

Presenter Disclosure Information

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A New Epidemic of Heart Failure in the United States: Findings from the National Hospital Discharge Surveys, 1980 - 2006

FINANCIAL DISCLOSURE: None

UNLABELED/UNAPPROVED USES DISCLOSURE: None

A New Epidemic of Heart Failure in the United States: Findings from the National Hospital Discharge Surveys, 1980 - 2006

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BACKGROUND

- **Heart failure is the most common diagnosed cardiovascular condition among senior hospitalized patients**

OBJECTIVES

- **To quantitatively examine the long-term trend of hospitalization rates in patients aged 65 or older with primary diagnosis of heart failure in the past 27 years**

METHODS

- **Dataset**

National Hospital Discharge Surveys (NHDS), 1980 – 2006

The NHDS provides national estimates of hospital use based upon patients discharged from noninstitutional hospitals

- **Case definition**

Patients with heart failure was defined with first-listed (primary) diagnosis of the disease according to International Classification of Disease 9th version and Clinical Modification (ICD-9-CM) codes 428

METHODS

Statistical analyses

- **Sampling weight procedure to reflect the overall US population**
- **Census estimated population data were used to estimate age and gender-specific hospitalization rates**
- **Age-adjusted rates for US 2000 population**
- **Relative risk estimated: Poisson regression model**
- **Trend test: $y = a + \beta * x + \xi$**
- **Estimated % change = $100 \times (e^{\beta} - 1)$**

