TB - the facts
- 1/3 of all people carry TB
- People feel better/ stop taking drugs
  - Spread MDR-TB via travel!
- Treatment of antibiotic-resistant strains ~$10,000/ case
  - ↑ hospitalization $9,000 if methicillin-resistant
  - $100,000 for vancomycin-resistant

NY Department of Health TB policy:
- “Always test a patient for drug susceptibility”
- “Always treat with a regimen of at least two- and preferably four to five- drugs”
- “Never add a single new antibiotic to a failing drug regimen, always add two or three”
- “Treat patients with multidrug-resistant strains for at least 18 months”
- “Always treat multidrug resistant patients with direct observation therapy”

General lessons: Antibacterial Resistance
- Cipro and Anthrax
  - “better off taking valium”
- Don’t get antibiotics for colds
  - colds/flu viruses- antibiotics kill bacteria
- A hard lesson – salmonella

Antibiotic resistance adds $30 BILLION to annual US medical bill!

Start Human Evolution

Some Facts
- Chimps not our ancestors per se- share common ape-like ancestor
  - only 2% DNA difference (~5 MYA)
- Human evolution not a “ladder”
  - Some hominid ancestors overlapped

From the beginning:
- Primates evolved from insect-eating mammals ~65 MYA
- Important characteristics:
  - dexterous hands
  - claws-> nails
  - sensitive fingers
  - eyes close together – better depth perception
  - eye-hand coordination
**Australopithecus**
- walked African savanna
- probably first bipeds (upright-walking)
- Lucy – 3.2 MY old
- *A. ramidus* – 4.4 MY- bipedal?
- Extinct ~1.4 MYA

**Homo habilis**
- “handy man” – manual dexterity, big brains
  - started using tools
  - “mankind stood up first and got smarter later” (Gould)
- brain enlargement evident ~2.5 MYA
- Brain capacity intermediate – *Australopithecus* and *Homo sapiens*

**Homo erectus**
- First species to extend out of Africa
  - global dispersal ~1.8 MYA
  - possibly because of diet shift – more meat
- Taller than *H. habilis*
  - larger brain (large as modern humans)
- Resided in huts/caves
  - fire
  - clothing

**Neanderthals**
- Europe, Middle East, Asia
  - 130,000 YBP to 35,000 YBP
- Brains slightly larger than ours
- Skilled tool makers
- Rituals- required abstract thought
  - E.g., burials
  - Speech?

**Origin of Homo sapiens**
- Oldest fossils about 100,000 YBP
  - Look like modern humans
  - African
- Cro-Magnon 35,000 YBP
- Models –
  - *multiregional*: modern humans evolved simultaneously around world
  - *monogenesis*: “out of Africa”