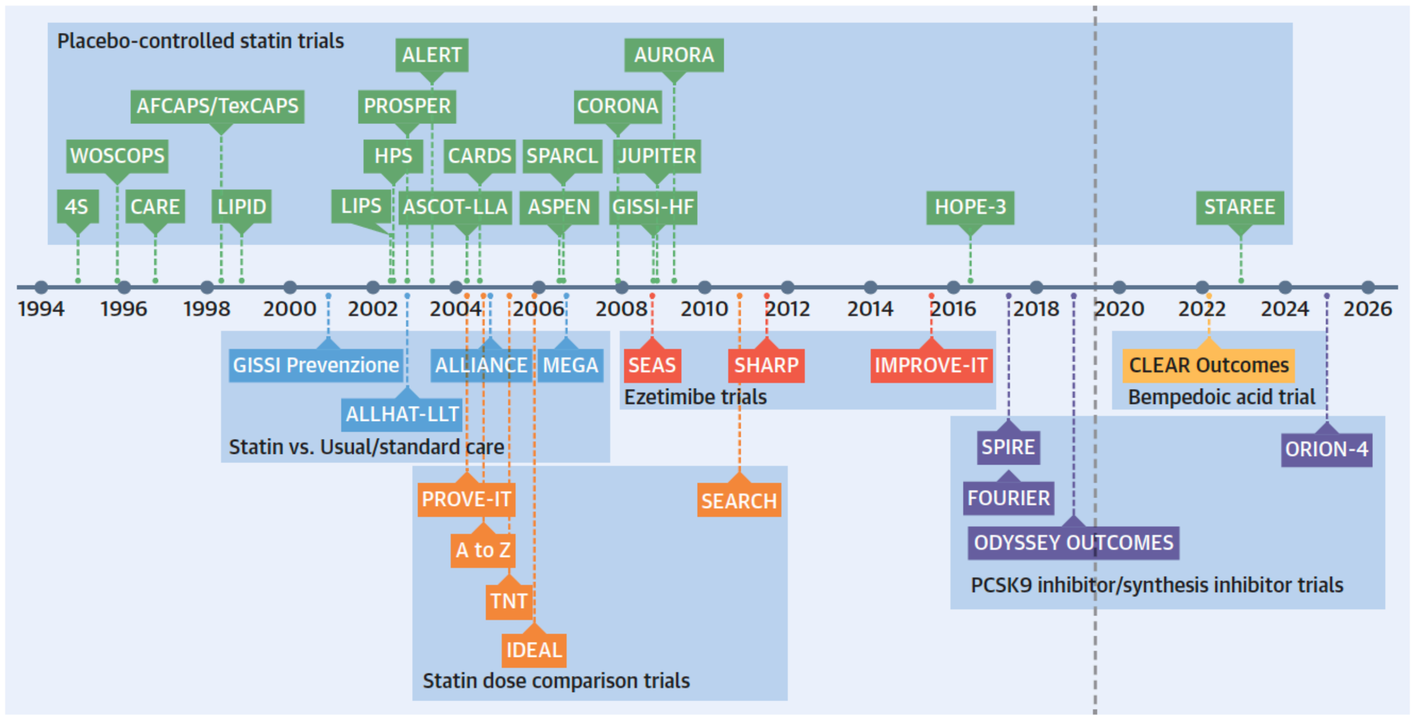
How Do We Actually Get There?

- Transformative therapeutics
- Timely quality & performance measures
- Innovative technology and remote monitoring platforms