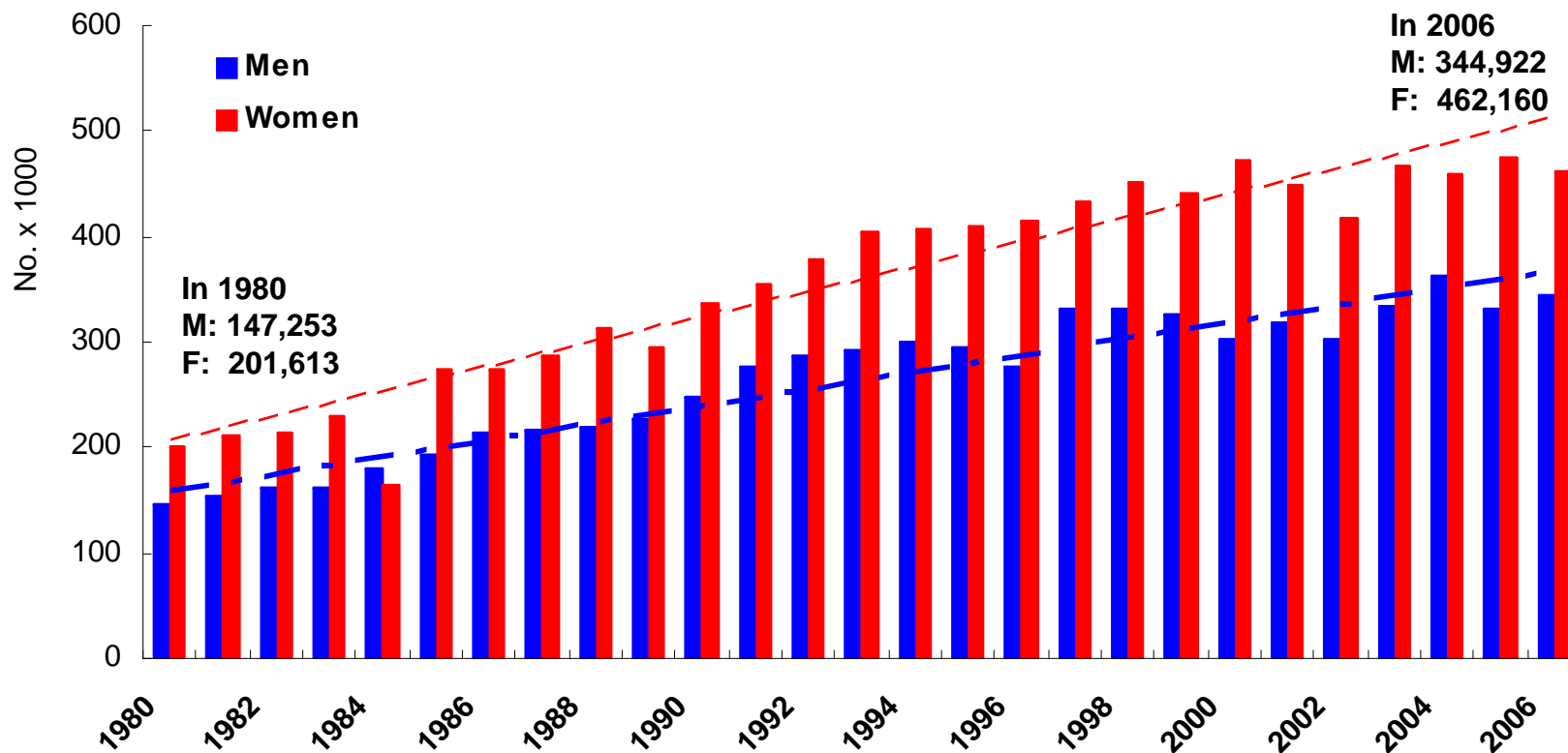
RESULTS: Sample distribution

Study sample of those aged 65 and older who were hospitalized with any disease, 1980 and 2006

		N	%
Sex	Men	941122	42.3
	Women	1284083	57.7
	Total	2,225,205	
Age (year)	65-74	937,189	42.1
	75-84	882,292	39.7
	>=85	405,724	18.2
Regions	Northeast	55,809	25.0
	Midwest	666,817	30.0
	South	719,158	32.3
	West	283,421	12.7

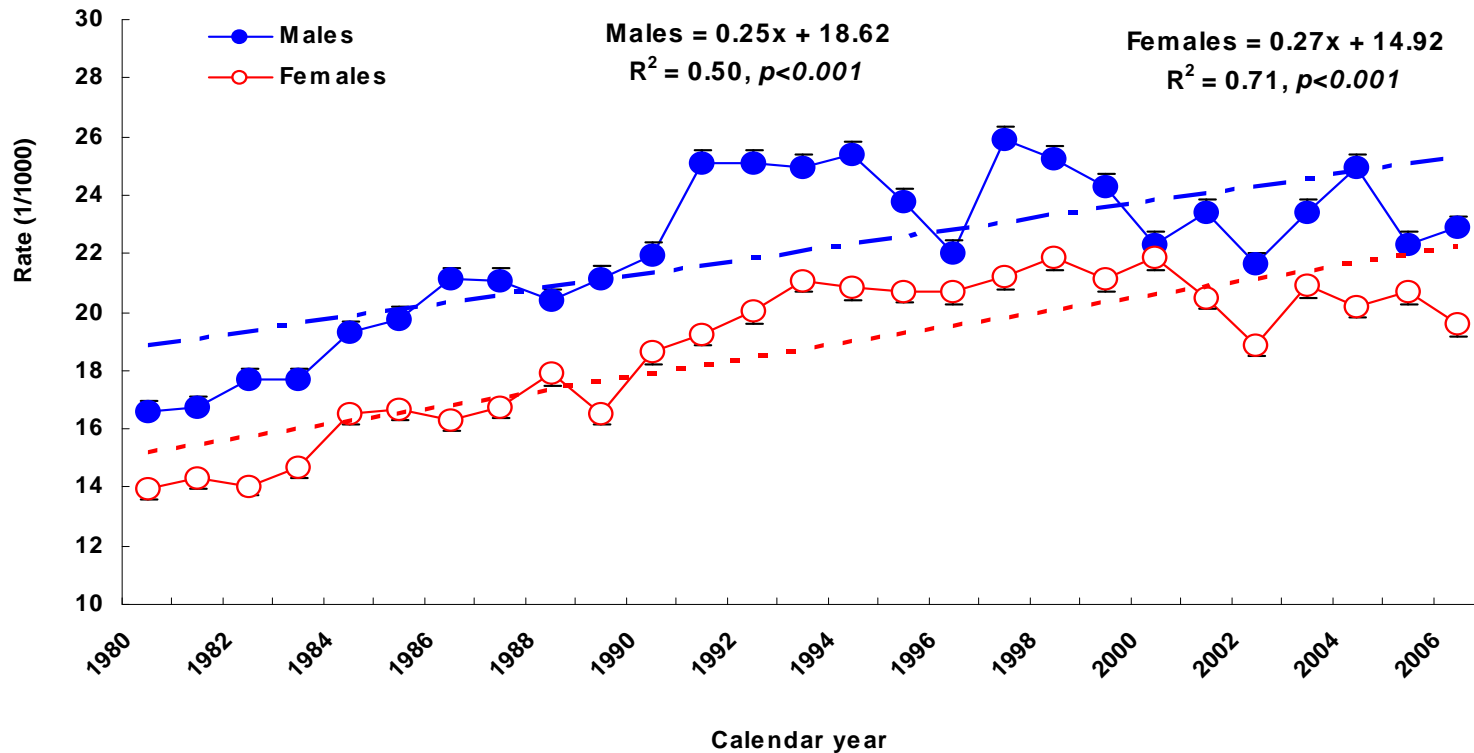
The number of patients aged 65 or older with first-listed diagnosis of heart failure hospitalization (per 1000), 1980 – 2006, USA

