USMLE – WHAT IS IT FOR?

A series of examinations conducted by the National Board of Medical Examiners (NMBE)

Currently, four separate exams:

- **Step 1** – usually taken after the completion of second year of medical school
- **Step 2 Clinical Knowledge (CK)** – usually taken during the fourth year of medical school
- **Step 2 Clinical Skills (CS)** – usually taken during the fourth year
- **Step 3** – typically taken during the first year of post graduate training
STEP 1

Assesses understanding and application of important basic sciences with special emphasis on principles and mechanisms, underlying health, disease and modes of therapy.

- Usually taken after the completion of second year of medical school
- Multiple choice with only ONE best answer (3 to 11 response options arranged logically or alphabetically)
- Minimum passing score = 189
STEP 2

Assesses application of medical knowledge, skills, and understanding of clinical science essential for the provision of patient care.

- usually taken during the fourth year of medical school

Clinical Knowledge (CK):
- Multiple choice format
- Minimum passing score = 189

Clinical Skills (CS):
- Assesses data-gathering and communication skills (including spoken English) with standardized patients, and on the ability to complete an appropriate patient note by physician raters.
- Scores as Pass/Fail
STEP 3

Assesses whether physician possesses and can apply the medical knowledge and understanding of clinical science considered essential for the unsupervised practice of medicine, with emphasis on patient management in ambulatory care settings.

- Typically taken during the first year of post graduate training
- Consists of multiple choice items and computer-based case simulations.
- Minimum passing score = 190
**USMLE STEP 1 SNAPSHOT**

- Question total: 322
- Questions per block: 46
  - Approximately 1.2 minutes per question
- Number of blocks: 7
- Time per block: 60 minutes
- Total exam time: 7 Hours
- Total breaks/lunch: 1 Hour
STEP 1 TEST CONTENT

Step 1 is a broadly based, integrated examination. Test items commonly require you to perform one or more of the following tasks:

- interpret graphic and tabular material,
- identify gross and microscopic pathologic and normal specimens,
- apply basic science knowledge to clinical problems.
CONTENT AREAS:

• anatomy
• behavioral sciences
• biochemistry
• microbiology
• pathology
• pharmacology
• physiology
• interdisciplinary topics, such as nutrition, genetics, and aging
   ▪ Find more specific content information on page 6-19 of the 2012 USMLE Bulletin
STEP 1 SPECIFICATIONS:

SYSTEM:
25%–35% General principles
65%–75% Individual organ systems
- hematopoietic / lymphoreticular
- nervous/special senses
- skin/connective tissue
- musculoskeletal
- respiratory
- cardiovascular
- gastrointestinal
- renal/urinary
- reproductive
- endocrine
- immune

PROCESS:
- 20%–30%: Normal structure and function
- 40%–50%: Abnormal processes
- 15%–25%: Principles of therapeutics
- 10%–20%: Psychosocial, cultural, occupational, and environmental considerations
Bloom's Taxonomy

The Cognitive Process Dimension

Remember
- List
- Describe
- Tabulate
- Appropriate Use

Understand
- Summarize
- Interpret
- Predict
- Execute

Apply
- Classify
- Experiment
- Calculate
- Construct

Analyze
- Order
- Explain
- Differentiate
- Achieve

Evaluate
- Rank
- Assess
- Conclude
- Action

Create
- Combine
- Plan
- Compose
- Actualize

The Knowledge Dimension

FACTUAL KNOWLEDGE

CONCEPTUAL KNOWLEDGE

PROCEDURAL KNOWLEDGE

META-COGNITIVE KNOWLEDGE
Quadrant C - Assimilation
Students extend and refine their acquired knowledge to be able to use that knowledge automatically and routinely to analyze and solve problems and create solutions.

Quadrant D - Adaptation
Students have the competence to think in complex ways and to apply their knowledge and skills. Even when confronted with perplexing unknowns, students are able to use extensive knowledge and skill to create solutions and take action that further develops their skills and knowledge.

Quadrant A - Acquisition
Students gather and store bits of knowledge and information. Students are primarily expected to remember or understand this knowledge.

Quadrant B - Application
Students use acquired knowledge to solve problems, design solutions, and complete work. The highest level of application is to apply knowledge to new and unpredictable situations.

