

**THE OBJECTIVES OF MEDICAL EDUCATION  
for THE UNIVERSITY OF VIRGINIA  
SCHOOL OF MEDICINE**

**I General Goals**

**II The 12 Objectives of Medical Education**

**III Objectives Expanded for Medical School Education**

**References**

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## I GENERAL GOALS

**“...to advance the knowledge and well being of mankind.” Thomas Jefferson**

The goals of the Medical School curriculum follow from the University of Virginia philosophy statement for Medical Student Education:

“The general medical education curriculum should prepare students for graduate training leading to careers as practicing physicians. It should also stimulate them to consider careers as scientists and teachers. The curriculum should develop in students the learning skills essential for independent study and continued learning in their life as physicians.” (1)

The medical school curriculum has three **goals**:

Goal 1. Attitudes: Excellence in the practice of a set of personal and professional attitudes which enable competent, responsible and lifelong performance as a physician.

Goal 2. Knowledge: Excellence in understanding the science of human biology and behavior.

Goal 3. Skills: Excellence in applying human science to the health of the individual, the family, the community and society at large.

## II THE 12 OBJECTIVES OF MEDICAL EDUCATION

These **objectives** outline the learning tasks required of all students of medicine. They define the curricular template for medical education. A student who achieves competence in each of these areas should be able to continue training in postgraduate medical education leading to a career in general or specialty medicine, medical research, education or administration. The fundamental purpose of medical education as expressed in these objectives is to enable the student to *think* and *act clinically* at a defined level of competence. These objectives include:

1. Competence in the *development and practice of a set of personal and professional attitudes* which enable the independent performance of the responsibilities of a physician and the *ability to adapt* to the evolving practice of medicine.
2. Competence in the *human sciences*:
  - a) in the understanding of *current* clinically relevant medical science, and
  - b) in scientific principles as they apply to the analysis and further expansion of medical knowledge.
3. Competence in the *ability to engage and involve any patient in a relationship* for the purpose of clinical problem-solving and care throughout the duration of the relationship.
4. Competence in *eliciting a clinical history*.
5. Competence in *performing a physical examination*.
6. Competence in *generating and refining a prioritized differential diagnosis* for a clinical finding or set of findings.
7. Competence in *developing and refining a plan of care* for the prevention and treatment of illness and the relief of symptoms and suffering.
8. Competence in *developing a prognosis for an individual, family or population* based upon health risk or diagnosis, with and without intervention, and to *plan for appropriate follow-up*.
9. Competence in *selecting and interpreting clinical tests* for the purpose of health screening and prevention, diagnosis, prognosis or intervention.
10. Competence in *organizing, recording, presenting, researching, critiquing and managing clinical information*.
11. Competence in *selecting and performing procedural skills* pertaining to physical examination, clinical testing and therapeutic intervention.
12. Competence in the knowledge of the social, economic, ethical, legal and historical *context* within which medicine is practiced.

### III OBJECTIVES EXPANDED FOR MEDICAL SCHOOL EDUCATION

In this section, the **objectives** of medical education have been expanded to illustrate some but not necessarily all details to be addressed in the medical school curriculum. For each of these objectives, levels of competence need to be defined which specify observable and measurable learning outcomes in terms of both **knowledge and skill** throughout the spectrum of organ systems, disease mechanisms, disease prevalence, health care circumstances and clinical disciplines.

#### **OBJECTIVE 1: Competence in the *development and practice of a set of personal and professional attitudes which enable the independent performance of the responsibilities of the physician and the ability to adapt to the evolving practice of medicine.***

These attitudes are learned from the modeling of faculty teaching and practice as well as from a variety of personal and other professional experiences. For the purpose of professional development, they may require more formal educational experiences such as didactic and small group sessions, courses and individual mentoring. They include an attitude of:

- A. Humanism, compassion and empathy
- B. Collegiality and interdisciplinary collaboration  
(colleagues, nursing and other health care professionals, staff)
- C. Continuing and lifelong self education
- D. Awareness of and response to one's personal and professional limits
- E. Community and social service
- F. Ethical personal and professional conduct
- G. Legal standards and conduct
- H. Economic awareness in clinical practice

#### **OBJECTIVE 2: Competence in the *basic human sciences.***

Fundamental to the application of science to human health and disease is the knowledge and understanding of the **terms, facts and concepts** of human biology and behavior *as they may be applied clinically* to any aspect of the human condition. These ideas are derived from the spectrum of basic science disciplines.

