

# Cardiology problems and care in the elderly women



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# OUTLINE

- Introduction
- Aging and heart disease
- Clinical presentation
- ECG limitations
- Prognosis
- Management





age is  
of NO  
IMPORTANCE  
UNLESS YOU  
ARE A  
CHEESE





# Introduction

## □ Elderly

- ▣ 6% of the US population
- ▣ 60% of MI related deaths

- Cardiovascular morbidity and mortality rates rise rapidly past 75 years of age.

**Elderly is defined as >75 years**



# Introduction:

## Age-Related Physiologic Changes

### Cardiacwise:

- decreased arterial compliance
- increased cardiac afterload
- left ventricular diastolic dysfunction



# Introduction



## Age-Related Physiologic Changes

- less able to increase their cardiac output by mounting a tachycardic response.
- more likely- CHF and/or cardiovascular collapse when they encounter cardiovascular even nonspecific stressors

# Introduction:

## Age-Related Physiologic Changes

- Drug metabolism is different
  - renal and hepatic reserves
  - volume of distribution
- More susceptible to adverse drug reactions.



# Aging and Heart Disease



Does heart disease increase with age?

- Risk of heart disease increases about 3-fold with each advancing decade.<sup>1</sup>
- Older age is considered a risk factor for heart disease
  - after age 55 for women
  - after age 45 for men.<sup>2</sup>

1. Hsia J, Barad D, Margolis K, et al. Am J Cardiol. 2003;92(3):264.  
2. Heart Disease and Stroke Statistics: 2006 Update. Dallas 2006.

# How common is heart disease in older women?



- More than 70 million Americans (**37.6 million are women**) have cardiovascular disease.

- Almost 40% of these people are age 65 or older.<sup>2</sup>

2. Heart Disease and Stroke Statistics: 2006 Update. Dallas 2006

# How common is heart disease in older women?



## First heart attack<sup>6</sup>

- Women - at age 70
- Men - at age 66.6
- Women + age 70 without heart disease lifetime risk is 25%.
- Men it is more than 30%.<sup>7,8</sup>

6. *Heart Disease and Stroke Statistics - 2005 Update*: American Heart Association and the American Stroke Association; 2005.

7. Lloyd-Jones DM. *Lancet*. Jan 9 1999;353(9147):89-92.

8' Kannel WB *Prog Cardiovasc Nurs*. 2003;18(3):135-140.

# Will age affect chances of surviving a heart attack?



- More than 83% of people who die from heart disease are older than 65 years.<sup>6</sup>
- Women are more likely than men to die within a few weeks of having a heart attack.<sup>6</sup>

*6. Heart Disease and Stroke Statistics - 2005 Update: American Heart Association and the American Stroke Association; 2005.*

# Aging and Heart Disease



## MENOPAUSE

Women younger than 55 have not yet gone through menopause

- still have high levels of the female hormone estrogen in their blood.
- Estrogen produced by the body is thought to help protect the heart.<sup>3, 4</sup>

3. Rexrode KM, Manson JE, Lee I, et al. *Circulation*. 2003;108:1688-1693.

4. Waters DD, Gordon D, Rossouw JE, et al. Women's Ischemic Syndrome Evaluation, 2004.

# Aging and Heart Disease



- After menopause, however, the levels of estrogen in a woman's body drop significantly.

Women develop heart disease about 10 to 15 years later than men.

# Should heart disease be treated differently because of age?



**No**

- older patients are undertreated.<sup>9</sup>
- Mistaken belief that heart disease treatments are less effective in elderly people who often have other medical conditions as well as heart disease.<sup>10</sup>

