

DEMONSTRATING COMPETENCE THROUGH NATIONAL STANDARDIZED ASSESSMENT PROGRAMS: THE US EXPERIENCE FOR D.O.s

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NBOOME
NATIONAL BOARD OF OSTEOPATHIC MEDICAL EXAMINERS

2017



Mission

To protect the public by providing the means to assess competencies for osteopathic medicine and related health care professions.

Vision

To be the global leader in assessment for osteopathic medicine and related health care professions.

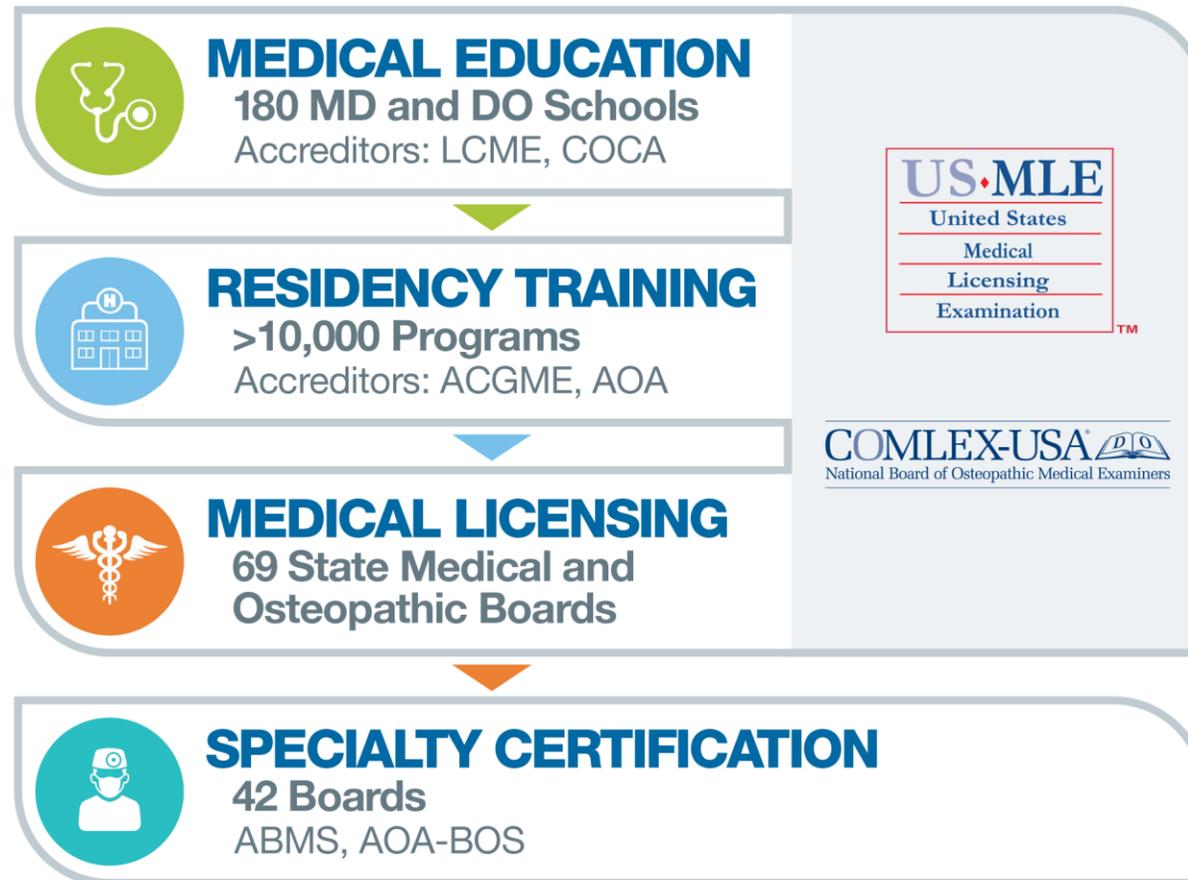


Presentation Overview

- Medical Regulation in the United States
- Standardized Assessment Across the Continuum
- **COMLEX-USA** for DO Licensure, Secondary Uses
- Enhanced COMLEX-USA Master Examination Blueprint
- **COMAT** Achievement Tests
- Revalidation/Continuous Professional Development:
CATALYST Program
- Questions



