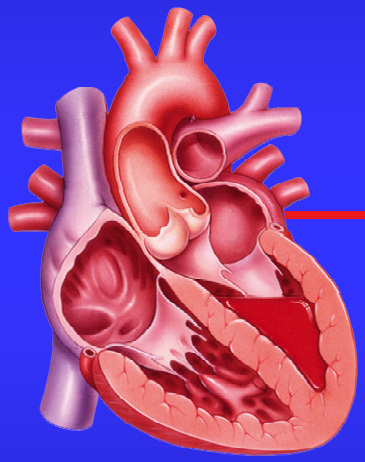
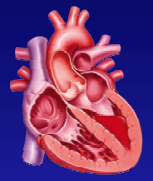
# *The Role of Information Technology in Disease Management: A Case for Heart Failure*



*Teresa De Peralta, MSN, APN-C*

***Heart Failure Product Workflow Consultant***

***Medtronic***

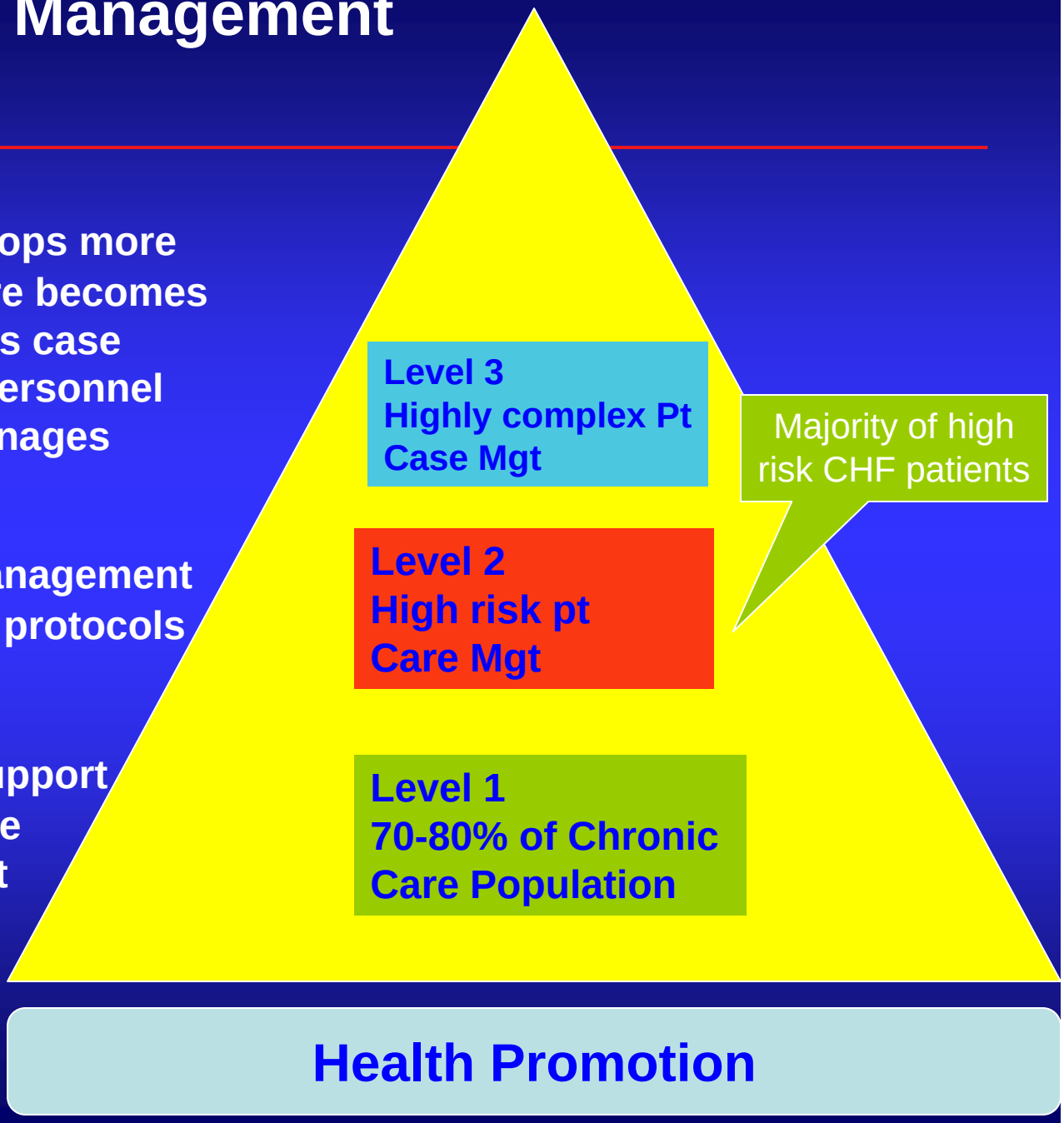


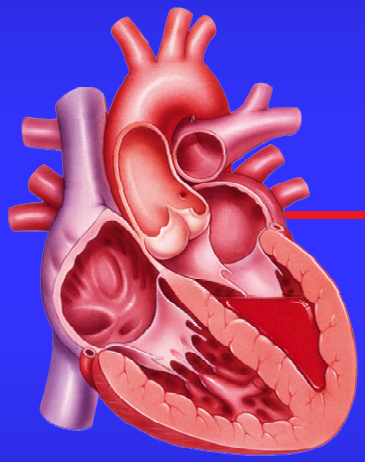
# Population Management

**Level 3:** As patient develops more than one co-morbidities care becomes more complex. This requires case management where a key personnel usually a nurse actively manages Care of the patient

**Level 2:** Disease/care management Using evidence-based care protocols For specific disease

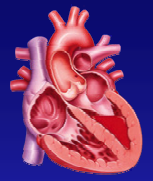
**Level 1:** With the right support Patients can take active care In their treatment to prevent Complications and disease Progression.





***It is important to have the right information and knowledge in order to be able to identify those who are at most risk.***

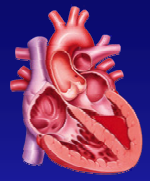
**Information is power when it is accessible and actionable by those who need it – when they need it.**



# What programs will help deliver good chronic disease management?

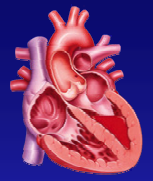
- Better integration of health and social care
  - Multi-disciplinary team approach *
- Quality outcomes framework
  - JCAHO Core measures *
- Development in IT
  - Remote monitoring *
- Developing new roles and new ways of working
  - Integration of HF & EP Clinics *
- Role of Allied Health Professionals
  - NPs, Pas , RNs,  VNA *
- Practitioners with special interests & expertise
  - HF cardiologists, nurses *

* CHF application



# Essential Components of good disease management

- Use of information systems to access key data on individuals and population
  - HF Registries
  - Integrated information systems ( Paceart, CareLink, CardioSight, EMR)
- Stratifying patients at risk
  - ACC/AHA Stages of HF
  - Risk stratification protocols
    - ADHERE Registry, Seattle Heart Model
- Involving patients in their own care
- Coordinating care (case managers, special clinics)



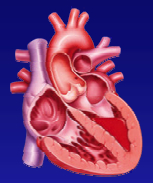
# Essential Components of good disease management…cont'd

- Integrating specialist and generalist care
- Integrating care across organizational boundaries
- Reduce healthcare utilization
  - Minimize unnecessary visits and admissions
  - Provide care in the least intensive setting

# Good chronic disease management can make a REAL DIFFERENCE

- Help prevent disease progression / deterioration
- Help prevent crises
- Help patient attain a good quality of life