Estimated number of patients (per 1000) aged 65 or older with first-listed diagnosis of HF hospitalization, 1980 - 2006



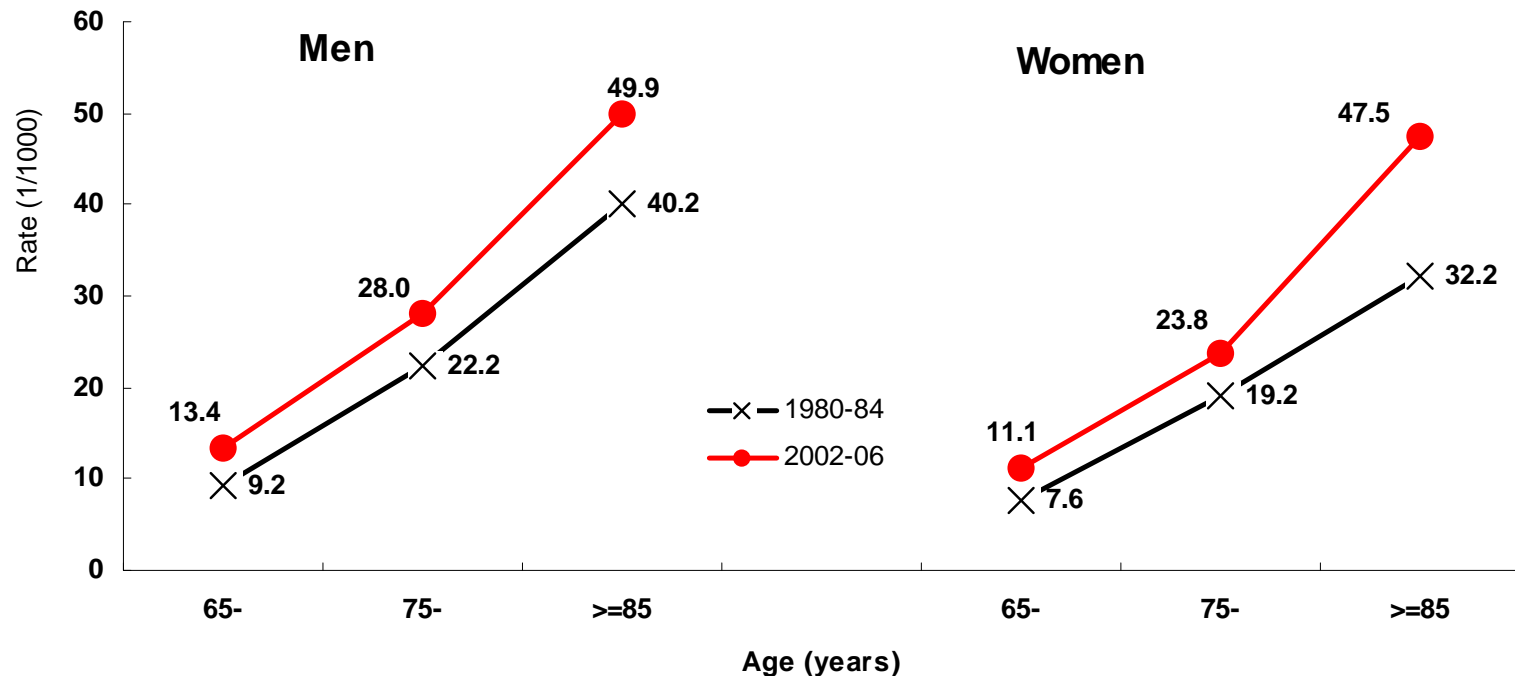
Age-adjusted heart failure hospitalization rates (per 1000) from 1980 to 2006, USA

