

Potential Conflicts of Interest:

- 1. No major conflicts of interest, i.e., all honoraria < \$5,000;**
- 2. Consultations - current or previous:
Sanofi-Aventis, Merck, Bristol-Myers-Squibb, Pfizer, Astra-Zeneca, McNeill, Organon, Berlex, Novartis, Ciba-Geigy, Exeter CME; North American Center for Continuing Medical Education (NACCME), Servier Pharma, Johnson & Johnson, Bayer, Daiichi Sankyo, Omnia CME, Duke Clinical Research Institute, TIMI, Janssen, Boehringer Ingleheim, Medscape, Roche, Amgen, Genzyme/Sanofi Aventis, ZS Pharma, Astra Zeneca, CardioDx.**

- **More than 1/3 of myocardial infarctions occur in patients ages ≥ 75 years.**
- **More than 10% of myocardial infarctions occur in patients ages ≥ 85 years.**
- **The elderly are often excluded or under-represented in clinical trials.**
- **Older adults may gain greater absolute benefits with an early invasive strategy compared with younger adults because of their higher risk for adverse outcomes with conservative management.**

- Older adults with acute myocardial ischemia may present with symptoms other than chest discomfort and signs of ischemia can be more difficult to discern.
- Their presentation may be confounded by coexisting disease states, altered physiology, frailty, and disability.
- Older adults are at higher risk for adverse outcomes including mortality, bleeding, heart failure, and mechanical complications of infarction than younger adults.

An 87-year-old widow, living independently, has 1 week of fatigue and chest tightness with minor tasks, preventing her from attending usual activities. Her past history is remarkable only for systolic hypertension and osteoarthritis, for which she takes hydrochlorothiazide and Naprosyn.

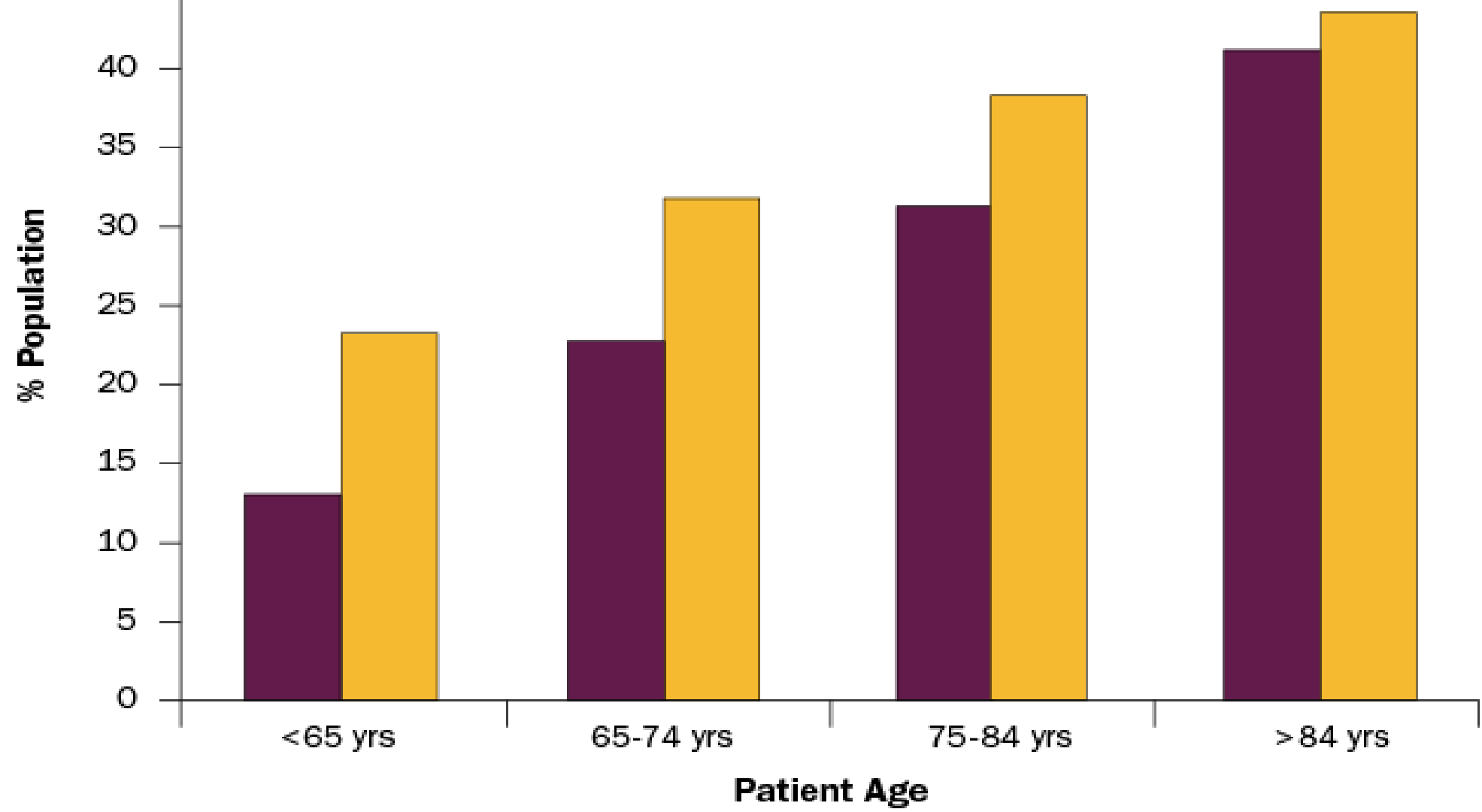
On the day of admission, she awoke from sleep at 5 a.m. with sudden chest tightness, heart pounding, and an inability to breathe. She lives alone, but despite her moderate distress, she was able to get to the phone and call 911. The emergency medical system found her in respiratory distress with an oxygen saturation of 90%, irregular heart rate of 110 bpm, and blood pressure 200/85 mm Hg. After receiving two sublingual nitroglycerin tablets and oxygen by nasal cannula (NC), she was breathing more comfortably and her chest tightness was resolving.