9. Rathore SS, Mehta RH, Wang Y, Radford MJ, Krumholz HM. *Am J Med.* March 2003;114(4):333-335.

10. Frishman WH. *South Med J.* Oct 1993;86(10):2529-37. ■

# The problem with trials



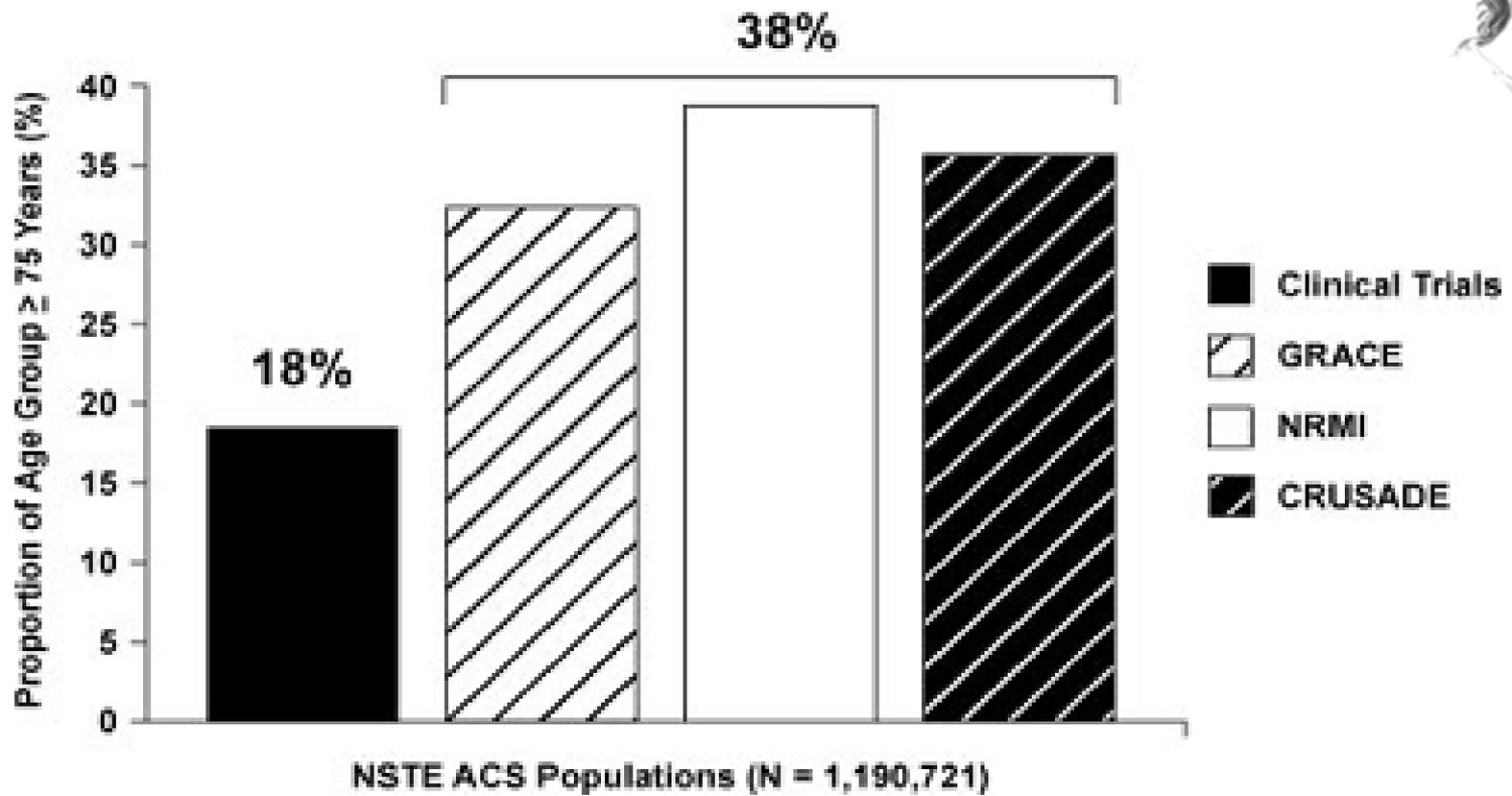
- Population studied should reflect the population treated.

**however....**

- No incentive exists to encourage this level of evidence in the elderly

The background of the slide is white with several faint, light gray butterfly silhouettes scattered across it. The butterflies are of various sizes and orientations, some appearing to fly towards the center and others away from it.

**Difficulty Extrapolating  
Study  
Results to Real-World  
Patients.....**



**Figure 1.** Representation of the subgroup  $\geq 75$  years of age as a proportion of the total trial and community populations described in the present statement. Community populations include GRACE, NRMI, and CRUSADE. Trial populations include VIGOUR.