CENTER FOR OUTCOMES RESEARCH AND EVALUATION
CORE

Yale Cardiovascular Medicine

Rapidly Expanding Therapeutic Armamentarium



JACC 2020

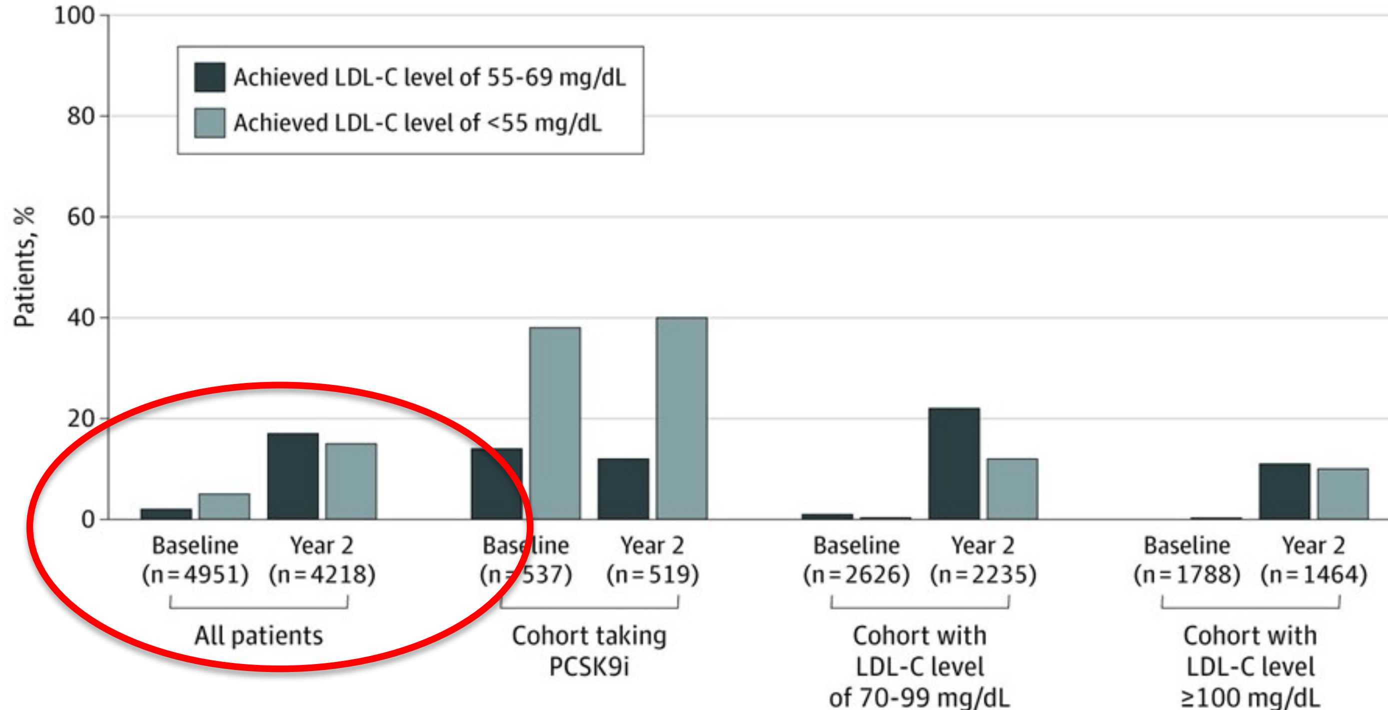
The Fundamental Problem

Rumsfeld JS et al. Nat Rev Cardiol. 2016;13:350-359.

CENTER FOR OUTCOMES RESEARCH AND EVALUATION
CORE

Yale Cardiovascular Medicine

Sobering Gaps in Care



Cannon CP et al. JAMA Cardiol. 2021

How Do We Actually Get There?

- Transformative therapeutics
- Timely quality & performance measures
- Innovative technology and remote monitoring platforms
- Renewed patient and community engagement efforts
- Novel care delivery and clinical operations

