

MEDICINE (WR2/UNIVERSITY PROGRAM), MD

Degree: Doctor of Medicine (MD)

Programs Leading to MD

Case Western Reserve University offers three distinct pathways to earn a medical degree: the **WR2/University Program**, the **Lerner College Program** (Cleveland Clinic Lerner College of Medicine at CWRU), and the **Medical Scientist Training Program**. All students in these programs:

- Begin clinical work and patient interactions early in their studies.
- Use an integrated, systems-based approach to learning medicine.
- Are respected as junior colleagues by faculty.
- Learn the science of medicine combined with communication and compassion skills.
- Develop skills for lifelong, self-directed learning, essential in the ever-evolving field of medicine.

WR2/University Program Overview

The WR2 curriculum at the School of Medicine is continuously updated to reflect the latest in educational principles, practices, and knowledge. The school pioneered the organ systems approach in the 1950s and introduced the Western Reserve2 Curriculum (WR2) in 2006. The WR2 Curriculum emphasizes a learner-centered approach, self-directed learning, and dynamic small group sessions, creating an environment that encourages scientific inquiry and excitement.

WR2/University Program in Detail

The WR2 Curriculum has high expectations for self-directed learning, and seeks to train physician scholars who are prepared to treat disease, promote health and examine the social and behavioral context of illness. It interweaves four themes - 1) research and scholarship, 2) clinical mastery, 3) teamwork and leadership, and 4) civic professionalism and health advocacy to prepare students for the ongoing practice of evidence-based medicine in the rapidly changing health care environment of the 21st century.

Learning Methods: Scholarship and clinical relevance guide the learning process, with an integration of clinical experiences and education in biomedical and population sciences throughout the four-year curriculum. The WR2 Curriculum promotes an independent and self-directed learning environment, primarily facilitated through:

- facilitated, small-group student-centered discussions
- large group interactive sessions, including Team-Based Learning and didactic sessions
- interactive sessions in holoanatomy, radiology, and ultrasound
- clinical skills training
- patient-based activities

Clinical experiences start in the first weeks of the WR2/University Program with community-based health care field experiences. Outpatient clinical activities commence in the spring of the first year, where each student learns from a community physician in their practice for one afternoon a week over seven weeks.

Electronic resources enhance classroom time, foster self-directed learning, and utilize the innovative technology available at Case Western Reserve University.

A key component of the WR2/University Program is the unscheduled time on some Thursday mornings and most weekday afternoons. Students use this time for self-directed learning as well as to pursue joint degrees, participate in Pathways, take electives, join interest groups, shadow physicians in practice, or become active in student organizations.

Each student in the WR2/University Program is a member of one of the following advising societies: Blackwell-McKinley Society, Gerberding Society, Robbins Society, Satcher Society, Geiger Society, or Wearn Society. Each society is headed by an advising dean, who helps the students navigate the curriculum, advises them on residency and career planning, and writes their dean's letters. The Society Deans hold regularly scheduled small group and individual meetings with the students. The Society Deans are all members of the faculty of the School of Medicine and participate actively in the educational programs of the school.

Four Year Education Focus

The WR2/University Program at Case Western Reserve University School of Medicine is dedicated to providing a holistic and dynamic educational experience. Central to our approach are the following key pillars, which guide our curriculum and pedagogy:

1. Fostering experiential and interactive learning in a clinical context;
2. Stimulating educational spiraling by revisiting concepts in progressively more meaningful depth and increasingly sophisticated contexts;
3. Promoting integration of the biomedical and population sciences with clinical experience;
4. Transferring concepts and principles learned in one context to other contexts;
5. Enhancing learning through deliberate practice, or providing learners with direct observation, feedback, and the opportunity to practice in both the clinical environment and in the Case Western Reserve University (CWRU) School of Medicine's Skills and Simulation Center.

The Western Reserve Curriculum has 10 Guiding Principles

1. The core concepts of health and disease prevention are fully integrated into the curriculum.
2. Medical education is experiential and emphasizes the skills for scholarship, critical thinking, and lifelong learning.
3. Educational methods stimulate an active interchange of ideas among students and faculty.
4. Students and faculty are mutually respectful partners in learning.
5. Students are immersed in a graduate school educational environment characterized by flexibility and high expectations for independent study and self-directed learning.
6. Learning is fostered by weaving the scientific foundations of medicine and health with clinical experiences throughout the curriculum. These scientific foundations include basic science, clinical science, population-based science, and social and behavioral sciences.
7. Every student has an in-depth mentored experience in research and scholarship.
8. Recognizing the obligations of physicians to society, the central themes of public health, civic professionalism and teamwork &

leadership are woven through the curriculum.