● More than half of all trials for coronary disease in the past decade failed to enroll any patient 75 years of age.

● 9% of all patients enrolled



# Difficulty Extrapolating Study Results to Real-World Patients

- Significant difference between the age of patients in ACS versus the age of patients in real-world populations MI.

- Trial populations have
  - **fewer cardiovascular risk factors**
  - **fewer comorbidities**
  - **better hemodynamics**
  - **less renal impairment.**

# Difficulty Extrapolating Study Results to Real-World Patients



In the elderly :

- CCF and prior stroke ↑
- Tachycardia and Hypotension ↑

# Clinical Presentation



40% of patients 85 years of age or older have chest pain

77% of those younger than 65 years of age more likely to present with.....

# Clinical Presentation

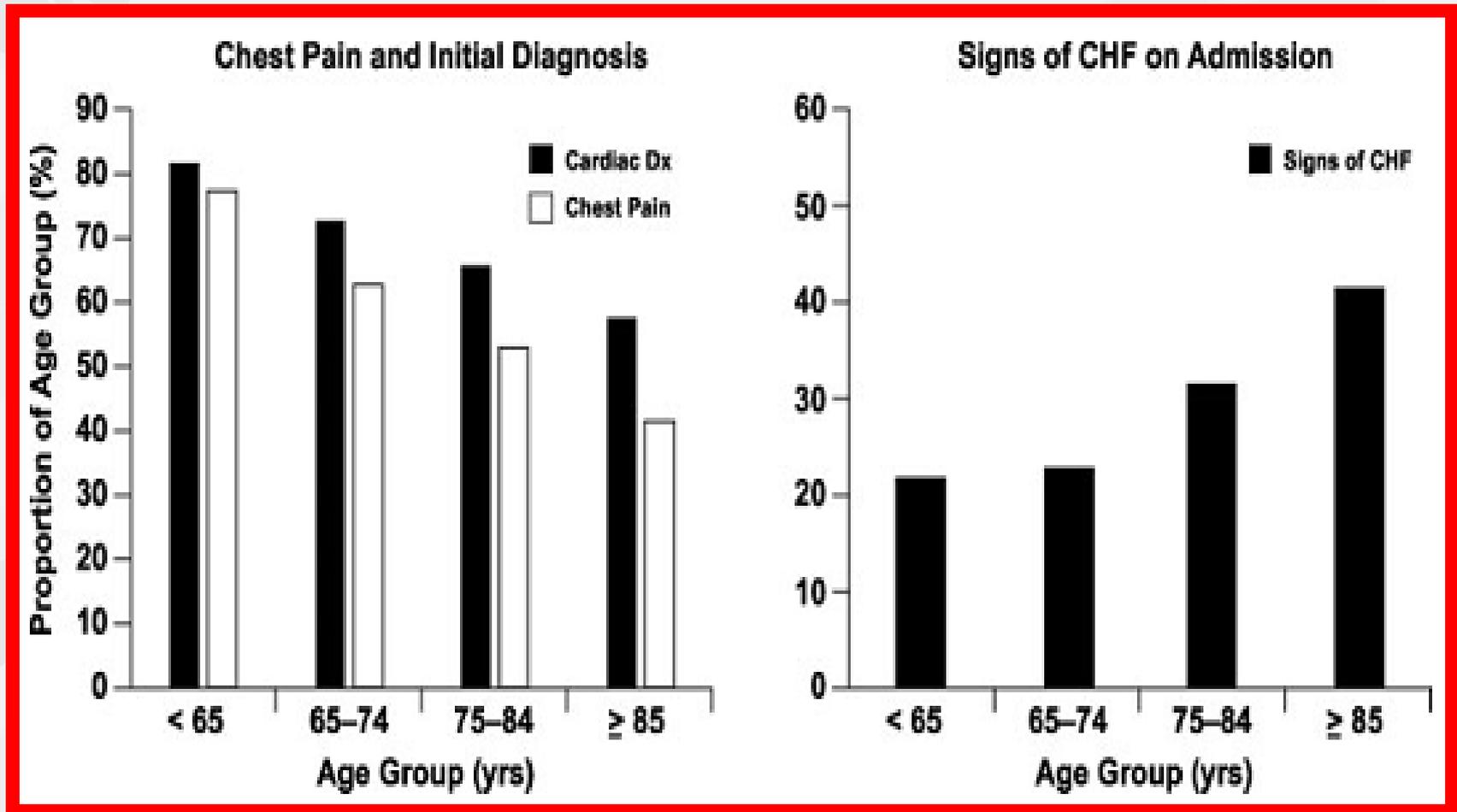


- dyspnea, the most common anginal equivalent (49%)
- sweating (26%)
- nausea and vomiting (24%)
- syncope (19%)



# Admission Signs And Symptoms

2007;115;2549-2569 Circulation



# Clinical Presentation



- Often results in delayed risk stratification

**Always do ECG early** in elderly patients with these complaints, even when chest pain is absent!



# Secondary Events

- ACS is more likely to develop in elderly patients + another acute illness
  - pneumonia,
  - chronic obstructive pulmonary disease
- "secondary" coronary events
  - may occur due to increased myocardial oxygen demand
  - or hemodynamic stress due to the primary illness.

# Secondary Events



## The take-away point:

Get the ECG early in elderly patients, even (and especially) when another significant illness has already been diagnosed.

- Atypical presentations predict a worse prognosis.

# ECG limitations

- Elderly patients are more likely to have nondiagnostic ECGs.
- Nondiagnostic ECGs + NSTEMI/ACS
  - 85 years of age or older - 43%
  - <65 years of age - 23%





# ECG limitations

Elderly are also more likely to have

- left-bundle-branch block
- prior evidence of MI

The lack of chest pain combined with nondiagnostic ECGs   
delays and undertreatment.



