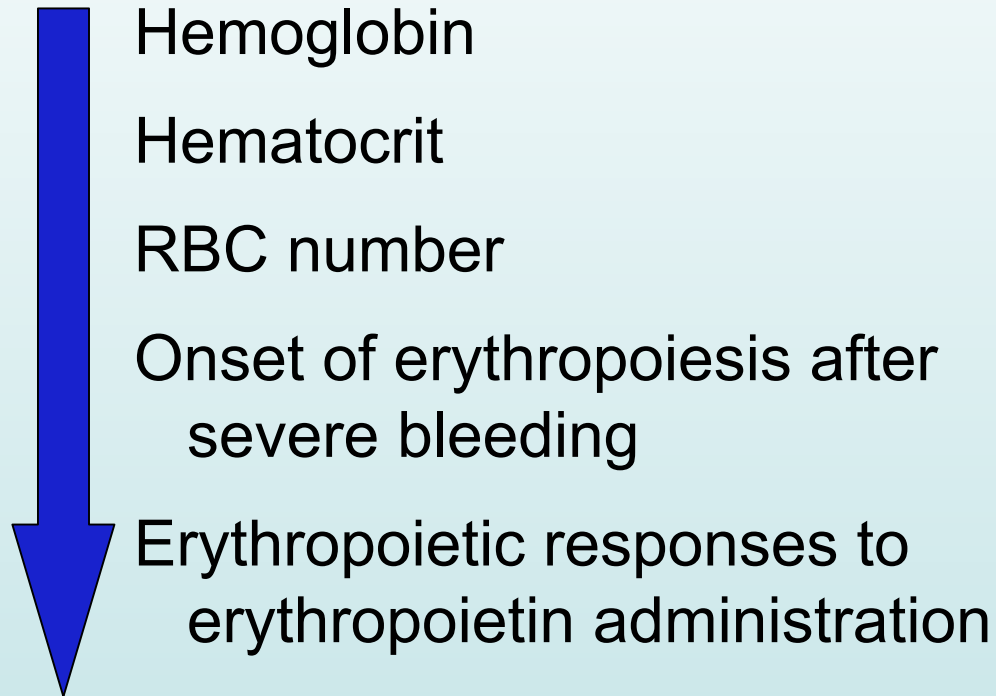


Table 18-13 Hematological Profile of Some Older Individuals



Most of these changes are NOT experienced by
centenarians

Table 18-14
Hormonal Regulators of Erythropoiesis

Erythropoietin
Testosterone
Interleukin-3

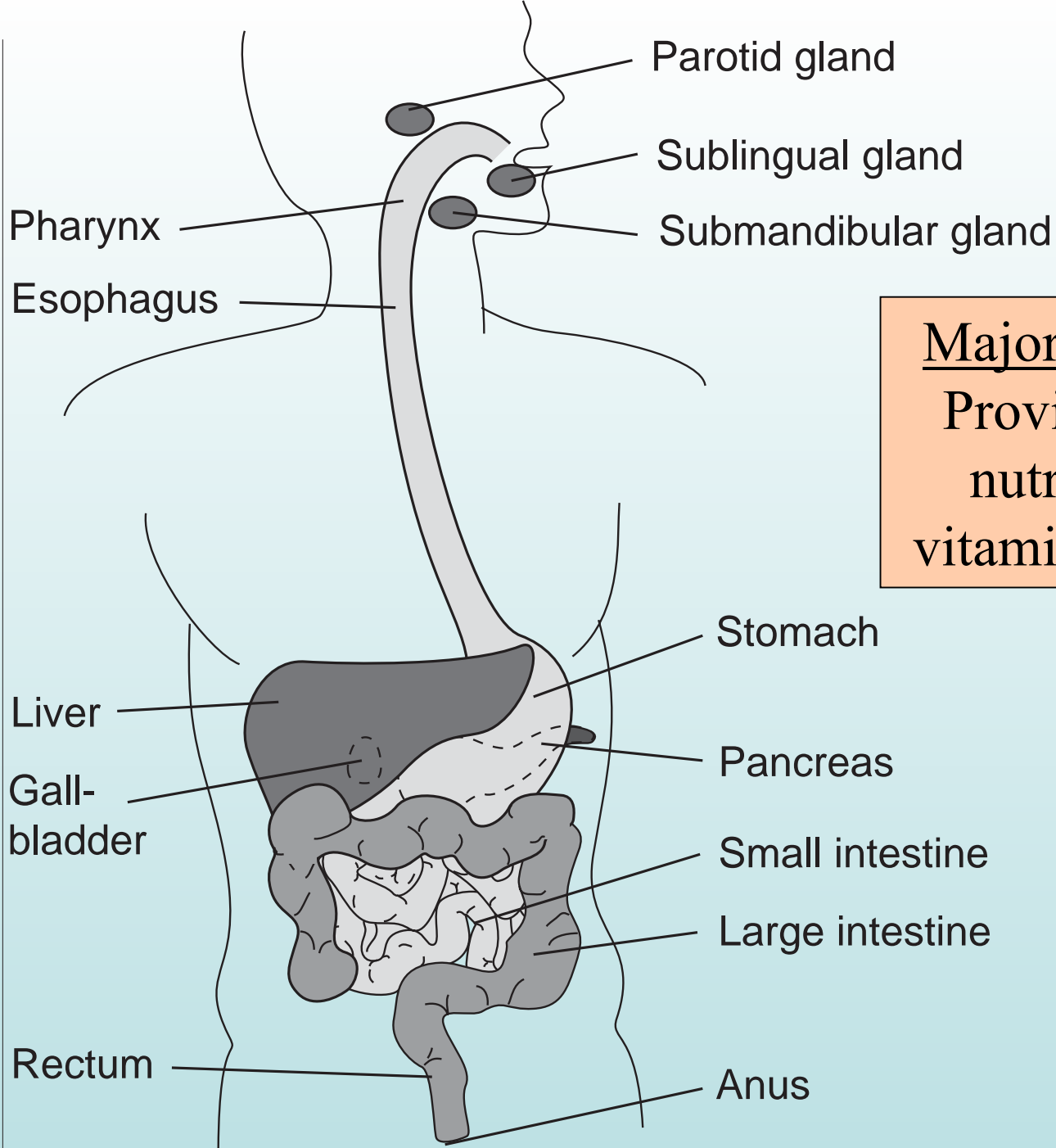
Table 18-15

Factors Involved in Earlier and Faster (< 120 days) Removal of RBCs from Circulation in Old Subjects

<u>Causes</u>	<u>Mechanisms</u>
Earlier and greater fragility	Alteration in membrane lipids increases cell fragility as well as decreases glucose transport and utilization
Greater tendency to aggregate	Membrane alterations may promote RBC aggregation
Decreased availability of energy for metabolism	Decreased activity of Na^+K^+ -ATPase
Altered ionic balance, especially in aging associated diseases	Alteration in ionic balance

Aging of the Gastro-Intestinal Tract

Figure 20.1



Major goal of GI system
Provide organism with
nutritive substances,
vitamins, minerals, fluids

Table 20-1

Major Functions of the Gastrointestinal System

Digestion: chemical (enzymes) and mechanical (teeth, muscles) food breakdown into small units that can be absorbed by the intestinal epithelium

Absorption: active or passive transfer of substances from the GI tract to blood & extracellular spaces

Motility: smooth muscle contraction and relaxation regulate digestion & movement of GI content along tract

Secretion: synthesis and release of hormones, enzymes, chemical mediators, mucus, intrinsic factor

Aging of Teeth

pgs. 361-362

- Yellowish brown discoloration (from staining by beverages, tobacco, bacteria)
- Recession of pulp from crown
- Narrowing of root canal
- Roots become brittle and fracture easily
- Odontoblasts (secrete dentin) become irregular and discontinuous
- Pulp calcification
- Osteoporosis of mandibular and maxillary bones contributing to tooth loss
- Gum recession and infection (peridontitis)

Disturbance of Deglutition

pg. 363

Dysphagia (disturbance of swallowing of food)
maybe associated with:

- Increased incidence of non-peristaltic contraction
- Failure lower esophageal sphincter to relax
- Reduced amplitude of peristaltic contractions

