Thank You for Joining!

Today's Webinar Will Begin Shortly

Get With The Guidelines-Heart Failure:
Managing Comorbidities in Heart Failure

Thursday April 28, 2016
12:00pm – 1:00pm Central

Presenters: **Dr. Warren K. Laskey, MD, MPH**
Dr. Diane M. Dodendorf, PhD

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GET WITH THE GUIDELINES. HEART FAILURE

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Managing Comorbidities in Heart Failure Patients

Much more than “just” heart failure

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What we will be discussing today

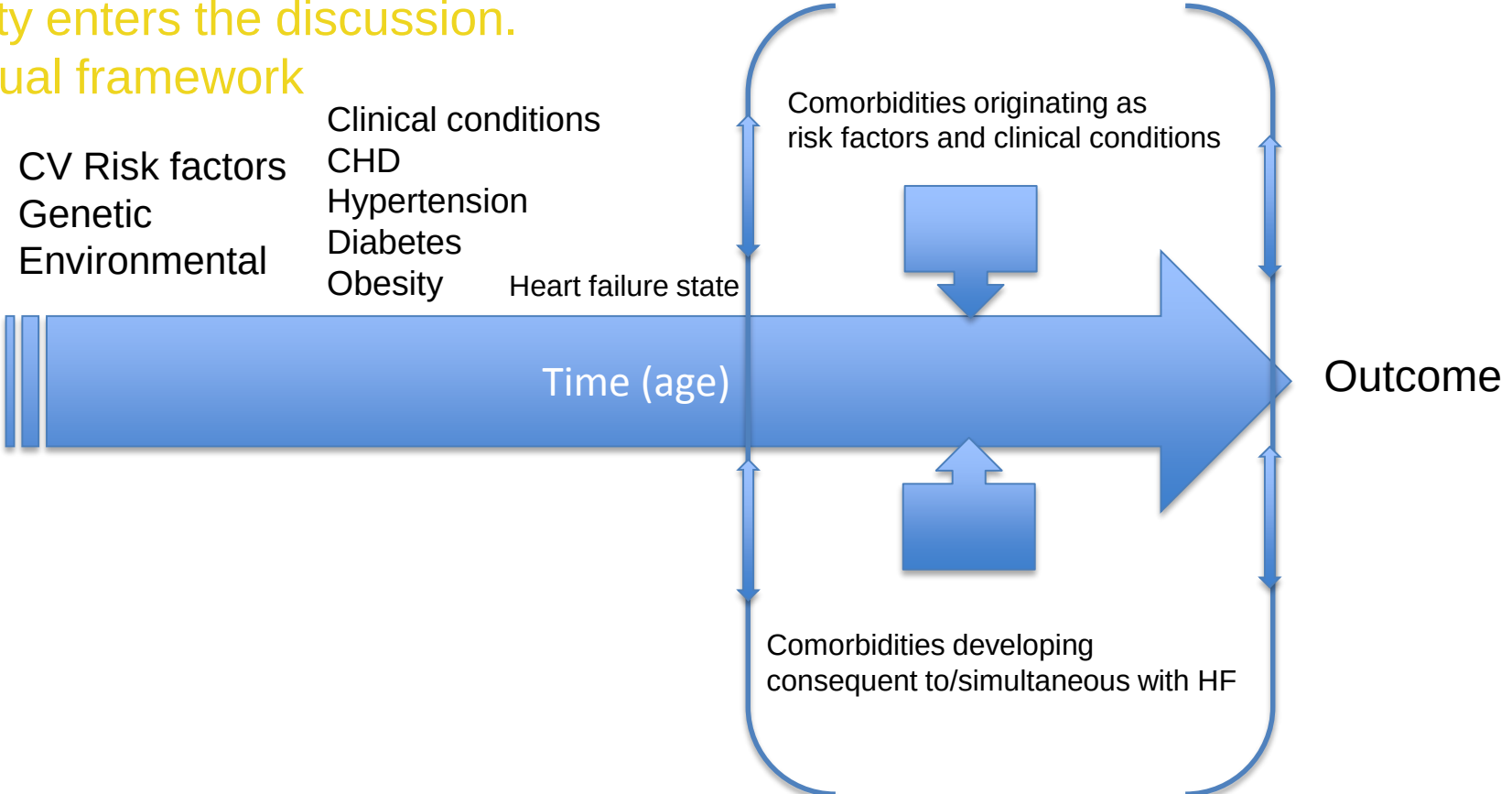
- The burden of comorbidities in the elderly, i.e., > 65 yrs of age, U.S. population
- The burden of comorbidities in elderly patients with heart failure
- The impact of comorbidities, singly and in combination, on specific outcomes in patients with heart failure
- Identification of potentially modifiable comorbidities and the evidence to date regarding effect modification
- Models for the management of the patient with heart failure (rather than the heart failure patient)

Definition(s) of comorbidity

- "existing simultaneously with and *usually independently* of another medical condition" (Merriam-Webster)
- comorbidity is "the presence of one or more additional disorders (or diseases) *co-occurring with* a primary disease or disorder" (Wikipedia)
- *"Attempts to study the impact of comorbidity are complicated by the lack of consensus about how to define and measure the concept. Related constructs, such as multimorbidity, burden of disease, and frailty are often used interchangeably. There is an emerging consensus that internationally accepted definitions are needed to move the study of this topic forward" (1)*

1) Valderas JM, et al. Defining comorbidity: Implications for understanding health and health services Ann Fam Med 2009; 7: 357-63

From “risk factors” to “clinical conditions” to “disease” and how and where comorbidity enters the discussion.
A conceptual framework



Risk factors, comorbidities and their inter-relationships, i.e., non-independence*

Risk factors for coronary heart disease

- Elevated cholesterol
- Smoking
- Elevated blood pressure
- Inactivity

Risk factors for heart failure

- Obesity
- Smoking
- Elevated blood pressure
- Inactivity
- Diabetes

* Given the non-independence of many of these factors, incidence rates of specific outcomes in the setting of co-occurrence will likely exceed rates expected from their individual effects

The View from CMS.
From conditions (splitters) to comorbidity (lumpers)

- Medicare-Medicaid beneficiaries were considered to have a chronic condition if the CMS administrative data had a claim indicating that they were receiving a service or treatment for the specific condition.
- In order to generate counts of categories of individual conditions, CMS combined Chronic Condition Warehouse (CCW)* variables into broad(er) categorical condition groups (CCGs)
  - In this instance, 32 CCW chronic conditions were collapsed into 13 CCGs
  - After identifying which CCG each enrollee had, CMS used the CCGs to quantify the comorbid burden per enrollee

* https://www.ccwdata.org/web/guest/condition-categories

For example

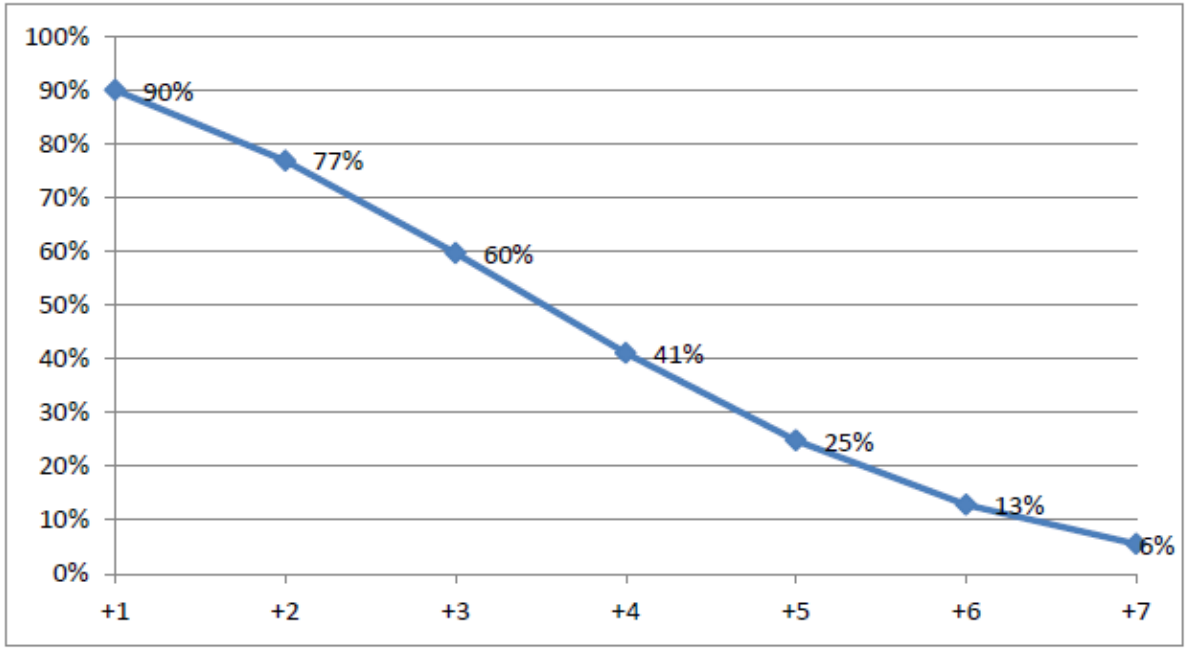
Categorical Condition Group	CCW Condition Flag	CCW Description
Mental Health Condition	DEPR_COMBINED	Depression (any instance including Bipolar)
	ANXI_COMBINED	Anxiety Disorders
	BIPL_COMBINED	Bipolar Disorder
	DEPSN_COMBINED	Major Depressive Disorder
	PSDS_COMBINED	Personality Disorders
	PTRA_COMBINED	PTSD
	SCHI_COMBINED	Schizophrenia
	SCHIOT_COMBINED	Schizophrenia & Other Psychotic Disorders
Anemia	ANEMIA_COMBINED	Anemia
Stroke	STRK_COMBINED	Stroke
Diabetes	DIAB_COMBINED	Diabetes
Eye Disease	CAT_COMBINED	Cataract
	GLCM_COMBINED	Glaucoma
Heart Condition	AMI_COMBINED	Acute Myocardial Infarction
	AFIB_COMBINED	Atrial Fibrillation
	CHF_COMBINED	Heart Failure
	HYPLIP_COMBINED	Hyperlipidemia
	HYPTEN_COMBINED	Hypertension
	IHD_COMBINED	Ischemic heart disease

From: Centers for Medicare and Medicaid Services. Physical and Mental Health Condition Prevalence and Comorbidity among Fee-for-Service Medicare-Medicaid enrollees. Sept, 2014.