# Overall prognosis

Cardiovascular morbidity mortality rates rise rapidly past 75 years of age.

## Mortality NSTEMI

- 65 years of age or younger - 1%
- 85 years of age or older - 10%

# **Management (Mx)**

**Risk factors**

**Drugs**

**Intervention**



# Mx: Risk factors

- In reality, the elderly benefit as much as younger heart disease patients.
- Medical and surgical treatment to reduce the risk of dying or having a heart attack.<sup>11, 12</sup>

11. Wenger NK, Helmy T, Patel AD, Lerakis S. *Medscape General Medicine*. April 13, 2005 2005;7(2).

12. Tresch DD, Alla HR. *Am J Geriatr Cardiol*. Nov-Dec 2001;10(6):337-344.



# Mx: Risk factors

- Hypertension tx is particularly beneficial for patients 60 to 80 years of age.
- With these medications, older patients can reduce their blood pressure just as much as younger patients.<sup>13</sup>

13. MacMahon S, Rodgers A.. *Clin Exp Hypertens*. Nov 1993;15(6):967-978.



## Mx: Risk factors

- Managing cholesterol more beneficial for elderly men and women than for younger patients.
- Statins – reduce MACE about **39%** in those 65 years of age and older.
- Statins also reduced the risk of dying from a heart attack by 45% in men and women 65 years of age and older.<sup>14</sup>

14. Lewis SJ, Moye LA, Sacks FM, et al.. *Ann Intern Med.* Nov 1 1998;129(9):681-689.

# Mx: Drugs



- **Elderly patients susceptible to adverse drug reaction**
  - Impaired renal function.
  - Impaired hepatic function
  - Coexisting medical conditions that alter drug metabolism.
  - Age-associated decreases in lean body mass and an increase in adipose tissue alter drug metabolism.
  - Polypharmacy

# Anti Platelets



- Absolute and relative benefits of aspirin are greater in the elderly.
- Efficacy of aspirin is not enhanced by doses higher than 75 to 150mg/d –
- higher doses increase risk for GI toxicity and bleeding.



# Anti Platelets

- Clopidogrel in addition to aspirin or as an alternative for
  - aspirin intolerant
  - PCI
  - higher TIMI scores
  - prior revascularization
- Dual-antiplatelet therapy, aspirin >100mg per day are associated with increased bleeding without greater efficacy.