# *Burden of Heart Failure Disease*

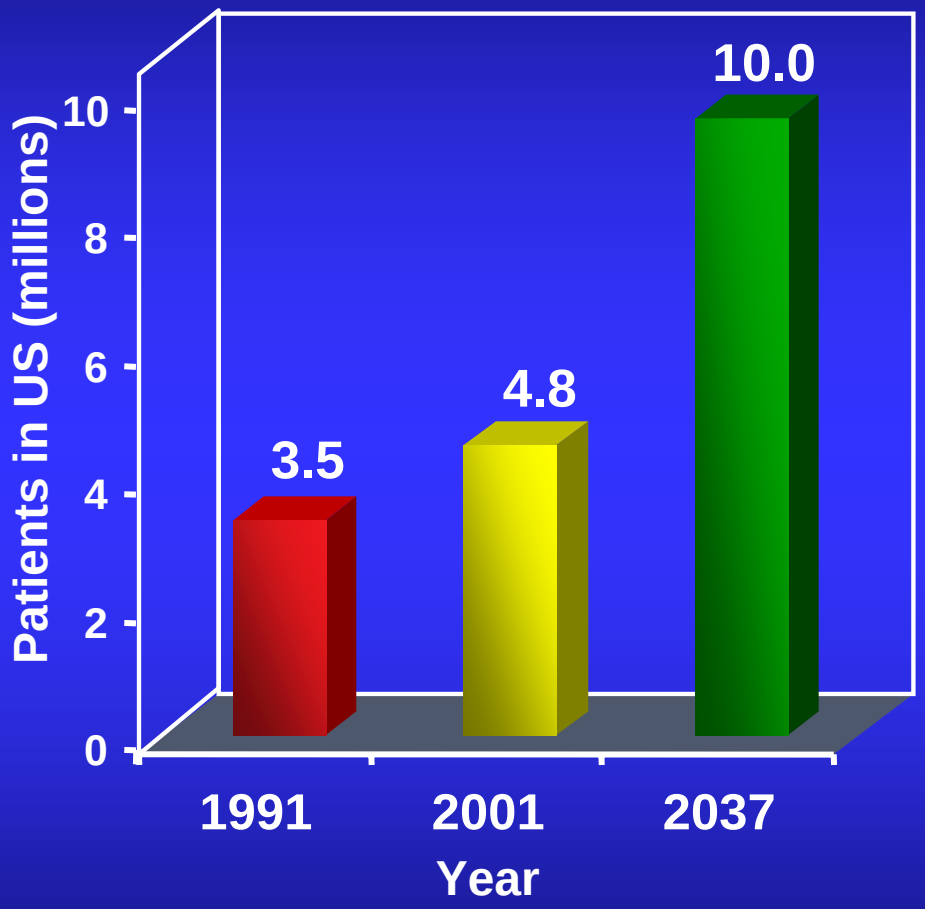


# Heart Failure Defined

"Heart failure is a complex clinical syndrome that can result from any structural or functional cardiac disorder that impairs the ability of the ventricle to fill with or eject blood."

Hunt SA et al. *Circulation*. 2001;104:2996

# Epidemiology of Heart Failure in the United States

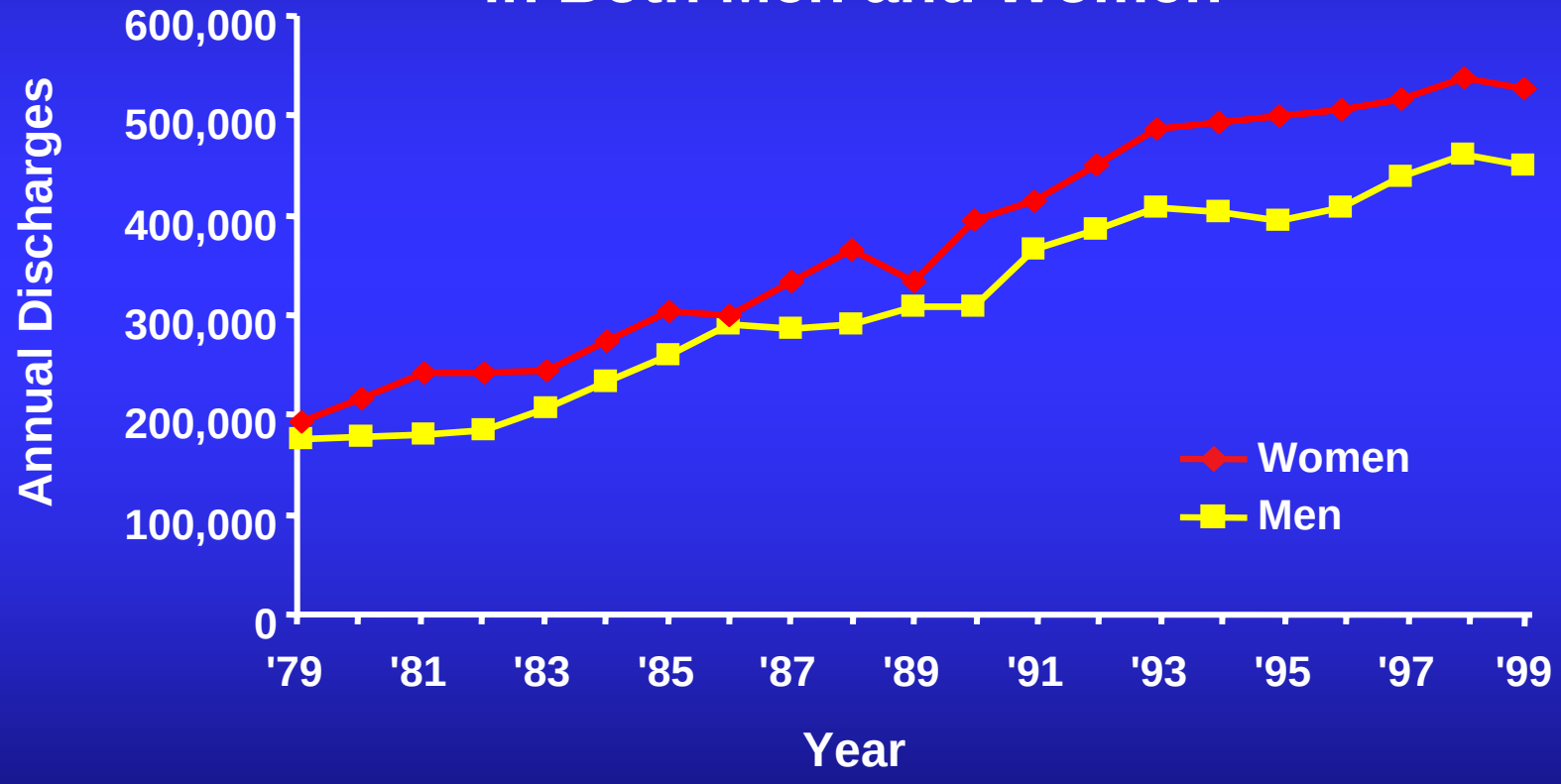



- 4.79 million patients[1]; estimated 10 million in 2037[2]
- Incidence: about 550,000 new cases each year[1]
- Prevalence is 2% in persons aged 40 to 59 years, progressively increasing to 10% for those aged 70 years and older[3]
- Sudden cardiac death is 6 to 9 times higher in the heart failure population[1]


1. American Heart Association. *2002 Heart and Stroke Statistical Update.* 2001.
2. Croft JB et al. *J Am Geriatr Soc.* 1997;45:270–275.
3. National Heart, Lung, and Blood Institute. *Congestive Heart Failure Data Fact Sheet*. Available at: http://www.nhlbi.nih.gov/health/public/heart/other/CHF.htm.