The eleven most common comorbidities among FFS CMS enrollees overall

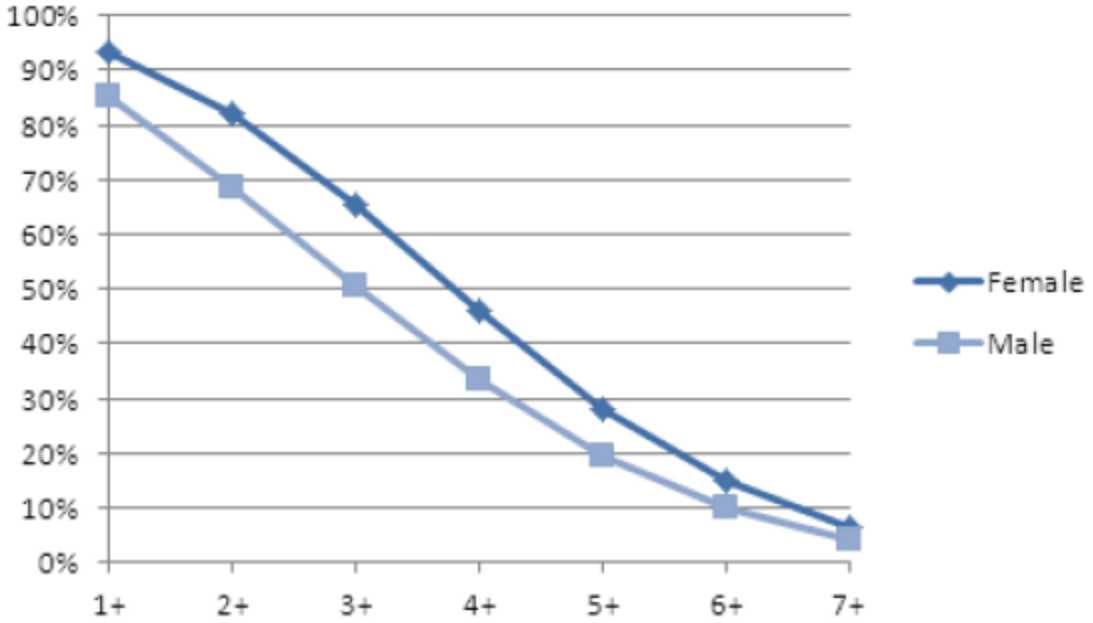
	Chronic or Clinical Condition Indicator	Number	Percentage
1	Hypertension	3,197,377	60.7%
2	Hyperlipidemia	2,028,532	38.5%
3	Diabetes	1,846,997	35.1%
4	Rheumatoid or Osteoarthritis	1,776,766	33.8%
5	Ischemic Heart Disease	1,727,757	32.8%
6	Anemia	1,628,761	30.9%
7	Depression (Any Instance, including Bipolar episode)	1,324,634	25.2%
8	Major Depressive Disorder	1,289,765	24.5%
9	Congestive Heart Failure	1,196,062	22.7%
10	Alzheimer's Disease, Related Disorders, or Senile Dementia	996,606	18.9%
11	Chronic Obstructive Pulmonary Disease (COPD)	993,239	18.9%

Percentage of enrollees with more than one categorical condition group



Source: CY 2008 CCW Medicare and Medicaid data, FFS enrollees with at least six months enrollment in Medicare Parts A and B and/or Medicaid.

Percentage of enrollees by number of categorical condition groups, by sex



Source: 2008 CCW Medicare and Medicaid data, FFS enrollees with at least six months enrollment in Medicare Parts A and B and/or Medicaid.

Condition prevalence by sex among FFS CMS enrollees, 2008

	Sex		Overall Prevalence
	Female	Male	
Number of Enrollees	3,237,886	2,026,939	5,264,825
Hypertension	**65.7%**	52.7%	60.7%
Hyperlipidemia	**40.8%**	34.9%	38.5%
Diabetes	**37.2%**	31.7%	35.1%
Rheumatoid or Osteoarthritis	**40.3%**	23.3%	33.8%
Ischemic Heart Disease	33.8%	31.2%	32.8%
Anemia	**34.1%**	25.9%	30.9%
Depression (Any Instance, including Bipolar)	**28.2%**	20.3%	25.2%
Major Depressive Disorder	**27.6%**	19.6%	24.5%
Heart Failure	**24.7%**	19.5%	22.7%

Percentage of enrollees with 0-4+ categorical condition groups, by age

Age Group	Chronic Condition Data Warehouse						
	Number of Enrollees	Number of Comorbid CCGs					
		0 CCGs	1 CCG	2 Comorbid CCGs	3 Comorbid CCGs	4+ Comorbid CCGs	Mean
Under 65	2,226,698	15%	19%	19%	17%	30%	2.58
65+	3,038,127	6%	9%	16%	20%	49%	3.54
Under 40	496,706	27%	28%	19%	12%	12%	1.63
40-64	1,729,992	11%	16%	19%	19%	35%	2.85
65-84	2,334,406	7%	10%	16%	19%	47%	3.45
85 +	703,721	3%	7%	14%	20%	57%	3.86

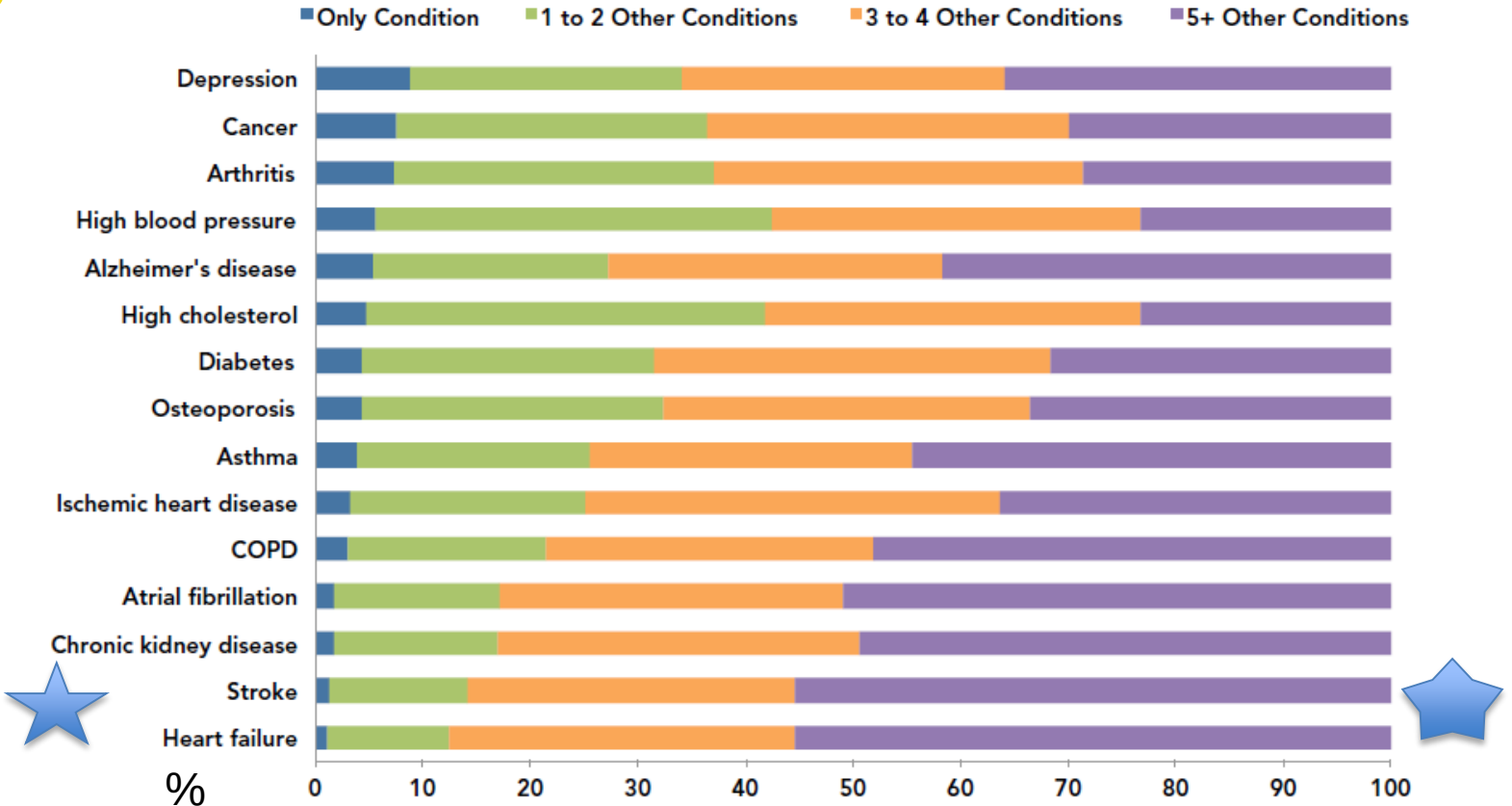
Source: CY 2008 CCW Medicare and Medicaid data, FFS enrollees with at least six months enrollment in Medicare Parts A and B and/or Medicaid.