CENTER FOR OUTCOMES RESEARCH AND EVALUATION CORE

Yale Cardiovascular Medicine

A Path Forward

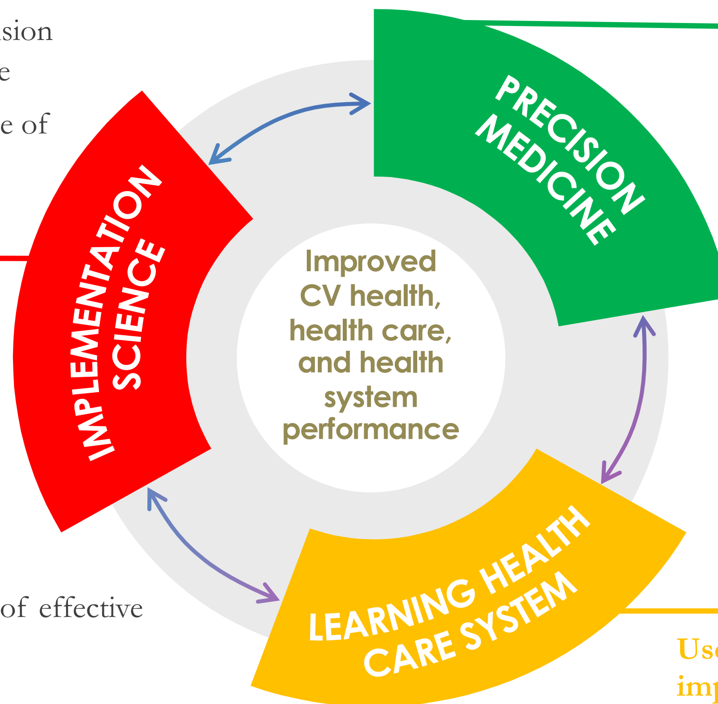
Key Areas of Synergy

- Evolution of evidence base for precision medicine and implementation science
- Recognition of underuse and overuse of interventions
- Management of abundance of data

Optimal integration of effective diagnosis, prevention, and treatment

Understanding of multilevel content

Theories and strategies to drive health care improvement



Optimal use of data to drive clinical care and patient decision making

Ongoing development of the evidence base, novel therapies

Improved phenotyping of complex diseases

Key Areas of Synergy

- Refresh cycle of evidence base
- Determination of degree of achievable personalization of care

Key Areas of Synergy

- Support for implementation of effective practices
- Contextually sensitive
- Improvement of practices

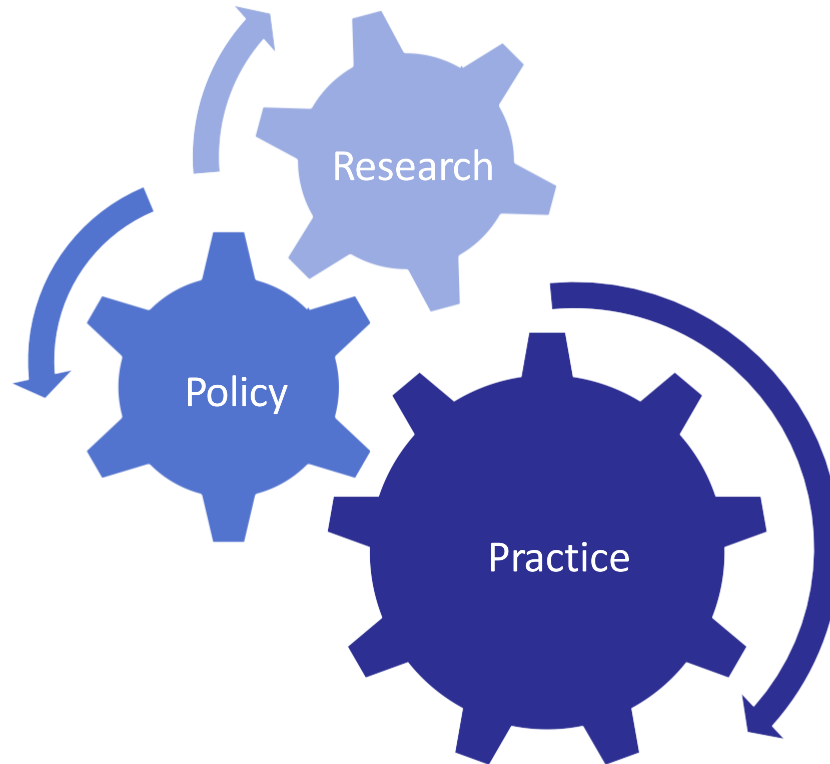
Use of ongoing data to drive health system improvement

Focus on iterative and ongoing learning

All stakeholders participate

Adapted from Chambers DA et al. JAMA. 2016;315:1941-1942.