Application Model

1. Knowledge in one discipline
2. Apply in discipline
3. Apply across disciplines
4. Apply to real-world predictable situations
5. Apply to real-world unpredictable situations
PERFORMANCE SCORES FOR 2010:
FIRST ATTEMPT

NATIONAL MEANS FOR
USMLE STEP 1

Mean score:
- 222 (SD 24)
Percent passing:
- 91%

UWSOM USMLE STEP 1 MEANS

Mean score:
- 220 (SD 22)
Percent passing:
- 94%
NATIONAL BOARD OF MEDICAL EXAMINERS®

Performance of Examinees Taking USMLE® Step 1 for the First Time in 2010

Medical School: 048-010 U Washington School of Medicine

Behavioral Sciences
Biochemistry
Biostatistics & Epidemiology
Cardiovascular System
Gastrointestinal System
General Principles of Health & Disease
Genetics
Gross Anatomy & Embryology
Hematopoietic & Lymphoreticular Systems
Histology & Cell Biology
Microbiology & Immunology
Musculoskeletal, Skin & Connective Tissue
Nervous System/Special Senses
Nutrition
Pathology
Pharmacology
Physiology
Renal/Urinary System
Reproductive & Endocrine Systems
Respiratory System
PERFORMANCE SCORES FOR 2011: FIRST ATTEMPT

**NATIONAL MEANS FOR USMLE STEP 1**

Mean score:
- 224 (SD 24)

Percent passing:
- 94%

**UWSOM USMLE STEP 1 MEANS**

Mean score:
- 222 (SD 22)

Percent passing:
- 95%
NATIONAL BOARD OF MEDICAL EXAMINERS®

Distribution of Total Scores

Performance of Examinees Taking USMLE® Step 1 for the First Time in 2011

Medical School: 048-010 U Washington School of Medicine

Percent

Percent
0 5 10 15 20 25 30 35 40 45 50


National School
Performance of Examinees Taking USMLE® Step 1 for the First Time in 2011

Medical School: 048-010 U Washington School of Medicine

Behavioral Sciences
Biochemistry
Biostatistics & Epidemiology
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General Principles of Health & Disease
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Gross Anatomy & Embryology
Hematopoietic & Lymphoreticular Systems
Histology & Cell Biology
Immune System
Microbiology & Immunology
Musculoskeletal, Skin & Connective Tissue
Nervous System/Special Senses
Nutrition
Pathology
Pharmacology
Physiology
Renal/Urinary System
Reproductive & Endocrine Systems
Respiratory System
Performance of Examinees Taking USMLE® Step 2 Clinical Knowledge (CK) for the First Time in the Academic Year
July 2010 to June 2011
Medical School: 048-010 U Washington School of Medicine

Preventive Medicine & Health Maintenance
Understanding Mechanisms of Disease
Diagnosis
Principles of Management
Normal Growth & Development: Principles of Care
Immunologic Disorders
Diseases of Blood & Blood Forming Organs
Mental Disorders
Diseases of the Nervous System & Special Senses
Cardiovascular Disorders
Diseases of the Respiratory System
Nutritional & Digestive Disorders
Gynecologic Disorders
Renal, Urinary & Male Reproductive Systems
Disorders of Pregnancy, Childbirth & Puerperium
Musculoskeletal, Skin & Connective Tissue Diseases
Endocrine & Metabolic Disorders
Medicine
Obstetrics & Gynecology
Pediatrics
Psychiatry
Surgery
TIMELINE 2012

“Students must take Step 1 in the June-July timeframe after the completion of the second year and prior to entering the clinical curriculum.”

- Clerkships start on **July 9**
- Target date: **June 29**th (no later than July 3rd if possible)
- With a few notable exceptions, there should be no need to extend into the first clerkship period.
JANUARY - FEBRUARY

The Warm Up

- 5-6 dedicated hours weekly
- Review content and course work from previous quarters
- Start assessing strengths and areas of concern
- Qbank, First Aid, etc.
MARCH - APRIL

The Slow Jog
- 6-8 dedicated hours weekly
- Review content and course work from previous quarters
- Review of questions and supporting materials
- Use Qbank (if not previously); tutorial mode is a good idea
MAY

Slow and Steady Wins the Race!