Categorical condition group prevalence

Categorical Condition Group	CCW Method
Number of Enrollees	**5,264,825**
Heart Condition	72%
Mental Health Condition	41%
Musculoskeletal Disorder	37%
Diabetes	35%
Anemia	31%
Lung Disease	23%
Eye Disease	22%
Kidney Disease	17%
Tobacco Use	11%
Other Metabolic Disorder	10%
Stroke	7%
Neoplasm	5%
Injury & Hip/Pelvic Fracture	1%

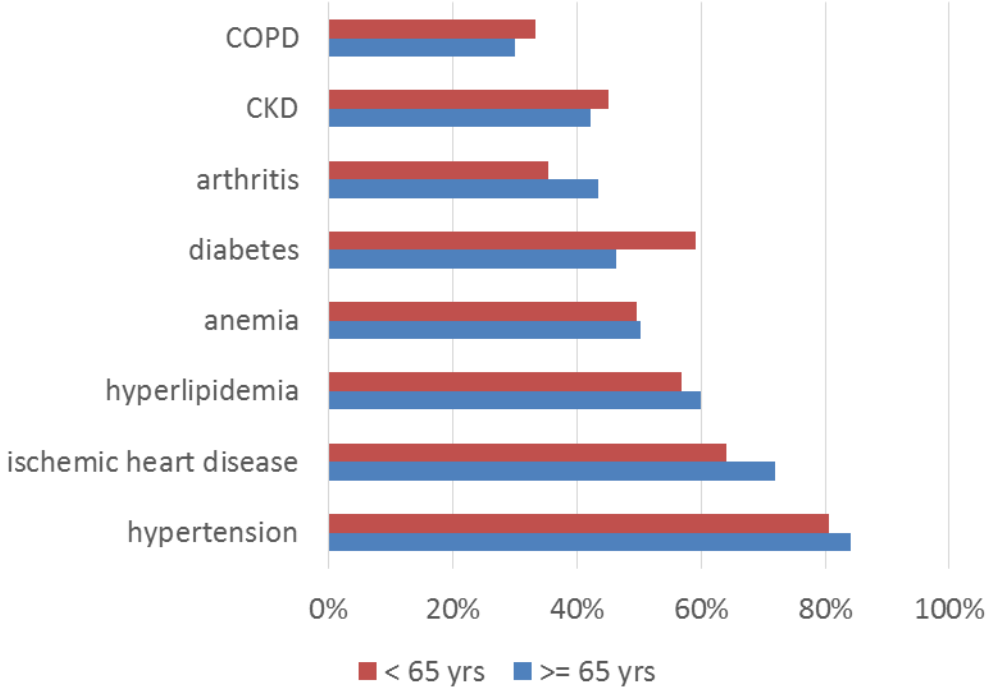
Source: CY 2008 CCW Medicare and Medicaid data, FFS enrollees with at least six months enrollment in Medicare Parts A and B and/or Medicaid.

Comorbidity among chronic conditions for Medicare FFS beneficiaries, 2010



Stroke and heart failure were highly comorbid conditions with about 55% of beneficiaries with these conditions having ≥ 5 chronic health conditions

Impact of age on co-occurring chronic conditions among 4.9 million Medicare beneficiaries with heart failure



Data source: Centers for Medicare and Medicaid Services administrative claims data, January 2011–December 2011, from the Chronic Condition Warehouse (CCW), ccwdata.org

Ten most common co-occurring chronic conditions among Medicare beneficiaries with heart failure (n= 4.9M), 2011

Beneficiaries Age ≥65 y (N=4,376,150)*			Beneficiaries Age <65 y (N=571,768)†		
	N	%		N	%
Hypertension	3,685,373	84.2	Hypertension	461,235	80.7
Ischemic heart disease	3,145,718	71.9	Ischemic heart disease	365,889	64.0
Hyperlipidemia	2,623,601	60.0	Diabetes	338,687	59.2
Anemia	2,200,674	50.3	Hyperlipidemia	325,498	56.9
Diabetes	2,027,875	46.3	Anemia	284,102	49.7
Arthritis	1,901,447	43.5	Chronic kidney disease	257,015	45.0
Chronic kidney disease	1,851,812	42.3	Depression	207,082	36.2
COPD	1,311,118	30.0	Arthritis	201,964	35.3
Atrial fibrillation	1,247,748	28.5	COPD	191,016	33.4
Alzheimer's disease/dementia	1,207,704	27.6	Asthma	88,816	15.5

*Mean No. of conditions is 6.1; median is 6.

†Mean No. of conditions is 5.5; median is 5.

Data source: Centers for Medicare and Medicaid Services administrative claims data, January 2011–December 2011, from the Chronic Condition Warehouse (CCW), ccwdata.org (847).

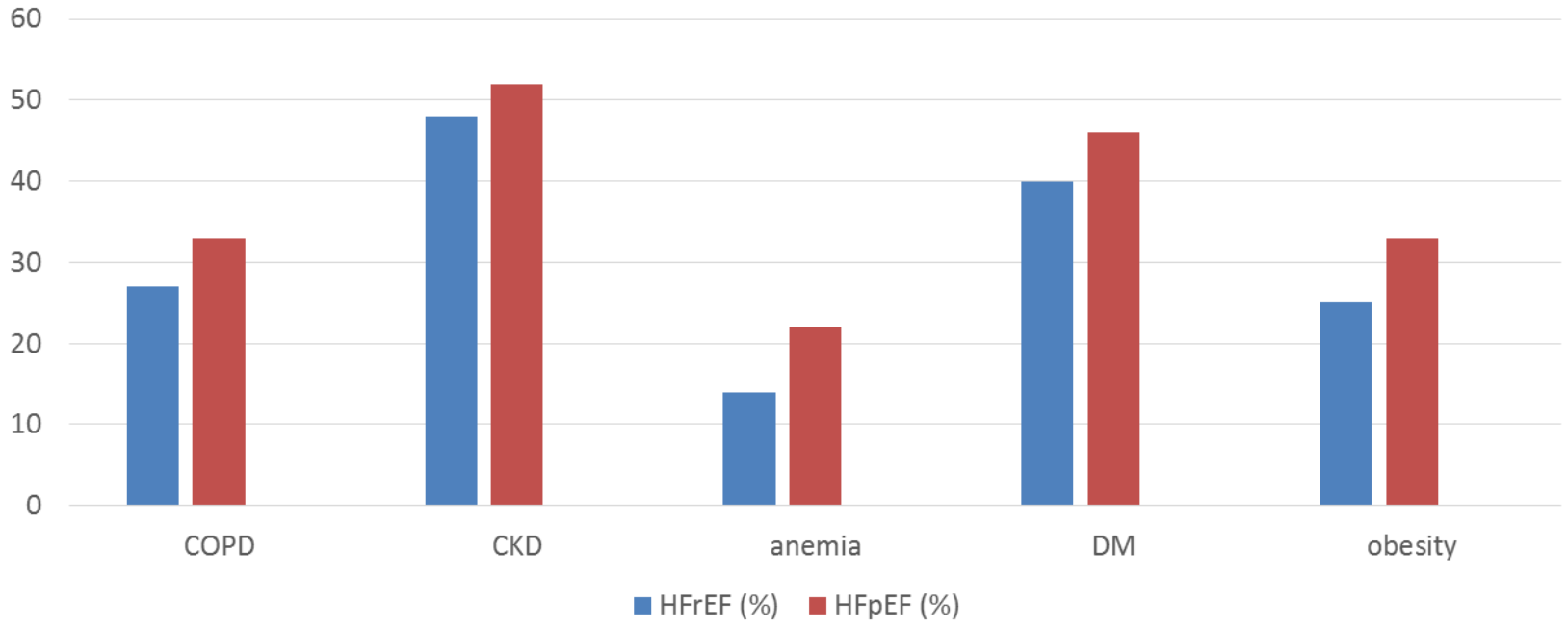
COPD indicates chronic obstructive pulmonary disease; and HF, heart failure.

