



United Council for Neurologic Subspecialties
Autonomic Disorders
Written Examination
Content Outline

The UCNS Autonomic Disorders (AD) examination was established to determine the level of competence for Autonomic Disorder specialists. The examination will assess current clinical practice.

The following content outline is provided to examination candidates interested in the certification examination. The content outline consists of four primary categories followed by subcategories. The written examination consists of 200 multiple choice questions.

<u>Content Area</u>	<u>Percentage of Questions</u>
I. Basic Science	25 %
II. Laboratory Evaluation of Autonomic Function	25 %
III. Clinical Autonomic Disorders	25 %
IV. Clinical Management	25 %

I. Basic Science

A. Anatomy

1. Central organization of autonomic control
2. Sympathetic system (Separate sympathetic noradrenergic, sympathetic cholinergic, sympathetic adrenergic)
3. Parasympathetic system
4. Visceral afferents
5. Enteric nervous system

B. Physiology

1. Patterns of activity of central autonomic neurons
2. Synaptic transmission in autonomic ganglia
3. Autonomic neuroeffector junctions
4. Cardiovascular reflexes (with emphasis on baroreflex)
5. Cardiorespiratory interactions
6. Thermoregulation
7. Autonomic control of the bladder
8. Control of gastrointestinal motility
9. Control of sexual function

10. Control of the eye
11. Control of immune function
12. Neuro-endocrinology
13. Sleep and autonomic function
14. Glucose regulation

C. Neurochemistry

1. Basic neurochemistry of the central autonomic circuits
2. Preganglionic neurotransmission and receptors: acetylcholine and co-transmitters
3. Post-ganglionic transmission with emphasis on catecholamines
4. Chemical coding in the sympathetic ganglia: norepinephrine, neuropeptides, and ATP
5. Chemical coding in the parasympathetic system
6. Humoral and local modulation of autonomic neurotransmission
7. Neuropeptides in primary visceral afferents
8. Chemical coding in the enteric nervous system

D. Pharmacology

1. Pharmacology of the central autonomic network.
2. Nicotinic receptors: distribution, agonists, and antagonists
3. Muscarinic receptors: subtypes, distribution, agonists, and antagonists
4. Adrenergic receptors: subtypes, distribution, agonists, and antagonists
5. Autonomic neuropeptide receptors

II. **Laboratory Evaluation of Autonomic Function**

A. Sudomotor Function

1. Thermoregulatory sweat test (physiology, method, pitfalls, interpretation)
2. Sudomotor axon reflex test (physiology, method, pitfalls, interpretation)
3. Sweat imprint method
4. Skin potentials

B. Cardiovascular Reflexes

1. Spontaneous
2. Deep Breathing
3. Head-up tilt/standing
4. Valsalva maneuver
5. Drugs
6. Cold pressor test
7. Handgrip maneuver
8. Venoarteriolar reflex
9. Flare response

C. Other Methods

1. Microneurography
2. Neck suction

3. Skin biopsies
4. Lower body negative pressure
5. Pharmacological assessment of postganglionic sympathetic outflow.
6. Doppler ultrasound techniques
7. Positron Emission Tomography and Single Photon Emission Computed Tomography

- D. Pupillary
- E. Lacrimal/Salivary Function
- F. Gastrointestinal Motility
- G. Bladder Function
- H. Sexual Function
- I. Humoral Markers
 1. Plasma catechols (indications, methods, pitfalls)
 2. Peptides
 3. Endocrine markers
- J. Statistical Methods and Experimental Design
- K. Molecular, Biologic, Genetic and Immunologic Approaches

III. **Clinical Autonomic Disorders**

- A. Degenerative central nervous system disorders such as multiple system atrophy
- B. Other central nervous system disorders
- C. Peripheral autonomic disorders (neuropathy, ganglionopathy, neuro-effector)
 1. Acute
 2. Chronic
- D. Disorders of orthostatic tolerance
- E. Paroxysmal dysautonomia's including dysreflexia and Raynaud's
- F. Focal autonomic disorders
- G. Iatrogenic (Drugs, surgery and toxin- induced autonomic neuropathies)
- H. Neoplastic and paraneoplastic disorders
- I. Pain and the autonomic nervous system
- J. Autonomic co-morbidities of psychiatric and medical illnesses
- K. Genetic and developmental disorders

IV. **Clinical Management**

- A. Orthostatic hypotension
- B. Orthostatic intolerance
- C. Syncope
- D. Labile hypertension (Baroreflex Failure, pheochromocytoma, etc.)
- E. Inappropriate sinus tachycardia
- F. Autonomic abnormalities in spinal cord and other CNS disorders
- G. Thermoregulatory and sweating disorders

- H. Gastrointestinal dysmotility
- I. Postprandial hypotension
- J. Neurogenic bladder
- K. Sexual dysfunction
- L. Secretomotor function: excessive salivation and lacrimation, reduced/absent salivation and lacrimation