9. The systems issues of patient safety, quality medical care, and health care delivery are emphasized and integrated throughout the curriculum.
10. Students acquire a core set of competencies in the knowledge, mastery of clinical skills and attitudes that are prerequisite to graduate medical education. These competencies are defined, learned and assessed and serve as a mechanism of assessment of the school's success.

Learning Outcomes

- Analyzes and effectively critiques a broad range of research papers (Research Scholarship).
- Demonstrates ability to generate research questions and formulate methods to answer these questions (Research Scholarship).
- Demonstrates ability to initiate, complete and explain his/her research (Research Scholarship).
- Demonstrates appropriate level of clinical, basic, and health systems science knowledge to be an effective starting resident physician (Knowledge for Practice).
- Demonstrates ability to apply knowledge base to clinical and research questions (Knowledge for Practice).
- Effectively communicates knowledge as well as uncertainties (Interpersonal Communication Skills).
- Uses effective written and oral communication in clinical, research, and classroom settings (Interpersonal Communication Skills).
- Demonstrates effective communication with patients using a patient-centered approach (Interpersonal Communication Skills).
- Meets obligations in a reliable and timely manner (Professionalism).
- Exhibits professional behavior or addresses lapses in professional behavior (Professionalism).
- Consistently demonstrates compassion, respect, honesty and ethical practices (Professionalism).
- Critically reflects on personal values, priorities, and limitations to develop strategies that promote personal and professional growth (Personal and Professional Development).
- Recognizes when personal views and values differ from those of patients, colleagues, and other care givers and reflects on how these can affect patient care and research (Personal Professional Development).
- Identifies challenges between personal and professional responsibilities and develops strategies to address them (Personal Professional Development).
- Demonstrates knowledge, skills, and behaviors to perform history taking, physical examination and procedures appropriate to the level of training and clinical setting (Patient Care).
- Uses evidence from the patient's history, physical exam, and other data sources for clinical reasoning to formulate management plans (Patient Care).
- Incorporates diagnostic, therapeutic, and prognostic uncertainty in clinical decision making and patient care discussions (Patient Care).
- Identifies and critically analyses relevant literature and practice-based guidelines to apply best evidence of patient care and management (Patient Care).
- Incorporates a patient's perspective, values, context, and goals into all aspects of the clinical encounter (Patient Care).
- Performs effectively as a member of a team (Teamwork

Interprofessional Collaboration).

- Respects and supports the contributions of individuals on an Interprofessional health care team to deliver quality care (Teamwork Interprofessional Collaboration).
- Applies knowledge of health care systems to patient care (Systems-based Practice).
- Demonstrates awareness of context of care, patients' values, health care system, and environment in clinical care (Systems-based Practice).
- Applies principles of quality improvement and safety to patient care (Systems-based Practice).
- Demonstrates habits of ongoing reflection using feedback from others as well as self-assessments to both identify learning needs (cognitive and emotional) and practice continuous quality improvement (Reflective Practice).

Admission

Inquiries about admission and application should be addressed to the Office of Admissions-University Program.

Office of Admissions-WR2/University Program

School of Medicine
9501 Euclid Avenue
Cleveland, Ohio 44106-4920
Phone: 216.368.3450 or casemed-admissions@case.edu

Getting Started

Students wishing to apply to any MD program at the School of Medicine must initiate this electronic process through the American Medical Colleges Application Service (AMCAS). Visit AMCAS to learn more about the medical school application process.

Admissions Process

After the American Medical College Application Service (AMCAS) is completed the applicant receives an e-mail directing them to the CWRU School of Medicine online secondary (final) application where the applicant can designate to which MD program(s) they wish to apply. The invitation to complete the secondary application is based on meeting a minimum MCAT score of 495. Applicants can apply to both MD programs and/or the MSTP. It is possible for an applicant to be interviewed by and receive an admission offer from all three programs.

Applicants should complete this secondary application as instructed. After the applicant has submitted the secondary application and all supporting materials, the appropriate admissions subcommittee will review the information and decide whether to invite the applicant for an interview. After the interview, the Medical Student Admissions Committee (MSAC) of the CWRU SOM will discuss each applicant and decide whether to extend an offer of admission.

Admissions Criteria

Although academic credentials are important in the admissions process, high grades and a high score on the MCAT are not the only criteria for admission. Just as important are interpersonal skills, exposures to medicine, well-roundedness and qualities such as professionalism, empathy, and leadership ability. The School of Medicine includes a widely diverse student body.

Academic Requirements

Given the variability in the way undergraduate institutions structure

various courses, there is some flexibility with some of our prerequisite courses. Please closely review the prerequisite charts for each program.