Equally important in the process of contemporary medical care is the ability of the physician to understand the limits of scientific knowledge and to be able to identify clinical questions for which an evidence base is needed. An understanding of scientific method and its application to the furtherance of medical knowledge and understanding is therefore an important element in medical education.

The application of basic science ideas and understanding within the clinical realm is a **continuous process** which evolves as scientific understanding of the human condition and the mechanisms of disease evolves. The ability to continuously draw upon the fund of accumulated and new information in the practice of medicine is a skill which is necessarily lifelong in the career of the physician. As such, its learning must begin as medical education commences and be developed and nurtured throughout the 4 year medical school curriculum. The point of emphasis is that the basic science curriculum should be conceived of as a 4 year process and that it be integrated, as much as possible, with the clinical science curriculum.

**OBJECTIVE 3: Competence in the *ability to engage and involve any patient in a relationship for the purpose of clinical-problem solving and care throughout the duration of the relationship.***

The ability to **listen, communicate, empathize, educate and interact** with any individual across the spectrum of age, gender, social and cultural background, educational level and health care circumstance is required of the physician. This skill of engagement and the development of a physician-patient relationship, both in the short term and over a lengthy period of association also requires an awareness of and the ability to judiciously **control one's personal bias** regardless of personal preferences or needs. Such skill requires flexibility and versatility in professional behavior which is derived from both innate ability and acquired learning.

**OBJECTIVE 4: Competence in *eliciting a clinical history.***

The ability to collect accurate, systematic and thorough information through the subjective view of a patient or other relevant sources of a particular health circumstance (e.g., family, friend, bystander) throughout the spectrum of acute, emergent and continuing health circumstances is basic to the achievement of clinical efficiency and appropriateness. A pertinent and timely history provides the foundation for the clinical activities of diagnosis, prognosis and intervention. It includes the continuum from a focused to a complete clinical history, and varies depending upon factors such as age, gender, demography, the epidemiology of disease, family history, problem orientation and individual patient circumstances.

**Examples:**

- General medical history
- An organ-system history (neurological, cardiac, gynecological...)
- A preventive history (age, gender and health behavior specific)
- The sensitive history (sexual, alcohol, violence and abuse...)
- The group specific history (pediatric, geriatric...)
- The nutritional history
- Functional and exercise assessment history

**OBJECTIVE 5: Competence in *performing a physical examination.***

Similar to history taking, the ability to completely or selectively perform physical examination in a variety of health circumstances is basic to the development of competent clinical method. Physical examination skill includes recognizing both normal and abnormal findings.

**Examples:**

- The general physical examination
- Organ-system and regional examination (neuro, cardiac, gynecological, ent, rectal, shoulder...)
- Specific problem oriented examination (acute abdomen, the dyspneic patient, the patient in coma, acute trauma,...)
- The instrument examination (ophthalmoscopic, otoscopic, stethoscopic...)
- The cancer examination (age, gender specific)
- Age specific examination (pediatric, neonatal, geriatric...)
- Mental status and psychiatric examination

**OBJECTIVE 6: Competence in *generating and refining a prioritized differential diagnosis for a clinical finding or set of findings.***

Accurate and pertinent wellness and illness evaluation, prognosis and intervention follows from accurate health and disease assessment. The development and continual refinement of a prioritized differential diagnosis, based upon a carefully performed clinical history, physical examination and appropriate clinical testing assures that the most likely diagnostic hypotheses to explain a health concern or problem direct the health care process. It also assures that sufficient alternative explanations for illness phenomena are considered to minimize uncertainty in medical care.

**OBJECTIVE 7: Competence in *developing and refining a plan of care for the prevention and treatment of illness and the relief of symptoms and suffering.***

The care of health and disease requires appropriate intervention for the prevention and treatment of illness as well as for the relief of symptoms and suffering. These interventions may be intended to affect lifestyle, health risk, the etiology, the pathophysiology or the sequelae or spread of disease. They may include psychological support or therapy, nutritional intervention, behavior modification, medication, physical therapy, surgery, radiation therapy, disease surveillance, public health measures or alternative healthcare interventions.