Medical Regulation in the United States

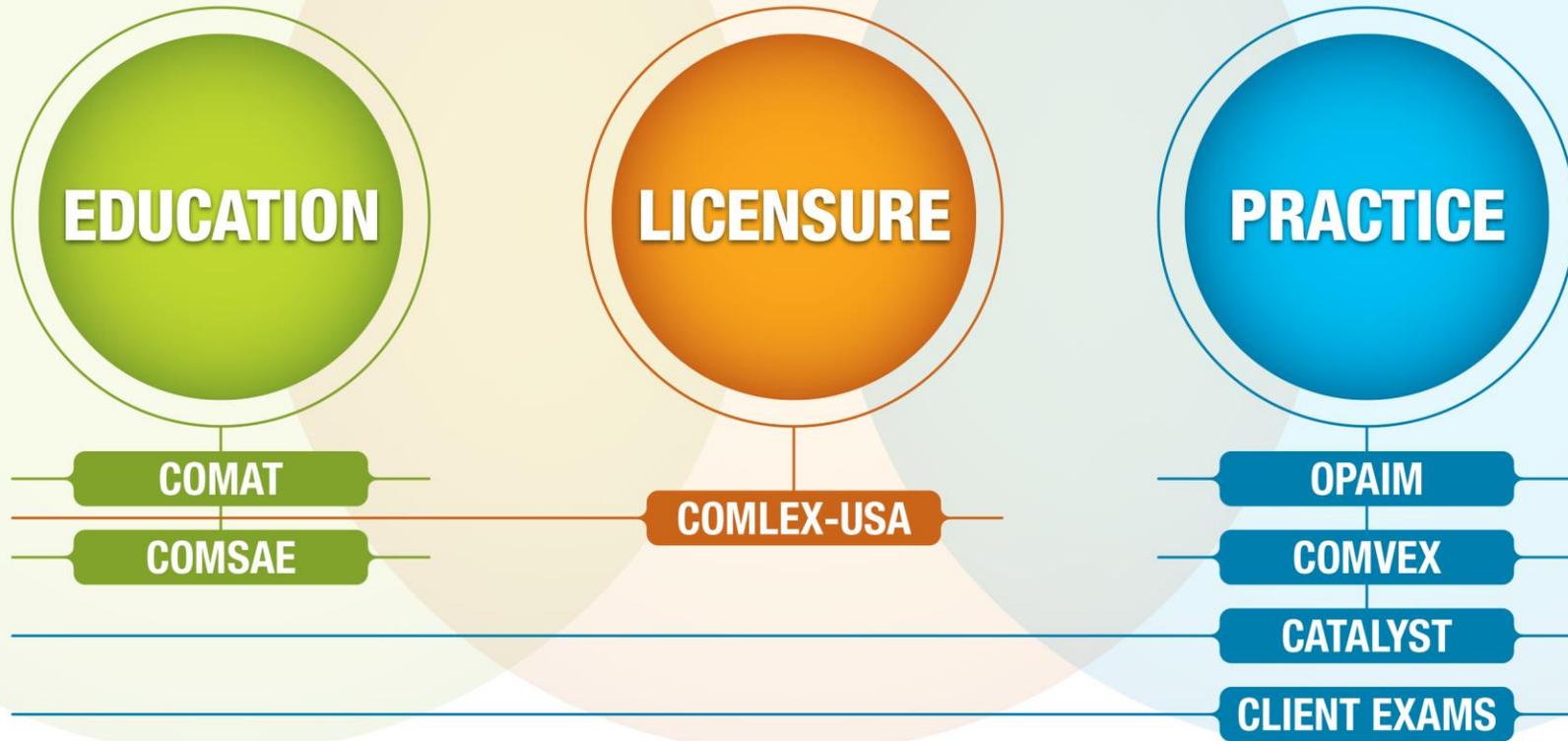


- ▶ State-based system
- ▶ License issued by individual state boards
- ▶ Licensed for undifferentiated practice
- ▶ License renewal required every 2-3 years
- ▶ > 900,000 physicians
- ▶ > 80% are specialty certified
- ▶ 23% are international medical graduates

Source: U.S. Medical Regulatory Trends and Actions Report, Federation of State Medical Boards, 2016.



Assessment Across the Continuum



700+
NATIONAL
FACULTY
MEMBERS

116,000
ACTIVE
LICENSED DOs

225+
FULL-TIME
STAFF

10,000+
RESIDENCY
PROGRAMS

70
STATE
LICENSING
BOARDS

35 COMs
48
CAMPUSES



COMPLEX-USA 
National Board of Osteopathic Medical Examiners

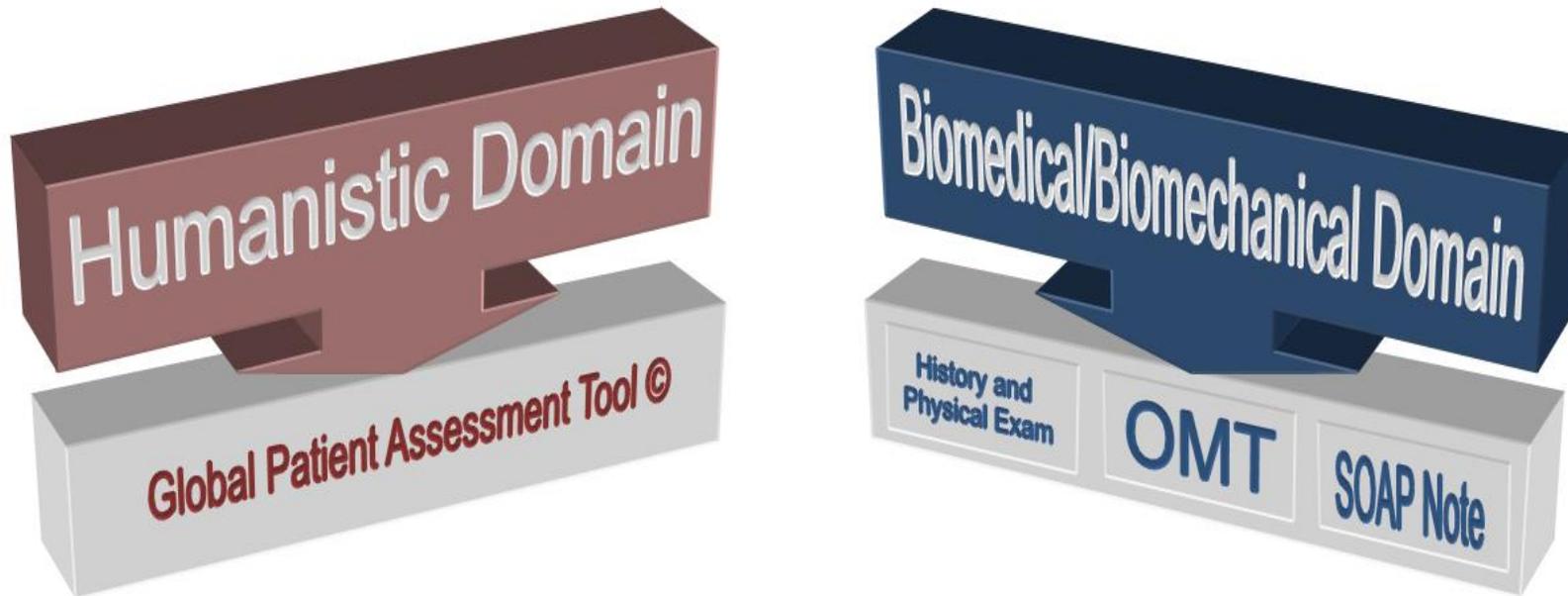
Comprehensive Osteopathic Medical
Licensing Examination-USA



COMLEX-USA Series

- COMLEX-USA Level 1
- COMLEX-USA Level 2 - Cognitive Evaluation (CE)
- COMLEX-USA Level 2 - Performance Evaluation (PE)
- COMLEX-USA Level 3

Clinical Skills in COMLEX-USA Performance Evaluation



Sandella JM, Smith LA, Gallagher LA, Langenau EE. Patterns of misrepresentation of clinical findings on patient notes during the COMLEX-USA Level 2-PE. *J Am Osteopath Assoc.* 2014;114(1):22-29. doi:10.7556/jaoa.2014.004.

Helstrom J, Langenau EE, Sandella JM, Mote B. Keyboard Data Entry: Use among Osteopathic Medical Students and Residents. *J Am Osteopath Assoc.* 2014;114(4):274-282. Doi: 10.7556/jaoa.2014.053.

Sandella JM, Smith LA, Dowling DJ. Consistency of interrater scoring of student performances of osteopathic manipulative treatment on COMLEX-USA Level 2-PE. *J Am Osteopath Assoc.* 2014;114(4):253-258. doi:10.7556/jaoa.2014.050.



COMLEX-USA

National Board of Osteopathic Medical Examiners

Enhanced COMLEX-USA Blueprint 2018-2019





Enhanced COMLEX-USA Blueprint Recent Publications

Gimpel JR, Horber D, Sandella J, Knebl J, Thornburg J. Evidence-based redesign of the COMLEX-USA series. *J Am Osteopath Assoc.* 2017;117(4):253-261. doi:10.7556/jaoa2017.043

Gimpel, JR. Redefining Competency Domains for Osteopathic Medical Practice. *J Am Osteopath Assoc.* 2016;116:568-570.