Age-adjusted hospitalization rates (per 1000) in subjects aged 65 or older with a first-listed diagnosis of heart failure in the United States, 1980 to 2006



Age-specific hospitalization rates for those aged 65-74, 75-84, and ≥ 85 , a comparison between 1980-84 and 2002-06

Age-specific hospitalization rates (per 1000) in subjects aged 65 or older with a first-listed diagnosis of heart failure, in years 1980-84 and 2002-2006



Odds ratios of HF hospitalization

Multi-adjusted odds ratios of hospitalization in patients aged 65 or older with a first-listed diagnosis of HF in association with age, sex and period *

	B (SE)	OR (95%CI)	<i>p</i> -value
Age (years)			
65-74	1	-	
75-84	0.828 (0.02)	2.29 (2.18 ~ 2.40)	<0.001
>=85	1.414 (0.03)	4.11 (3.89 ~ 4.35)	<0.001
Sex			
Females	1	-	
Males	0.146 (0.02)	1.16 (1.11 ~ 1.21)	<0.001
Period			
1980-1984	1	-	
2002-2006	0.312 (0.02)	1.37 (1.31 ~ 1.42)	<0.001
Interaction terms			
Age x Sex	-0.035 (0.04)	0.97 (0.89 ~ 1.05)	0.404
Age x Period	-0.059 (0.05)	0.94 (0.85 ~ 1.05)	0.283
Sex x Period	-0.051 (0.04)	0.95 (0.88 ~ 1.03)	0.219

* Odds ratios were estimated using multivariate Poisson regression analyses. Age, sex and period were adjusted with each other in Poisson regression models.