# Heart Failure Hospitalizations

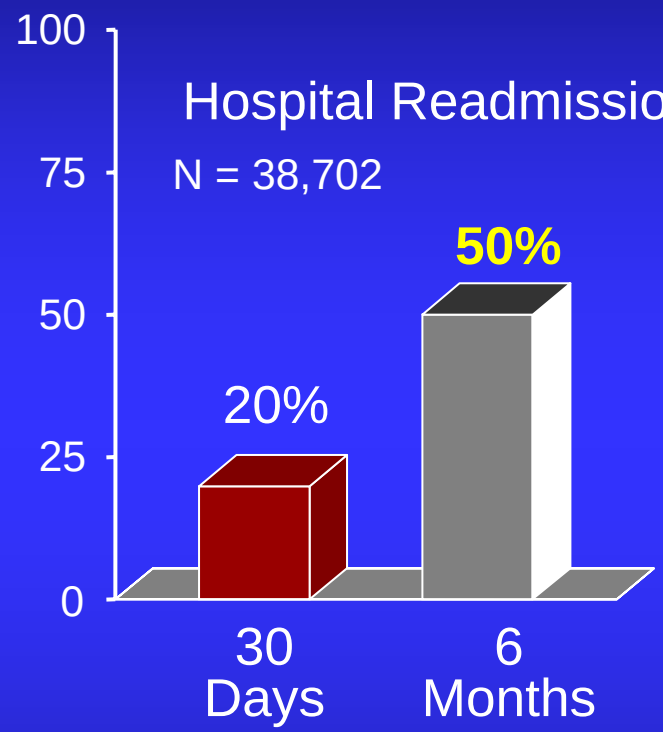
## The Number of Heart Failure Hospitalizations Is Increasing in Both Men and Women

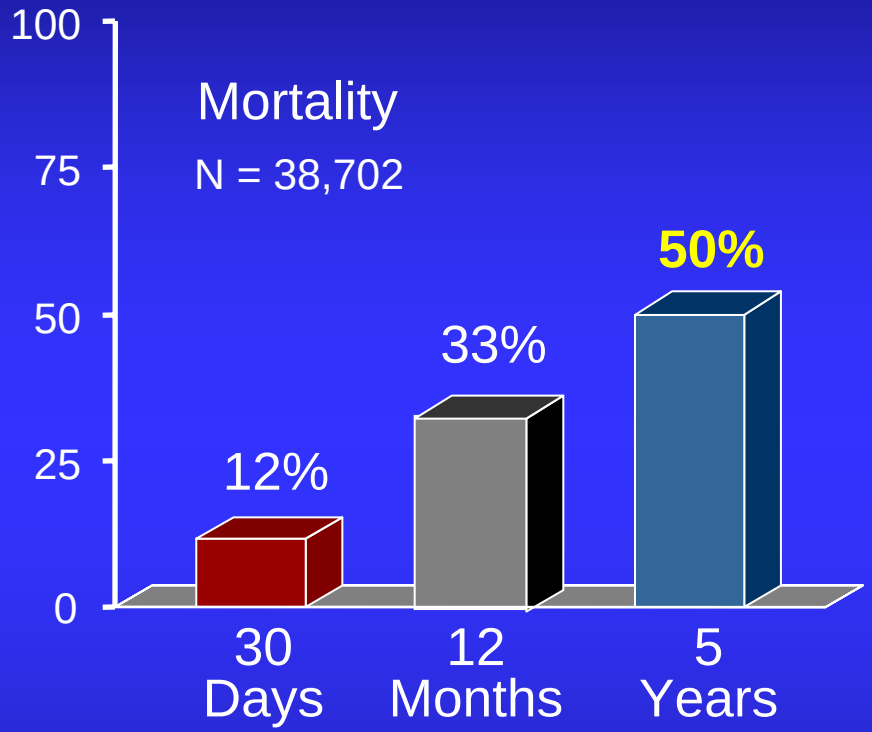



CDC/NCHS: hospital discharges include patients both living and dead.

American Heart Association. *2002 Heart and Stroke Statistical Update*. 2001.

# Outcomes in Patients Hospitalized with Heart Failure



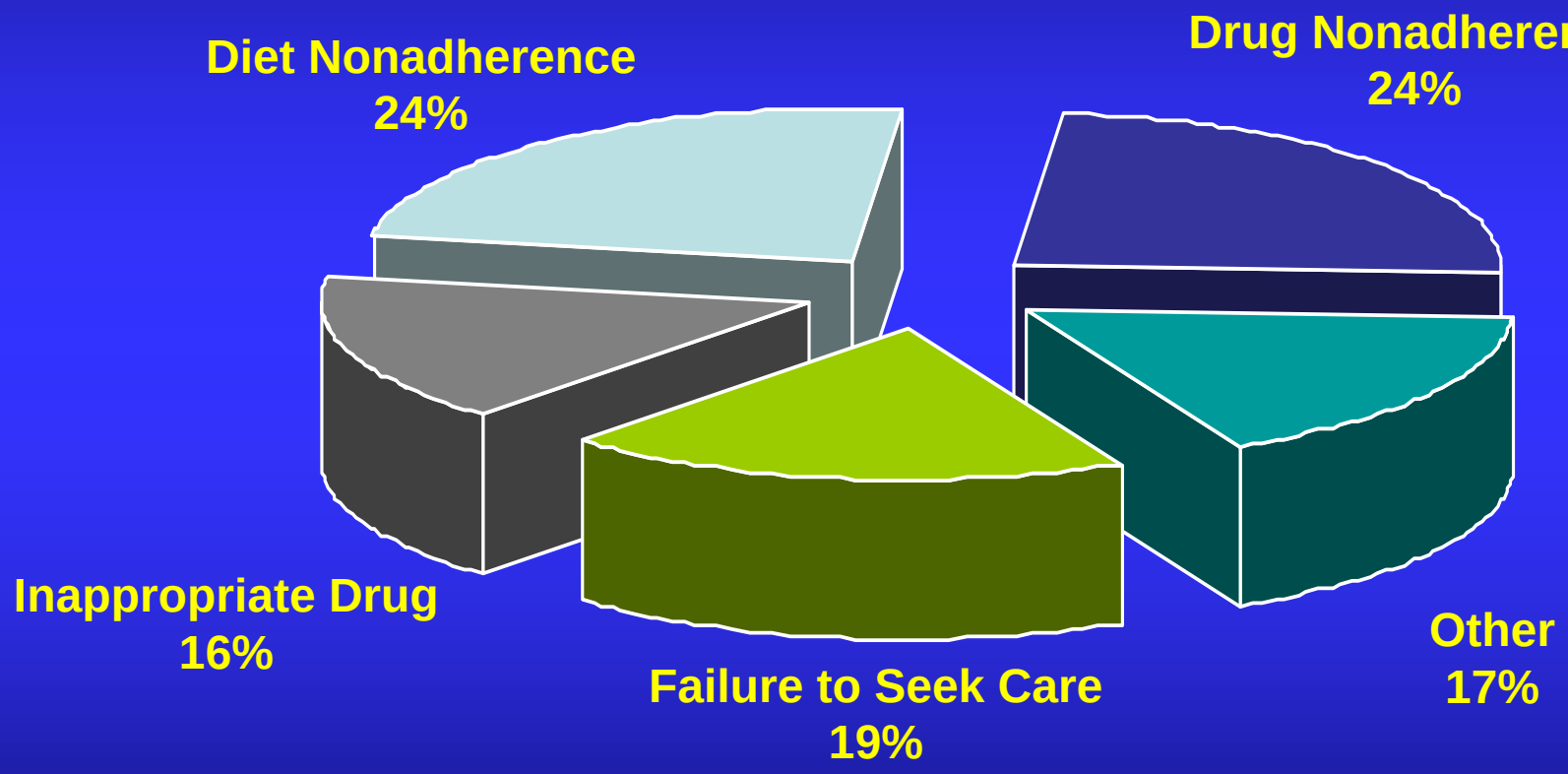




**Median length of hospital stay: 6 days**

***We have better interventions but have a long way to go***

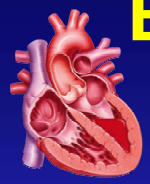
**References:** Aghababian RV. *Rev Cardiovasc Med.* 2002;3(suppl 4):S3-S9.
Jong P et al. *Arch Intern Med.* 2002;162:1689-1694.