If these prerequisites were not fulfilled at an accredited, four-year, degree-granting American or Canadian college or university, the applicant should be prepared to take at least 1 year of challenging, upper-level sciences at one of these institutions prior to application.

If all science prerequisites were taken at a **community college**, the committee strongly recommends that the applicant take at least one year of upper-level sciences from an accredited four-year degree-granting university within the United States or Canada. If a few science prerequisite courses were taken at a community college, the committee will evaluate them on a case-by-case basis.

Undergraduate students should pursue a major in a subject of their own choosing; they should not structure their undergraduate experiences in an attempt to sway the medical school admissions committee but instead, base it on their own personal interests and goals.

Financial Aid

About 70 percent of the WR2/University Program's medical students utilize financial aid in some form and approximately 40 percent receive financial aid based strictly on financial need.

The School of Medicine adheres to the unit loan concept used by most private medical schools. Under this concept, if a student qualifies for financial aid, they are expected to obtain a specific portion of their support from outside sources such as a Federal Direct Loan, savings, and/or family contribution. Once the student obtains this amount, the remaining aid would be provided through the School of Medicine resources, up to the amount determined to be their reasonable need. The school's contribution would be a combination of loan and scholarship, with the exact ratio determined by the student's particular circumstances.

Educational Authority

Governance of the educational programs leading to the medical degree resides with the Committee on Medical Education, an authority that is provided to this curriculum committee by the Faculty of Medicine. The faculty of the School of Medicine is responsible for the content and implementation of the curriculum and assessment students. The Dean of the School of Medicine serves as its chief academic officer, with overall responsibility to the university for the entire academic program. The Vice Dean for Medical Education carries the Dean's academic and administrative authority and has direct supervisory responsibility for the units that lead and support the curriculum.

The faculty's Committee on Medical Education (CME) evaluates, reviews and makes recommendations concerning overall goals and policies of the School's medical education program. Acting for the faculty, the Committee on Medical Education is responsible for:

1. The formal approval and adoption of the School's educational program objectives and ongoing monitoring to ensure that the objectives serve as guides for establishing curriculum and provide the basis for evaluating program effectiveness
2. The review of performance in each program's competencies
3. The evaluation of the overall content and appropriateness of the educational programs and curricula leading to the MD degree. The faculty elects the majority of the members of the Committee on Medical Education. Student representatives also serve on this

committee and its curriculum councils.

The operational responsibility for the medical curriculum is invested in curriculum committees that report to the Committee on Medical Education. There are five curriculum committees:

1. The WR2 Curriculum Committee (WR2/University Program)
2. The Curriculum Monitoring Committee (WR2/University Program)
3. The Curriculum Steering Council (Lerner College Program)
4. The Joint Clinical Oversight Group
5. The Continuous Quality Improvement Committee

These committees are responsible for the strategic planning, content, design, monitoring of curriculum, student assessment, and program evaluation.

Expectations for Personal and Professional Characteristics

Students are assessed on their knowledge base, clinical skills, and professional behavior and attitudes. The following characteristics are evaluated throughout the medical curriculum, and students are expected to adhere to these standards in both their academic and personal pursuits:

Interpersonal relationships: Provide supportive, educational and empathetic interactions with patients and families, and is able to interact effectively with "difficult" patients. Demonstrates respect for and complements roles of other professionals, and is cooperative, easy to work with, commanding respect of the health care team.

Initiative: Independently identify tasks to be performed and makes sure that tasks are completed. Performs duties promptly and efficiently, and is willing to spend additional time, assume new responsibilities, and able to recognize the need for help and ask for guidance when appropriate.

Dependability: Complete tasks promptly and well. Present on time and actively participates in clinical and didactic activities. Always follows through and is exceptionally reliable.

Attitude: Are actively concerned for others. Maintain a positive outlook toward assigned tasks. Recognizes and admits mistakes. Seeks and accepts criticism, using it to improve performance.

Integrity and honesty: Demonstrate integrity. Is honest in professional encounters. Adheres to professional ethical standards.

Tolerance: Demonstrate exceptional ability to accept people and situations. Acknowledges her or his biases and does not allow them to affect patient care.

Function under stress: Consistently maintain professional composure and exhibits good clinical judgment in stressful situations.

Appearance: Always display an appropriate professional appearance.