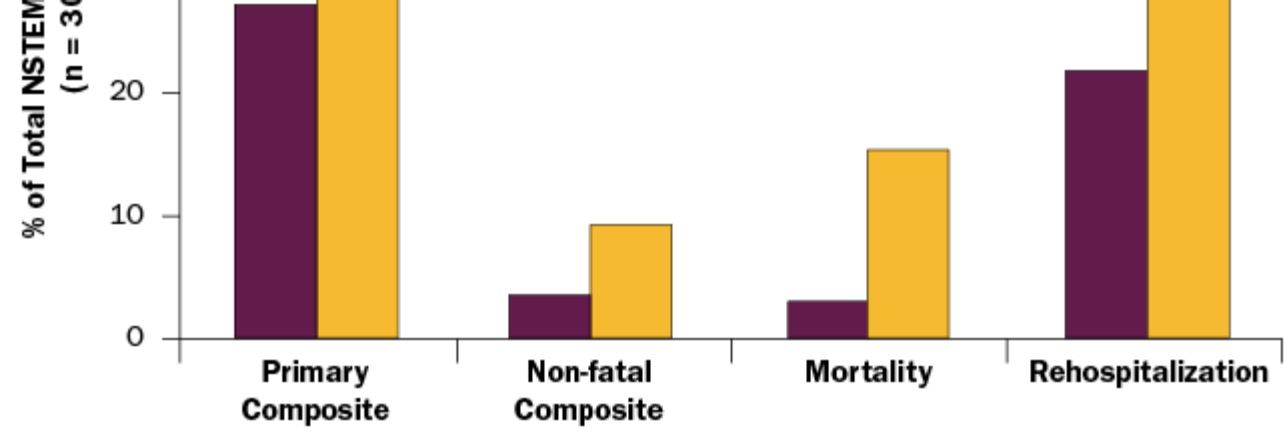
In the emergency room, she was alert and comfortable with blood pressure 165/81 mm Hg, heart rate 89 bpm, and oxygen saturation of 96% on 4L NC. Her initial electrocardiogram showed new atrial fibrillation with an interventricular conduction delay and 1 mm ST depression inferolaterally. Exam revealed mild jugular venous distention, a right carotid bruit, and distant breath sounds. Cardiac exam revealed no murmurs or gallops, and no lower extremity edema. Her chest X-ray showed mild interstitial edema. Initial creatine kinase-myocardial band was 15, troponin T was 2.1, and B-type natriuretic peptide was 830 ng/ml. Other laboratory values included: serum creatinine 1.2 mg/dl, sodium 135 mg/dl, and hematocrit 33%. She was admitted to the coronary care unit (CCU) with a non-ST-segment elevation myocardial infarction (MI).

