

Element 09.00

Rakowski

What is Heart Failure

- Heart failure a symptom complex *not a disease*
- Heart can't pump enough blood *to meet body demands, or does so only with elevated filling pressure*
- **Overcompensation:** *activation of neurohumoral pathways with LVH / dilatation*
- **Management:** *early diagnosis, treat underlying condition, control symptoms, prolong life*

What Do I Need to Know?

Heart failure

- Etiology
- Stage in natural history
- Components: *systolic and diastolic function, ischemia, valve regurgitation, LVH, hemodynamics*
- Effects of therapy

Etiology of Heart Failure

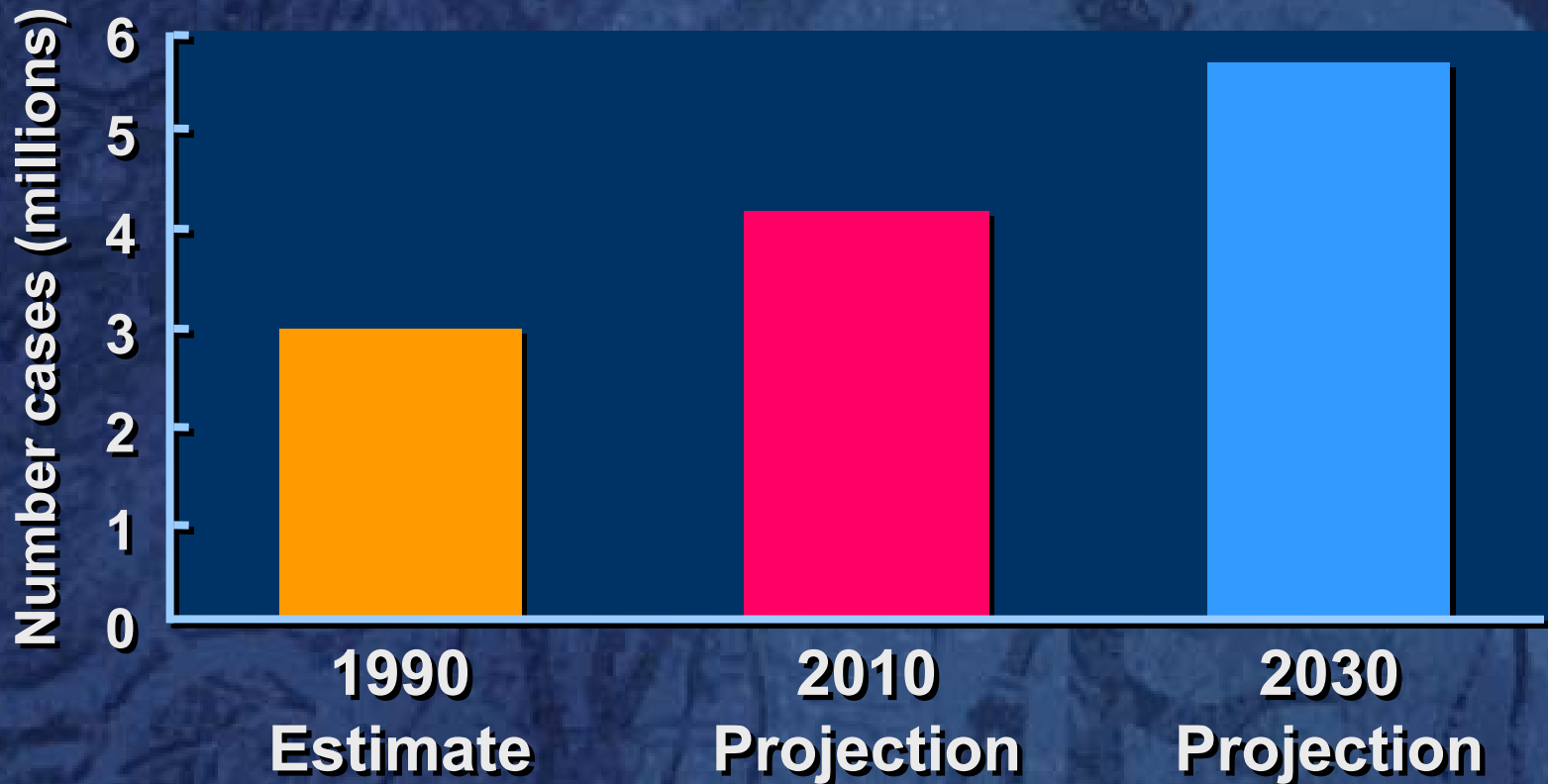
- **Myocardial disease**
 - Coronary artery disease*
 - Infectious/viral*
 - Inflammatory*
 - Alcohol/substance abuse*
 - Idiopathic/genetic*
- **Infiltrative**
- **Valvular heart disease**
- **Hypertension**
- **Diabetes**