Enhanced COMLEX-USA Blueprint 2018-2019

Focuses the assessment on two dimensions that continue to integrate:

- Osteopathic philosophy of whole person healthcare
- Underlying structure-function relationships
- Interdependence of body systems
- Self-healing and self-regulatory mechanisms, and
- Osteopathic approach to patient care, including osteopathic manipulative medicine and OMT

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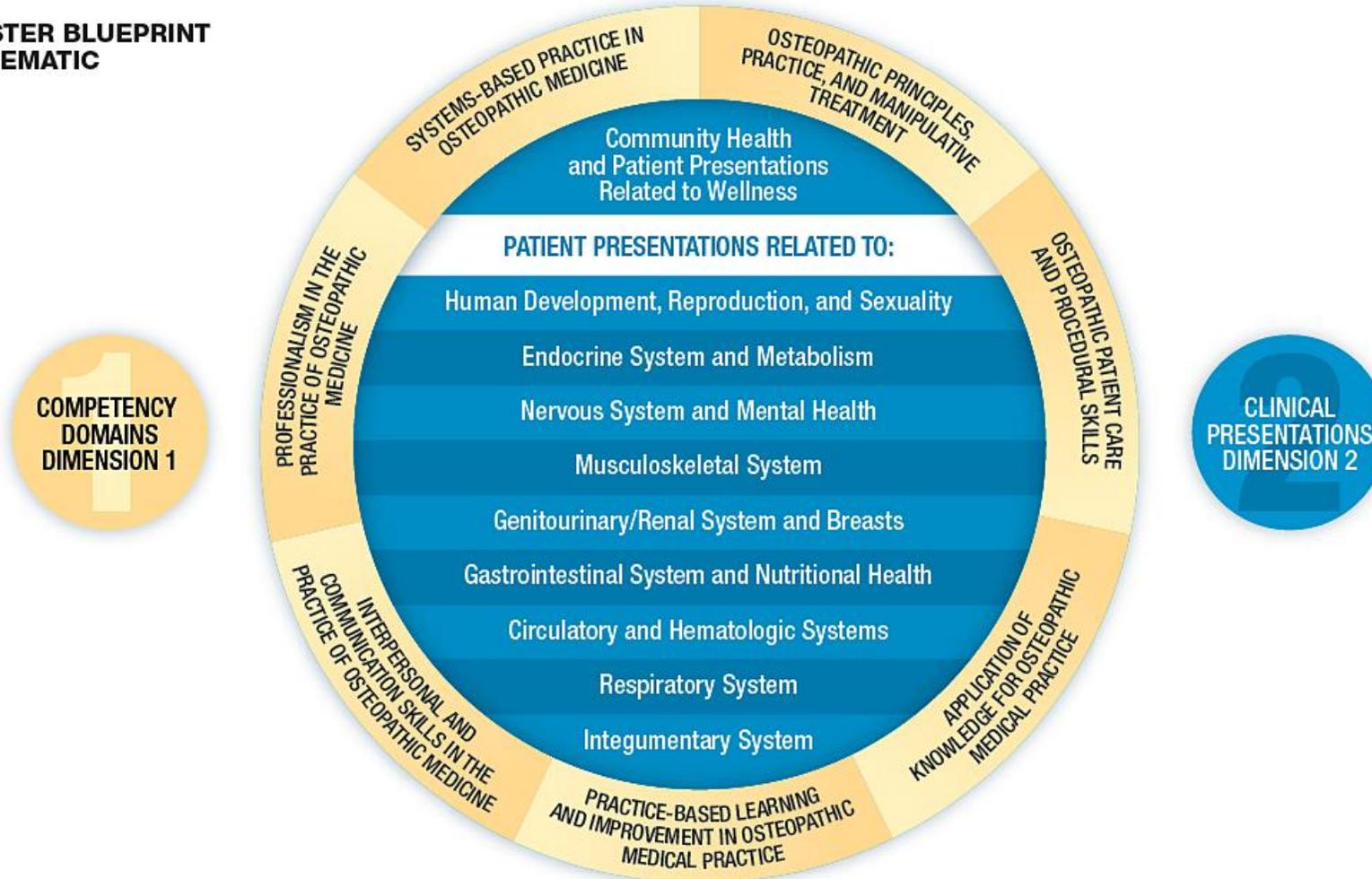


COMLEX-USA EXAMINATION PROGRAM			
LEVEL 1	LEVEL 2-CE	LEVEL 2-PE	LEVEL 3
One-day computer-based examination 400 predominantly multiple-choice test questions	One-day computer-based examination 400 predominantly multiple-choice test questions	One-day 12 station standardized patient-based performance evaluation of fundamental clinical skills	Two-day computer-based examination 500-550 MCQs, clinical decision-making cases, and other novel test item formats (up to 30 additional clinical cases)
MAY 2019	IMPLEMENTATION TIMELINE		SEPT. 2018
	JUNE 2019	MAR. 2019	

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MASTER BLUEPRINT SCHEMATIC





CONTENT ACROSS THE EXAMINATION SERIES

COMPETENCY DOMAINS: DIMENSION 1		MINIMUM
1	Osteopathic Principles, Practice, and Manipulative Treatment	10%
2	Osteopathic Patient Care and Procedural Skills	25%
3	Application of Knowledge for Osteopathic Medical Practice	30%
4	Practice-Based Learning and Improvement in Osteopathic Medical Practice	5%
5	Interpersonal and Communication Skills in the Practice of Osteopathic Medicine	10%
6	Professionalism in the Practice of Osteopathic Medicine	5%
7	Systems-Based Practice in Osteopathic Medicine	5%
CLINICAL PRESENTATIONS: DIMENSION 2		MINIMUM
1	Community Health and Patient Presentations Related to Wellness	12%
2	Patient Presentations Related to: Human Development, Reproduction, and Sexuality	5%
3	Patient Presentations Related to: Endocrine System and Metabolism	5%
4	Patient Presentations Related to: Nervous System and Mental Health	10%
5	Patient Presentations Related to: Musculoskeletal System	13%
6	Patient Presentations Related to: Genitourinary/Renal System and Breasts	5%
7	Patient Presentations Related to: Gastrointestinal System and Nutritional Health	10%
8	Patient Presentations Related to: Circulatory and Hematologic Systems	10%
9	Patient Presentations Related to: Respiratory System	10%
10	Patient Presentations Related to: Integumentary System	5%