Pathways

Case Western Reserve University School of Medicine offers specialized Pathway programs for medical students interested in focusing on specific aspects of health and patient care. Available to students in both WR2/University and Lerner College programs, these longitudinal pathways include:

Addiction Medicine Pathway

The School of Medicine has had a strong curriculum in the area of addiction medicine and addiction psychiatry for over three decades beginning with the cocaine epidemic in 1988 and extending through the current opioid epidemic. More and more medical students, residents, and practicing physicians seek additional education, experience, and the development of clinical expertise in the management of patients with substance use disorders. Based upon this increasing interest and the tremendous adverse effect of substance use disorders on our community and our patients, the addiction medicine pathway offers its student members a seminar series regarding SUDs, a preclinical elective on the opioid crisis, individual mentorship, research opportunities, clinical electives in local treatment programs and a series of additional enrichment opportunities regarding the identification and management of patients with substance use disorders. First year students apply within weeks of arriving to campus to be considered for membership in this important co-curricular pathway.

Andrew B. Kaufman World Medicine Pathway

The Andrew B. Kaufman World Medicine Pathway will prepare medical students for advanced training and careers that address global health challenges. A foundational curriculum during the pre-clerkship years will focus on building knowledge, skills, and attitudes through a series of seminars, simulations, and other experiences. Students will then have a mentored experience in the clinical years focused on biomedical research, clinical care, capacity building, or global health policy/advocacy which will include international elective time.

Advocacy and Public Health Pathway

The goal of the Advocacy and Public Health Pathway is to support, develop, and sustain students' professional commitment to advocacy. The first five weeks of the core curriculum provides all students a solid foundation in epidemiology, biostatistics, bioethics, health systems science and health disparities. This introduction to the complex determinants of health, how social and environmental factors impact health and the value and importance of public health, provides a basic understanding of how physicians can act as advocates for patients within health care and public health systems. Through a framework of interprofessional experiences developed in partnership with multiple community organizations, the Advocacy and Public Health Pathway builds on this foundation, providing additional training for students interested in exploring the multitude of ways physicians can leverage their power and expertise to support the social, economic and political change necessary to improve the health of populations.

Climate and Health Pathway

The Climate and Health Pathway will foster awareness and inspire action among medical students on the impact of our changing climate on the health of patients and communities, including interconnections with advocacy and health equity. Students will also explore the profound impact that modifications in the delivery of health care can have on our environment. Through seminars, workshops, and experiential learning, students will gain the confidence and knowledge to educate their patients, colleagues, and other health professionals, be poised to incorporate climate change and health issues into their practice of medicine, and become leaders in the field of climate change and health.

Edward J. & Nancy M. Mueller Health Innovation and Entrepreneurship Pathway

In today's world, innovation and aligned entrepreneurial activities are increasingly focused upon as required value-drivers in patient care, health

care economics, and regional economic development. The goal of the Edward J. & Nancy M. Mueller Health Innovation and Entrepreneurship Pathway is to address issues relating to the commercialization of medical-related inventions by exposing students to the challenges and opportunities encountered when attempting to develop innovative concepts from the point of early discovery to the market. The students will gain insight into what constitutes innovation, the skills necessary to become successful entrepreneurs, and future approaches on how to manage their clinical practice.

Humanities Pathway

The vision of the Humanities Pathway is to use arts and humanities-based courses and experiences to promote the development of health care professionals who will explore the fundamental questions of what it is to be human and to be a health care professional. Students will think critically about the complex interplay among patients, health care professionals, and culture. They will develop innovative and informed approaches to health, well-being, and quality of life for the patients and communities they serve while developing resilience and passion to improve the culture of medicine.

Medical Education Scholars Pathway

Today's students are tomorrow's teachers. The Medical Education Scholars Pathway seeks to support students in their development as teachers and educational scholars. Students collaborate with faculty to co-create curricula and use well-established approaches to turn their efforts into scholarship. Additionally, they serve their local School of Medicine colleagues through their teaching and the Greater Cleveland population through their efforts to provide community education.

The Jack, Joseph, and Morton Mandel Wellness and Preventive Care Pathway

The mission of this pathway is to provide participants with insight and skills in wellness and health promotion as it relates to the domain of the mind, body, and spirit, social interactions, and the community. The vision is to incorporate and advance the promotion of health and wellness at the individual, family, institutional, professional and community levels.

Urban Health Pathway

The Urban Health Pathway is designed to provide selected students with the opportunity to expand their knowledge and skills in caring for patients in an urban setting, and to foster a better understanding of medicine and health in urban communities by aligning students' engagement, clinical and research goals with the community's health care needs.

Medical Student Organizations

The list of medical student organizations and activities available to medical students continually evolves to reflect the interests of current students.

Licensure

Licensure to practice medicine in the United States and its territories is a privilege granted by the individual licensing boards of the states and territories. Each licensing board of the individual jurisdictions establishes its policies, eligibility, and requirements for the practice of medicine within its boundaries pursuant to statutory and regulatory provisions. The degree of doctor of medicine awarded by Case Western Reserve University is an academic degree and does not provide a legal basis for the practice of medicine.