Heart Failure

A Growing Problem

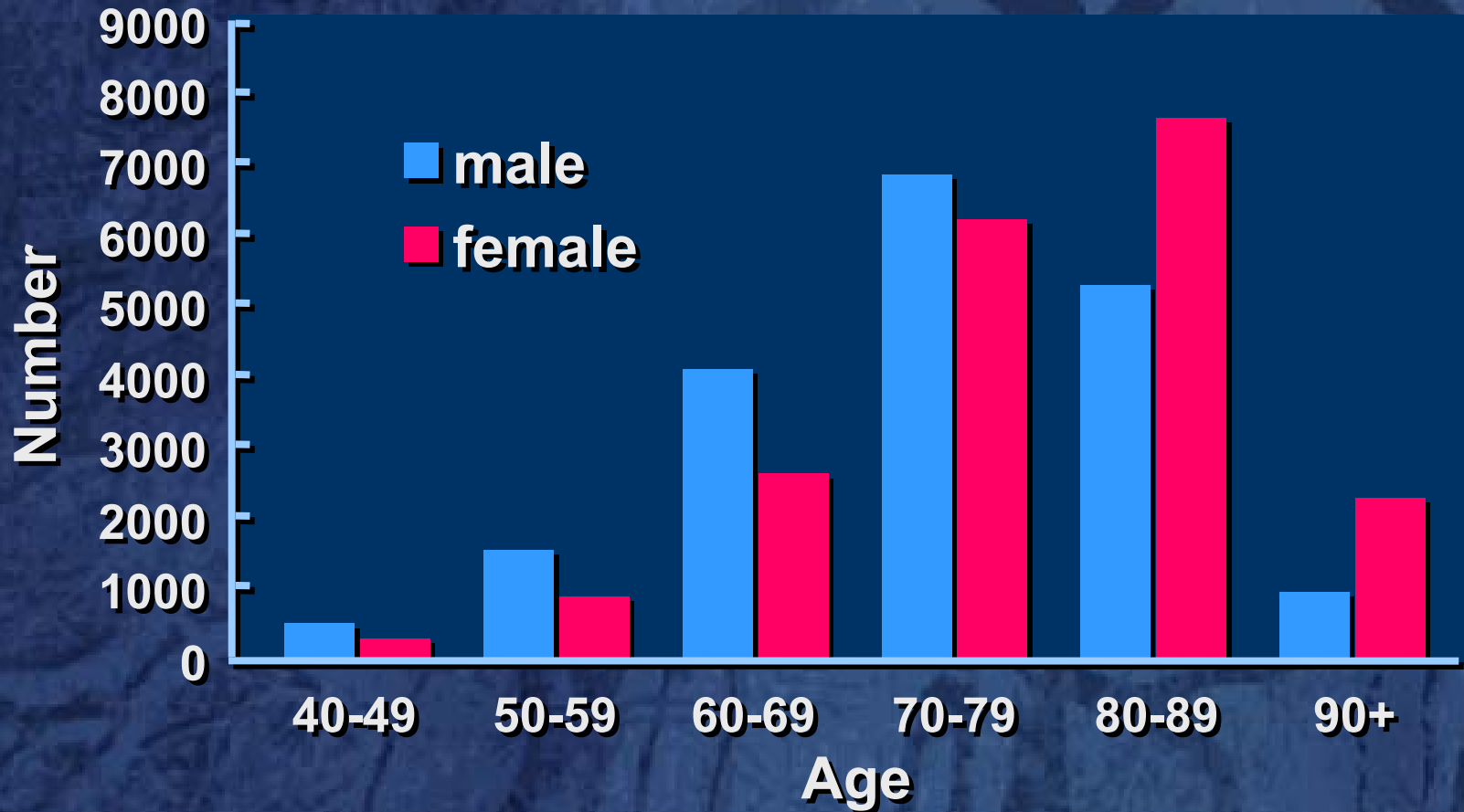
- **Baby boomers aging**
- **Average lifespan increasing**
- **More pts survive infarction**
- **Improved survival for CHF**