TEST SPECIFICATIONS FOR EACH EXAMINATION

DIMENSION 1: COMPETENCY DOMAINS		TEST SPECIFICATIONS PERCENTAGES					Series Minimum
		Level 1	Level 2-CE	Level 2-PE HUM* : BM/BM*	Level 3	Series Minimum	
1	Osteopathic Principles, Practice, and Manipulative Treatment	11%	10%	0% : 15%	10%	10%	
2	Osteopathic Patient Care and Procedural Skills	6%	30%	0% : 25%	40%	25%	
3	Application of Knowledge for Osteopathic Medical Practice	60%	26%	0% : 15%	17%	30%	
3.1	Foundational Biomedical Sciences Knowledge Base	75%	25%		10%		
4	Practice-Based Learning and Improvement in Osteopathic Medical Practice	5%	7%	0% : 5%	8%	5%	
5	Interpersonal and Communication Skills in the Practice of Osteopathic Medicine	3%	5%	60% : 20%	3%	10%	
6	Professionalism in the Practice of Osteopathic Medicine	3%	7%	30% : 5%	6%	5%	
7	Systems-Based Practice in Osteopathic Medicine	2%	5%	0% : 5%	6%	5%	
DIMENSION 2: CLINICAL PRESENTATIONS		Level 1	Level 2-CE	Level 2-PE	Level 3	Series Minimum	
1	Community Health and Patient Presentations related to Wellness	12%	12%	14%	12%	12%	
2	Patient Presentations Related to Human Development, Reproduction, and Sexuality	5%	5%		5%	5%	
3	Patient Presentations Related to Endocrine System and Metabolism	5%	5%		5%	5%	
4	Patient Presentations Related to Nervous System and Mental Health	10%	10%	14%	10%	10%	
5	Patient Presentations Related to Musculoskeletal System	13%	13%	14%	13%	13%	
6	Patient Presentations Related to Genitourinary/Renal System and Breasts	5%	5%		5%	5%	
7	Patient Presentations Related to Gastrointestinal System and Nutritional Health	10%	10%	14%	10%	10%	
8	Patient Presentations Related to Circulatory and Hematologic Systems	10%	10%	14%	10%	10%	
9	Patient Presentations Related to Respiratory System	10%	10%	14%	10%	10%	
10	Patient Presentations Related to Integumentary System	5%	5%		5%	5%	

*HUM: Humanistic Domain | BM/BM: Biomedical/Biomechanical Domain



Dimension 1: Competency Domains

COMPETENCY DOMAINS: DIMENSION 1		MINIMUM
1	Osteopathic Principles, Practice, and Manipulative Treatment	10%
2	Osteopathic Patient Care and Procedural Skills	25%
3	Application of Knowledge for Osteopathic Medical Practice	30%
4	Practice-Based Learning and Improvement in Osteopathic Medical Practice	5%
5	Interpersonal and Communication Skills in the Practice of Osteopathic Medicine	10%
6	Professionalism in the Practice of Osteopathic Medicine	5%
7	Systems-Based Practice in Osteopathic Medicine	5%

OIA 2017 CONFERENCE



Fundamental Osteopathic Medical Competency Domains 2016



Guidelines for Assessment for Osteopathic Medical Licensure
and the Practice of Osteopathic Medicine



overview

Osteopathic physicians must demonstrate the understanding and application of established and evolving principles of foundational biomedical and clinical sciences integral to the practice of patient-centered osteopathic medical care. As with the other competency domains, application of knowledge is about ability (ie, knowledge put into action). Cognitive and other learning science theorists explain that the acquisition of declarative knowledge in biomedical and clinical sciences, the conscious knowledge that something is the case, progressively transforms into procedural knowledge (knowing how to do something). This gradual transformation leads the osteopathic physician to develop a problem and task-specific knowledge base that is integrated across individual disciplines. It is this knowledge base that provides a foundation for competent patient-centered osteopathic medical care. An osteopathic physician with a fluent knowledge base in foundational biomedical and clinical sciences, for example, would be able to explain principles of health, disease, and diagnostic and treatment options to patients. Included in this knowledge base is the articulation of core scientific and clinical practice principles relevant to osteopathic medical practice (eg, health and the body's innate capacity to heal, differential diagnoses, disease etiologies, indications and contraindications, assessment of the risks and benefits of diagnostic and therapeutic interventions).

Knowledge fluency is fundamental to a generalist osteopathic physician's competency to practice osteopathic medicine. Knowledge fluency is demonstrated by the ability to efficiently interpret, process, and skillfully apply principles of foundational biomedical and clinical sciences in a timely manner. Also important to an osteopathic physician's knowledge competency is the ability to formulate appropriate clinical questions, retrieve evidence to inform patient care, acquire additional and evolving knowledge for lifelong learning, and apply this knowledge for continuous practice improvement. Demonstration of the understanding and application of core knowledge is fundamental to the incorporation of new knowledge. Continuous quality improvement, however, is primarily addressed in the practice-based learning and improvement domain (Domain 4).

As osteopathic medical knowledge provides the foundation for many physician competency domains, considerable overlap exists between this competency domain and the other six. Testing concepts are mapped here when the primary component being assessed is application of knowledge (eg, the knowledge of the scientific understanding of mechanisms of action; molecular and macro systems including biomolecules, molecules, cells, and organs; origins of disease processes; why certain diagnostic tests and treatments are used).

The principles that underlie the human condition, including its biologic complexity, genetic diversity, homeostatic mechanisms, structure-function interrelationships, development, and interactions of systems and environmental influences, guide the osteopathic physician in the understanding of health and the diagnosis and treatment of disease. While these foundational principles often cross biomedical science and clinical disciplines in the practice of osteopathic medicine, they are mapped here for primary characterization.

REQUIRED ELEMENT 3.1

FOUNDATIONAL BIOMEDICAL SCIENCES KNOWLEDGE
BASE

REQUIRED ELEMENT 3.2

CLINICAL SCIENCES KNOWLEDGE BASE

REQUIRED ELEMENT 3.3

CONTINUOUS KNOWLEDGE-BASE DEVELOPMENT AND
LIFELONG LEARNING



REQUIRED ELEMENT 3.1 FOUNDATIONAL BIOMEDICAL SCIENCES KNOWLEDGE BASE

DEFINITION

Given the various clinical presentations common and important to osteopathic medical practice and described herein, the osteopathic physician must be able to demonstrate the application of knowledge of clinically applicable foundational biomedical science concepts related to patient care and health, homeostasis, structure-function relationships, prevention, and disease, and do so in an integrated, patient centered, osteopathic manner.

MEASURED OUTCOMES

The osteopathic physician must effectively apply clinically relevant foundational biomedical science knowledge related to:

- the molecular, biochemical, tissue, and cellular bases of health and disease.
- medical genetics.
- the anatomic and structural bases of health and disease.
- the physiologic and pathologic bases of health and disease.
- the microbiologic and immunologic bases of health and disease.
- pharmacologic principles and pharmacotherapeutics in health and disease.
- neurosciences.
- biopsychosocial sciences.
- epidemiology and population sciences.
- medicolegal and governing regulatory principles in medical practice.

REQUIRED ELEMENT 3.2 CLINICAL SCIENCES KNOWLEDGE BASE

DEFINITION

Given the various clinical presentations common and important to osteopathic medical practice and described herein, the osteopathic physician must be able to demonstrate the application of knowledge of established and evolving clinical science concepts related to patient care and health, homeostasis, structure-function relationships, prevention, and disease and do so in an integrated, patient-centered, osteopathic manner.

MEASURED OUTCOMES

The osteopathic physician must effectively apply clinical science knowledge related to disciplines pertaining to the primary-care-oriented focus of osteopathic medical practice, including generalist concepts from the following specialties:

- emergency and acute care medicine.
- family medicine.
- general internal medicine and its subspecialties (eg, allergy/immunology, cardiology, endocrinology, gastroenterology, hematology, infectious diseases, nephrology, oncology, pulmonary medicine, rheumatology).
- preventive and occupational medicine.
- neurology.
- obstetrics and gynecology.
- osteopathic neuromusculoskeletal medicine.
- pain medicine, hospice, and palliative care.
- physical medicine and rehabilitation.
- pediatrics and adolescent medicine.
- geriatrics.