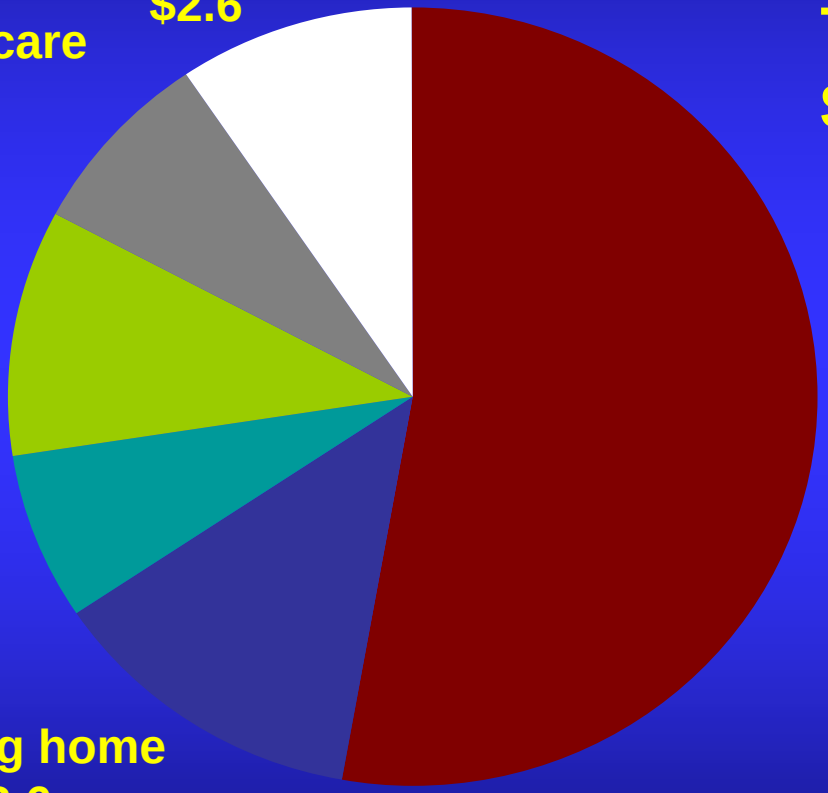
# Causes of Hospital Readmission for HF




Vinson J et al. *J Am Geriatr Soc.* 1990;38:1290

# Estimated Direct and Indirect Costs of Heart Failure in the US

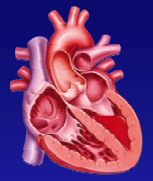





**Total cost: $27.9 Billion**

* Lost future earnings of persons who will die in 2005, discounted by 3%.

**Reference:** American Heart Association. Heart Disease and Stroke Statistics – 2005 Update.



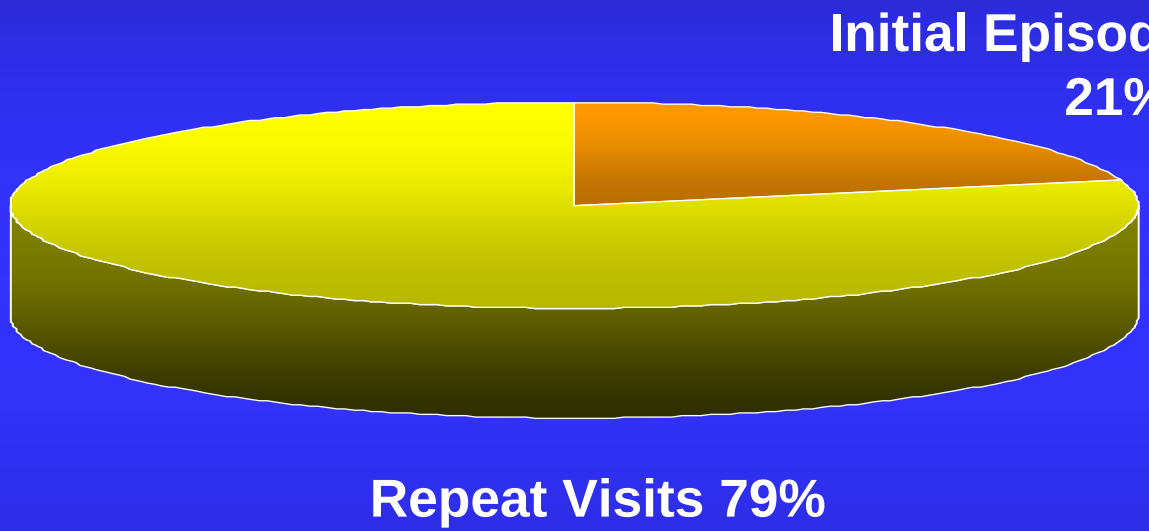
# Top Five Medicare DRGs: On Average, Hospitals Lose Money

| DRG Description | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|
| Heart failure and shock | + | + | + | – |
| Simple pneumonia and pleurisy | + | + | – | – |
| Chronic obstructive pulmonary disease | + | + | + | – |
| Major joint and limb reattach (low extremity) | + | + | + | – |
| Intracranial hemorrhage and stroke with infarction | + | – | – | – |

+ Reimbursement is greater than cost
– Reimbursement is less than cost

# Hospital Visits for Congestive Heart Failure

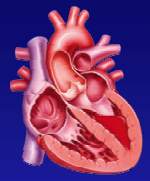
## Emergency Department Presentations




**Approximately 80% of ED visits for HF result in hospitalizations**

*Requires full evaluation for reversible causes of heart failure.

Aghababian RV. *Rev Cardiovasc Med.* 2002;3(suppl 4):S3–S9.