Program Requirements

Curricular Composition

The four years of the WR2 Curriculum are divided into four major components, each of which focuses on health as well as disease.

Foundations of Medicine and Health

This component is made up of six curricular blocks.

Block 1 (Becoming a Doctor) is five weeks in duration and gives students an understanding of population health, professional identity formation (PIF), and the doctor's role in society. Typically students begin their medical education by studying basic science at the molecular level and are often not fully aware of the relevance that this knowledge has in their future education as physicians or how it relates to the actual practice of medicine. This curricular block focuses on how physicians can act as advocates for their patients in the health care system; how social and environmental factors impact health; and the importance of population health. Additionally, students begin to explore their professional identity as future physicians, reflecting on their roles and responsibilities in patient care. During this block, medical students are introduced to key population health concepts including epidemiology, biostatistics, community assessment, health risk behavior, and social-environmental determinants of health.

The next five blocks in the Foundations of Medicine and Health consist of basic science education complemented by early contact with patients in clinical preceptorships and simulated clinical experiences. Subject matter is integrated across entire biological systems, which permits faculty in the different disciplines to leverage teaching time to convey content and concepts common to their disciplines. Content is divided into the following blocks:

- **Block 2 (The Human Blueprint):** Consists of endocrine and reproductive systems, development, genetics, molecular biology, and cancer biology.
- **Block 3 (Food to Fuel):** Encompasses the gastrointestinal system, nutrition, energy, metabolism, and biochemistry.
- **Block 4 (Homeostasis):** Includes cardiovascular system, pulmonary system, renal system, cell regulation, and pharmacology. During Block 4's **Clinical Immersion Week**, students leave the classroom and enter the clinical setting to see the relevance of the basic science they have been studying as the concepts are used in the setting of patient care.
- **Block 5 (Host Defense and Host Response):** Focuses on host defense, microbiology, blood, skin, and the autoimmune and musculoskeletal systems.
- **Block 6 (Cognition, Sensation and Movement):** Consists of neuroscience and behavioral science.

Longitudinal Blocks: Several concepts and themes stretch longitudinally across the sequential blocks, including **Block 7 - Structure** (histopathology, gross anatomy - HoloAnatomy, radiology, and ultrasound), **Block 8 - Foundations of Clinical Medicine and Research & Scholarship.** Teamwork, professionalism, clinical mastery, health systems, and bioethics are likewise incorporated longitudinally.

Assessment week is the final week of Blocks 1-6. During this week, no new material is introduced. Learning activities are planned to help students spiral back to concepts introduced earlier in the block by presenting these concepts again, sometimes in new contexts, and now integrated with other concepts previously learned. End of block

assessment takes place during the Reflection & Integration week.

Research & Scholarship

The WR2 Curriculum encourages student career development in the areas of basic science, clinical, translational, quality improvement, and medical education research and scholarship. Research teaches students critical thinking that makes them better evidence-based physicians. The focus on Research & Scholarship provides medical students with opportunities to pursue individualized areas of interest in great depth. There is a required 12-week mentored research block that takes place during the summer between Year 1 and Year 2. Leading up to that summer, students participate in the Year 1 Research & Scholarship course and, as part of this course, begin to acquire the intellectual tools needed to formulate research questions, critically assess scientific literature, and continue the lifelong pursuit of learning that is a critical aspect in the careers of all physicians and physician-scientists. The mentored research project culminates in a thesis, which is written by the student in the format of a manuscript of the leading journal in the particular area of interest. In addition to the formal 12-week requirement, students may also choose to complete additional research electives or may opt for a year off devoted to research, which would lead to a five-year curriculum.

Interprofessional Education

Interprofessional Education (IPE) curriculum focuses on experiential learning that meets institutional requirements for Teamwork and Interprofessional Collaboration. Pre-clerkship students engage in interprofessional simulation experiences and sessions that highlight the roles of non-physician providers within the health care team. During their third year, students participate in Transitions-of-Care processes, emphasizing the importance of multidisciplinary input in patient care planning. In their final years, students undertake simulations at the Simulation Center focusing on high-functioning teams and patient safety.