- psychiatry and behavioral medicine.
- general surgery and its subspecialties (eg, colon and rectal, neurologic, pediatric, plastic, thoracic, urologic, and vascular).
- orthopedics and sports medicine.
- anesthesiology.
- otorhinolaryngology and ophthalmology.
- radiology.
- pathology.
- dermatology.
- other clinical discipline areas relevant to primary care in osteopathic medicine.

REQUIRED ELEMENT 3.3 CONTINUOUS KNOWLEDGE-BASE DEVELOPMENT AND LIFELONG LEARNING

DEFINITION

The osteopathic physician must demonstrate that he/she acquires and sustains knowledge of applicable foundational biomedical and clinical science concepts appropriate for clinical practice for lifelong learning, including, as applicable, at the point of care.

MEASURED OUTCOMES

The osteopathic physician must demonstrate that he/she:

- incorporates new developments in foundational biomedical and clinical science knowledge relevant to the practice of osteopathic medicine into his/her practice.



Dimension 2: Clinical Presentations

CLINICAL PRESENTATIONS: DIMENSION 2		MINIMUM
1	Community Health and Patient Presentations Related to Wellness	12%
2	Patient Presentations Related to: Human Development, Reproduction, and Sexuality	5%
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CLINICAL PRESENTATIONS represent the manner in which a particular patient, group of patients, or community present(s) to osteopathic physicians. These are high-frequency, high-impact categories based on evidence from osteopathic medical practice and are further categorized as topics.

Clinical presentations may include, but are not limited to, presentations of patients across all relevant age categories, from special populations, and in varied clinical settings, and the following ways in which patients present for osteopathic medical care:

1. Community Health and Patient Presentations Related to Wellness

PATIENT PRESENTATIONS RELATED TO

2. Human Development, Reproduction, and Sexuality

PATIENT PRESENTATIONS RELATED TO

3. Endocrine System and Metabolism

PATIENT PRESENTATIONS RELATED TO

4. Nervous System and Mental Health

PATIENT PRESENTATIONS RELATED TO

5. Musculoskeletal System

PATIENT PRESENTATIONS RELATED TO

6. Genitourinary/Renal System and Breasts

PATIENT PRESENTATIONS RELATED TO

7. Gastrointestinal System and Nutritional Health

PATIENT PRESENTATIONS RELATED TO

8. Circulatory and Hematologic Systems

PATIENT PRESENTATIONS RELATED TO

9. Respiratory System

PATIENT PRESENTATIONS RELATED TO

10. Integumentary System



Patient presentations span all relevant age categories, special populations, and varied clinical settings.

- 4.1 ANXIETY
- 4.2 DISTURBANCES OF MOOD/DEPRESSIVE DISORDERS
- 4.3 COGNITIVE DISTURBANCES
- 4.4 DISTURBANCES OF BEHAVIOR AND PERCEPTION
- 4.5 LIFE ADJUSTMENT AND STRESSORS
- 4.6 DISTURBANCES OF THE SPECIAL SENSES
- 4.7 HEADACHE
- 4.8 SPEECH AND LANGUAGE DISTURBANCES
- 4.9 MOVEMENT DISTURBANCES
- 4.10 SEIZURES
- 4.11 SENSORY DISTURBANCES AND PAIN
- 4.12 SLEEP DISTURBANCES
- 4.13 SUBSTANCE ABUSE
- 4.14 NERVOUS SYSTEM TRAUMA
- 4.15 WEAKNESS AND PARALYSIS
- 4.16 PHYSICAL EXAM FINDINGS RELATED TO THE NERVOUS SYSTEM AND MENTAL HEALTH
- 4.17 LABORATORY TEST FINDINGS AND DIAGNOSTIC IMAGING RELATED TO THE NERVOUS SYSTEM AND MENTAL HEALTH

The Guide to clinical presentations in this category may include, but is not limited to, the following ways in which patients present for osteopathic medical care:

abuse and neglect, child or elder • acalculia • action tremors • adjustment disorder • agnosia • agraphia • akinesia • amyotrophic lateral sclerosis • anomia • anxiety disorders, including generalized anxiety, anxiety secondary to another medical condition, anxiety secondary to another mental disorder or induced by illicit, prescribed, or over-the-counter drugs or other substances • apraxia • arteriovenous malformations • astereognosia (tactile agnosia) • athetosis • atrophy of extremity muscles • ballism (ballismus) • behavioral abnormalities, including avoidance, dependency, and obsessive-compulsive disorder • bipolar and related disorders • brain tumors, including sellar/pituitary masses, neoplasms, and metastatic tumors; paraneoplastic syndromes • cerebral concussion/mild traumatic brain injury • cerebral palsy • cerebral vascular disorders, including aneurysms and vasculitis (eg, temporal arteritis) • cerebrospinal fluid abnormalities • chalazion • chronic fatigue syndrome, fibromyalgia • cognitive impairments, including altered level of consciousness, mild cognitive impairment, amnesia, coma, confusion, delirium, disorientation, subcortical and cortical dementia (eg, Alzheimer disease, Huntington disease, Parkinson disease) • cogwheel rigidity • cyclothymic disorder • depressive disorders • disruptive behaviors, including attention deficit/hyperactivity disorder, pediatric anxiety (eg, disruptive mood dysregulation disorder, selective mutism, separation anxiety) • dizziness and true vertigo, including peripheral or central vestibular dysfunction, benign paroxysmal positional vertigo, labyrinthitis, Meniere disease) • dysautonomias • dyskinesias • dystonias • ear and hearing disorders, including acoustic neuroma and other neoplasms; conductive, sensorineural, or neurogenic hearing loss; presbycusis; otosclerosis; ototoxic drugs; Meniere disease •





