Chapter 7

Know the following:
- Most computer-aided surgery is minimally invasive using an endoscope
- Distance or telepresence surgery can be performed by robots controlled by surgeons at another site.
- Virtual reality surgery allows computer simulations to simulate real life.
- Endoluminal surgery – minimally invasive surgery performed by robots using natural orifices rather than incisions.
- AESOP – a robot that holds and moves the endoscope under the direction of the surgeon in endoscopic surgery.
- Operating room of the future – images from all sources will be displayed on a screen and available to surgeons on one central screen.
- Lasers can use light energy to cut, vaporize tumors, and seal small blood vessels
- LASIK is a laser eye surgery technique.

Chapter 8

Know the following:
- FDA – oversees safety of food and drugs in US
- Bioinformatics – the application of IT to biology
- Human Genome Project – goal was to find the location and mapping of 100,000 or more human genes
- Stem cells – can develop into different types of body cells; theoretically can repair the body
- Computerized Physician Entry Form – can reduce prescription errors
- Computer warning systems can be used to prevent adverse drug events (ADE)
- Centralized computerized pharmacies identify medications by barcode
- RFID tags can be used in near vicinity to act as a barcode on products
- Telepharmacy – can be used to deliver medication outside of a traditional pharmacy

Chapter 9

Know the following:
- Electrical conductance – used to diagnose cavities by passing electric current through the tooth
- DentSim – uses virtual reality to teach technical dexterity to dental students
- Teledentistry – allows dentists to consult with other dentists and specialists using the Internet and a digital camera.
- Fiber optic camera is analogous to the endoscope used in surgery
- Electronic dental chart – administrative applications, patient’s conditions, and treatments.
- High number of cavities in poor children traced to increased lead levels and shortage in calcium and vitamin C
- WAND – administers computer-controlled injections.

Chapter 10
Know the following:
- Visible Human Project - computerized library of human anatomy at the National Library of Medicine.
- Explorable Virtual Human is being developed. It will include authoring tools that engineers can use to build anatomical models that will allow students to experience how real anatomical structures feel, appear, and sound.
- The Vesalius Project (Columbia University) is creating these three-dimensional models (called maximal models) of anatomical regions and structures to be used in teaching anatomy.
- The Virtual Human Embryo is digitizing some of the 7,000 human embryos lost in miscarriages, which have been kept by the National Museum of Health and Medicine of the Armed Forces Institute of Pathology since the 1880s.
- ADAM
- Human patient simulators
- Medi-Span – a collection of data on drug/drug and drug/food interactions
- Starbright World
- MYCIN and INTERNIST – both examples of expert systems to aid in diagnosis.
- MEDLARS – collection of 40 databases maintained by the National Library of Medicine. Includes the MEDLINE and SDILINE databases.
- CINAHL – database specifically geared to the needs of nurses.

Chapter 11
Know the following:
- Assistive or adaptive technology helps people with disabilities to work and live independent lives.
- FES – a neuroprostheses - delivers low-level electrical stimulation to muscles to restore movement to paralyzed limbs
- Computerized devices are used in optometry to detect glaucoma, make cataract surgery more precise, and detect retinal tears.
• Acceleglove
• Bluetooth (short-distance wireless technology) – allows computerized devices to be linked so that events such as a pacemaker sensing a heart attack can be linked to a cell phone automatically calling 911.
• HELEN (Help Neuropsychology) contains diagnostic analyses that keep track of information on stroke patients
• Implants pose dangers such as infection, rejection, and blood clots.
• Microdialysis – attempts to look at the body’s response to an implant at the cellular level.

Chapter 12
Know the following:
• Privacy – right to control personal information and who gets access to it.
• Software piracy
• Virus
• Identity theft
• Spyware
• Medical Information Bureau – database with health information on 15,000,000 people
• Health Insurance Portability and Accountability Act – encourages the use of electronic medical records and requires health care facilities to have privacy policies.