One Part of the Solution…
Reconfigure Clinical Operations



Green, LW. *American Journal of Public Health*, 2006

Reimagining Evidence Generation for Heart Failure and the Role of Integrated Health Care Systems

Tariq Ahmad, MD, MPH; Nihar R. Desai, MD, MPH

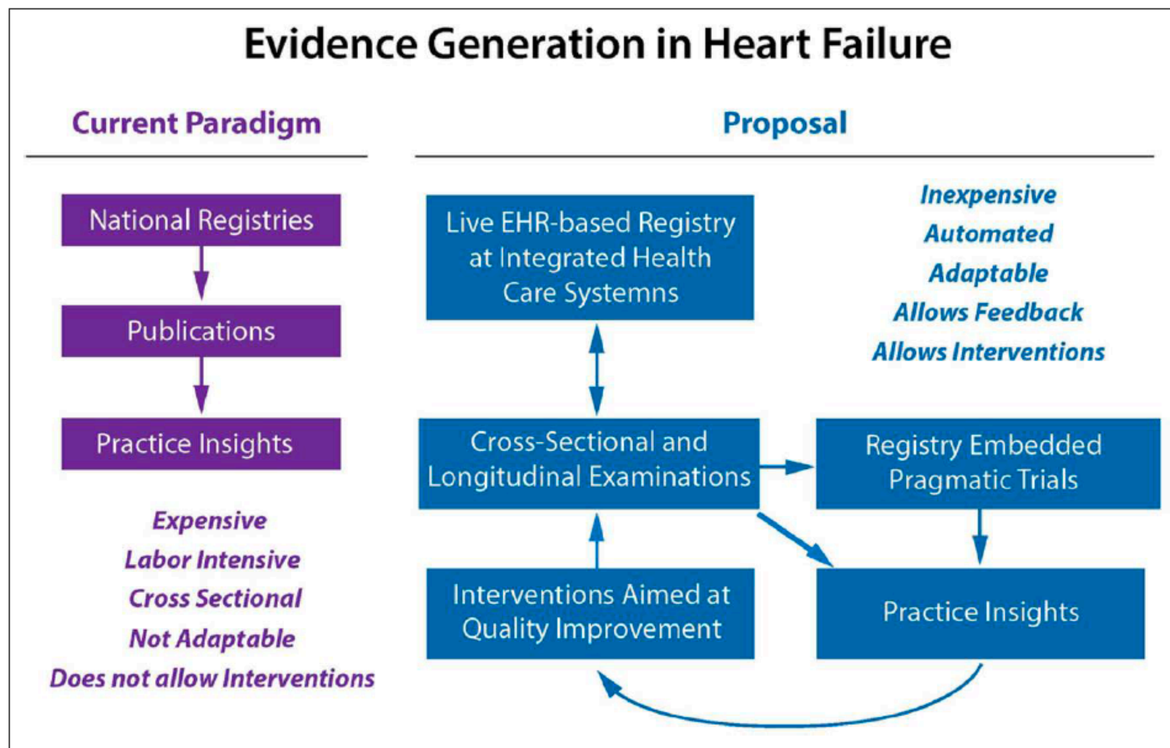
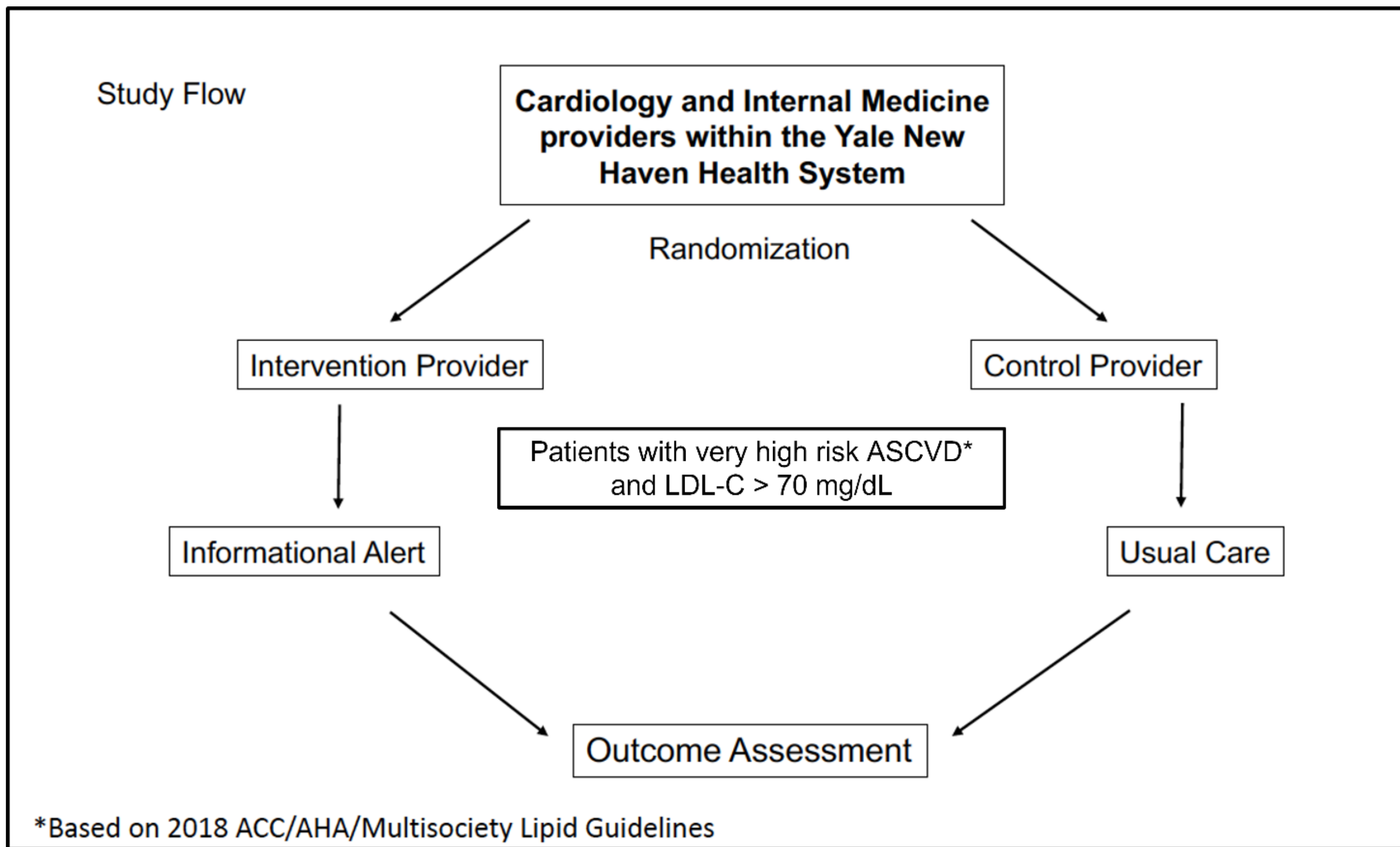