Presenting symptoms of acute MI in older adults may include: acute shortness of breath, confusion, profound fatigue, chest heaviness, nausea, back pain, and syncope. This patient had 1 week of typical exertional chest pain and fatigue preceding her acute presentation marked by heart failure and rapid atrial fibrillation. Although her ejection fraction (EF) is unknown, it is likely to be normal, given her lack of a prior cardiac history.

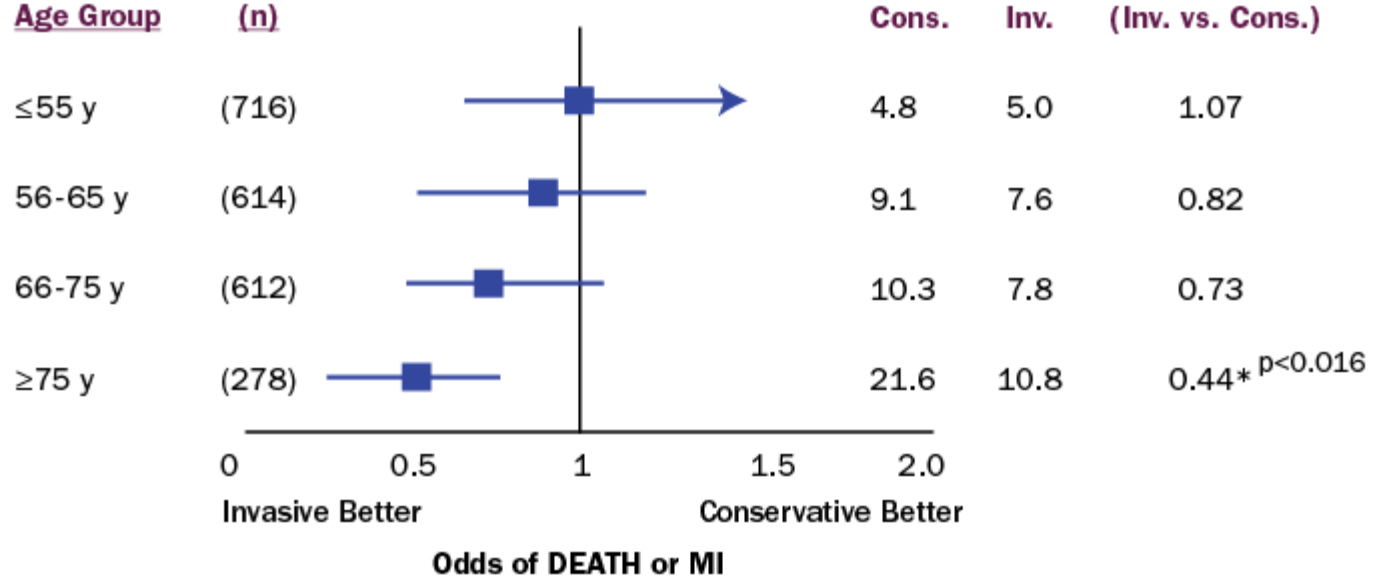
Among patients with atypical presentations (e.g., shortness of breath, nausea, and/or syncope), nearly one half (43%) are at least 75 years of age. Yet, it is important to remember that typical chest pain also occurs commonly in older adults. Atypical MI presentations are also more commonly seen in women, diabetics, and those with pre-existing heart failure.