- 8-10 hours weekly (as possible)
- Keep up with content for courses
- Review of questions and supporting materials
- Use Qbank
- Add notes
END OF MAY - JUNE

Sprint for the Finish!

- 8-12 hours daily
- Do self-assessments
- 50-75 Qbank questions
- Review of questions and supporting materials
- Use Qbank in tutoring mode to study
TARGET – JUNE 29TH!
PREPARATION MATERIALS

Most used:
- USMLE World Q-Bank
- First Aid for the USMLE Step 1
- Doctors in Training
- Kaplan Step 1 Test Preparation Program
SUPPORT ACTIVITIES

• Individual appointments on scheduling, anxiety, stress and effective learning
• Test taking skills workshop
• Stress reduction workshop
• Seminars (as needed)
EXAMPLES OF SUPPORT SESSIONS

ACADEMIC SKILLS

Test Taking Skills – 4/2
– 9:00-11:00
• Individual appointments as needed
• Tutoring support as needed

WELLNESS/COUNSELING

Self-Hypnosis – Joe Barber, PhD – 4/9 – 9:00-11:00
• Other evening activities in planning stages; will be announced
• Individual appointments as needed
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**Brush Up Review**

**RELAX – BREATHE - REFOCUS**
A DAY IN THE LIFE... 10 – 15 HOURS DAILY

- 2-3 “mock blocks” - 1 hour random/timed Qbank questions [46 questions per block]
- 1-2 hours – review the “mock blocks”
- BREAK
- 3-4 hours – Content review: First Aid, Doctors in Training videos, Kaplan videos, Goljan lectures, notes, etc.
- BREAK – Workout/self-care
- 3-4 hours – Q-bank questions in tutorial mode based on previous content
- 1-2 hours – Review the material for the day and prepare for tomorrow
# MAY/ JUNE 2012
## BREAKDOWN BY FIRST AID TOPICS - Example

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THE PENN METHOD

Approximately 30 days; Content is specific for assigned days

Sample calendar will be included in packet

- 3-4 days – First Aid for the Boards
- 4-5 days – Biochemistry; 50 biochem questions
- 3-4 days – Microbiology; 50 microbio questions
- 1-2 days – Immunology; 50 immuno questions
- 1 day – Embryology; 50 embryo questions
- 1-2 days – Anatomy; 50 anatomy questions
- 1 day – Neuroanatomy; 50 neuro questions
- 3 days – Physiology; 50 physio questions
- 4-6 days – Pharmacology; 50 pharm questions
- 3-4 days – Pathology; 50 path questions
- 1 day – Histology; 50 histo questions
- 1 day – Behavioral Sciences; 50 behavioral sciences questions
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<td>28 Self-Care</td>
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CONTENT REVIEW SESSIONS
A 25 year old man is brought to the Emergency Department because of a high fever and shaking chills. He has a history of intravenous drug abuse, but a test for HIV-antibodies is negative. Physical examination reveals a systolic murmur, and he complains of shortness of breath. Which of the following is a pathogenic feature of the microorganisms that will most likely be isolated from this patient’s blood cultures?

A. *Candida albicans*  
B. *Haemophilus influenzae*  
C. *Staphylococcus aureus*  
D. *Staphylococcus epidermidis*  
E. Viridans (alpha-hemolytic) streptococci
Case 1

A 25 year old man is brought to the Emergency Department because of a high fever and shaking chills. He has a history of intravenous drug abuse, but a test for HIV-antibodies is negative. Physical examination reveals a systolic murmur, and he complains of shortness of breath. Which of the following is a pathogenic feature of the microorganisms that will most likely be isolated from this patient’s blood cultures?

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D. *Staphylococcus epidermidis*
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Case 1 Endocarditis, FA p. 301

Bacterial endocarditis

Fever (most common symptom), Roth’s spots (round white spots on retina surrounded by hemorrhage), Osler’s nodes (tender raised lesions on finger or toe pads), new murmur, Janeway lesions (small erythematous lesions on palm or sole), anemia, splinter hemorrhages on nail bed. Valvular damage may cause new murmur (see damaged aortic valve below). Multiple blood cultures necessary for diagnosis.


Endocarditis may also be nonbacterial 2° to malignancy or hypercoagulable state (marantic/thrombotic endocarditis). S. bovis is present in colon cancer, S. epidermidis on prosthetic valves; HACEK organisms cause culture-negative endocarditis.