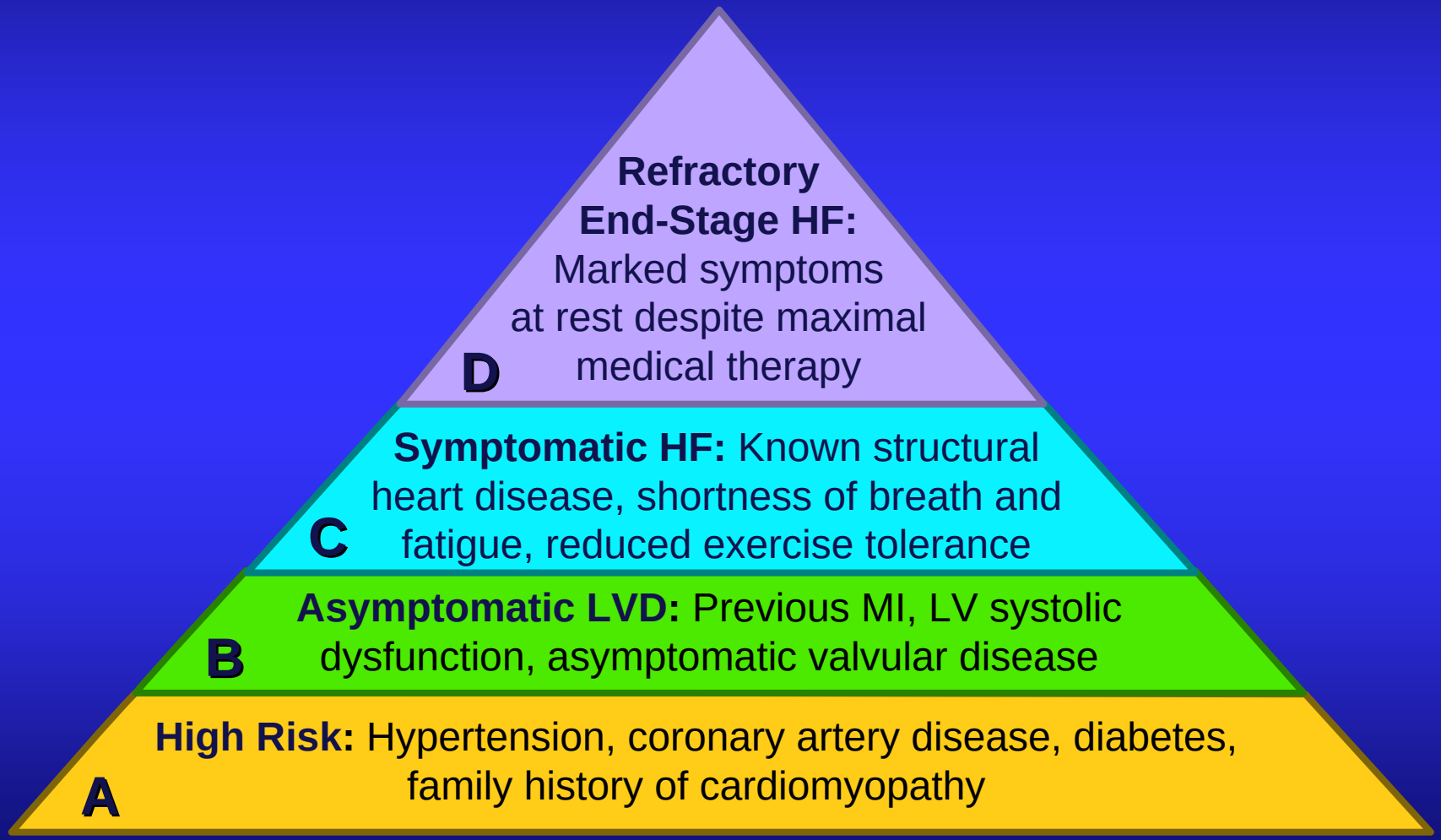
# JCAHO Core Measures

## Hospital Core Performance Measures/ORYX

- Complete discharge instructions in the medical record
- Appropriate use of ACE inhibitors at discharge
- LVEF evaluated before or during admission or planned after discharge
- Smoking cessation advice/counseling

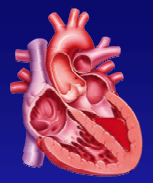
Heart failure (HF) measures. JCAHO Web site. Available at: http://www.jcaho.org/accredited+organizations/hospitals/oryx/core+measures/ information+on+final+specifications.htm#Heart. Accessed January 2003.

# Disease Progression of HF: ACC/AHA HF Stages




Yancy CW, Strong M. *Prim Care Spec Ed.* 2002;6:15

# ACC / AHA Heart Failure Guidelines



## At Risk for Heart Failure

### Stage A
At high risk for HF but without structural heart disease or symptoms of HF.

**e.g.: Patients with:**
-hypertension
-atherosclerotic disease
-diabetes
-metabolic syndrome

**or**

Patients
-using cardiotoxins
-with HFx CM

**Therapy Goals**
-Treat hypertension
-Encourage smoking cessation
-Treat lipid disorders
-Encourage regular exercise
-Discourage alcohol intake, illicit drug use
-Control metabolic syndrome

**Drugs**
-ACEI or ARB in appropriate patients (see text) for vascular disease or diabetes

Structural Heart Disease

### Stage B
Structural heart disease but without symptoms of HF.

**e.g.: Patients with:**
-previous MI
-LV remodeling including LVH and low EF
-asymptomatic valvular disease

**Therapy Goals**
-All measures under stage A

**Drugs**
-ACEI or ARB in appropriate patients (see text)
-Beta-blockers in appropriate patients (see text)

**Devices in Selected Patients**
-Implantable defibrillators

Development of Symptoms of HF

## Heart Failure

### Stage C
Structural heart disease with prior or current symptoms of HF.

**e.g.: Patients with:**
-known structural heart disease

**and**

-shortness of breath and fatigue, reduced exercise tolerance

**Therapy Goals**
-All measures under stages A and B
-Dietary salt restriction

Drugs for Routine Use
-Diuretic for fluid retention
-ACEI
-Beta-blockers

**Drugs in Selected Patients**
-Aldosterone antagonist
-ARBs
-Digitalis
-Hydralazine/nitrates

**Devices in Selected Patients**
-Biventricular pacing
-Implantable defibrillators

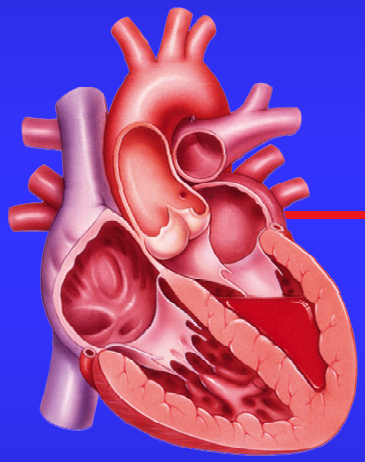
Refractory Symptoms of HF at Rest

### Stage D
Refractory HF requiring specialized interventions.

**e.g.: Patients** who have marked symptoms at rest despite maximal medical therapy (e.g., those who are recurrently hospitalized or cannot be safely discharged from the hospital without specialized interventions)

**Therapy Goals**
-Appropriate measures under stages A, B, C
-Decision re: appropriate level of care

**Options**
-Compassionate end-of-life care/hospice
-Extraordinary measures
•heart transplant
•chronic inotropes
•permanent mechanical support
•experimental surgery or drugs

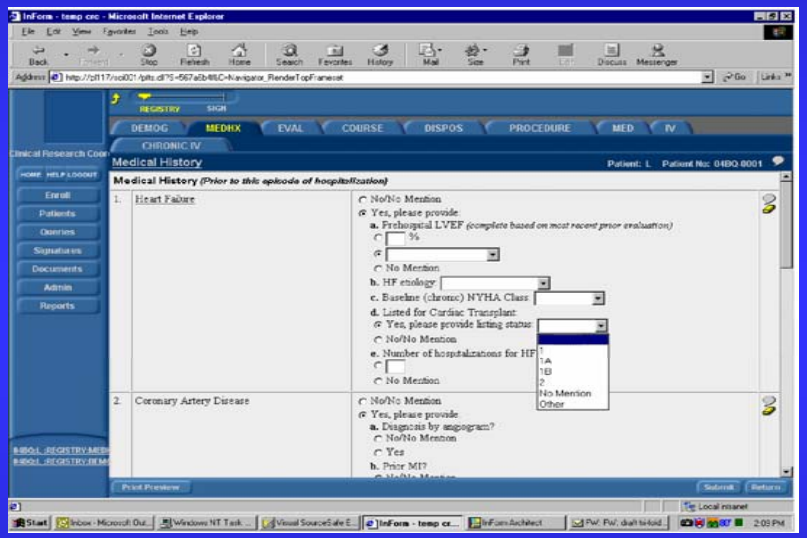


# *The Role of Registries in Heart Failure*

# *Acute Decompensated Heart Failure National Registry (ADHERE®)*

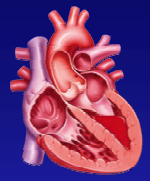
# ADHERE® Registry

- ADHERE Core Module
  - Largest US HF registry
  - Multicenter
  - Observational
  - Open label
  - Web based