USA Projected HF Cases



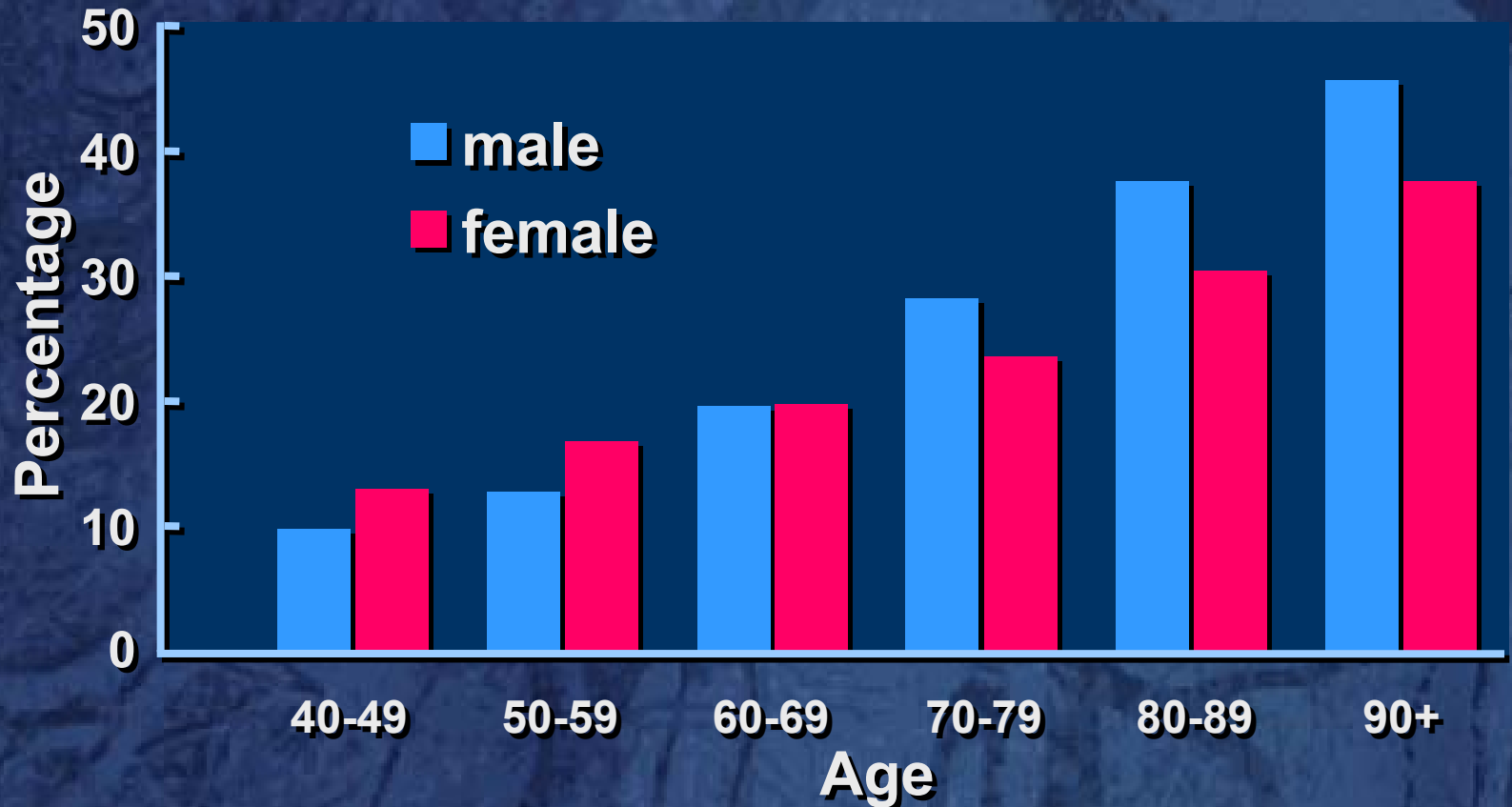
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Age at HF Presentation