The clinical relevance of comorbidity in HF: Predicting mortality in 39,372 patients with HF

Variable	Rate ratio	95% CI
Age (per 10 years)	1.154	(1.092, 1.220)
Males	1.115	(1.073, 1.159)
BMI (per 1 kg/m^2 increase up to 30 kg/m^2)[a]	0.965	(0.959, 0.972)
Current smoker	1.159	(1.109, 1.210)
SBP (per 10 mmHg increase)	0.882	(0.855, 0.910)
Diabetes	1.422	(1.365, 1.481)
NYHA		
I	0.788	(0.732, 0.848)
II	1.000	
III	1.410	(1.354, 1.467)
IV	1.684	(1.580, 1.796)
Ejection fraction (per 5% increase up to 40%)[a]	0.581	(0.539, 0.627)
COPD	1.228	(1.152, 1.310)
HF duration >18 months	1.188	(1.139, 1.240)
Creatinine (per 10 µmol/L up to 350 µmol/L)	1.039	(1.035, 1.042)
Beta-blocker	0.760	(0.726, 0.796)
ACE-I/ARB	0.908	(0.856, 0.963)

From Pocock SG, et al Eur Heart J 2013; 34: 1404

Differences* in comorbidity burden between HFpEF and HFrEF



From Steinberg BA, et al Circulation 2012; 126:65-75

*Rates are unadjusted for differences in age/sex distribution

To summarize, at this point

- Among FFS Medicare-Medicaid enrollees:
  - The most prevalent classes of conditions include cardiovascular, metabolic and mental health conditions
  - Among CV conditions prevalence is above 10% for:
    - Hypertension (61%)
    - Ischemic heart disease (33%)
    - Heart failure (23%)
    - COPD (19%)
- Among FFS Medicare-Medicaid enrollees with HF:
  - Over half of these beneficiaries possess $\geq$ 5 chronic health conditions
  - Many of the latter would be considered risk factors in subjects without clinical heart failure

Current “controversies” in the comorbidity discussion

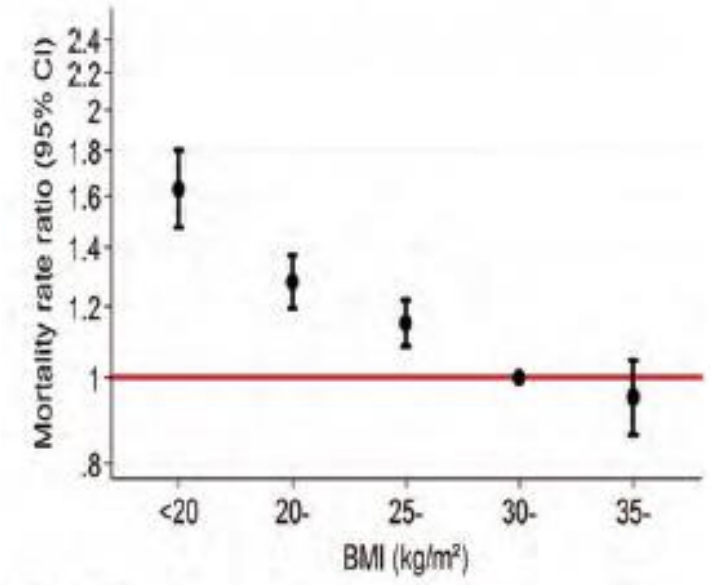
Are all comorbidities "bad"? A meta-analysis of the impact of obesity on mortality

	Self-reported or Measured Height and Weight			Height and Weight					
				Measured			Self-reported		
	No. of HRs	Summary HR (95% CI)	I^2, %	No. of HRs	Summary HR (95% CI)	I^2, %	No. of HRs	Summary HR (95% CI)	I^2, %
BMI of 25-<30									
All ages	86	0.94 (0.90-0.97)[a]	87.6	45	0.92 (0.88-0.96)[a]	74.8	41	0.95 (0.90-1.01)[a]	91.0
Mixed ages	68	0.95 (0.91-0.99)[a]	89.3	34	0.93 (0.88-0.98)[a]	79.2	34	0.96 (0.91-1.02)[a]	91.8
Age ≥65 y only	18	0.90 (0.86-0.95)	27.9	11	0.90 (0.84-0.96)	23.4	7	0.91 (0.84-0.98)	42.9
BMI of ≥30									
All ages	42	1.21 (1.12-1.31)[a]	89.3	22	1.11 (1.03-1.20)[a]	67.1	20	1.33 (1.21-1.47)[a]	88.0
Mixed ages	33	1.26 (1.16-1.37)[a]	89.7	16	1.13 (1.04-1.23)[a]	66.7	17	1.39 (1.27-1.53)[a]	84.3
Age ≥65 y only	9	1.05 (0.92-1.21)[a]	63.9	6	1.02 (0.81-1.29)[a]	73.1	3	1.08 (0.93-1.25)	39.7
BMI of 30-<35									
All ages	42	0.97 (0.90-1.04)[a]	83.8	21	1.00 (0.92-1.09)[a]	64.2	21	0.94 (0.84-1.05)[a]	89.6
Mixed ages	33	0.98 (0.91-1.06)[a]	84.8	16	1.03 (0.94-1.12)[a]	64.8	17	0.95 (0.85-1.07)[a]	90.3
Age ≥65 y only	9	0.88 (0.69-1.12)[a]	78.0	5	0.90 (0.70-1.16)[a]	64.1	4	0.82 (0.46-1.47)[a]	88.1
BMI of ≥35									
All ages	42	1.34 (1.21-1.47)[a]	81.2	21	1.32 (1.20-1.46)[a]	46.6	21	1.35 (1.16-1.57)[a]	88.7
Mixed ages	33	1.35 (1.22-1.50)[a]	82.2	16	1.37 (1.24-1.52)	40.4	17	1.34 (1.14-1.57)[a]	89.6
Age ≥65 y only	9	1.28 (0.93-1.76)[a]	75.2	5	1.12 (0.89-1.43)	37.8	4	1.40 (0.64-3.07)[a]	86.8

Abbreviation: BMI, body mass index (calculated as weight in kilograms divided by height in meters squared).
[a] Indicates significant heterogeneity ($P<.05$).

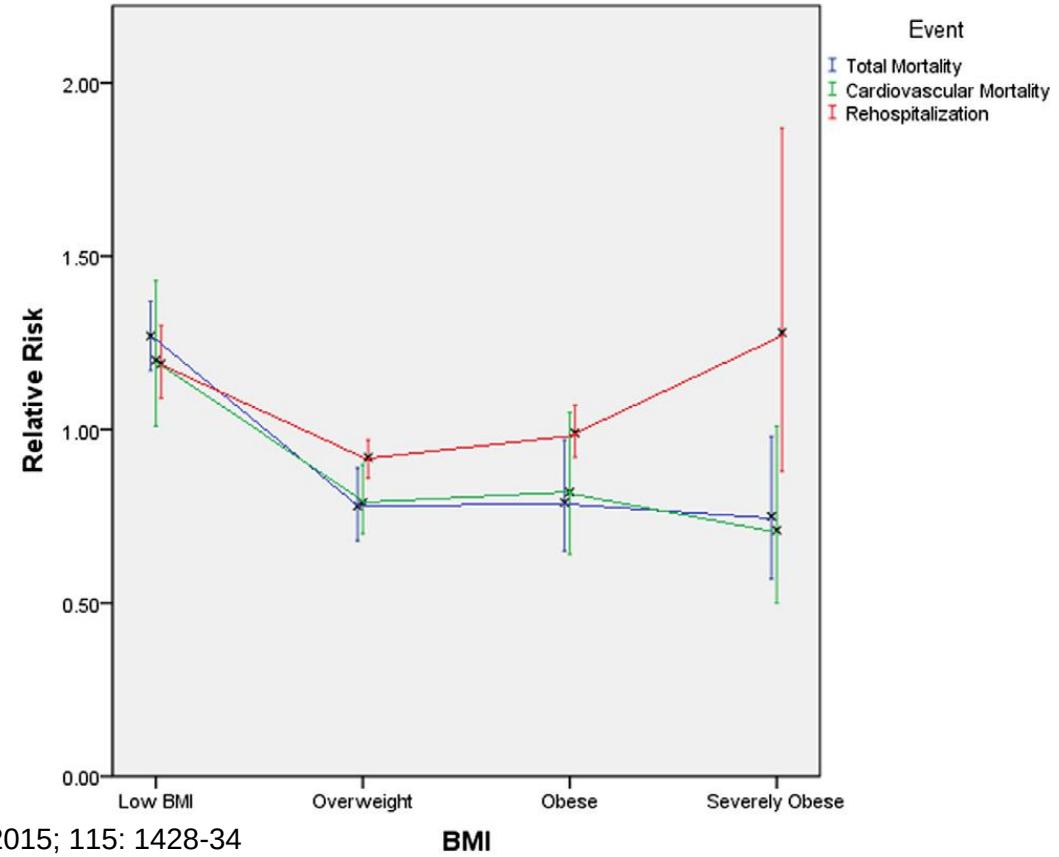
Flegal KM, et al JAMA 2013; 309: 71-82

The obesity paradox from MAGGIC.
Effect modification, confounding or survival time bias?



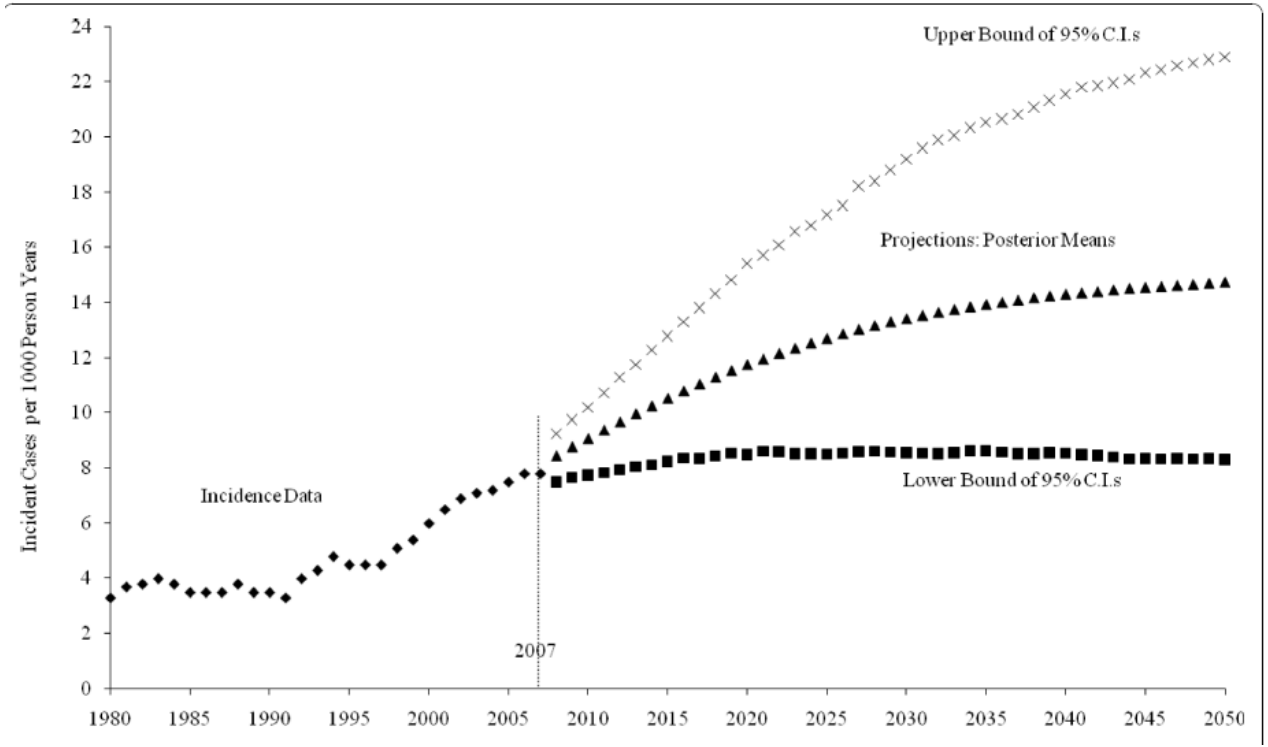
From Pocock SJ, et al. Eur Heart J 2013; 34: 1404