- Registry of US patients treated in hospitals for ADHF

Fonarow GC for ADHERE Scientific Advisory Committee. *Rev Cardiovasc Med.* 2003;4(suppl 7):S21

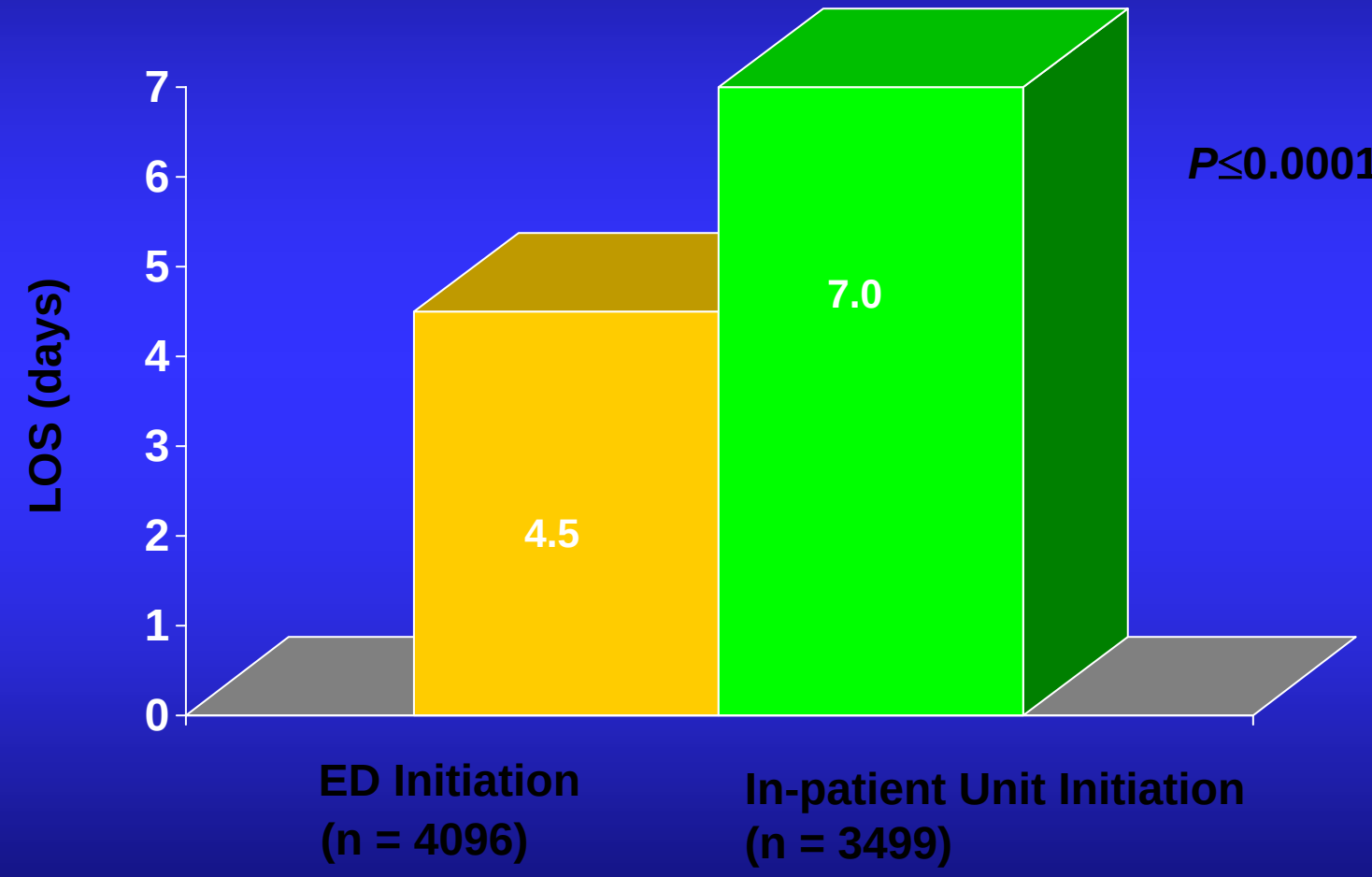


# Goals of ADHERE® Registry

- Describe demographics and clinical characteristics of patients hospitalized with ADHF
- Characterize current management of hospitalized patients with ADHF
- Define treatment strategies associated with best clinical outcomes and most efficient use of resources
- Assist in evaluating and improving quality of care

Fonarow GC for ADHERE Scientific Advisory Committee. *Rev Cardiovasc Med.* 2003;4(suppl 7):S21

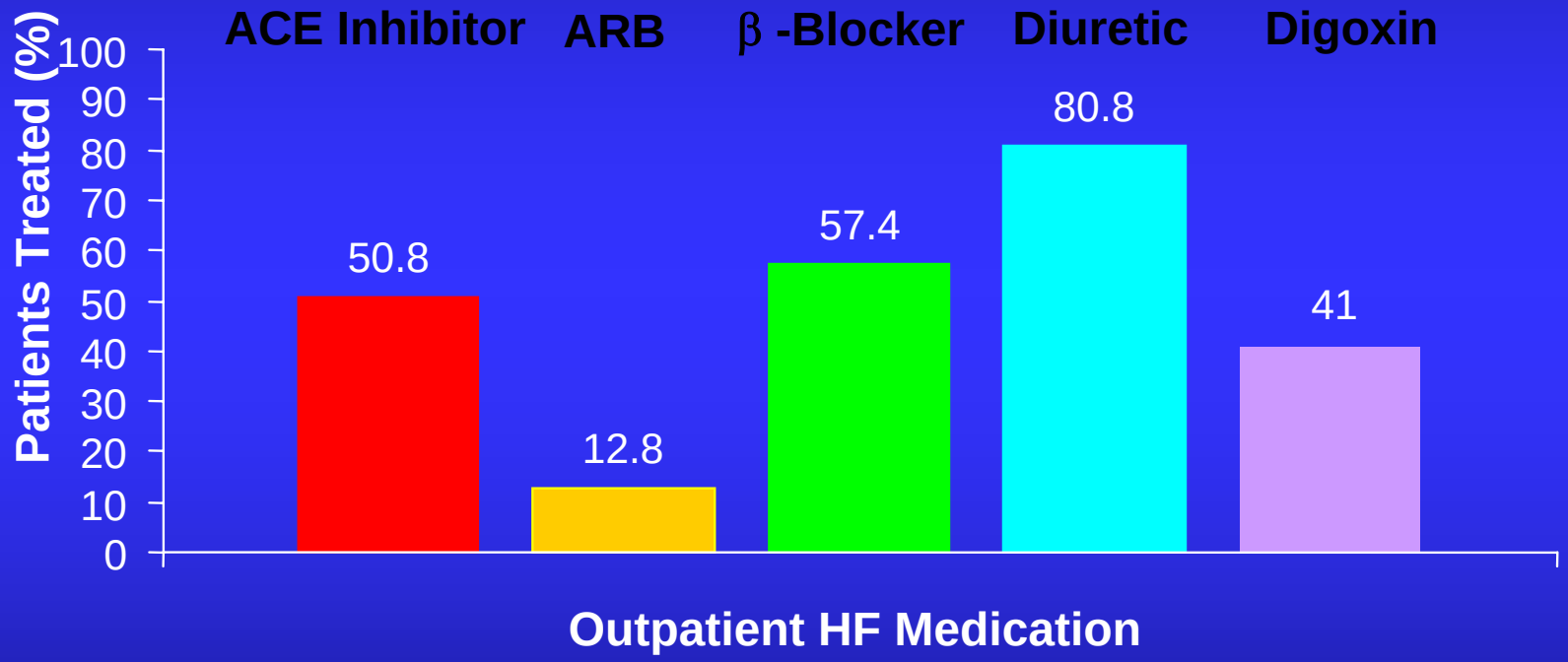
# Impact of ED vs In-patient Initiation of IV Vasoactive Therapy on LOS