Figure. Our proposal on how integrated health care systems can play a key role in addressing the challenges of heart failure research today that requires a far more cost-effective and rapid innovation-implementation cycle.

PROMPT-Lipid: Study Schema



CORE
CENTER FOR OUTCOMES RESEARCH AND EVALUATION
Yale Cardiovascular Medicine

PROMPT-LIPID Alert

Patient May Need Lipid Medication Optimization

Your patient meets the criteria for being at very high risk for Adverse Cardiovascular Events based upon diagnosis codes and laboratory values.

Recent Cholesterol Values

LDL Calculated (mg/dL)		HDL (mg/dL)		Cholesterol (mg/dL)	
Date	Value	Date	Value	Date	Value
11/09/2020	90	11/09/2020	50	11/09/2020	200 (H)

Current Lipid Lowering Therapy

Antihyperlipidemic - HMG CoA Reductase Inhibitors (statins)

atorvastatin (LIPITOR) 20 mg tablet

Antihyperlipidemic - Selective Cholesterol Absorption Inhibitor

ezetimibe (ZETIA) 10 mg tablet

In order to improve the care of patients at high risk for adverse CV events, we present guideline-based treatment options below. For full treatment guidelines, click here. In addition to ensuring adherence to current lipid lowering medication and continued lifestyle modification, please consider whether any of the following are appropriate for your patient:

Intensify Statin Therapy
Add PCSK9i

Open SmartSet | Do Not Open | **Lipid Lowering Therapies** Preview

Acknowledge Reason

Will adjust medications | Inappropriate - Patient is Pregnant | Clinically not indicated (other) | Disagree with assessment

Accept | Dismiss

Key Technical Elements:

1. Patient ID
2. LDL-C timing relative to medication changes
3. Medication assessment

Key Alert Attributes:

1. User Designed
2. Real-time
3. Targeted
4. Tailored
5. Embedded Ordering Capability

PROMPT-LIPID Order Set

High Intensity Statins 1

Usage: Patient not on high-intensity statin 2

- [ ] atorvastatin ( ) 40 mg tablet
  Disp-30 tablet, R-1
- [ ] atorvastatin ( ) 80 mg tablet
  Disp-30 tablet, R-1
- [ ] rosuvastatin ( ) 20 mg tablet
  Disp-30 tablet, R-1
- [ ] rosuvastatin ( ) 40 mg tablet
  Disp-30 tablet, R-1

Ezetimibe

Usage: Patient already on high-intensity statin and LDL still >70mg/dL

- [ ] ezetimibe ( ) 10 mg tablet

PCSK9i

Usage: Patient already on high dose statin and LDL still >70mg/dL

- [ ] evolocumab ( ) 140 mg/mL pen injector
  R-2
- [ ] evolocumab ( ) 420 mg/3.5 mL wearable injector
  R-2
- [ ] alirocumab ( ) 75 mg/mL Pen Injector 3
  R-2
- [ ] alirocumab ( ) 150 mg/mL Pen Injector
  R-2

Follow-up Labs

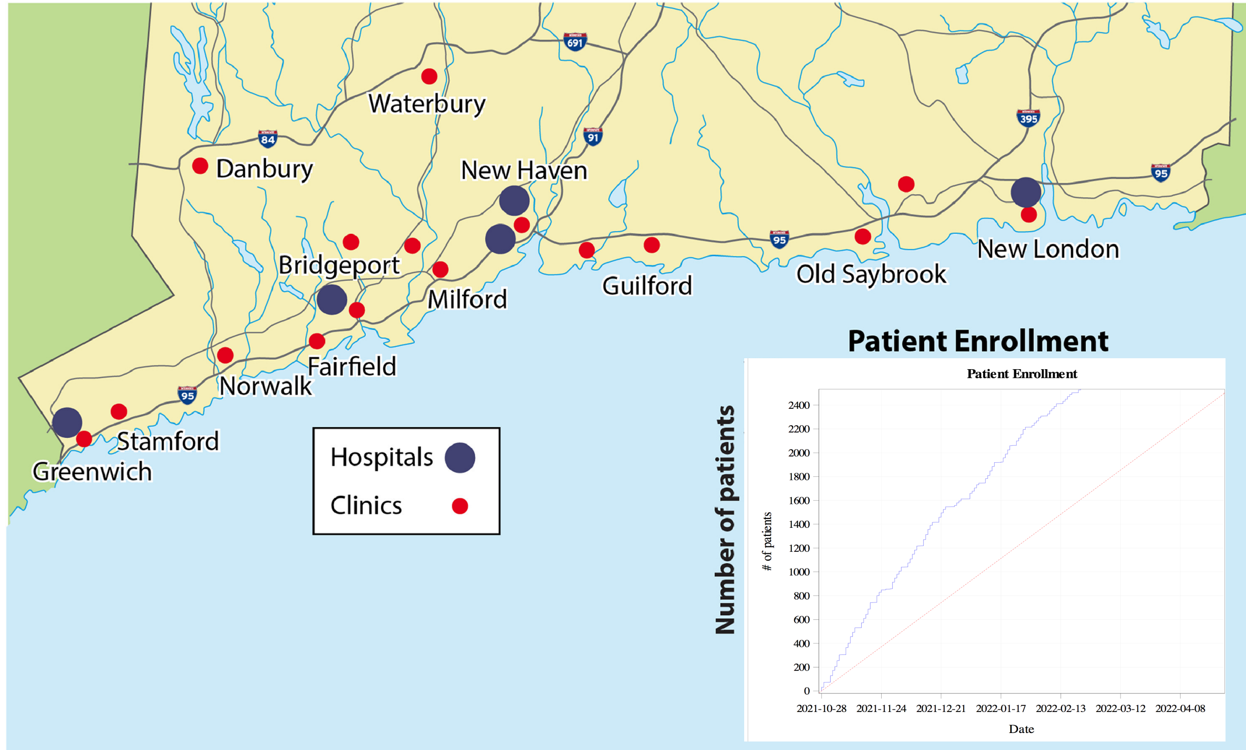
90 Day Lipid Panel w/ Hyperlipidemia HCC Dx