In any case, an observation made repeatedly



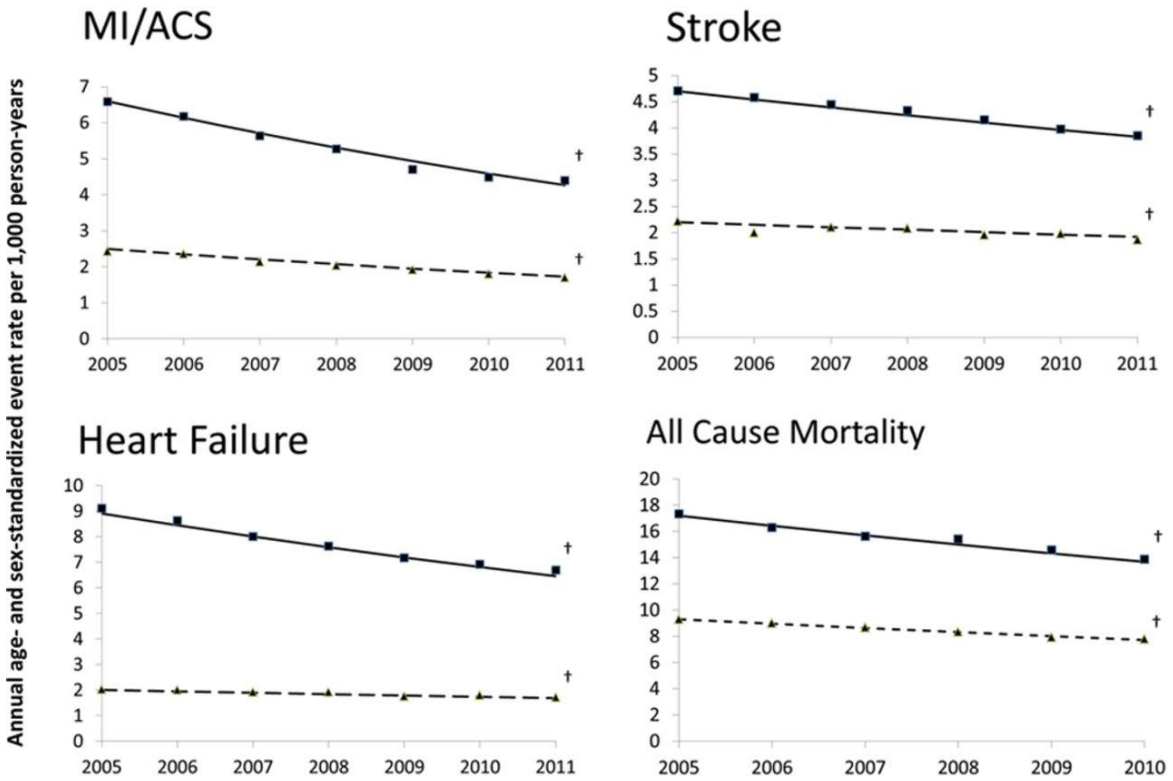
Sharma A, et al. Amer J Cardiol, 2015; 115: 1428-34

Projection (Bayesian) model of diagnosed diabetes incidence through 2050



From Boyle JP, et al. Popul Health Metr 2010; 8-29

Rates of myocardial infarction (MI)/acute coronary syndrome (ACS), stroke, heart failure, and all-cause mortality from 2005—200 by diabetes mellitus among 2.5 million insured persons across 11 healthcare systems.



Jay R. Desai et al. Circ Cardiovasc Qual Outcomes. 2015;8:508-516

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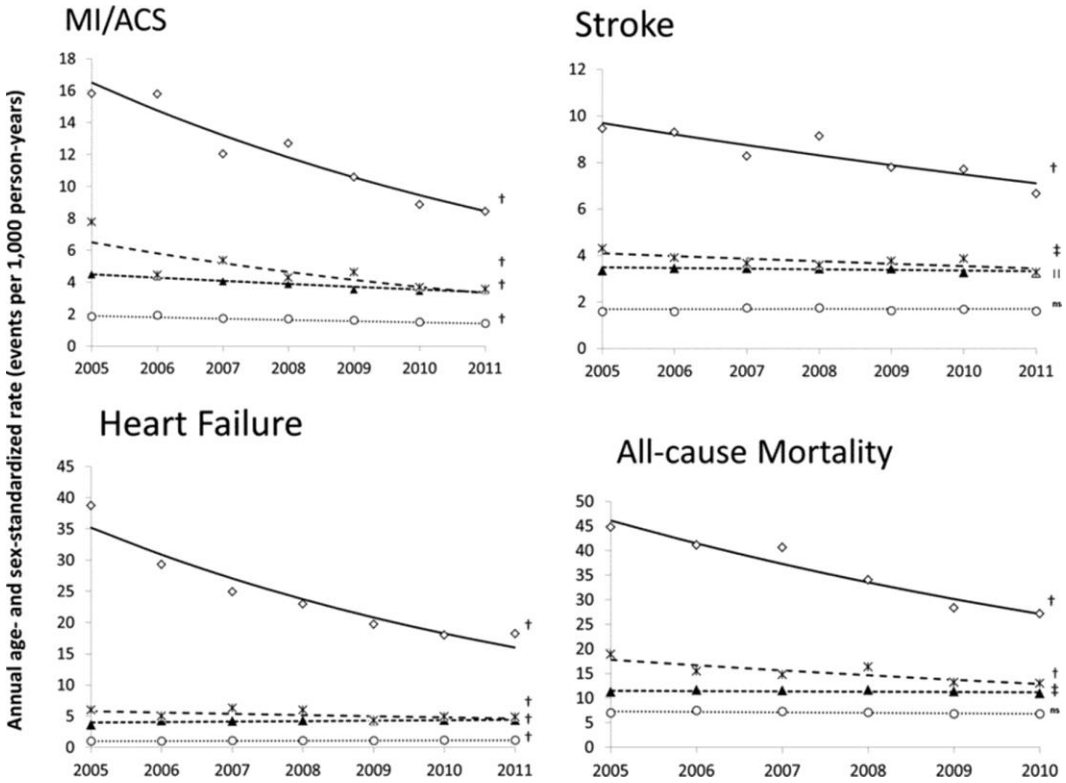
Rates of myocardial infarction (MI)/acute coronary syndrome (ACS), stroke, heart failure, and all-cause mortality from 2005 to 2011 among 2.5 million insured persons across 11 healthcare systems by diabetes mellitus status and prior cardiovascular history.