Peacock WF et al. *Ann Emerg Med*. 2003;42:92

# Utilization of Evidence-Based Therapies in HF

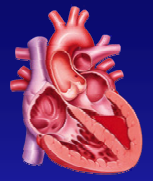
## History of HF and LVEF Documented and ≤0.40*




*Excludes patients with documented contraindications

2300/7883 patients hospitalized with HF; prior known dx of systolic dysfunction HF; outpatient medical regimen

ADHERE™ Registry Report Q1 2002 (4/01–3/02) of 180 US Hospitals. Presented at the HFSA Satellite Symposium, September 23, 2002



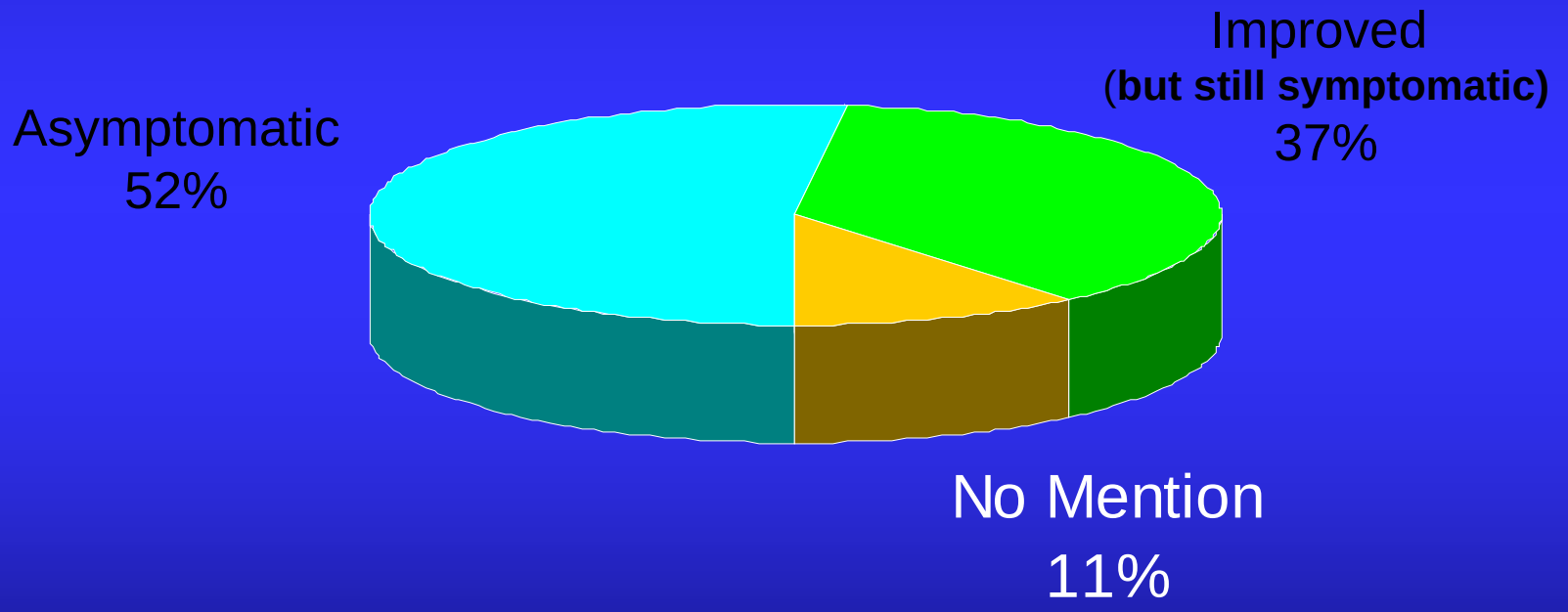
# ADHERE® Quality of Care
## Conformity to JCAHO HF Performance Indicators

| | All Patients (N = 105,381) | Patients at Academic Hospitals (n = 34,346) | Patients at Non-Academic Hospitals (n = 71,035) | *P* value |
|---|---|---|---|---|
| **HF-1 (%)** **Discharge Instruc** | **32.3** | **21.9** | **37.8** | **<0.0001** |
| **HF-2 (%)** **LV Function** | **82.7** | **84.0** | **82.0** | **<0.0001** |
| **HF-3 (%)** **Discharge ACE-I Rx** | **66.1** | **70.3** | **63.7** | **<0.0001** |
| **JCAHO HF-4 (%)** **Smoking Cessation Counseling** | **40.0** | **33.1** | **44.0** | **<0.0001** |

All Enrolled Discharges (N = 105,388) October 2001–January 2004

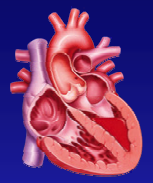
# Clinical Status at Time of Discharge

## All Enrolled Discharges* (N = 105,388) October 2001–January 2004



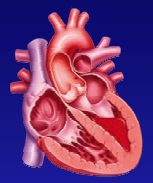

**49% of patients discharged from the hospital Are still symptomatic or have no mention of Improvement of symptoms**

*Who were discharged home (including home with additional and/or outpatient care)