Clinical Experiences

The clinical curriculum cuts across all four years of the medical school curriculum, and can be divided into three areas of involvement:

Area 1: Foundations of Clinical Medicine

This segment of the clinical curriculum runs longitudinally through the Foundations of Medicine and Health and seeks to develop a broad range of clinical and professional capabilities. Foundations of Clinical Medicine develops the necessary skill sets through the following separate, but integrated programs that take place across Years 1 and 2:

- **Tuesday Seminars:** This program continues the theme of "doctoring" begun in Block 1 through the Year 1 and Year 2 curriculum. Topics examined include the relationship between the physician and the patient, the family and the community; professionalism; health care disparities; cultural competence; quality improvement; law and medicine; medical error/patient safety; development of mindful practitioners and end-of-life issues.
- **Communications in Medicine:** This program comprises various activities that focus on the range of skills needed for effectively talking with patients including the basic medical interview, educating patients about a disease, counseling patients for health behavior change, and presenting difficult news and diagnosis. In addition, students participate in a longitudinal, community-based experience that pairs them with an older adult partner for monthly meetings, allowing them to apply and refine these communication techniques while developing rapport and insight into geriatric patient perspectives.
- **Physical Diagnosis:** Physical Diagnosis 1 introduces the basic adult

exam to Year 1 students, with one session per week for eight weeks. Physical Diagnosis 2 provides in-depth regional exams in various formats during Year 1 and Year 2.

- **Clinical Reasoning:** This is a thread throughout Foundations of Clinical Medicine that teaches students how to develop a complete and appropriately focused differential diagnosis. This begins in IQ, continues in Physical Diagnosis 2 Clinical Reasoning sessions and culminates in the Clinical Skills Exams.
- **Patient-based Programs:** Outpatient clinical sessions during either Year 1 or Year 2 in which students spend some afternoons in a community physician's office developing and reinforcing medical interviewing, physical exam and presentation skills (written and oral) with ongoing mentorship from a preceptor. Students additionally have skills practice sessions to help practice the skill of synthesizing information, mimicking outpatient clinical encounters. Finally, students spend three sessions doing complete histories, physicals and write-ups on patients they see in an in-patient setting.
- **Procedures:** Training in basic medical and surgical procedures, including infection control (PPE donning and doffing, and handwashing), hemorrhage control, scene safety, basic airway management, anaphylaxis and overdose management, sterile field, gloving and gowning, OR scrub, suturing, injections, phlebotomy, and IV placement.

Area 2: Clerkship Rotations

The Clerkship Rotations are designed to provide students with both breadth and depth in clinical care. Experiences are developmental, with opportunities to reinforce, build upon, and transfer knowledge and skills from all parts of the curriculum. Clinical learning is integrated across disciplines whenever possible through a unique block structure, and important themes related to scholarship, humanism, and science are supported through specially designed weekly small group programs. A unified approach to addressing and assessing a core clinical curriculum is utilized at all teaching sites with the flexibility to take advantage of the unique strengths of each clinical setting.

Traditional Clerkship Rotations: Beginning in their third year, most students will complete their clerkship rotations through this traditional block schedule. These rotations are organized in blocks of varying lengths that group complementary core specialties at one or more sites.

- Internal Medicine, Family Medicine, and Aging comprise a 12 week rotation.
- Pediatrics (6 weeks) and OB/Gyn (6 weeks) are paired together.
- Neuroscience (4 weeks) and Psychiatry (4 weeks) are paired together.
- Surgery and Emergency Medicine comprise a 8 week rotation.

Each of these clerkship rotations is offered at all of the School of Medicine's hospital affiliates, including University Hospitals of Cleveland, MetroHealth Medical Center, and the Louis Stokes VA Medical Center. However, Pediatrics and OB/Gyn are not available at the VA. Students have 8 weeks of electives that can be taken at any affiliate hospital or as a visiting student at another institution.

Cleveland Clinic Longitudinal Clerkship: Students will have the option of completing their clerkship rotations as part of a 12-month longitudinal clerkship experience at the Cleveland Clinic. The educational learning objectives remain the same for all Case Western Reserve University students on their clerkship rotations, however, the structure of this experience will offer some unique features aimed at increased longitudinal ambulatory experiences with faculty. Students will complete

all 40 weeks of their clerkship rotations within the Cleveland Clinic Health System and have 8 weeks of electives that can be taken at any affiliate hospital or as a visiting student at another institution. The rotation structure will be:

- Longitudinal Ambulatory Block (LAB) – 12 week rotation
- Team-Based Care 1 – Inpatient Internal Medicine/Surgery – 12 week rotation
- Team-Based Care 2 – OB, Inpatient Gynecology, Inpatient Pediatrics – 8 week rotation and electives (any site) – 4 weeks
- Team-Based Care 3 – Neurology/Psychiatry – 8 week rotation and electives (any site) – 4 weeks.