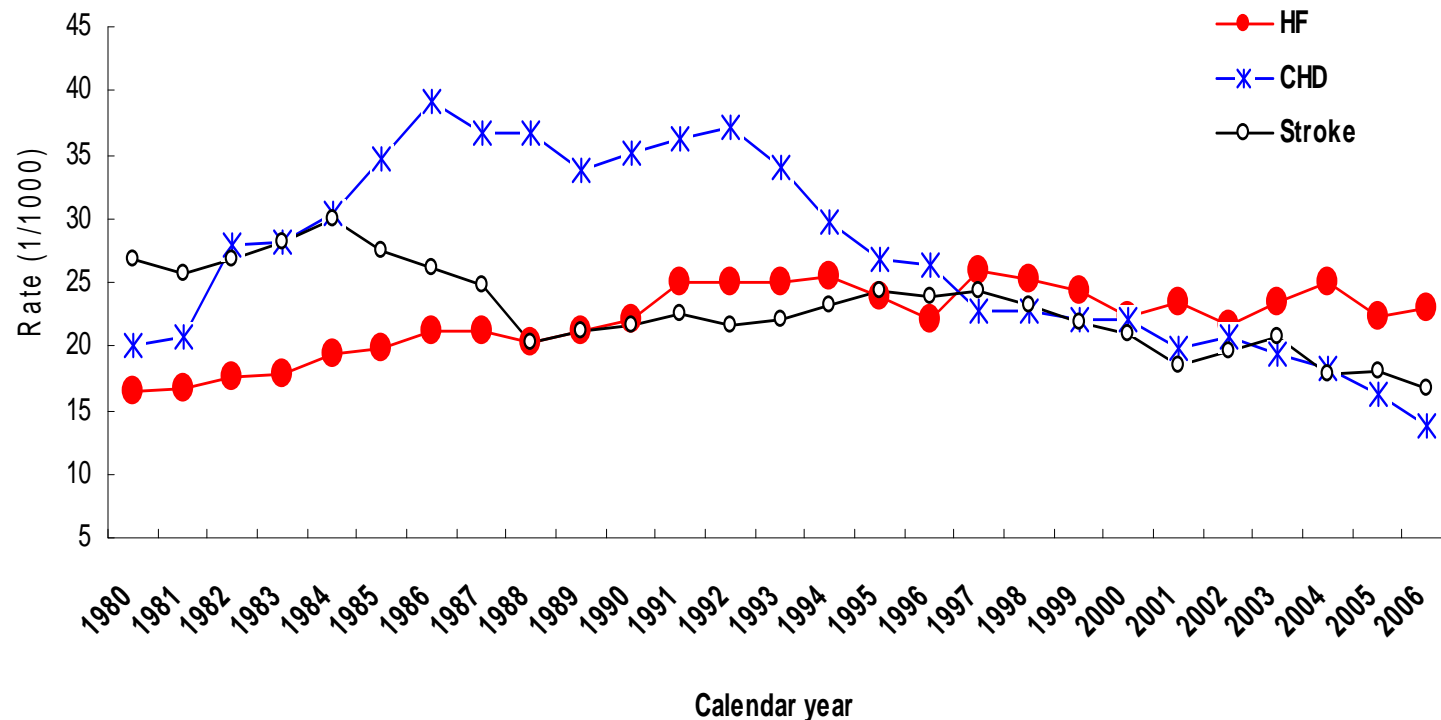
Trends of hospitalization rates in patients with heart failure, CHD and stroke

Changes in age-adjusted rate of hospitalization rates in the elderly aged 65 or older with first-listed diagnoses of HF, CHF and stroke in the United States, 1980 to 2006

	<u>Reg. coefficients (B)</u>	<u>Estimated annual % change</u>		R ²	p-value
	B (SE)	%	95%CI		
Males					
Heart failure	0.012 (0.002)	1.20	0.76 ~ 3.17	0.53	<0.001
CHD	-0.023 (0.006)	-2.24	-4.21 ~ -0.27	0.39	<0.001
Stroke	-0.016 (0.002)	-1.55	-3.51 ~ -0.42	0.69	<0.001
Females					
Heart failure	0.015 (0.002)	1.55	0.42 ~ 3.51	0.71	<0.001
CHD	-0.024 (0.006)	-2.36	-4.33 ~ -0.39	0.49	<0.001
Stroke	-0.013 (0.002)	-1.34	-3.30 ~ -0.63	0.73	<0.001

