**Why get a stress?**
- To evaluate the heart for areas of reversible ischemia
- Good to rule out cardiac source of chest pain, decompensated CHF,

**What to do with the results?**
- Negative stress means no **reversible ischemia** and implies that symptoms are not due to a cardiac etiology that can be fixed by revascularization
- Positive stress indicates **reversible ischemia** and may be an indication for cardiac cath

**Contraindications**
- Aortic Stenosis (also HOCM)
- Ongoing Angina
- Patient would not be a candidate for catheterization
Stressing Agents

GXT (aka Exercise)
- Treadmill or other instrument
- No medications
- Various protocols, most involve aerobic activity for about 10 minutes

Dobutamine
- β-1 adrenergic agonist
- Stimulates heart rate and contractility (“whips the heart”)

Adenosine, dipyridimole (DP)
- Vasodilator
- Opens up blood vessels to increase blood flow to the heart, but does not directly stimulate the heart (“opens the throttle”)
- Patients get a flushed feeling
- Contraindicated in Reactive Airway Disease (ie. Asthma, COPD) because of bronchospasm

Combinations of stress and imaging
Exercise – Any imaging
Dobutamine – Echo or nuclear
Adenosine – Nuclear only

Imaging Modalities

EKG
- Continuous tracing of EKG with periodic printouts
- EKG is done on every stress test
- Look for ST depression >1mm
- Immediate result
- High false positive rate in women

Echocardiogram
- Echo is done before stress and immediately following stress
- Can get info such as EF and valve morphology (although not as good as a standalone echo)
- Look for reversible wall motion abnormality – in rest a wall moves normally but after stress it does not move as well (in proportion to other walls)
- Functional study, does not “see” areas of poor blood flow unless the result is ischemia causing poor wall motion
- Immediate result

Nuclear imaging
- Thallium, myoview, dual-isotope, etc.
- Looks at blood flow to various areas of the heart
- Needs resting images followed by stress images (sometimes need a “washout period”)
- Look for areas of reversible ischemia – areas that get good blood flow during rest but do not receive good blood flow during stress
- Radiation exposure
- Picks up early lesions
- Delayed results – takes time for imaging, development, and interpretation