Jay R. Desai et al. Circ Cardiovasc Qual Outcomes. 2015;8:508-516

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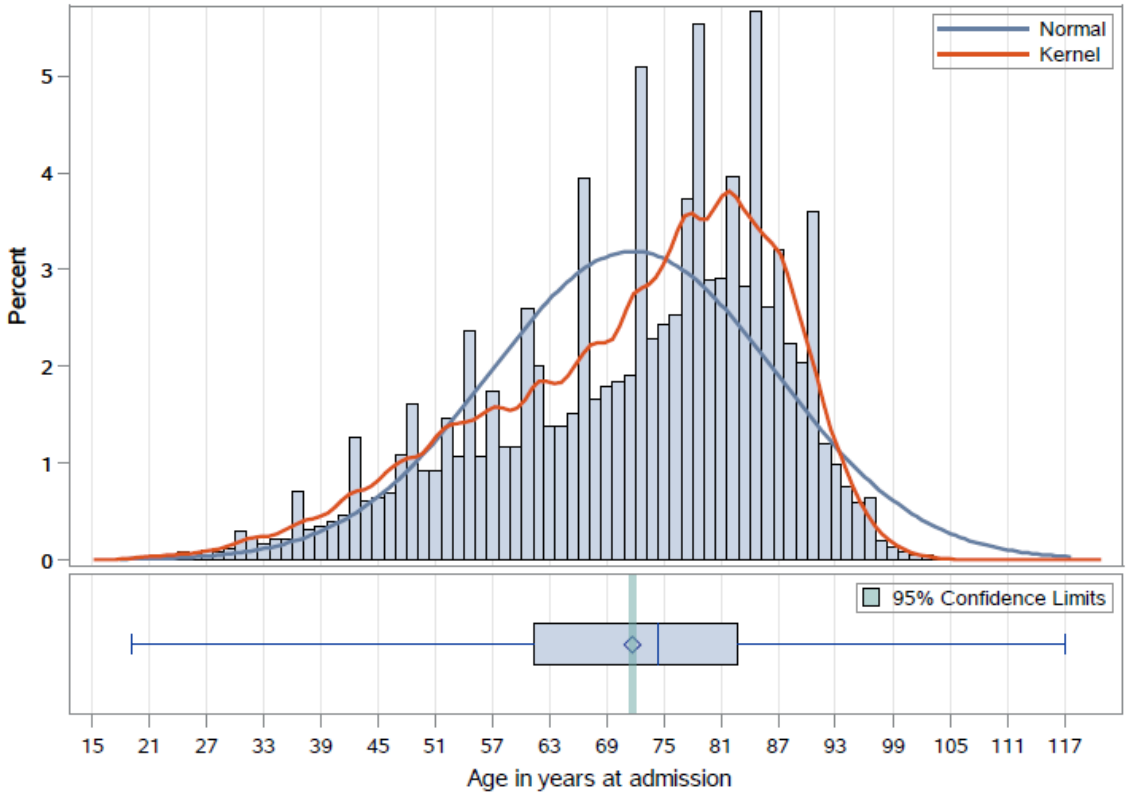
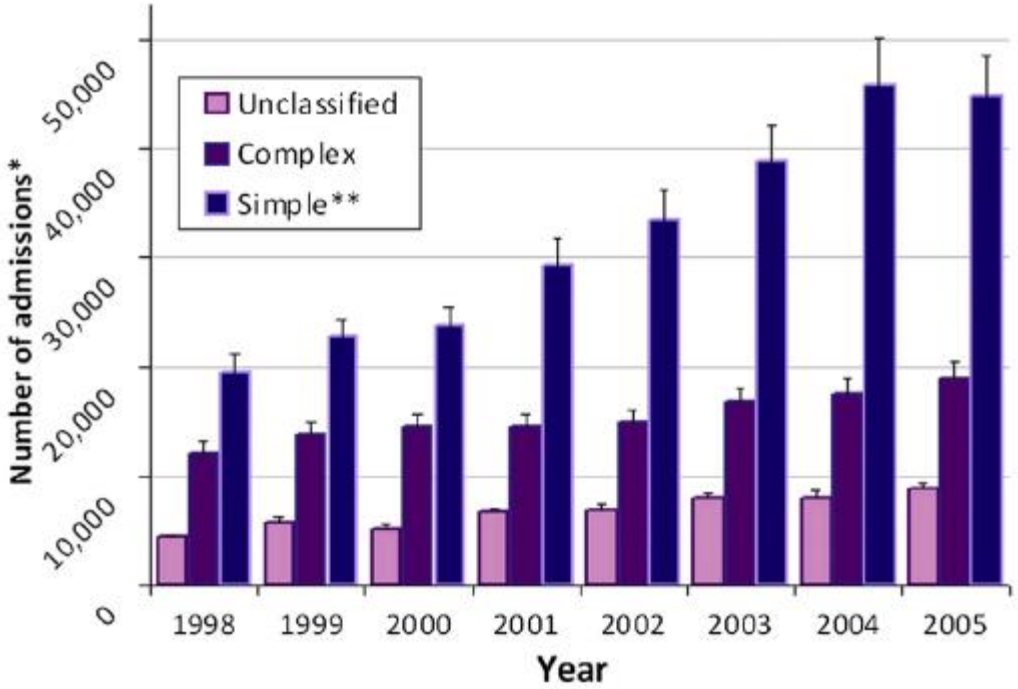
Are there additional comorbid conditions we need to be aware of in the current era?

Age Distribution of 2.6 million heart failure admissions in the National Inpatient Sample, 2000-2010

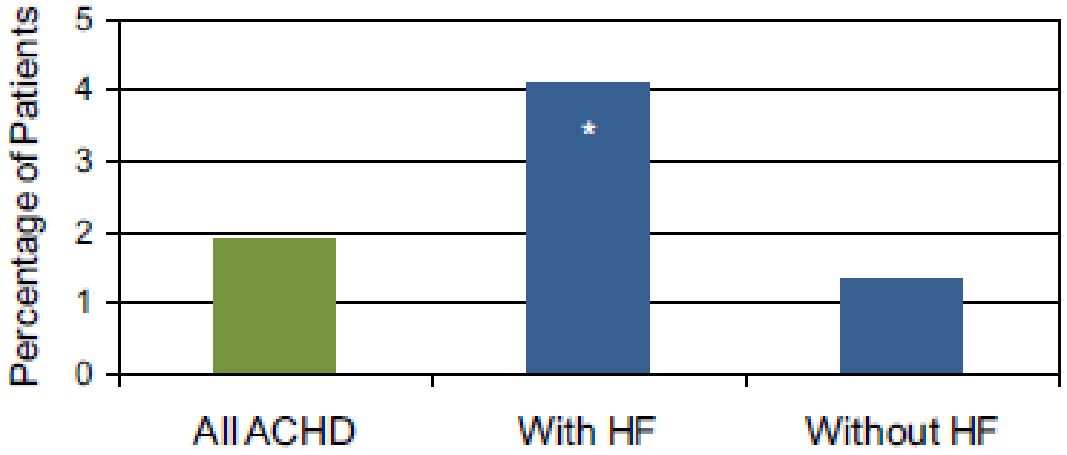


Within this left tail are an increasing number of adults with congenital heart disease



Rodriguez FH, et al. Heart Failure Clin; 2014

Mortality of hospitalized patients with HF and congenital heart disease



* Odds ratio 3.3, 95% CI 2.6-4.1

ibid

The less discussed comorbidities

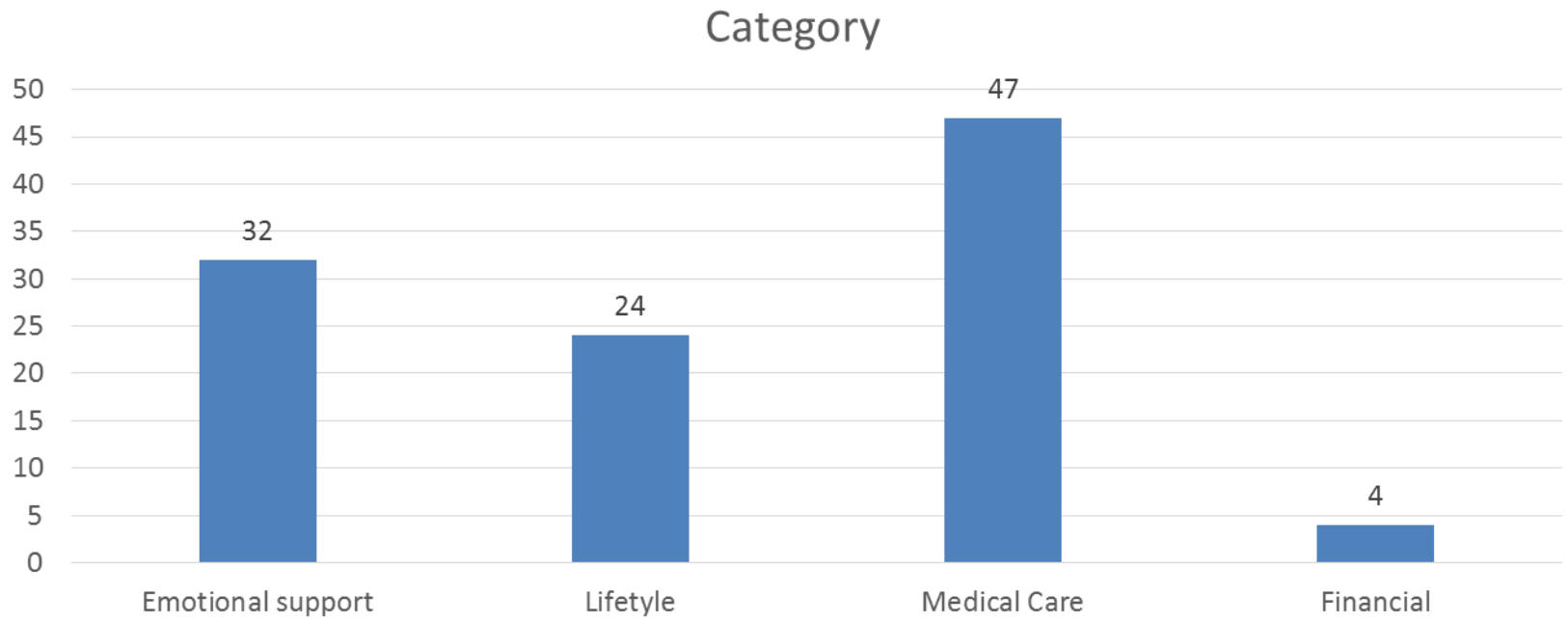
- Invisible (to a certain degree)
- Not part of “traditional” medical assessment
- Patient not likely to disclose without prompts
- Referral and treatment may be difficult

Survey conducted by AHA staff of 200 patient volunteers

- **Emotions and lifestyle**: These respondents are primarily focused on emotional support and management of lifestyle factors. Emotional support includes the management of their emotions and getting support from family members. Lifestyle includes diet, exercise, and stress management skills, with an emphasis on overall well-being.
- **Medical Care**: The primary focus of their medical care is the management of signs and symptoms and their medication management. Targets of care include feeling better (fewer symptoms and more energy) and increasing their ejection fraction.