**Examples:**

- Acute Care
- Emergent and urgent care
- Cardiopulmonary resuscitation
- Chronic disease care
- Pre and post-operative care
- Preventive care
- Care of the newborn
- Care of the family
- Care of acute and chronic pain
- Care of an at-risk population
- Care of the dying

**OBJECTIVE 8: Competence in *developing a prognosis for an individual, family or population based upon health risk or a diagnosis, with and without intervention, and to plan for appropriate follow-up.***

Development of accurate prognosis and a plan for health care follow-up requires an understanding of the individual, of the natural history of health risk and disease processes, and of the course and outcome of a health risk or disease which would result from specific intervention. Learning the skill of prognosis requires particular emphasis upon:

1. Knowing the natural history of health risk and of disease
2. Knowing disease outcomes and the factors which influence them
3. Assessing health care behavior of the individual, the family and caretakers
4. Knowing the efficacy of health care interventions

**OBJECTIVE 9: Competence in *selecting and interpreting clinical tests for the purpose of health screening and prevention, diagnosis, prognosis or intervention.***

The judicious examination of the body and of body specimens through clinical testing is fundamental to both the quality and cost of health care. It is frequently required for patient evaluation and diagnosis, for evaluating the course of disease and for assistance in determining disease outcomes. Clinical judgment in the selection, justification and interpretation of clinical tests requires a knowledge of test rationale, sensitivity, specificity, predictive value, utility and cost.

**Examples:** Blood and urine testing  
Radiological imaging (xray, ultrasound, ct, mri)  
Tissue biopsy and examination  
Organ function evaluation (pulm function, cardiac cath, eeg...)

**OBJECTIVE 10: Competence in *organizing, recording, presenting, researching, critiquing and managing clinical information.***

The overall management of clinical information in the setting of both accumulated and new medical knowledge as it applies to the care of the individual, the family, the community and society at large is fundamental to the quality and cost of healthcare. Skill competencies in each of the *six information categories* identified above need to be addressed in the undergraduate medical curriculum. This should also include skill in the use of modern information technologies.

**Examples:** Focused case write-ups and presentations  
Complete case write-ups and presentations  
Development and refinement of patient problem lists  
Interval and continuous medical record keeping  
Preparation of case material for publication  
Focused literature searches  
Quality of care evaluation studies  
Evidence-based literature critiques  
Cost-efficacy comparisons  
Computer based medical information management

**OBJECTIVE 11: Competence in *selecting and performing procedural skills pertaining to physical examination, testing and therapeutic intervention.***

The performance of specific body and specimen examination techniques, diagnostic and testing procedures, and therapeutic procedures are required in clinical care throughout the spectrum of clinical disciplines.

**Examples:** Body measurement (wgt, hgt, strength, vital signs...)  
Obtaining and preparing specimens for examination (urine, blood smear, hct, arterial blood, stool, microbiological specs...)  
Parenteral administration (intravenous, intramusc, intra-artic, intracavitary...)  
Tube placement (bladder, nasogastric...)  
Diagnostic tests (lumb punc, blood cult, ecg, pft, urodynamics, simple biopsy...)  
Imaging performance and interpretation (ultrasound, chest xray, abd xray...)

**OBJECTIVE 12: Competence in the knowledge of the social and cultural, economic, ethical, legal and historical *context* within which medicine is practiced.**

The practice of medicine exists within and in response to the dynamic nature of individual and social need and the demand for health care. As such, the nature of its practice reflects the conditions of both past and contemporary life as well as of the scientific understanding of the human condition at any one time. As such, it influences and is influenced by a number of important factors within and beyond the control of its practitioners and scientists. Successful performance as a physician and adaptation to an evolving environment necessitates an understanding of the context within which medicine is practiced.

**Examples:**

- The cultural and social determinants of health and disease patterns
- The macro and microeconomics of health care
- The nature and types of health care delivery systems
- Health care law and legislation (including malpractice, forensic medicine)
- The ethics of health care
- The history of human science
- The evolution of medicine

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