Heart Failure Is Deadly

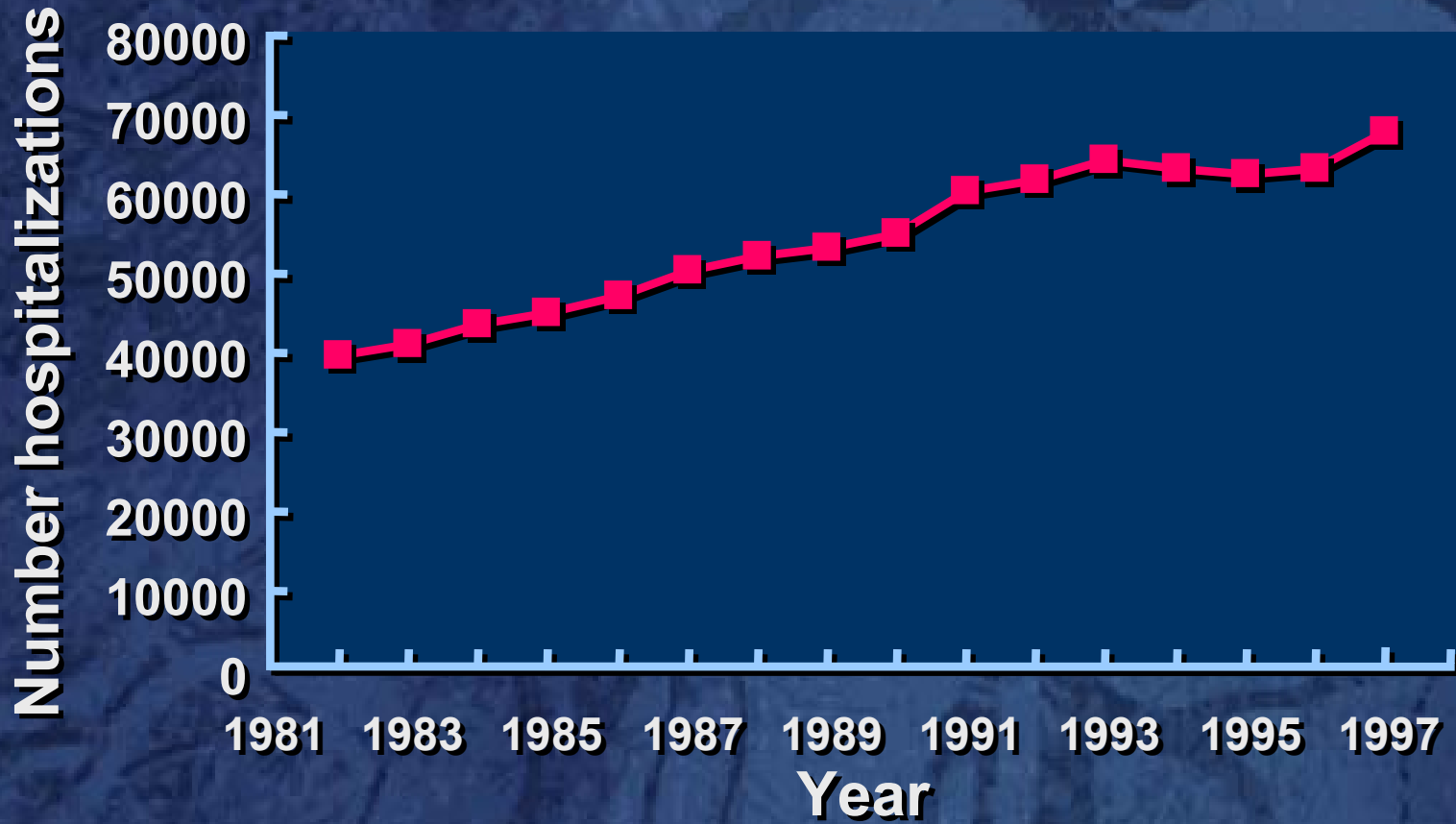
Mortality for HF Admission



Johanssen: Health Care Reports

HF Hospitalization in Canada

ICD9 Code 428 As Primary Diagnosis

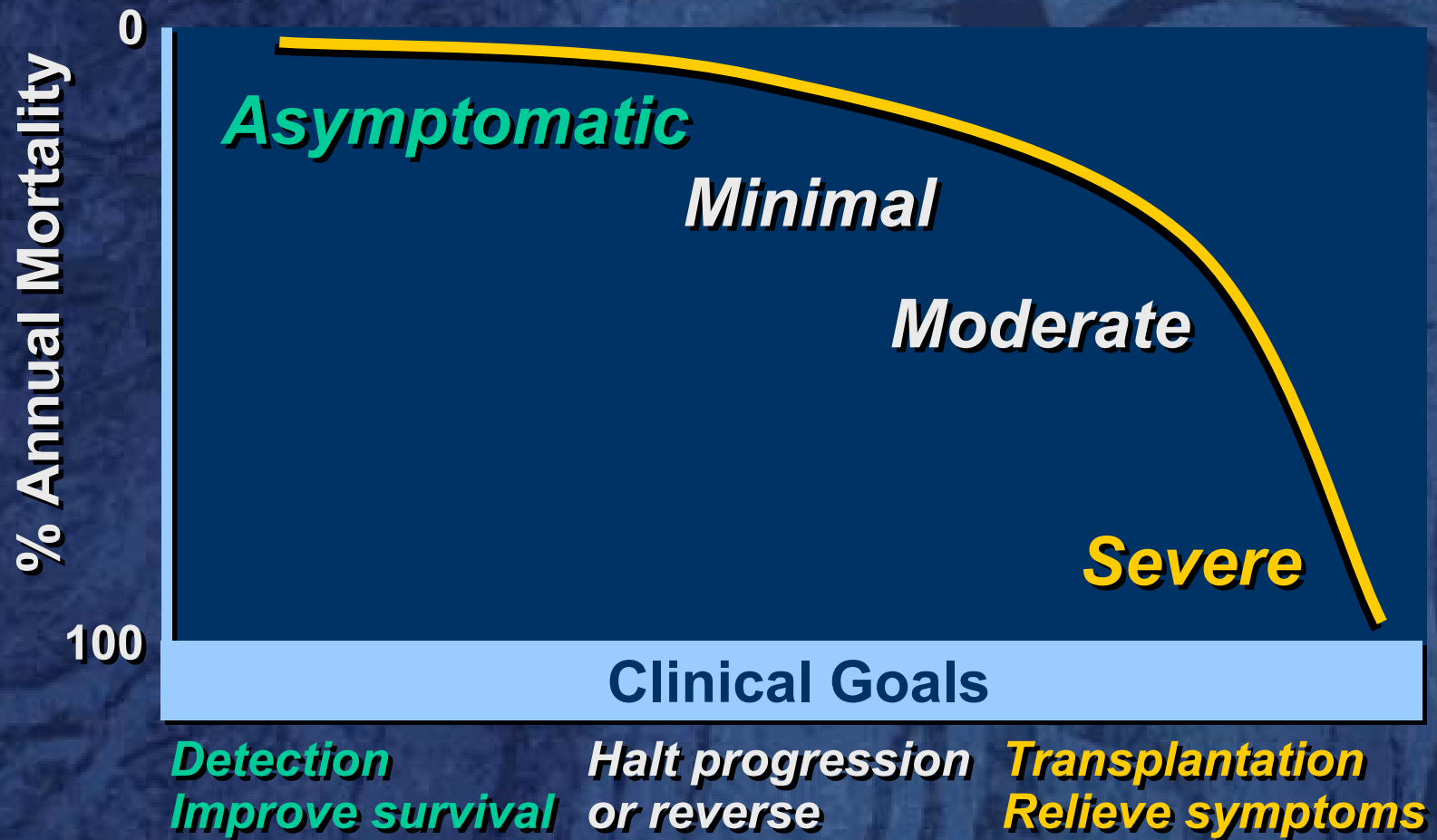


Johanssen: Health Care Reports

Heart Failure Is Expensive

- Most frequent cause of hosp in elderly
- Growing rapidly
- 20-50% pts discharged readmitted within 6 mo
- Average number of medications 6
- Average cost/stay is \$12,000
- Annual hosp cost estimated at \$5B
(Cancer cost estimated at \$2.25 b)

Natural History/Management Goals



Echo in CHF: Advantages

- Detect preclinical disease
- Determine etiology of CHF & exclude mimics
- Quantitation: *systolic and diastolic function, chamber size, LV mass, hemodynamics, valvular regurgitation*
- Stress echo: *functional status, presence and severity of CAD, perfusion, viability*
- Evaluation of therapy & prognosis

Challenges in Echo Evaluation

- Routine diastolic evaluation: *neither comprehensive nor accurate*
- Most randomized CHF trials do not include diastole: *use MUGA EF*
- Many techniques can be used *without a single clear, simple & robust approach*
- Reduced reimbursement: *creates need to streamline echo*

Questions to Resolve

- Which patients need evaluation
 - When?*
 - How often?*
- What should be routinely evaluated and how?
- How do we increase awareness of the important role that echo can play?