Courtesy Alison Cook, AHA

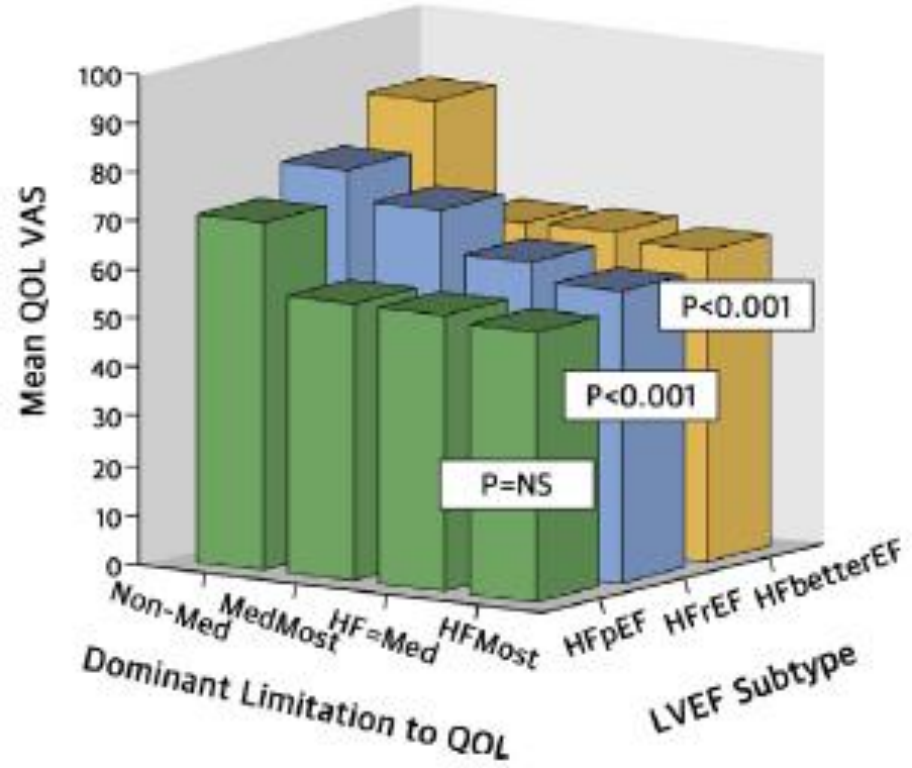
Patient-centric approach to heart failure: “what is my biggest struggle?”



Courtesy Alison Cook, AHA

Mean QOL score stratified by patient-reported limitations to QOL and EF subtype

Less than one-half of patients with heart failure said their quality of life was primarily limited by heart failure symptoms

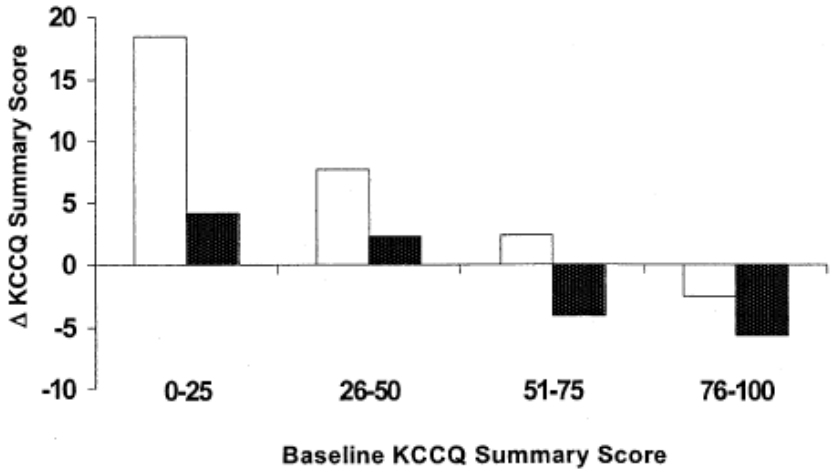


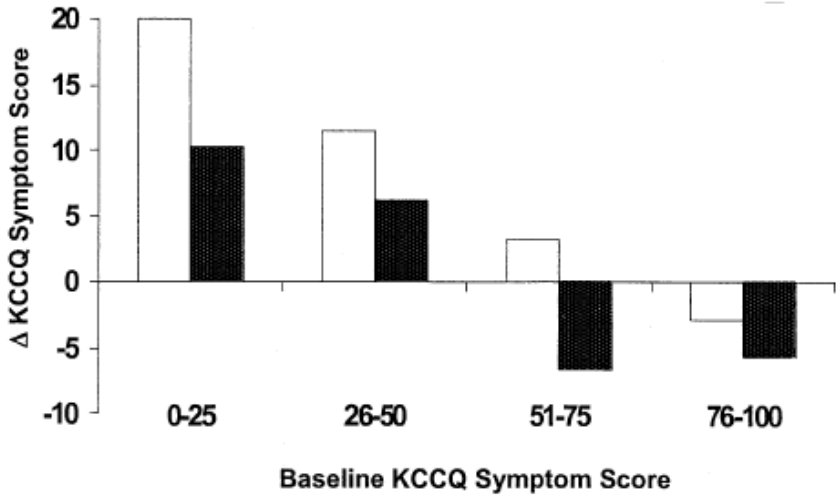
Joyce E, et al JACC-HF 2016; 4: 184-93

Psychosocial Comorbidities (and their linkages)

Psychological	Depression Anxiety	It is well established in the literature that depression and anxiety are quite prevalent with HF. Rumsfeld et al (2003) found markedly worse baseline health status with depression. Depression puts HF patients at high risk for significant worsening of HF symptoms.
Sociological	Neighborhood SES Partner/Significant Relationship Social Support Medication adherence Transportation	McCarthy et al (2013) and Kind et al (2014) have studied the importance of socioeconomic variables. Howie-Esquival and Spicer (2012) addressed HF patients without a partner indicating great risk for readmission. Krumholz (2015) also noted “economic burden” and “live alone” in the Tele-HF Study. Foraker et al (2011) noted socioeconomic factors as significant in the ARIC study.
Education	Post high school education Health literacy/understanding Medication adherence	Tremendous efforts have been made by Am Heart Assoc to design and distribute patient education materials at an appropriate literacy level.
Environment	Urban/Rural Community Support Nearby Pharmacy/Delivery	Community resources have been noted to make a difference in self management of disease.
Financial	Employment/Income SES Health Insurance Medication adherence	Medication adherence is a major issue that involves community resources as well as individual financial/health insurance concerns.

Depression as a predictor of decline in health status in patients with heart failure





Rumsfeld JS, et al JACC 2003; 42:1811-7

How to Identify/Screen & Address These Psychosocial Issues

Psychological	Depression Anxiety	Screen and refer/treat. PHQ 9 and BMH 20 are screenings tools. Behavioral Health Integration in Primary & Specialty Care Clinics.
Sociological	Neighborhood SES Partner/Significant Relationship Social Support Medication adherence Transportation	Screen: ask about supports and need for assistance. Identify system resources for social support in community.
Education	Post high school education Health literacy/understanding Medication adherence	Screen and assess: “teach back” strategy. Patient education materials at appropriate level.
Environment	Urban/Rural Community Support Nearby Pharmacy/Delivery	Ask about source for prescriptions. Identify system resources for financial assistance. Identify resources for community support.
Financial	Employment/Income SES Health Insurance Medication adherence	Screen and assess. Refer to Patient Assistance Programs.

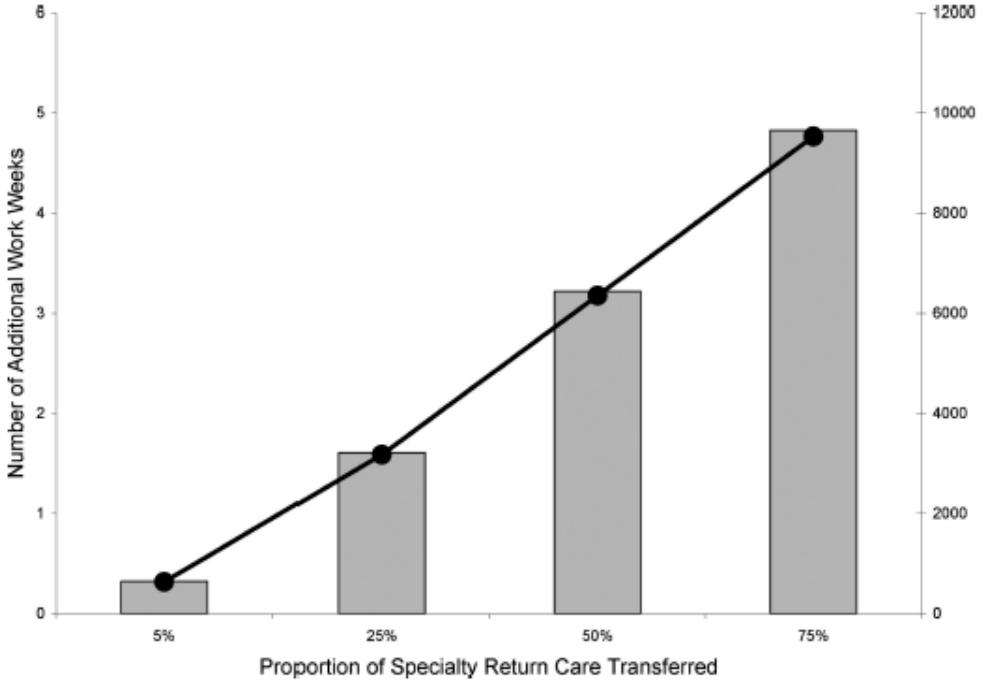
UNM Hospital – Heart Failure Clinic
Psychologist at Clinic; Referrals from HF providers