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The Guide to clinical presentations in this category may include, but is not limited to, the following ways in which patients present for osteopathic medical care:

eating and feeding disorders (eg, anorexia nervosa, bulimia nervosa, pica, binge-eating) • elimination disorders (eg, enuresis, encopresis) • encephalopathies (eg, Reye Syndrome, Wernicke-Korsakoff encephalopathy, shock) • epidural hematoma • eye and vision disorders, including discharge, pain, lacrimal drainage, blepharitis, iritis, subconjunctival hemorrhage, hordeolum, floaters, cataracts, glaucoma, red eye(s), eye trauma (eg, orbital floor fracture), diplopia, amblyopia, nystagmus, strabismus, refractive error, ptosis, optical migraine, photophobia, blurred vision (eg, acute narrow-angle glaucoma), unilateral and bilateral vision loss, acute vision loss (eg, amaurosis fugax [temporary blindness]) • fasciculation • gambling disorder • gender dysphoria • grieving and normal bereavement • head and spinal cord injury • headache (acute and chronic), including cluster, migraine, tension; episodic and constant; unilateral and bilateral; primary and secondary, with and without red flag symptoms (eg, aura); trigeminal autonomic cephalgia; headache attributed to a substance or its withdrawal; headache from trauma/traumatic brain injury • hoarding disorder • Huntington disease • hypomania • infantile and pediatric seizures and spells • infections (eg, systemic, central nervous system, sinusitis, encephalitis, meningitis) • learning disorders • malingering • mood disorders, including depressed mood, elevated mood, elevated mood with or without depressed mood, mania, cyclothymia • mouth and jaw disorders, including taste disorders, mastication pain • movement disorders, including voluntary and involuntary abnormal movements, such as cerebellar and sensory ataxias, chorea, and other hyperkinetic (eg, Tourette syndrome) and bradykinetic (eg, Parkinson disease) disorders and diseases • myoclonus • nerve-, muscle-, and pain-related syndromes, including complex regional pain syndrome, post-herpetic neuralgia, meralgia paresthetica, →



Patient presentations span all relevant age categories, special populations, and varied clinical settings.

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The Guide to clinical presentations in this category may include, but is not limited to, the following ways in which patients present for osteopathic medical care:

compression or diabetic neuropathy, spinal stenosis, Guillain-Barré syndrome, multiple sclerosis, Bell palsy, myasthenia gravis • neurocognitive disorders • neurologic gait disorders (eg, hemiplegic gait, spastic diplegic gait, neuropathic gait, myopathic gait, Parkinsonian gait, choreiform gait, ataxic [cerebellar] gait, sensory gait) • obsessive-compulsive and related disorders (eg, body dysmorphic disorder, trichotillomania, excoriation disorder) • olfactory disorders • pain, chronic nonmalignant • pain, neuropathic, nociceptive, mixed, sympathetic • panic disorder, phobias (eg, specific phobias, agoraphobia), social anxiety disorder • paraphilias • personality disorders (eg, paranoid, schizoid, schizotypal, antisocial, histrionic, borderline, narcissistic) • postpartum depression or psychosis • premenstrual dysphoric disorder, dissociative disorders • psychogenic and illicit, prescribed, or over-the-counter drug or substance-induced seizures • psychotic disorders, hallucinations, delusions, and disturbances of perception • psychotic disorders, brief, including schizophreniform disorder, schizophrenia spectrum, and other psychotic disorders • psychotic disorders, specific, including delusional disorders; shared psychotic disorder; psychosis secondary to illicit, prescribed, and over-the-counter drugs and substances; psychosis secondary to medical conditions • pupillary abnormalities (eg, isocoria, anisocoria, mydriasis, miotic pupils) • relational problems • resting tremors • seizures, atonic or convulsive, including epilepsies and secondary seizures • seizures, including focal and generalized • sleep disorders, including obstructive sleep apnea, somnambulism, insomnia, excessive daytime sleepiness, sleep-wake disorders, narcolepsy, night terrors, parasomnias • somatic symptoms and related disorders (eg, conversion disorder, factitious disorders, psychological factors affecting other conditions) • →



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The Guide to clinical presentations in this category may include, but is not limited to, the following ways in which patients present for osteopathic medical care:

speech/language-related disorders, including alexia, aphasia (fluent and nonfluent), dysphasia, and dysarthria • stereotypy • stroke (eg, transient ischemic attack, hemorrhagic stroke) • subarachnoid hemorrhage • subdural hematoma • substance-related and addictive disorders, including oral and intravenous abuse of tobacco, alcohol, opioids, cocaine, and cannabis; intoxication; withdrawal symptoms (eg, delirium tremens) • suicidal ideation • tactile disturbances, including sensory loss, numbness, vibration/temperature/proprioception loss, tingling, and paresthesia • tics and tic disorders (eg, Tourette syndrome) • tinnitus, unilateral or bilateral, with or without hearing loss, including tinnitus secondary to ototoxic medications, tinnitus with somatic triggers (eg, labyrinthitis, Meniere disease) • trauma and stressor-related disorders (eg, adjustment disorders, post-traumatic stress disorder) • vascular and inflammatory masses • weakness and paralysis, focal (eg, hemiplegia); postural instability or tremors)

CONSTITUTIONAL SIGNS AND SYMPTOMS

fatigue • fever • generalized weakness • involuntary weight loss • malaise • night sweats • pallor

PHYSICAL EXAM FINDINGS

abdominal reflex • Chvostek test • clonus, Glasgow coma score, mini-cog testing • corneal reflex, nystagmus • cranial nerve examinations • cremasteric reflex • decreased muscle tone • dysdiadochokinesia • fundoscopic findings and cup, disc ratios • heel to shin test • Hoffman reflexes • →



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The Guide to clinical presentations in this category may include, but is not limited to, the following ways in which patients present for osteopathic medical care:

increased muscle tone • light reflex • micro-aneurysms • mini-mental status examination, ptosis • nuchal rigidity, Kernig sign, Brudzinski sign deep tendon (stretch) reflexes and grading • papilledema, cotton wool spots • plantar (Babinski) reflex • proliferative changes • red reflex • Romberg test • slitlamp exam findings • tuning-fork testing • visual-acuity testing

LABORATORY TEST FINDINGS AND DIAGNOSTIC IMAGING

angiography • cerebrospinal fluid evaluation • computed tomography imaging • electroencephalography patterns • elevated serum creatine kinase • lab findings, vitamins (eg, B12 deficiency) • magnetic resonance imaging • nuclear medicine imaging • radiography • sonography

LEVEL 1 SAMPLE QUESTION



Competency Domain 3: Application of Knowledge Clinical Presentation 9: Presentations Related to Respiratory System

A 72-year-old male presents to the office with increasing shortness of breath over the past 6 months. He admits to smoking 2 packs of cigarettes per day for 40 years. He denies coughing up blood, fever, or weight loss. Physical examination reveals a chest wall with increased AP diameter and muffled breath sounds in all fields. Clubbing of fingernails is noted. Which of the following will most likely be decreased in his pulmonary function studies?