The LAB will include outpatient components of Family Medicine, Internal Medicine, Pediatrics, Emergency Medicine, Palliative Medicine, and Geriatrics. LAB will also provide opportunities for students to explore other disciplines and possible areas of career interest and establish longitudinal experiences by working a half day a week with the same preceptor over 12 weeks. The longitudinal clerkship will also allow students to create a community of learning by participating in Longitudinal Learning Groups over the year. Topics such as quality/safety, high-value care, and palliative medicine will be covered as part of a year-long curriculum.

The MetroHealth-CWRU Longitudinal Integrated Clerkship

(MetroLIC): Students will have the option of completing their clerkship rotations as part of a 12-month longitudinal integrated clerkship experience in the MetroHealth System. The educational learning objectives remain the same for all Case Western Reserve University students on their clerkship rotations, however, the structure of this experience will emphasize longitudinal and integrated experiences with faculty and patients in the diverse MetroHealth community. Students will complete all 40 weeks of their clerkship rotations within the MetroHealth System and have 8 weeks of electives that can be taken at any affiliate hospital or as a visiting student at another institution

The structure of the MetroLIC is rooted in a year-long, half-day per week, outpatient schedule with a family physician, internist, pediatrician, and obstetrician/gynecologist. Students also complete outpatient experiences in Surgery and the Emergency Department through the year. Students will work with the same attending physician in each core specialty for the entire year and become an integral member of the clinic team. They will develop longitudinal relationships with patients of all age groups who they can help care for in the inpatient and outpatient settings and across specialties.

Spread across the academic year at approximately four-week intervals, the MetroLIC students will engage in their inpatient core rotations. Each inpatient burst lasts 14-21 days and the student will be a member of the inpatient teams on the internal medicine, pediatric, obstetrics-and-gynecology, surgical, neurology, and psychiatry services. During their inpatient bursts, they will be full members of the inpatient team caring for the hospitalized and diverse, urban, and underserved community served by the MetroHealth Medical Center.

Sciences and Art of Medicine Integrated (SAMI) is an undifferentiated-patient curriculum that takes place during the clerkship year. Utilizing a small group format, SAMI provides WR2/University Program medical students with an opportunity to practice patient care with direct observation and feedback from clinical facilitators. Each SAMI case incorporates health care disparities as well as integrates basic, health systems, and clinical sciences in order to improve students' skills of clinical reasoning and decision making. Finally, SAMI provides students

with an environment to further develop their humanism through activities like reflection and advanced communication skills.

Area 3: Advanced Clinical and Scientific Studies

Advanced clinical and scientific studies provide students with flexible learning opportunities that support ongoing professional development and residency preparation and planning:

- A minimum of two Acting Internships are required; one of which is required in the CWRU system at an affiliate site in Cleveland. There may be an exception made for students with specific military obligations or requirements.
- Students are encouraged to augment their interest in scholarship through rotations and activities that focus on sciences basic to medicine, research, and clinical rotations.
- Capstone: The Transition to Residency course is a required two-week experience during the final year of medical school, designed to help students prepare for the shift from medical student to resident physician. Through high-yield simulation, interactive workshops, and small group discussions, students engage in practical training for real-world scenarios they are likely to face on day one of residency. Topics include managing acutely ill patients, leading interdisciplinary teams, and navigating key transitions in clinical responsibility.

Student Assessment

Student assessment in the WR2 Curriculum is designed to accomplish three goals:

1. Drive the types of conceptual learning and scientific inquiry that are goals for the WR2 Curriculum.
2. Assess whether students have attained the level of mastery set for each phase of the curriculum.
3. Prepare students for medical licensure.

These three goals are accomplished through multiple assessment methods.

Independent study and inquiry are hallmarks of WR2 through assessment strategies that are formative, focus on the synthesis of concepts, and promote student responsibility for the mastery of skills and material. The following assessments are used in Foundations of Medicine and Health:

1. Assessment of students' participation in weekly Case Inquiry (IQ) groups by faculty facilitators, utilizing observable behavior anchors and focusing on contributions to team process and content, critical appraisal of resources, reflective practices, and professional behaviors.
2. Weekly, formative, open book Synthesis Essay Questions (SEQs) concept reasoning exercises in which students are given a brief written clinical scenario and asked to explain a clinical phenomenon and its basic science underpinnings. Throughout a teaching block, students complete SEQs at the end of each week. They compare their own answers to an 'ideal' answer and receive feedback from their IQ group facilitator.
3. Summative Synthesis Essay Questions (SSEQs) that measure what students know at specific points in their education, are closed book exercises with approximately 5 clinical vignettes that take an estimated 3-6 hours to complete. These SSEQs are based on the synthesis essays students have been assigned throughout the block. In the final week of the block, SSEQs present concepts from previous exercises in new contexts and require concept integration. These summative exercises are scheduled at the end of each Block 1-6 and

are graded by faculty.

