through which the chemical is transported from the site of synthesis to the site of cellular action (e.g., blood, lymph, extracellular fluids). The endocrine glands, which are distributed throughout the body, are listed in Table 28-1; also listed are several additional structures sometimes considered endocrine glands, although they are not usually included. The pathophysiology review in Fig. 28-1 provides a summary of the principle pituitary hormones and their target organs.

TABLE 28-1
Hormones and Their Function

Hormone	Effect	Hypofunction	Hyperfunction
Adenohypophysis (Anterior Pituitary)*			
STH or GH (somatotropin) *Target tissue:* Bones	Promotes growth of bone and soft tissues Has main effect on linear growth Maintains a normal rate of protein synthesis Conserves carbohydrate utilization and promotes fat mobilization Is essential for proliferation of cartilage cells at epiphyseal plate Is ineffective for linear growth after epiphyseal closure Has hyperglycemic effect (anti-insulin action)	Epiphyseal fusion with cessation of growth Prepubertal dwarfism Pituitary cachexia (Simmonds disease) Generalized growth retardation Hypoglycemia	Prepubertal gigantism Acromegaly (after full growth is attained) DM Postpubertal hypoproteinemia
Thyrotropin (TSH) *Target tissue:* Thyroid gland	Promotes and maintains growth and development of thyroid gland Stimulates TH secretion	Hypothyroidism Marked delay of puberty Juvenile myxedema	Hyperthyroidism Thyrotoxicosis Graves disease
ACTH *Target tissue:* Adrenal cortex	Promotes and maintains growth and development of adrenal cortex Stimulates adrenal cortex to secrete glucocorticoids and androgens	Acute adrenocortical insufficiency (Addison disease) Hypoglycemia Increased skin pigmentation	Cushing syndrome
Gonadotropins *Target tissue:* Gonads	Stimulate gonads to mature and produce sex hormones and germ cells	Absent or incomplete spontaneous puberty	Precocious puberty Early epiphyseal closure
FSH *Target tissue:* Ovaries, testes	*Male:* Stimulates development of seminiferous tubules; initiates spermatogenesis	Hypogonadism Sterility Absence or loss of secondary sex	Precocious puberty Primary gonadal failure Hirsutism