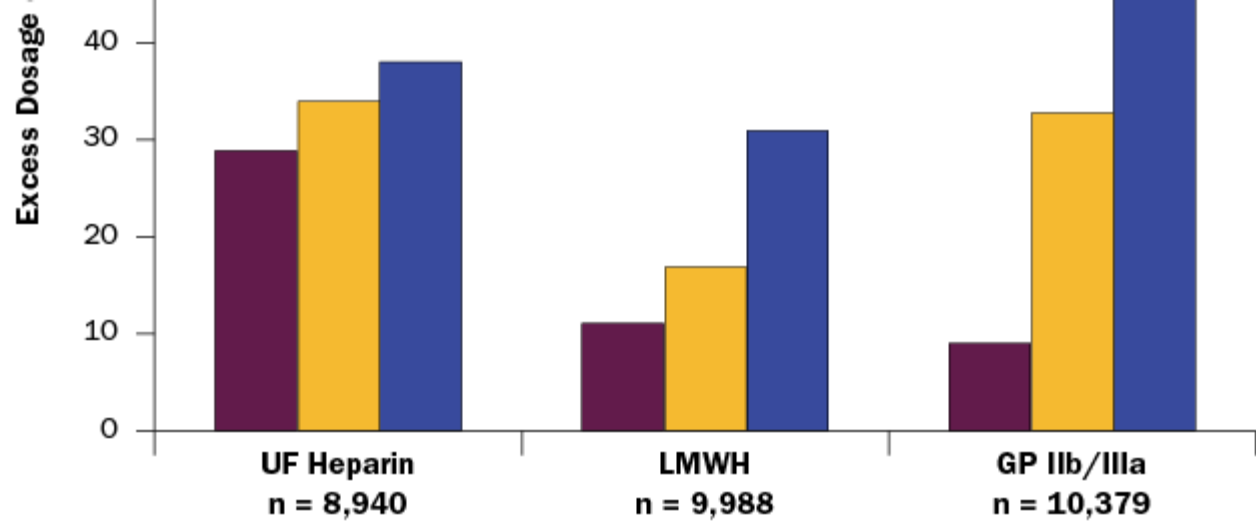
Her echocardiogram confirms an LVEF of 77% with mild hypertrophy and mild mitral regurgitation. She was treated with intravenous furosemide for pulmonary congestion. Her ventricular rate was controlled with beta-blockers. She was also started on aspirin, clopidogrel, and unfractionated heparin in the CCU, with a plan for cardiac catheterization the following day. Her nonsteroidal anti-inflammatory drug (NSAIDs), contraindicated in the setting of an acute coronary syndrome (ACS), were discontinued. On morning rounds, she reported an episode of chest tightness when using the bedside commode during the night. When discussing cardiac catheterization, she expressed concern that she could not withstand it due to her age.