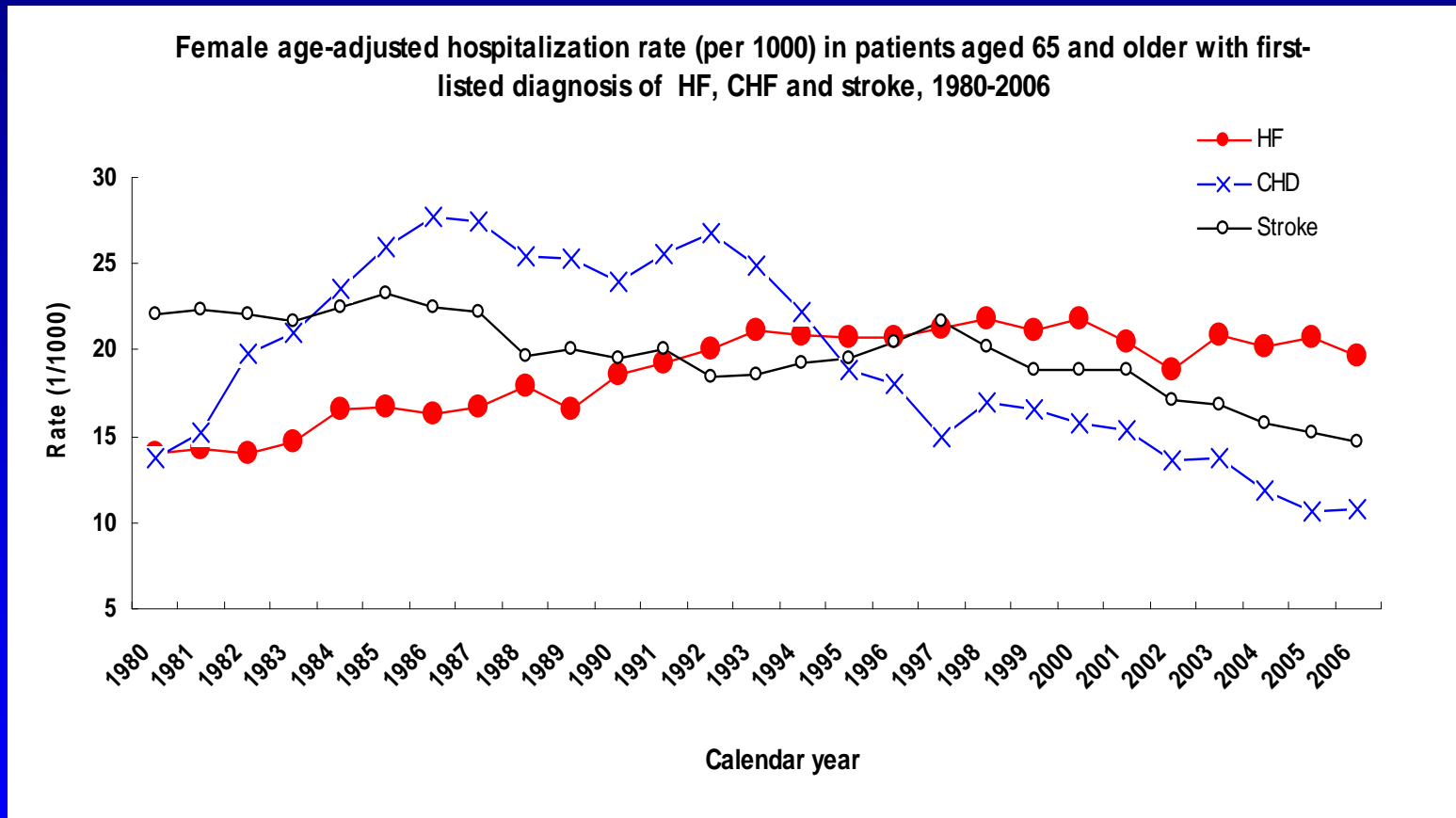
Trends of HF, CHD and stroke in males

Male age-adjusted hospitalization rate (per 1000) in patients aged 65 and older with first-listed diagnosis of HF, CHF and stroke, 1980-2006



Estimated annual % change:
CHD: -2.24%; Stroke: -1.55%; and HF: 1.2%

Trends of HF, CHD and stroke in females



Estimated annual % change:
CHD: -2.36%; Stroke: -1.34%; and HF: 1.55%

CONCLUSIONS

- **The result suggests that heart failure has reached epidemic levels and calls for effective prevention strategies to control the unfavorable epidemic of the disease.**

Thank you!

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