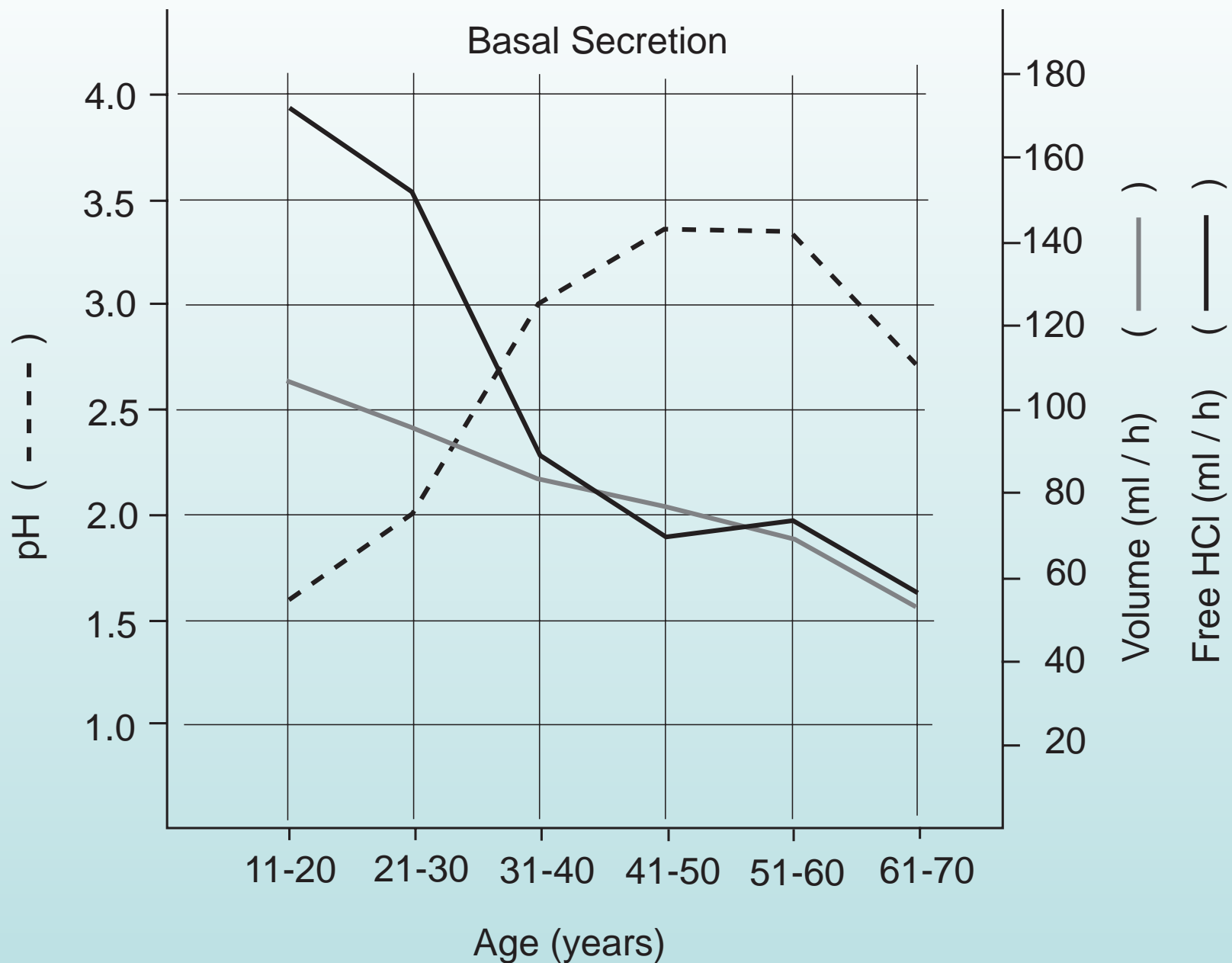
Major Functions of the Stomach

- Food reservoir
- Digestion of food
- Secretion of gastric juice with digestive enzyme, mucus, hydrochloric acid
- Secretion of hormones gastrin, glucagon, somatostatin, vasoactive intestinal polypeptide (VIP)
- Secretion of intrinsic factor
 - necessary for Vitamin B12 absorption & maturation of RBCs

Vasoactive Intestinal Polypeptide (VIP)

- Stimulates intestinal secretion of water & electrolytes
- Relaxes intestinal smooth muscle (including sphincters)
- Inhibit gastric acid secretion
- Dilates peripheral blood vessels

Figure 20-2 Changes in Gastric Secretion with Age



Factors influencing the incidence/severity of H. pylori infection

- Virulence of infection
- Genetic characteristics
- Environmental co-factors (non-steroidal anti-inflammatory drugs e.g. aspirin, others)

Management of Peptic Ulcer

Box 20.1 (pg. 365)

- Dietary
- Pharmacologic
- Surgical

Table 20-4 Important Factors for the Maintenance of Optimal Small Intestinal Function

Anatomic integrity

Normal gastrointestinal secretions.

Coordinated gastrointestinal motility,

Normal intestinal transport

Adequate intestinal blood supply

Normal defense mechanisms against toxic injurious agents (bacteria, injury, drugs)

Decreased intestinal absorption

- Changes in villus shape
- Increase of collagen
- Mitochondrial changes
- Prolonged replication time of cells
- Decreased villus motility
- Inadequate blood supply (atherosclerosis)
- Impaired water barrier restricting diffusion and transport
- Permeability changes

Table 20-3 Mechanisms of Decreased Intestinal Calcium Absorption with Aging

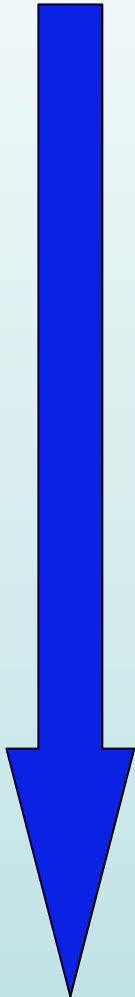
intake of Vitamin D (poor nutrition)