A end-expiratory lung volume

B forced expiratory volume in 1 second **

C functional residual capacity

D residual volume

E total lung capacity

LEVEL 2-CE SAMPLE QUESTION



Competency Domain 1: Osteopathic Principles, Practice and OMT Clinical Presentation 5: Presentations Related to Cardiovascular System

After undergoing coronary artery bypass surgery six months ago, a 58-year-old male gradually develops right-sided pain in the upper chest wall. When the patient exerts himself, the pain is exacerbated, but is not excruciating. He denies shortness of breath, palpitations, and lightheadedness. Palpation elicits pain at the right coracoid process and right costochondral articulations. The somatic dysfunction most likely to be present is

- A long head of biceps spasm
- B pectoralis minor spasm **
- C short head of biceps tendinitis
- D sternocleidomastoid spasm
- E trigger point at xiphoid

LEVEL 3 SAMPLE QUESTION



Competency Domain 6: Professionalism Clinical Presentation 1: Community Health and Presentations Related to Wellness

An alert and oriented 78-year-old female has become very ill from side effects of treatment for breast cancer metastatic to lung and bone. She has requested to discontinue treatment, but the family wishes to pursue any chance of cure. It is the duty of her physician to

- A agree with the family since they have the patient's best interests in mind
- B convince the patient to accept the family's wishes and continue treatment
- C consider the family's wishes if the patient becomes incompetent
- D uphold the patient's decision to discontinue treatment **
- E withhold further treatment until all family conflicts are resolved



COMAT

National Board of Osteopathic Medical Examiners

Comprehensive Osteopathic
Medical Achievement Tests



COMAT Program Features

- Virtually every COM now enrolled in COMAT Program!
- Eight (8) Core Clinical Disciplines – designed for end of clerkship/clinical rotation or course evaluations
 - Emergency Medicine
 - Internal Medicine
 - OPP
 - Psychiatry
 - Family Medicine
 - OB-GYN
 - Pediatrics
 - Surgery
- COMAT-Foundational Biomedical Sciences Examination – exam development targeted for late 2018!



COMAT Program Features

- Osteopathically distinctive assessments; content reflects the latest development of the subject and consensus “best-practice” guidelines - blueprints on NBOME website
- Assists COMs with accreditation mandates for osteopathic integration in varied clerkship/clinical rotation sites in Years 3-4
- Features learner-centered objectives and teaching and learning resources
- Standard scores and Annual COM aggregate performance profiles provided to COMAT COMs
- On-line adaptability and flexibility; proctored and secure
- Options for iPad administration and at Prometric Test Centers



COMAT-Osteopathic Principles & Practice

- the examinee will be required to demonstrate the ability to diagnose and manage selected patient presentations and clinical situations involving, but not limited to:
- Osteopathic concept and philosophy: osteopathic tenets, musculoskeletal structure and function, somatic nerve structure, and lymphatic drainage
- Osteopathic diagnosis
- Osteopathic treatment methods
- <https://www.nbome.org/exams-assessments/comat/exam-series/comat-principles/>

OSTEOPATHIC CONTINUOUS CERTIFICATION



NBOME Resources for AOA's OCC

C2: Lifelong Learning/ CME

Self-assessments – pre and post tests for on-line or traditional CME courses or modules
NBOME's **Learning Center**, CME

C3: Cognitive Assessment

Secure, proctored examinations
Test development: Item development, computerized item banking, customer service/administrative support
Customized score reporting
Psychometric consulting
CATALYST- continuous

C4: Practice Performance Assessment and Improvement

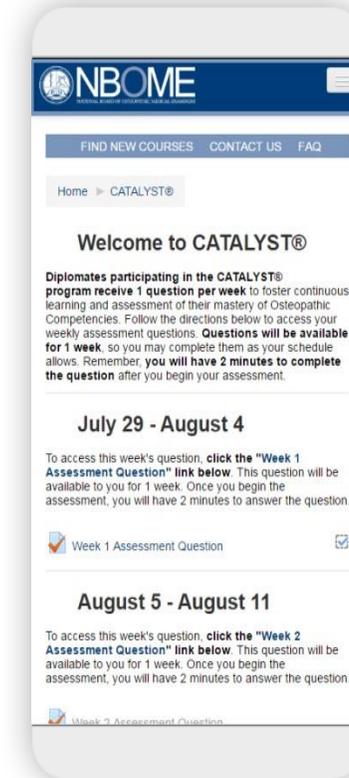
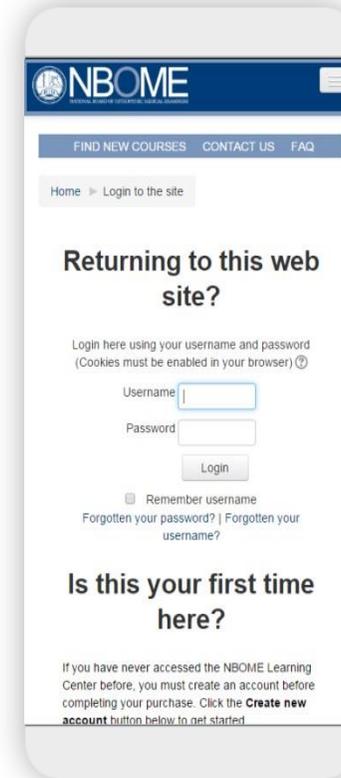
Performance Testing and Clinical Skills assessments
OPAIM practice assessment and improvement program

INTRODUCTION TO CATALYST



CATALYST - A Software Platform

- Easily accessible on smartphones, tablets or computers 24/7
- Email notification of new questions
- Short questions to fit busy schedules
- Continuous assessment and learning
- Immediate performance feedback
- Directed to improvement resources
- Enables spaced repetition
- Exploring adaptive learning engines





Supporting Research Indicates that Learning can be Accelerated by:

- Providing immediate feedback
- Spaced repetition
- Interleaving topics
- Asking learners to retrieve previous learning
- Spacing questions over time

References:

Roediger HL & Karpicke JD. Test-Enhanced Learning: Taking Memory Tests Improves Long-Term Retention. *Psychol Sci* 2006; 17: 249 – 255.
Brown PC, Roediger HL, & McDaniel MA. *Make it Stick: The Science of Successful Learning*. Cambridge MA: Harvard University Press, 2014
Moulton CA, Dubrowski A, MacRae H, Graham B, Grober E, & Reznick R. Teaching Surgical Skills: What kind of Practice Makes Perfect? A Randomized, Controlled Trial. *Ann Surg* 2006; 244 (3), 400- 409.

INTRODUCTION TO CATALYST



CATALYST Content

- Assessment content determined by each Certifying Board/Client
- Questions aligned to scope of practice
- Questions vary based on learner needs
- Enables continuous assessment and learning

The screenshot displays the NBOME Learning Center interface. At the top, it says "NBOME LEARNING CENTER" and "You are logged in as Abe Learner (Logout)". Below this, there are navigation links for "FIND NEW COURSES", "CONTACT US", and "FAQ". The main content area shows a clinical case and a question.

Home ▶ CATALYST® ▶ July 29 - August 4 ▶ Week 1 Assessment

Question 1
Answer saved
Marked out of 1
Flag question

A 24-year-old male presents to the office with a 7-day history of anorexia, malaise, and vague abdominal pain. He denies any vomiting or diarrhea. He states his urine looked "funny" yesterday which prompted him to call for an appointment. He has a negative history of drug or tobacco usage. He drinks an average of two beers each weekend, but stated he attended a family barbeque a week ago where he admitted to drinking 6 beers on Saturday. The patient has faint icterus and jaundice noted on inspection. Abdomen reveals active bowel sounds, mild fullness and tenderness in both the right and left upper quadrants. The remainder of the physical examination is unremarkable.