- [x] Hyperlipemia [E78.5] Select Specific Diagnosis 4
- [x] Lipid panel 5
  P Routine, Lab Collect, Expected: 2/9/2021, Expires: 11/9/2021, Resulting Agency - YALE-NEW HAVEN H

CENTER FOR OUTCOMES RESEARCH AND EVALUATION CORE

Yale Cardiovascular Medicine

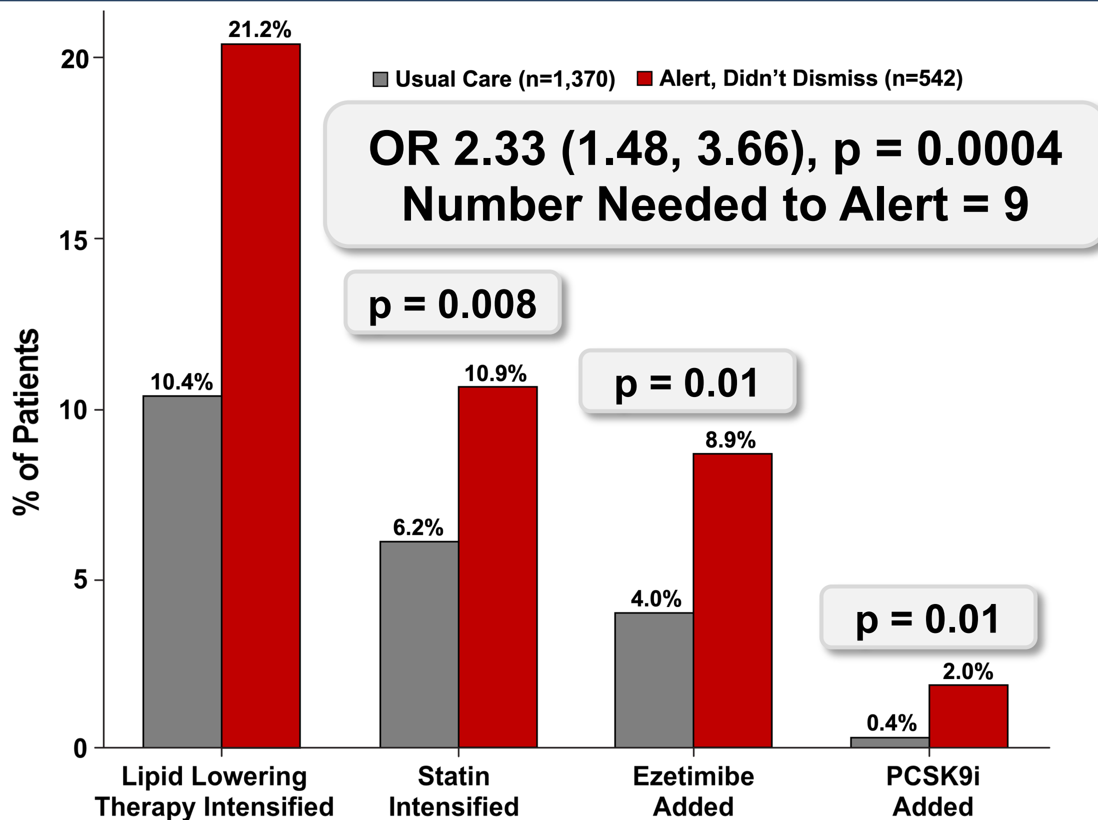
PROMPT-LIPID: Rapid Enrollment Across Yale New Haven Health System