Vitamin D conversion in skin
(reduced sunlight exposure)

intestinal absorption

Vitamin D metabolism (hepatic)
and activation (renal)

cellular calcium binding
(decreased receptors)



Major Liver Functions

Bile formation

- Carbohydrate storage and metabolism
- Regulation of lipid metabolism
- Manufacture of plasma protein
- Urea formation
- Ketone body formation

Metabolism of steroid & polypeptide hormones

Detoxification of many drugs and toxins

Aging of Liver

pg. 370

- Atrophy after 60 years and greater after 80 years
- Cell size variable
- Increased collagen
- Alteration in hepatic cell degeneration/
regeneration cycle
- Alteration in mitochondrial number
- Decrease in endoplasmic reticulum and ability to
metabolize drugs

Major Functions of the Bile

- Emulsification of lipids
- Activation of enzymes for digestion of lipids
- Excretion of cholesterol

- Conjugation of bilirubin to water soluble products

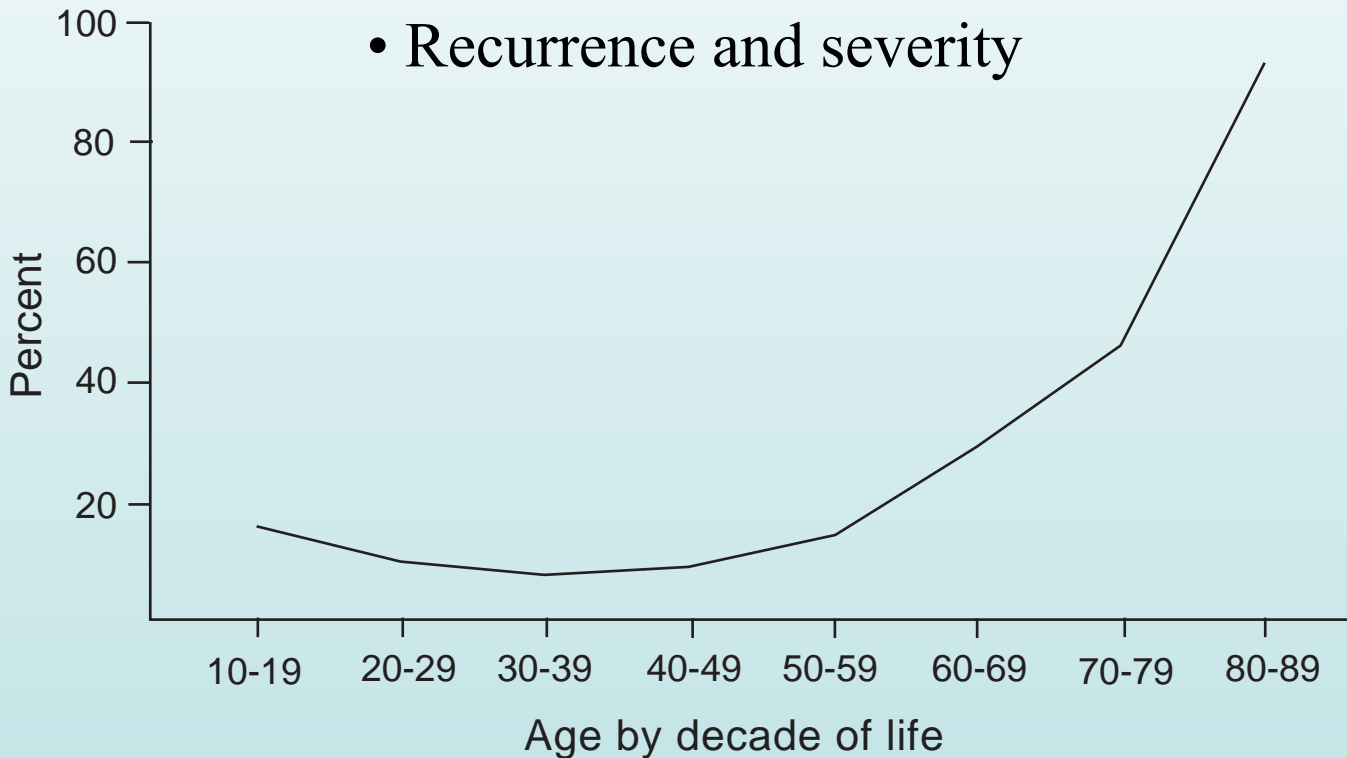
- Neutralization of acid delivered to duodenum from stomach

- Excretion of drugs, heavy metals, environmental toxins

20.7 Incidence of Bile Duct Stones

Characteristics of biliary disease in the elderly:

- Acute vs. Chronic
- Presence of stones
- Recurrence and severity





**Have a
nice
summer!**