# Glycoprotein IIb/IIIa inhibitors



- The majority of elderly patients who receive glycoprotein IIb/IIIa inhibitors (e.g. tirofiban) in the real world are given excessive doses.
- Probably not taking creatinine clearance into consideration.

# **Glycoprotein IIb/IIIa**

**inhibitors** 2007;115;2549-2569 *Circulation*



- Risk already high with antiplatelet and antithrombin (heparin) therapies.
- Benefits vary in elderly population. Needs clarification.

So far favorable risk-benefit when given at the time of intervention and in those without renal dysfunction.

# Invasive Strategy for NSTEMI

2007;115;2549-2569 Circulation



- Absolute and relative benefits in reducing death/MI with early invasive care.
- long-term follow-up suggests the superiority of revascularization for
  - **survival**
  - **symptom improvement**
- Increased bleeding (17% >75 years)

# Invasive Strategy for NSTEMI



- Consider patient preference, comorbidities, frailty.
- No data for patients >80 years.
- Complications bleeding, renal failure post catheterization.

2007;115;2549-2569 Circulation

# Mx: summary



Data limited in elderly populations regarding specifics of

- clopidogrel
- antithrombins (unfractionated heparin
- low-molecular-weight heparin
- direct thrombin inhibitors
- Factor Xa inhibitor
- early (within 48 hours) vs selective invasive strategies?

# Mx: Summary



- more careful dosing based on creatinine clearance



# Consider Age Related Risk

- Impact long-term outcome after an acute cardiac event.
  - **Physiological impairment (frailty)**
  - **Comorbidity (cancer, CHF, renal failure)**
  - **Psychological impairment (depression, isolation)**
  - **Disability (limited ADL. IADL)**
  - **Cognitive impairment**
- These issues are rarely included in clinical trials.



# ACC/AHA Recommendations

**TABLE 1. ACC/AHA Guidelines for Management of NSTEMI: Class I Recommendations in Elderly Patients**

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1. Decisions on management should reflect considerations of general health, comorbidities, cognitive status, and life expectancy. (Level of Evidence: C)
  2. Attention should be paid to altered pharmacokinetics and sensitivity to hypotensive drugs. (Level of Evidence: B)
  3. Intensive medical and interventional management of ACS may be undertaken but with close observation for adverse effects of these therapies. (Level of Evidence: B)
- 

Levels of evidence are based on the guidelines from which these recommendations are taken.

**TABLE 4. Recommended Dosing for Therapies in NSTEMI ACS**



1. Aspirin: (no adjustment) 81–325 mg daily
2. Clopidogrel: (no adjustment) 75 mg daily
3. UFH: weight-based bolus of 60 U/kg and infusion of 12 U · kg<sup>-1</sup> · h<sup>-1</sup>. Suggested maximum dose of 4000-U bolus and 900-U/h infusion, or 5000-U bolus and 1000-U/h infusion if patient weight >100 kg.
4. LMWH: weight-based dose of 1 mg/kg every 12 hours, with adjustment in infusion for renal function (if CrCl <30 mL/min) to 1 mg/kg subcutaneously every 24 hours
5. GP IIb/IIIa inhibitors—eptifibatide: weight-based bolus of 180 μg/kg and infusion of 2.0 μg · kg<sup>-1</sup> · min<sup>-1</sup>, with adjustment in infusion for renal function (if CrCl <50 mL/min) to 1.0 μg · kg<sup>-1</sup> · min<sup>-1</sup>
6. GP IIb/IIIa inhibitors—tirofiban: weight-based bolus of 12 μg/kg and infusion of 0.1 μg · kg<sup>-1</sup> · min<sup>-1</sup>, with adjustment in infusion for renal function (if CrCl <30 mL/min) to bolus of 6 μg/kg and infusion to 0.05 μg · kg<sup>-1</sup> · min<sup>-1</sup>

CrCl indicates creatinine clearance.

# Summary



- Trial population different from real world.
- Atypical presentations.
- Do ECG early.
- Reduce aspirin dose 100mg.
- Watch out for bleeding, renal and hepatic reserves.
- Consider frailty and comorbidities in overall management.