CENTER FOR OUTCOMES RESEARCH AND EVALUATION CORE

Yale Cardiovascular Medicine

PROMPT-LIPID Results



CENTER FOR OUTCOMES RESEARCH AND EVALUATION CORE

Yale Cardiovascular Medicine

Shah NN, et al. *Am Heart J*. 2022;253:76-86
Shah NN, et al. *Circulation*. 2022(Suppl):S1053

How Do We Actually Get There?

- ❖ Transformative therapeutics
- ❖ Timely quality & performance measures
- ❖ Innovative technology and remote monitoring platforms
- ❖ Renewed patient and community engagement efforts
- ❖ Novel care delivery and clinical operations
- ❖ **Alternative payment models**

CENTER FOR OUTCOMES RESEARCH AND EVALUATION
CORE

Yale Cardiovascular Medicine

Payment Models…They Are A Changin’

Medicare Payment Policy

IPPS/FFS	P4P	Bundled Payments	Accountable Care Organizations
	HRRP HVBP MIPS	BPCI BPCI-Advanced	MSSP NextGen ACO

Alternative Payment Model	P4P (HRRP, HVBP, MIPS)	Bundled Payments	Accountable Care Organization
Overview	Focus on specific measures and specific quality domains	One payment per defined episode—movement away from simple utilization-based reimbursement	Population-based care (payment not triggered by service delivery) rewarding integration, quality, outcomes, and efficiency

1.Srinivasan D et al. *J Card Fail*. 2017;23:615-620; 2.Burwell SM. *N Engl J Med.* 2015;372:897-899.

Cardiology Is In The Thick Of It…

Medicare Payment Policy

IPPS/FFS

P4P
- HRRP
- HVBP
- MIPS

Bundled Payments
- BPCI
- BPCI-Advanced

Accountable Care Organizations
- MSSP
- NextGen ACO

Alternative Payment Model	P4P (HRRP, HVBP, MIPS)	Bundled Payments	Accountable Care Organization
Cardiology Focus	30-day readmission and mortality for AMI, HF Process Measures for CAD, HF	Cardiac Care is among the most frequently selected clinical episode service line groups in BPCIA	Given the prevalence of chronic cardiovascular conditions (CAD, HTN, HF, etc) and their associated health care utilization, ACOs necessarily have to focus on these conditions/patients.

1.Srinivasan D et al. *J Card Fail*. 2017;23:615-620; 2.Burwell SM. *N Engl J Med.* 2015;372:897-899.

A Summary & A Look Ahead

- Despite deeper understanding of the physiology and pathobiology of heart failure and an expanding therapeutic arsenal, we find ourselves with significant gaps in performance, evidenced by suboptimal quality, disparities in care, variation in outcomes, and spiraling costs.
- We must continue to invest in innovation and foster development of novel therapies.
- Alternative payment models will be essential to fully aligning the interests of patients, providers, payers, and policymakers.
- To fully realize its potential, the transition to value-based care must be met with a realignment, reconfiguration, and reimagination of clinical care including novel approaches to care delivery, patient engagement, and policy.