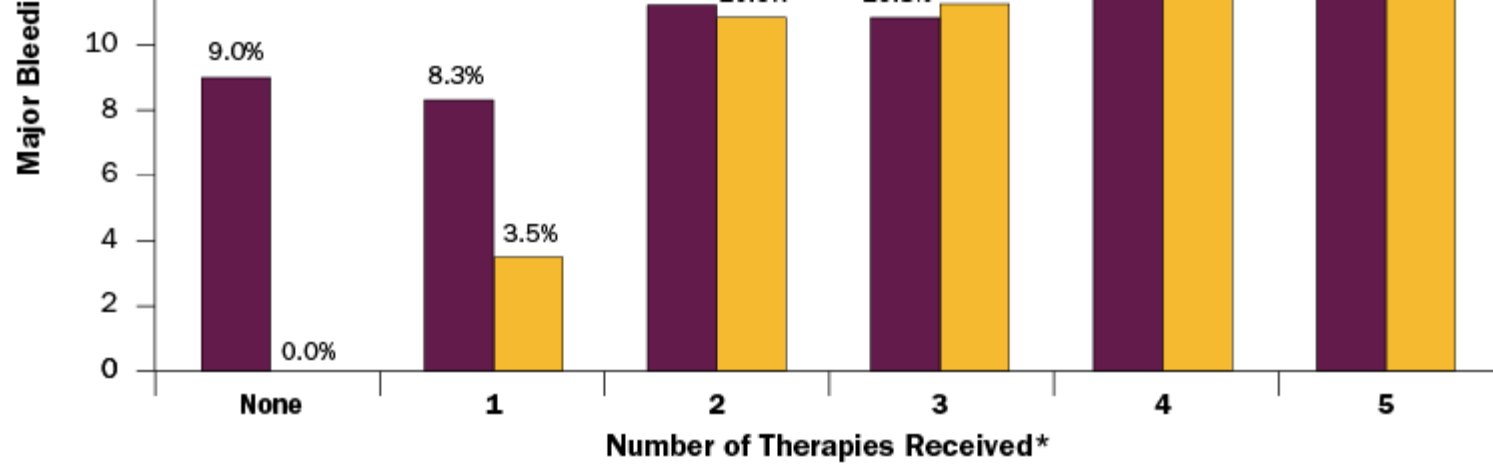




Composite: all-cause death, MI, revascularization, all-cause hospitalization, major bleeding, stroke/transient Ischemic attack, dialysis







*Therapies: (1) Aspirin, (2) beta-blocker, (3) heparin, (4) cath w/in 48 hours w/ GP IIb/IIIa, (5) cath w/in 48 hrs. (CABG patients and contraindications excluded).

Mechanisms Leading to Pharmacokinetic Variations of Antithrombotic Drug Effects in the Elderly



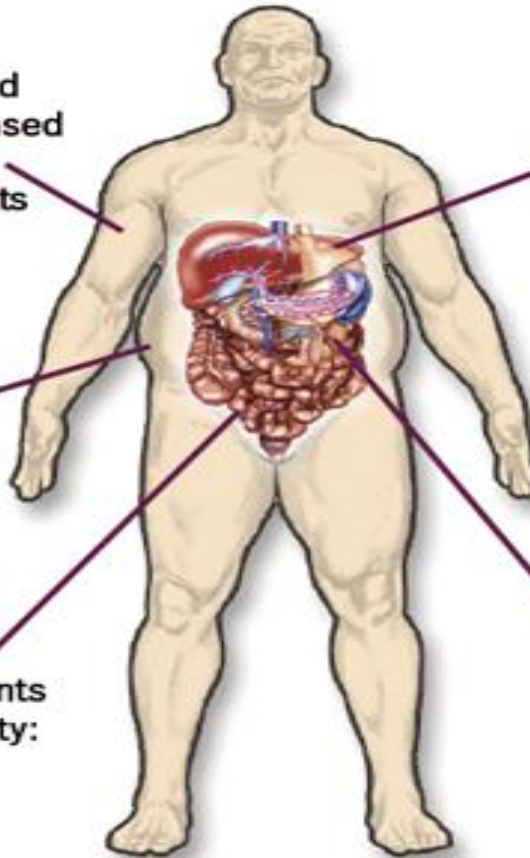
Reduction in lean body mass and total body water content: decreased distribution volume of hydrophilic drugs and accentuated toxic effects



Relative increase in body fat and increased distribution volume of fat-soluble drugs: increased half-life and time to reach a steady state serum concentration



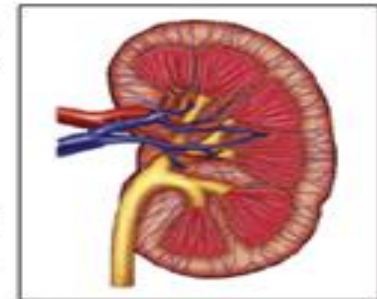
Simultaneous treatment with agents that hamper propulsive gut motility: reduced absorption



Polypharmacy is frequent in the elderly: higher potential for drug-drug interactions



Reduced glomerular filtration rate, tubular secretion and renal blood flow: reduction in renal drug elimination and accumulation of renally cleared drugs



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Bleeding increases as a function of age and comorbid conditions common in older adults, but must be considered in light of the benefit of anticoagulant therapy and catheter interventions