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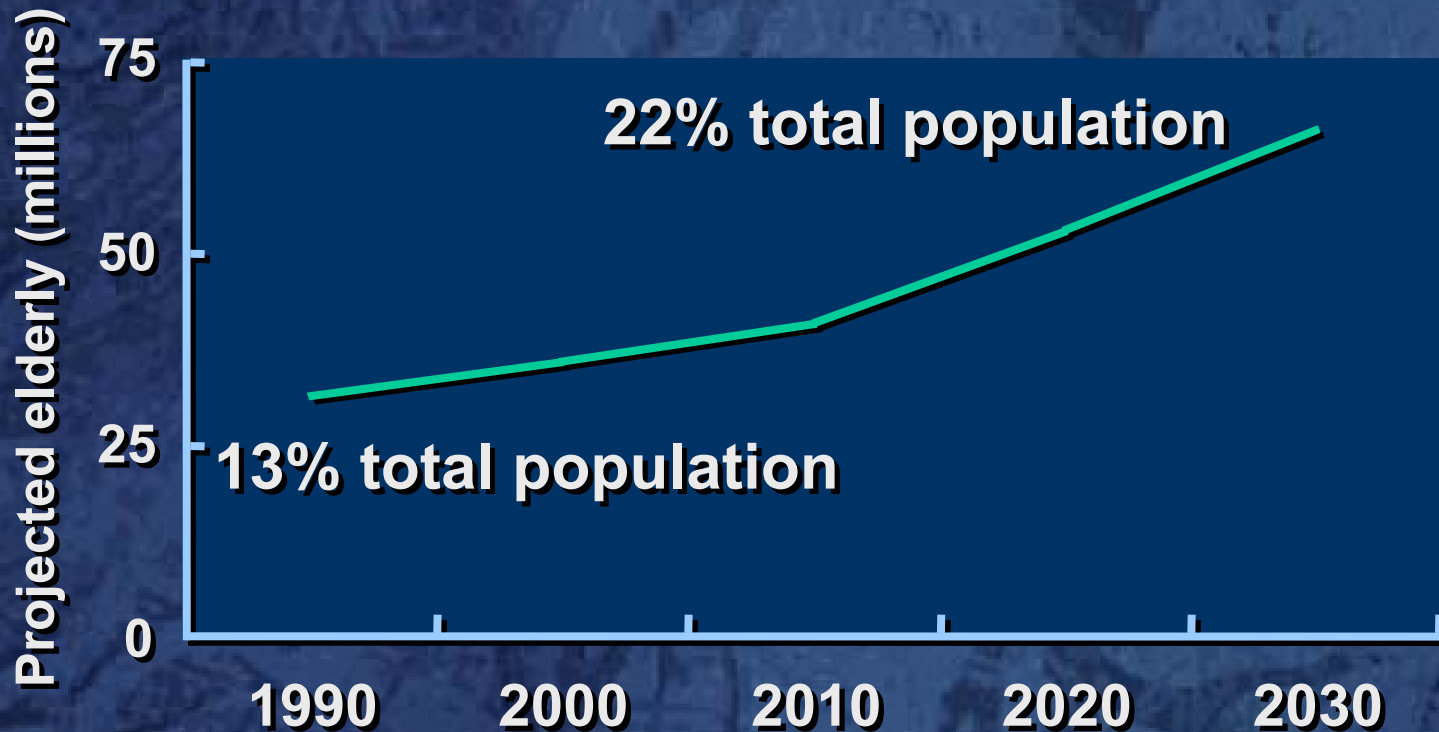
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Extra Slides

Causes of Heart Failure

- **Coronary artery disease**
- **Hypertension**
- **Diabetes**
- **Valvular heart disease**
- **Alcohol / substance abuse**
- **Myocarditis**
- **Genetic defects**
- **Idiopathic**