# OPTIMIZE HF REGISTRY

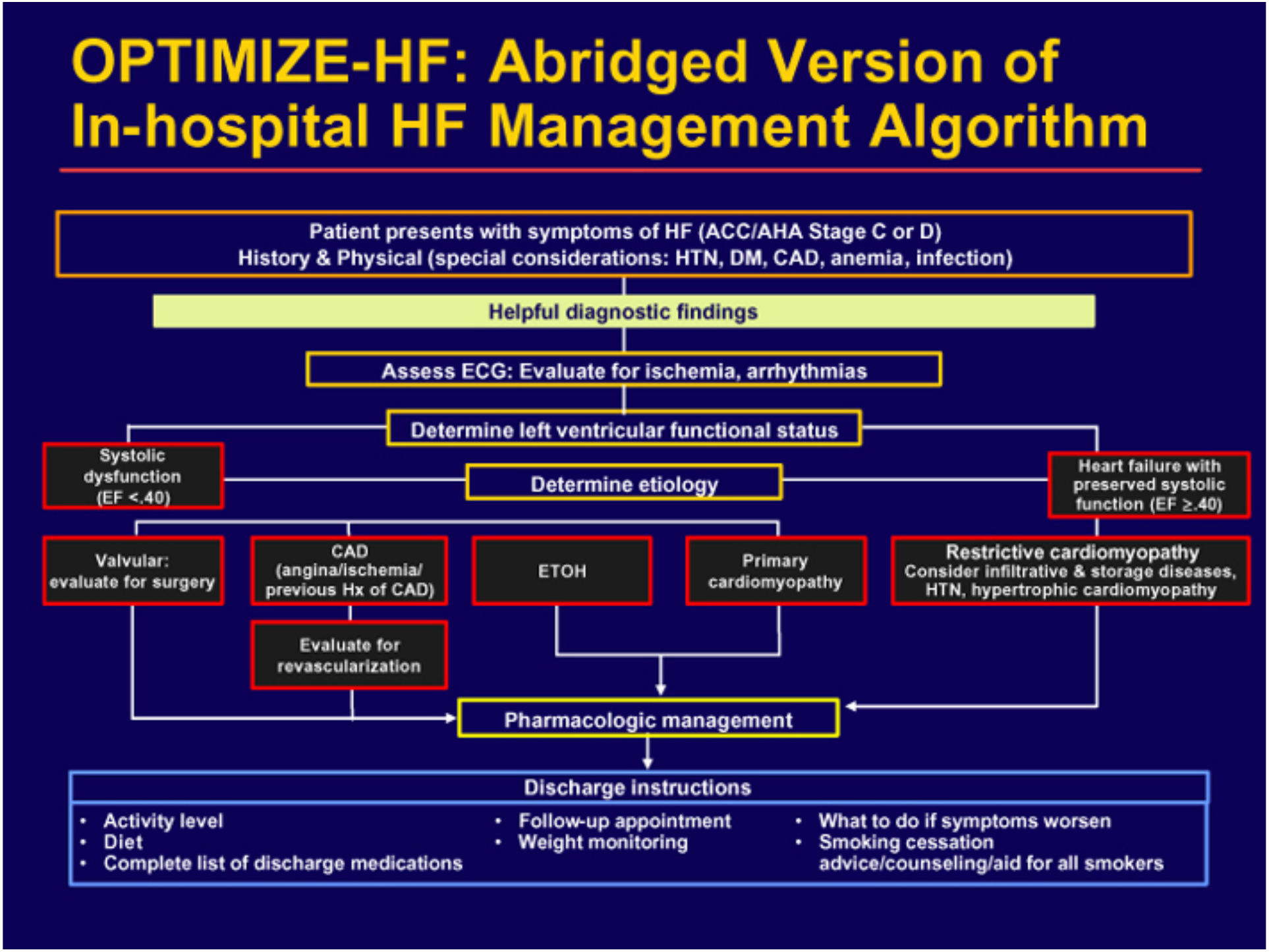
- Web-based registry
  - Data on medications on admission, hospitalization progress, discharge
  - JCAHO Core Measures
- Process of Care Improvement



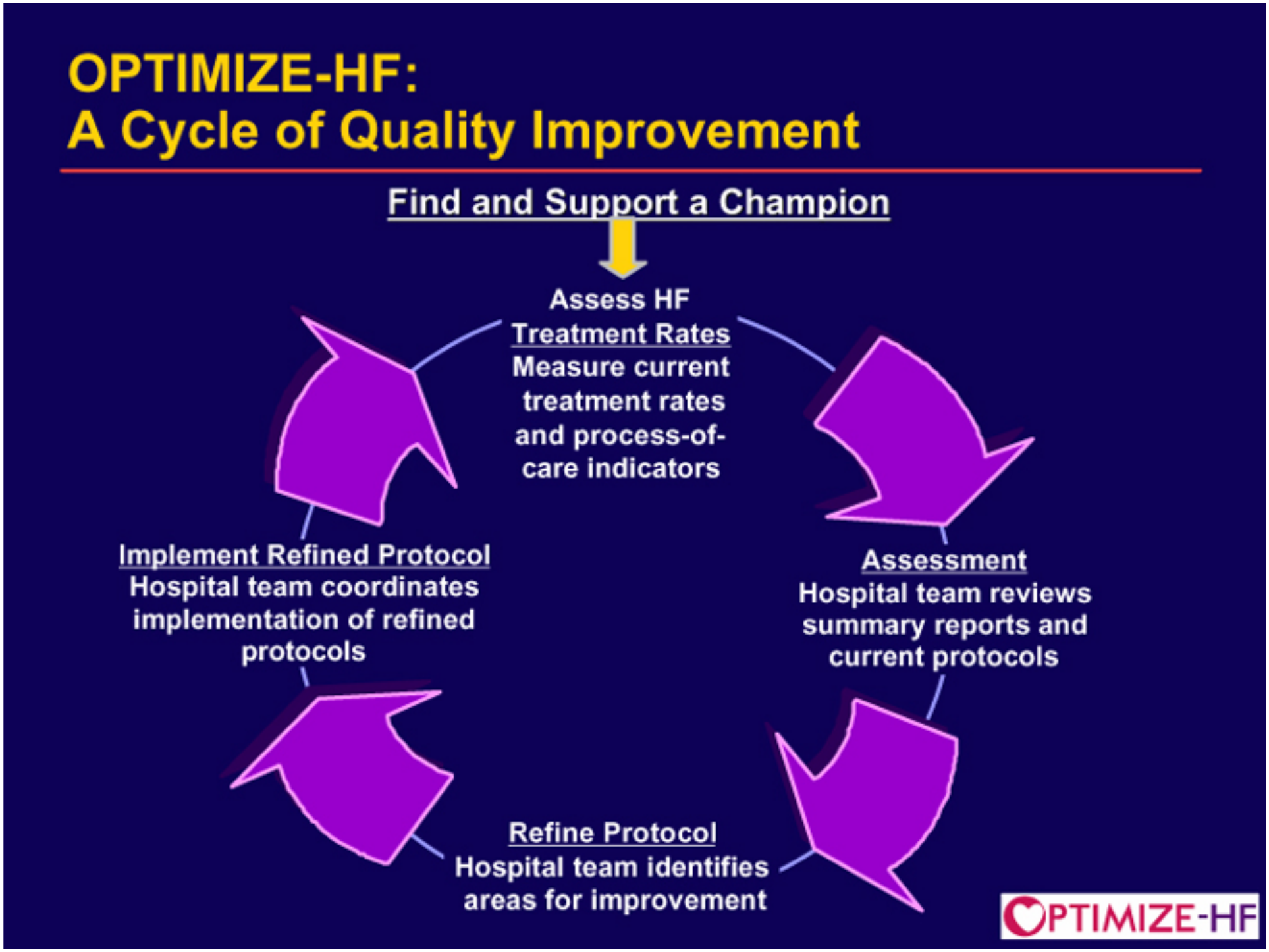
# Objectives of OPTIMIZE HF

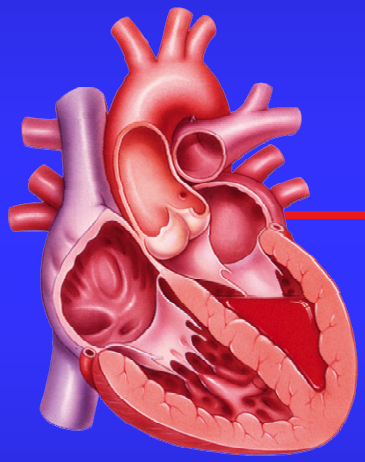
- Improve medical care and education of hospitalized HF patients
- Increase and speed up adoption of HF guidelines by initiating therapies prior to discharge
- Increase understanding to barriers to utilization of ACE inhibitors and Beta-blockers in HF patients

# OPTIMIZE-HF: Abridged Version of In-hospital HF Management Algorithm



# OPTIMIZE-HF:
# A Cycle of Quality Improvement





***The Challenge….***
***Data Access***
***Data interpretation***
***Making Clinical Decision***
***Documentation***