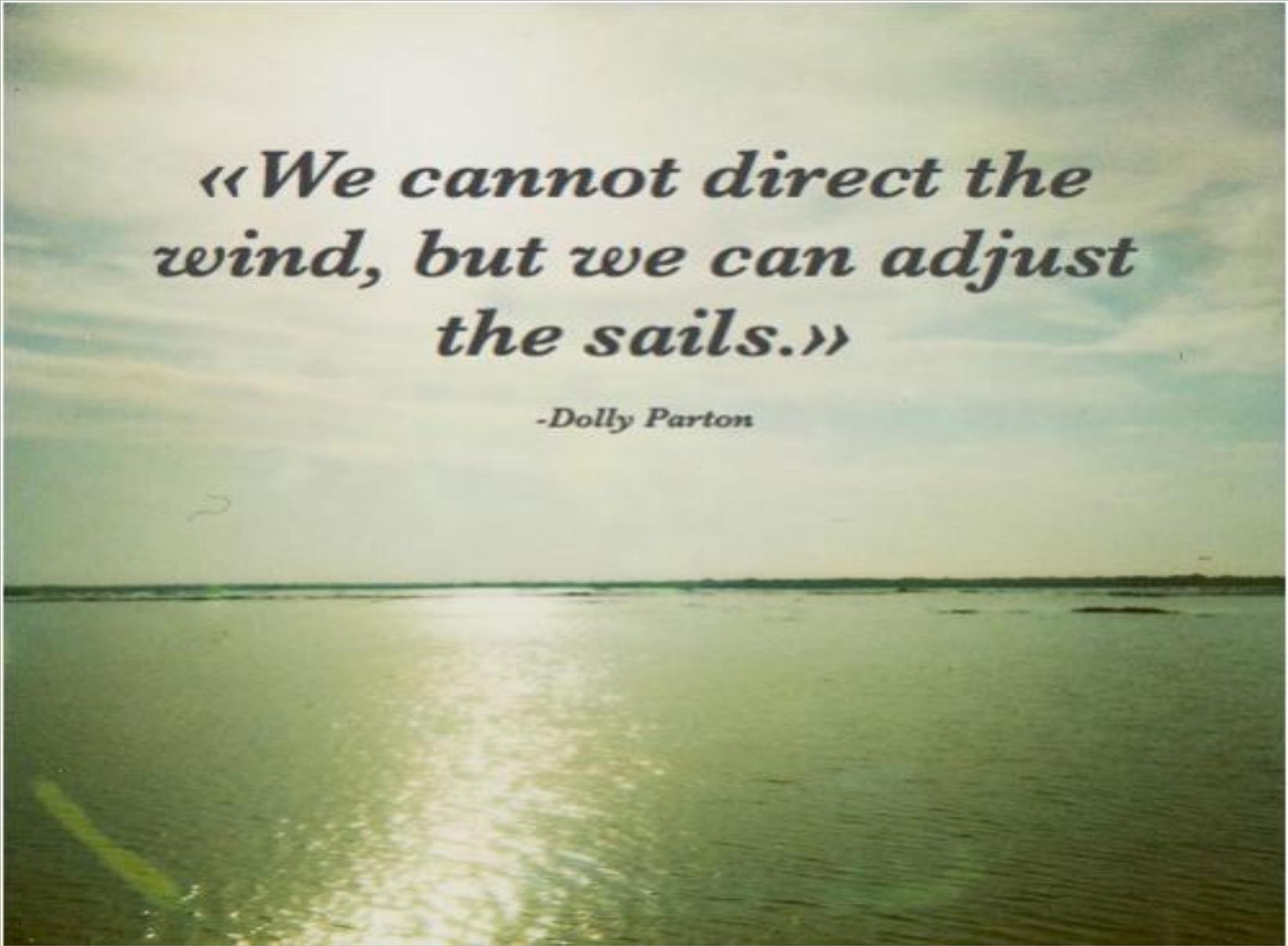
change

4 life

Eat well

Move more

Live longer



*«We cannot direct the  
wind, but we can adjust  
the sails.»*

*-Dolly Parton*



Thank you