- Warm handoff from cardiologist
- Usually 3 visits in co-located clinic
- Cognitive behavioral therapy

BHM 20		
Anxiety	Recovered	19%
Anxiety	Improved	45%
	Recovered/Improved	**64%**
Depression	Recovered	19%
Depression	Improved	42%
	Recovered/Improved	**61%**

Healthcare reform, specialty care and the patient centered medical home (PCMH): More work to do

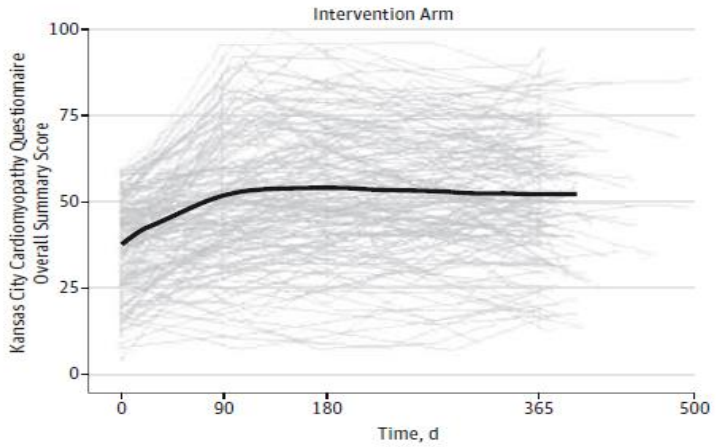
- National Ambulatory Medical Care Survey, 2007
- Measure care delivered by specialists for seven chronic conditions, including HF
- Estimate impact of re-allocation of 50% of this effort among PCP workforce
- Significant proportion of patient visits for HF were established patients (~ 20%)
- Re-allocating 50% of the CAD/HF return visits for established patients translated to 1.5 extra work weeks/year for each PCP

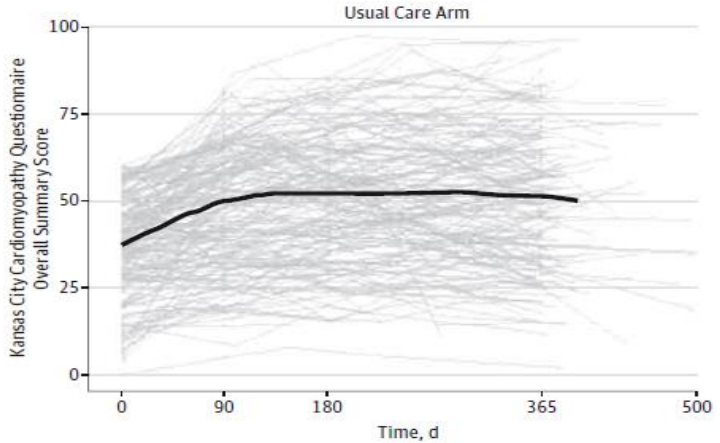


Hollingsworth JM, et al. Medical Care 2011; 49: 4-9

Patient-centered disease management in HF

- RCT comparing collaborative care (PCDM) model with usual care in patients with HF
- Primary outcome was change in KCCQ score at 1 year
- There was significant improvement (mean change 13.5 points) in both groups and no difference in score at baseline
- No significant difference in 1 year hospitalization rate
- Greater improvement in PHQ-9 score in the intervention arm in those screened positive for depression at baseline





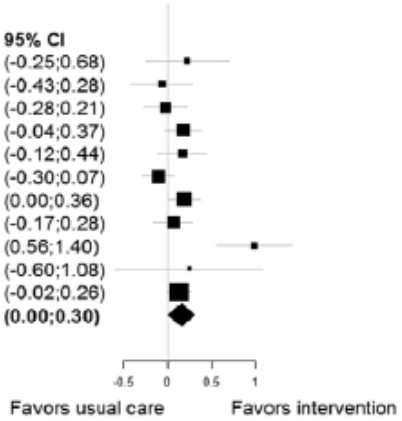
From Bekelman DB, et al . JAMA Intern Med 2015; 175:725

Self-management interventions for heart failure: A systematic review of 20 RCTs (n=5,624) of self-management interventions (Jonkman NH, et al Circulation 2106; 133:1189)

	control	intervention	total
Comorbidity index, n (%)*			
No comorbid conditions	401 (16.7)	556 (20.7)	957 (18.8)
Comorbid conditions in 1 cluster	925 (38.6)	991 (36.9)	1916 (37.7)
Comorbid conditions in >1 cluster	1070 (44.7)	1136 (42.3)	2206 (43.4)

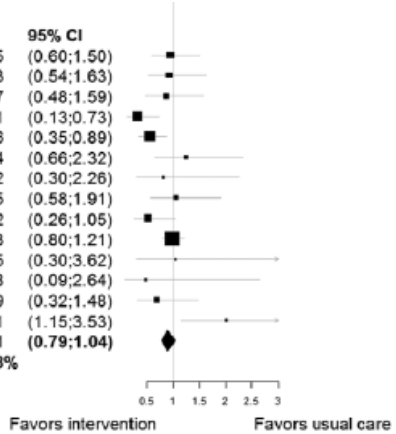
HF-related QoL 12 months

	Year	Sample size	SMD	95% CI
Blue	2001	165	0.21	(-0.25;0.68)
Stromberg	2003	106	-0.07	(-0.43;0.28)
Martensson	2005	153	-0.03	(-0.28;0.21)
Sisk	2006	406	0.17	(-0.04;0.37)
Bruggink-Andre de la Porte	2007	240	0.16	(-0.12;0.44)
Jaarsma	2008	1023	-0.11	(-0.30;0.07)
Smeulders	2009	317	0.18	(0.00;0.36)
Peters-Klimm	2010	197	0.06	(-0.17;0.28)
Otsu	2011	102	0.98	(0.56;1.40)
Leventhal	2011	42	0.24	(-0.60;1.08)
DeWalt	2012	605	0.12	(-0.02;0.26)
Overall		**3356**	**0.15**	**(0.00;0.30)**
I squared			**43.6%**	



Mortality time-to-event

	Year	Sample size	HR	95% CI
Rich	1995	282	0.95	(0.60;1.50)
Blue	2001	165	0.93	(0.54;1.63)
Riegel	2002	358	0.87	(0.48;1.59)
Stromberg	2003	106	0.31	(0.13;0.73)
Atienza	2004	338	0.56	(0.35;0.89)
Tsuyuki	2004	276	1.24	(0.66;2.32)
Riegel	2006	135	0.82	(0.30;2.26)
Aldamiz	2007	279	1.05	(0.58;1.91)
Bruggink-Andre de la Porte	2007	240	0.52	(0.26;1.05)
Jaarsma	2008	1023	0.98	(0.80;1.21)
Peters-Klimm	2010	197	1.05	(0.30;3.62)
Leventhal	2011	42	0.48	(0.09;2.64)
DeWalt	2012	605	0.69	(0.32;1.48)
Heisler	2013	266	2.01	(1.15;3.53)
Overall		**4312**	**0.91**	**(0.79;1.04)**
I squared			**43.8%**	



To review (1)….

- Among FFS Medicare-Medicaid enrollees:
  - The most prevalent classes of conditions include cardiovascular, metabolic and mental health conditions
  - Among CV conditions prevalence is above 10% for:
    - Hypertension (61%)
    - Ischemic heart disease (33%)
    - Heart failure (23%)
    - COPD (19%)
  - Prevalence of metabolic disorders
    - Hyperlipidemia (39%)
    - Diabetes mellitus (35%)
  - Mental health conditions
    - Anxiety disorders (15%)
    - Depression (25%)
    - Schizophrenia, etc (12%)

To review (2)….

- Among FFS Medicare-Medicaid enrollees with HF:
  - Over half of these beneficiaries possess ≥ 5 chronic health conditions
  - Many of the latter would be considered risk factors in subjects without heart failure
  - Interactions among such conditions may either increase risk of adverse outcomes (e.g., diabetes) or possibly decrease risk of adverse outcomes (e.g., obesity)
  - The multiplicity of comorbid conditions requires an integrated, multi-disciplinary care environment
  - Current (although limited) evidence suggests a beneficial effect on HF specific-outcomes as well as non-HF specific outcomes of self-management programs
  - The impact of psychosocial comorbidity is real, difficult to quantify but potentially modifiable. Patient-centric approaches to recognition and treatment should be incorporated into disease management programs

Work to do…..

- Longitudinal analysis of the impact of age, period and cohort on the incidence and prevalence of “traditional” CV risk factors in patients with HF, esp. DM, obesity
- Greater attention to the frequency of psychosocial comorbidity in patients with HF
- Enhanced population-level surveillance of “newer” risks and conditions:
- Incorporation of evidence base into practice guidelines

Current Guidelines Have Limited Applicability to Patients with Comorbid Conditions: A Systematic Analysis of Evidence-Based Guidelines

Marjolein Lugtenberg[1,2]*, Jako S. Burgers[2,3], Carolyn Clancy[4], Gert P. Westert[1,2], Eric C. Schneider[5,6,7]

- Systematic analysis of evidence based guidelines
- Focused on 4 prevalent chronic conditions
- Assessed supporting evidence for comorbidity-related recommendations
- In general, the guidelines included few recommendations on patients with comorbidities
- Strength of supporting evidence was moderate
- Conclude by saying that “guidelines should be more explicit about the applicability of their recommendations to patients with comorbidity”

Lutenberg M. et al PLoS ONE 2011; 6(10):25987

QUESTIONS???

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