Mitrval valve is most frequently involved.

Tricuspid valve endocarditis is associated with IV drug abuse (don’t tri drugs). Associated with S. aureus, Pseudomonas, and Candida.

Complications:
- chordae rupture,
- glomerulonephritis,
- suppurative pericarditis,
- emboli.

Bacteria FROM JANE:
- Fever
- Roth’s spots
- Osler’s nodes
- Murmur
- Janeway lesions
- Anemia
- Nail-bed hemorrhage
- Emboli

- Causes of endocarditis in IV drug users
  - Staph aureus
  - Pseudomonas
  - Candida
Case 1

A. *Candida albicans*
   - More often in severely immunocompromised patients, e.g. AIDS

B. *Haemophilus influenzae*
   - A minority of cases are caused by the HACEK group:
     - Haemophilus, actinobacillus, cardiobacterium, eikenella, kingella

C. *Staphylococcus aureus*
   - Staph from the skin enters the blood stream from IV drug use site
     - More commonly associated with tricuspid valve

D. *Staphylococcus epidermidis*
   - Tends to be endocarditis of prosthetic valves

E. Viridans (alpha-hemoloytic) streptococci
   - Tends to be endocarditis of prosthetic or congenitally abnormal valves
   - Usually subacute with better clinical prognosis
A 32 year old man is struck by a car and sustains crash injuries to both legs. Two days later, he develops a severe infection of the legs. Physical examination shows crepitus of the tissue of the legs. An x-ray of the legs shows radiolucent pockets in the soft tissues. Which of the following toxins produced by the most likely causal organism is responsible for these findings?

A. Alpha Toxin
B. Endotoxin
C. Enterotoxin
D. Neurotoxin
E. Superantigen toxin
Case 2

A 32 year old man is struck by a car and sustains crash injuries to both legs. Two days later, he develops a severe infection of the legs. Physical examination shows crepitus of the tissue of the legs. An x-ray of the legs shows radiolucent pockets in the soft tissues. Which of the following toxins produced by the most likely causal organism is responsible for these findings?

A. Alpha Toxin
B. Endotoxin
C. Enterotoxin
D. Neurotoxin
E. Superantigen toxin
Gas Gangrene

- *Clostridium perfringens*
  - Spore forming anaerobe
  - Grows in necrotic tissue
  - Produces α-toxin
    - Lecithinase: phospholipase
    - Myonecrosis and hemolysis
  - May see pockets of soft tissue on X-ray
The other answers

- Endotoxin (especially lipid A)
  - Lipopolysaccharides found in gram negative organisms
  - Leads to Shock

- Enterotoxin
  - *C. perfringens* has a mild enterotoxin causing watery diarrhea

- Neurotoxin
  - *C. tetanus* and *C. botulinum* have neurotoxins, but not *C. perfringens*

- Superantigen toxin
  - Cause fever, petechial rash, and DIC
  - Staph spp: TSST-1
  - *Strep pyogenes*: exotoxin A
Bacterial Toxins, FA p. 152-3

- Inhibit protein synthesis
  - *C. diphtheriae*
  - *P. aeruginosa*
  - Shigella
  - EHEC (O157:H7)
- Increase fluid secretion
  - ETEC
  - ETEC
  - *Y. enterocolitica*
  - *B. Anthracis*
  - *V. Cholerae*
- Inhibit phagocytotic ability
  - *B. pertussis*
- Inhibit neurotransmitter release
  - *C. tetani*
  - *C. botulinum*
- Lyse cell membranes
  - *C. perfringens*
  - *S. pyogenes*
- Superantigens leading to shock
  - *S. pyogenes*
  - *S. aureus*

- Mechanisms, Toxin, and symptoms found on this must know table (FA, p. 152-3)
  - It is intimidating, but you will get at least 2 questions about it on your exam
MOVING FORWARD:

• Increase awareness from the beginning of first year
• Debrief effectiveness of strategies
  • July – August 2012 – Poll students about evaluation of preparation programs; revise/rewrite review plan
• Implement comprehensive preparation plan for 2012-2013
• Continue to expand USMLE style questions into content throughout the curriculum
• Other ideas?
USMLE
University of Washington School of Medicine

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