4. Structure Practical Exercises assessments occur in the final week of blocks 2-6 and assess anatomy, histo-pathology and radiology through clinical scenarios and questions that require anatomic localization and histo-pathologic identification.
5. At the end of each block, students complete a secure formative MCQ achievement test, based on content covered in the current teaching block as well as on content from each previous block. These exams are designed utilizing test question resources available through the National Board of Medical Examiners (NBME). Tests will become progressively longer throughout the Foundations of Medicine and Health. The final Cumulative Achievement Test (CAT) reflects material across all curriculum blocks. These formative tests enable students to gain perspectives on their overall progress and preparedness for the USMLE Step 1.
6. Student progress in Foundations of Clinical Medicine is measured by small group facilitator assessment in the Tuesday Morning Seminars, communication workshops, direct observation of skills, preceptor evaluation of patient-based activities, and clinical skills examinations.
7. Conscientious Behaviors are the manifestation of medical professionalism. During the Blocks, students' attendance, completion of assignments, and submission of feedback and evaluations is tracked to help and support students in demonstrating conscientious and professional behaviors.

The WR2 Curriculum provides students with a focused education that is faculty-directed and student-centered. Classroom hours are limited. The content of WR2, organized across biological systems, provides students with an integrated view of medicine and health and an understanding of how the basic sciences and clinical practice relate to one another. The flexibility of WR2 permits students to explore in-depth an area of interest to them alongside a mentor. The curriculum places great emphasis on the social and behavioral context of health and disease as well as on population medicine which will prepare students to face the emerging challenges of today's health care system.

Assessment for Promotion and Graduation

The faculty of the School of Medicine is charged with assessing student performance, including knowledge, skills and personal characteristics that are important qualities of a responsible, competent and humane physician. This responsibility is delegated by the faculty to the Committee on Medical Students Promotion and Advancement (CMSPA), a standing committee of the faculty of medicine, with a majority of its members faculty-elected.

The Committee on Medical Students Promotion and Advancement reviews the performance of every medical student in the WR2/University Program during each of the four years, determines each student's continuing status as a student in the school, and recommends candidates for graduation. The CMSPA reviews a medical student's overall performance, which includes the usual indices such as formal grades and assessments, as well as the professional attitudes and behavior manifested by the student. Medical education entails the mastery of didactic, theoretical, and technical matters as well as the demonstration of appropriate professional and interpersonal behavior, sensitivity, sense of responsibility and ethics, and the ability to comport oneself suitably with patients, colleagues and co-workers. To be eligible for promotion and graduation, students must complete the requirements and perform satisfactorily in all components of the curriculum.

Medical students in the WR2/University Program are graded M (Meets or exceeds expectations) or U (Unsatisfactory) in the first

two years. Clerkships are graded H (Honors), CCD (Commendable with Clinical Distinction), COM (Commendable), S (Satisfactory), and U (Unsatisfactory); or M (Meets or Exceeds Expectations) and U (Unsatisfactory). Clinical electives and Acting Internships are graded as H (Honors), COM (Commendable), S (Satisfactory), and U (Unsatisfactory); or M (Meets or Exceeds Expectations) and U (Unsatisfactory). There is no class ranking.

Graduation Requirements

To graduate from CWRU School of Medicine with the MD degree students must:

- Satisfactorily complete all Program Specific Requirements and Educational Program Objectives of the School of Medicine
- Pass the USMLE Step 1 and USMLE Step 2 CK Exams
- Pass or remediate the School of Medicine's Clinical Skills Exam
- Pass or remediate the ePortfolio requirements
- Satisfactorily complete the MD Thesis
- Meet financial obligations to the University
- Be approved to graduate by the Committee on Medical Students Promotion and Advancement

Dual Degree Options

- Anthropology, MA/Medicine, MD
- Anthropology, PhD/Medicine, MD
- Applied Anatomy, MS/Medicine, MD
- Bioethics and Medical Humanities, MA/Medicine, MD
- Biomedical Engineering, MS/Medicine, MD
- Business Administration, MBA/Medicine, MD
- Clinical Research, MS/Medicine, MD
- Law, JD/Medicine, MD
- Medical Scientist Training Program (MSTP), PhD/Medicine, MD
- Medicine, MD/Oral and Maxillofacial Surgery, Professional Certification
- Molecular and Cellular Biology of Disease, MS/Medicine, MD
- Nutrition, MS/Medicine, MD
- Pharmacology, MS/Medicine, MD
- Public Health, MPH/Medicine, MD