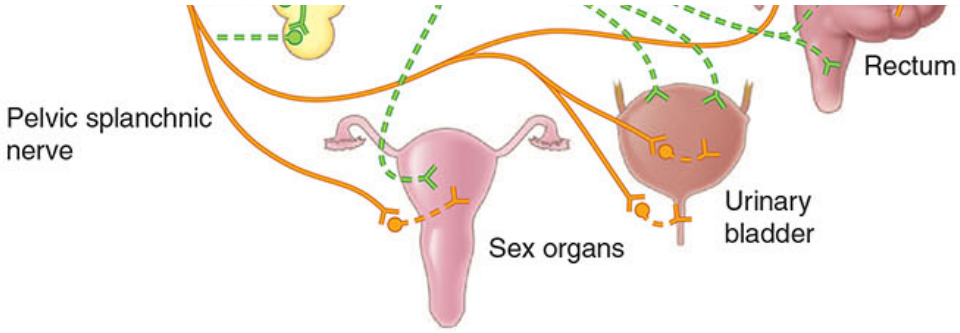

FIGURE 440-1 Schematic representation of the autonomic nervous system. *(Adapted with permission from R Snell: Clinical Neuroanatomy, 7th ed. Philadelphia: Wolters Kluwer Health/Lippincott Williams & Wilkins, 2009.)*

Acetylcholine (ACh) is the preganglionic neurotransmitter for both the sympathetic and parasympathetic divisions of the ANS as well as the postganglionic neurotransmitter of the parasympathetic neurons; the preganglionic receptors are nicotinic, and the postganglionic are muscarinic in type. Norepinephrine (NE) is the neurotransmitter of the postganglionic sympathetic neurons, except for cholinergic neurons innervating the eccrine sweat glands.

The gastrointestinal (GI) tract has long been described as part of the sympathetic and parasympathetic nervous systems. However, it has many unique characteristics such that it is now considered separately as the enteric nervous system. Parasympathetic control of the GI system is through the craniospinal nerves (vagus and S2-S4 nerves) while sympathetic efferent control is through the thoracolumbar region. The enteric nervous system itself is made up of a series of ganglia that form a network of plexuses with several hundred million cells (the equivalent of the number of cells in the spinal cord). Meissner's (submucosal) plexus, Auerbach's (myenteric), Cajal's (deep muscular), mucosal, and submucosal plexuses comprise the majority of nerves within the enteric nervous system. Numerous neurotransmitters have now been identified within the enteric nervous system, with many neurons containing both primary and co-transmitter neurotransmitters.

CLINICAL EVALUATION

■ CLASSIFICATION