Projected Elderly Population USA Age \geq 65 Years

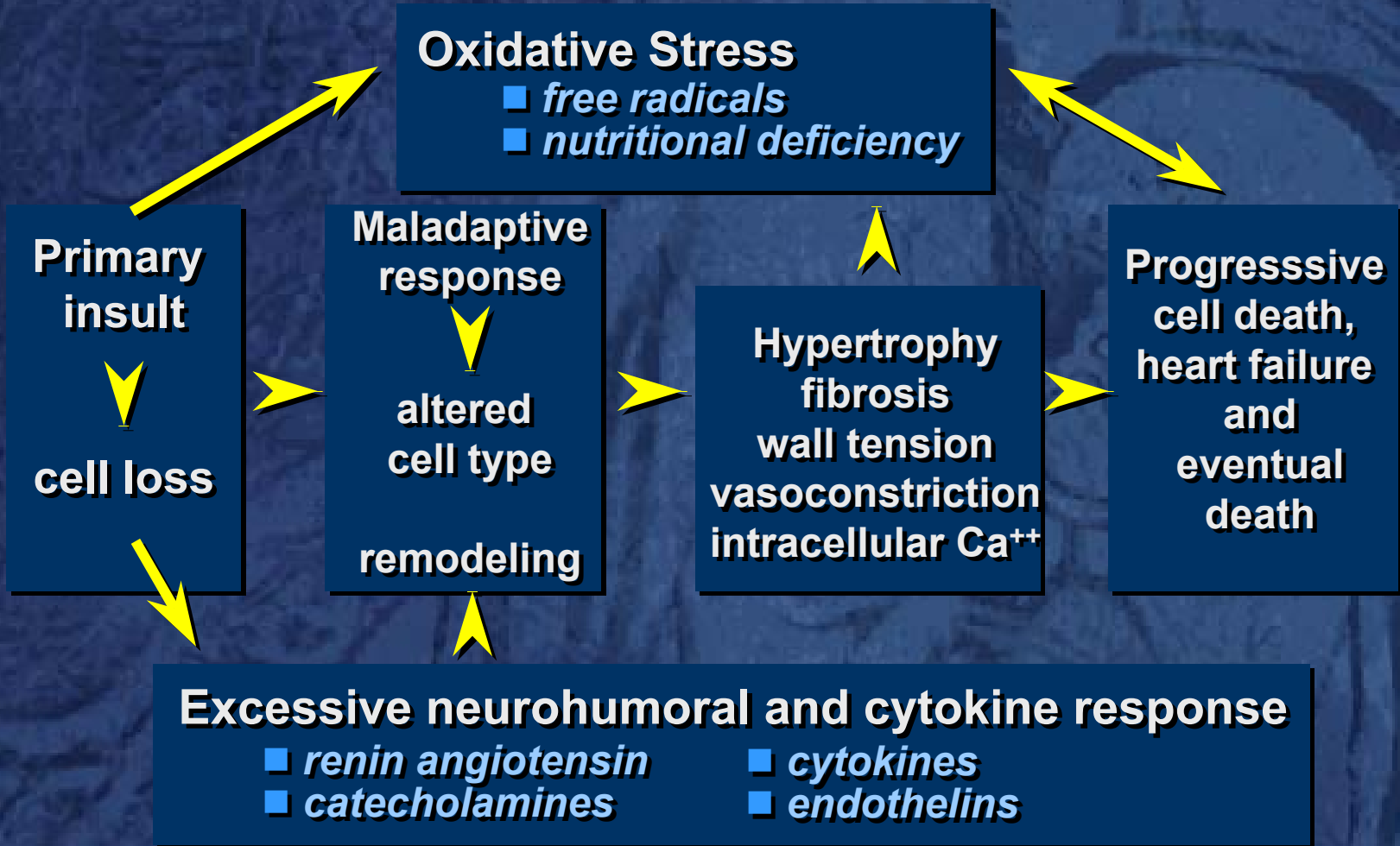


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What's Wrong in Heart Failure?

- **↓ Pump function**
Systole/diastole (structure & biochemistry)
- **Compensatory responses**
Remodeling, neurohormones, Na^{++} & H_2O retention, ↑ vascular resistance
- **Arrhythmias, congestion, death**

Pathophysiology of Heart Failure



Managing Heart Failure

- **Make appropriate diagnosis**
- **Stage disease severity**
- **Target treatment to etiology and severity**
- **Evaluate effectiveness**

Role of Echo

Managing Heart Failure

- **Make appropriate diagnosis**
etiology, screening
- **Stage disease severity**
systolic and diastolic function, prognosis
- **Target treatment to etiology/severity**
guide treatment choices
- **Evaluate effectiveness**
follow up studies

Heart Failure

- **Common**
- **Deadly**
- **Expensive**
- **Will rise further**
- **Health care epidemic**
- **Echo can help**