Vital signs are:

Temperature	38.0°C (100.4°F)
Blood pressure	118/72 mmHg
Heart rate	88/min
Respiratory rate	20/min

Laboratory evaluation reveals:

Test	Patient's Value	Reference Range
Aspartate aminotransferase	460 U/L	< 35 U/L
Alanine aminotransferase	522 U/L	<45 U/L
Total bilirubin	3.8 mg/dL	0.3-1.2 mg/dL
Direct bilirubin	1.8 mg/dL	0.0-0.2 mg/dL
Amylase	52 U/L	28-100 U/L

The most likely diagnosis is



Pilots Completed to Date:

Staff Education on CATALYST

- Employees' Emergency Preparedness Training

SOAP Note Rater Training on CATALYST

- Physicians SOAP Note Training Refresher

Board Recertification Cognitive Assessment Alternative

- CATALYST – AOBP
- CATALYST - AOBIM



Goals for AOBIM & AOBP CATALYST Pilots:

- Gather data on participants' perceptions of the assessment's "face validity"
- Collect diplomates' feedback on the assessment process (convenience, relevance, usefulness, comparison to traditional secure MCQ examination)
- Collect initial data in preparation for associating (correlating) to performance on traditional certification examination as an indication of learning.



AOBIM & AOBP CATALYST Pilot Participants:

- **Participants were:**
 - recently certified diplomates
 - volunteers offered 20 AOA Specialty specific 1-B CME credits for full participation.
- **Process:**
 - Presented 2 specialty-specific questions per week for 16 weeks.
 - Received immediate feedback and a rationale with references.
 - Permitted “catch-up” time to allow for busy schedules
- **Completed:**
 - Midpoint Evaluation Survey after week 8
 - Final Evaluation Survey after week 16.



AOBP Overview

- 131 diplomates invited to participate in CATALYST-AOBP
- 41 accepted
- 38/41 (93%) participated in pilot
- 32/38 (84%) completed all pilot requirements
- 36/38 (95%) answered Final Survey

AOBIM Overview

- 514 diplomates invited to participate in CATALYST-AOBIM
- 81 accepted
- 69/81 (85%) participated in pilot
- 42/69 (61%) completed all pilot requirements
- 52/69 (75%) answered Final Survey



Contributions to Validity Evidence:

- Content alignment with the Examination Blueprint
- Correlation with traditional MCQ measures
- Correlational Analyses:
 - Significant correlation found between CATALYST performance and scores on the AOBIM Certification Exam ($r = .472, p = .0027$)

CATALYST FINAL EVALUATION SURVEY



* 1 = Strongly Agree; 2 = Agree; 3 = No opinion; 4 = Disagree; 5 = Strongly Disagree

Evaluation Question	Average rating*	
	AOBIM n = 52	AOBP n = 36
Registering for CATALYST was easy and quick.	1.3	1.3
The process for answering the questions was convenient.	1.6	1.5
The CATALYST format provided a good opportunity to learn/reinforce Internal Medicine/Pediatrics material.	1.3	1.4
The rationales included with the answers to the CATALYST questions were effective learning tools.	1.5	1.4

CATALYST FINAL EVALUATION SURVEY



* 1 = Strongly Agree; 2 = Agree; 3 = No opinion; 4 = Disagree; 5 = Strongly Disagree

Evaluation Question	Average rating*	
	AOBIM n = 52	AOBP n = 36
I found the references included with the answers to the CATALYST questions to be useful.	1.7	1.8
I would rather answer a fixed number of CATALYST questions periodically to help me keep current rather than take the traditional high-stakes certification/recertification examination administered in a test center.	1.2	1.1
Participation in the CATALYST program will help me provide better care to my patients.	1.6	1.5

CATALYST FINAL EVALUATION SURVEY



* 1 = Strongly Agree; 2 = Agree; 3 = No opinion; 4 = Disagree; 5 = Strongly Disagree

Evaluation Question	Average rating*	
	AOBIM n = 52	AOBP n = 36
Participation in the CATALYST program will help me stay current in Internal Medicine /Pediatrics.	1.3	1.4
I would recommend CATALYST to others in my specialty	1.3	1.3
How did you access the questions?	Smartphone = 46% Tablet = 10% Laptop = 33% Desktop = 12%	Smartphone = 39% Tablet = 3% Laptop = 47% Desktop = 11%

CATALYST FINAL EVALUATION SURVEY

SUMMARY OF RESPONSES



AOBP

- **Convenient to Use** – 61% Strongly Agree; 31% Agree (= 92%)
- **Prefer CATALYST Over Traditional Recertification Exam** – 86% Strongly Agree; 14% Agree (= 100%).
- **Accessed CATALYST on Smartphone** – 39%

AOBIM

- **Convenient to Use** – 56% Strongly Agree; 35% Agree (= 91%)
- **Prefer CATALYST Over Traditional Recertification Exam** – 81% Strongly Agree; 15% Agree (= 96%)
- **Accessed CATALYST on Smartphone** – 46%

CATALYST FINAL EVALUATION SURVEY SUMMARY OF RESPONSES



AOBP

- **CATALYST Will Help Me Provide Better Care to Patients**– 53% Strongly Agree; 44% Agree (= 97%)
- **Would Recommend CATALYST to Others in My Specialty** – 69% Strongly Agree; 31% Agree (= 100%)

AOBIM

- **CATALYST Will Help Me Provide Better Care to Patients**– 58% Strongly Agree; 29% Agree (= 86%)
- **Would Recommend CATALYST to Others in My Specialty** – 65% Strongly Agree; 35% Agree (= 100%)



What did you like about CATALYST?

- Low time commitment. I MUCH prefer the idea of regular questions and information to keep current in pediatrics as opposed to the stress and time commitment of studying and traveling for a high-stakes exam. This is a better way to learn, and would be much less interruption to my practice/income (no need to take off work for study or the test).
- I enjoyed the ease of use and that with less than 5 minutes weekly, I was able to stay current on topics that I don't see daily within my specialty.
- I knew that 2 questions would be coming every Monday and it was easy to find the 5 minutes of peace and quiet to get them done.
- Great way to test knowledge and stay current.



What did you like about CATALYST?

- I thought the format of CATALYST is an excellent idea. I enjoyed doing the questions each week and it was readily accessible. I think it is an excellent alternative to the traditional MOC requirements.
- It was easy to use and kept my medical knowledge up-to-date over a long period of time rather than cramming for an exam.
- The material was clinically significant.
- The ease to answer questions was extremely helpful with my busy work schedule. Allowed me to answer questions when I had free time quickly and review at that time or later.
- The questions were diverse and informative.



What suggestions do you have for improving CATALYST?

- More questions per week (3 potentially)
- None. The questions were great!
- Remove some of the ""clicks"" needed to answer the questions.....
- The explanations could be better: a little more thorough, and bullet points with space separating each point. It'd be easier to read on cell phones.
- Better streamlined software



What suggestions do you have for improving CATALYST?

- Continue doing it year round.
- Answer explanation to be more robust. It should discuss wrong answers in more detail.
- Needs a mobile-friendly interface/smartphone app to make it easier to read on my phone.
- None.
- I would like a few more questions per week.

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