Mayo Clinic Alix School of Medicine

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Medical Education Program Highlights

Mayo Clinic established its medical school with an inaugural class of 40 students in Rochester, Minnesota, in 1972. Today, the Mayo Clinic Alix School of Medicine (MCASOM) comprises 3 campuses in Arizona, Florida, and Minnesota with a target enrollment of 424 students. MCASOM employs a single governance structure and delivers a single integrated curriculum, leveraging outstanding educational experiences across the Mayo Clinic enterprise.

Preparing future physicians for unprecedented change in health care requires an adaptable curriculum, a forward-thinking faculty, and a diverse and thriving student body. In 2019, MCASOM began transforming its educational program toward a highly flexible, customizable curriculum that facilitates individualized learning, encourages innovation, and cultivates the myriad talents of the next generation of physicians. This new model emphasizes active learning and authentic clinical experiences that bring value to both education and clinical practice. Student progress is supported with performance analytics and longitudinal coaching. Learning objectives are explicitly values aligned and reinforced within a learning environment and organizational culture that reflects Mayo Clinic’s primary value, “the needs of the patient come first” (Dr. William J. Mayo, 1910).

Curriculum

Curriculum description

The current MCASOM curriculum culminating in the MD degree is a single 4-year pathway. The first 2 years are made up of integrated blocks in which students simultaneously acquire foundational knowledge in basic sciences and clinical medicine. Students develop clinical competency longitudinally, with progressive independence throughout the 4 years. The third year includes traditional core clerkships, followed by subinternships and clinical electives in the fourth year. A substantial portion of the curriculum is designated for self-directed learning through selective rotations in the first 2 years and clinical electives in the third and fourth years. There is a longitudinal research curriculum that includes approximately 12 weeks dedicated to a mentored research project. Students are required to submit a first author manuscript and present their research regionally, nationally, or internationally. Just before graduation, students complete the Transition to Internship course and the internship boot camp.

Curriculum changes since 2010

• New regional campuses: In 2017, MCASOM opened a 4-year regional campus in Phoenix, Arizona, and a 2-year regional campus in Jacksonville, Florida. The Florida campus uses a 2 + 2 model in which 12–14 students are chosen to complete their third and fourth years in Florida after completing years 1 and 2 in Arizona or Minnesota. Substantive changes in governance structure, policies and procedures, curriculum management, faculty development, and student services were required to successfully deliver the MCASOM educational program in a comparable fashion across all 3 campuses.
• Science of health care delivery curriculum: In 2017, MCASOM and Arizona State University developed a science of health care delivery curriculum to prepare students for practice within 6 domains: person-centered care; population health; high-value care; teamwork; leadership; and health policy, economics, and technology. All students receive a certificate of completion, and students have the option to pursue a master’s degree in science of health care delivery at Arizona State University.
• THRIIVE program: MCASOM implemented a comprehensive program of student support and success at all 3 campuses which includes: academic success coaches, mental health counselors, wellness directors, humanities programming, resilience training, and individualized career specialty advisors and mentors who longitudinally follow students throughout medical school. MCASOM also supports student health and wellness with highly subsidized health insurance and fully subsidized fitness center memberships throughout the 4 years of medical school.
• Integrated MD–PhD program: MCASOM and the Mayo Clinic Graduate School of Biomedical Sciences together redesigned the MD–PhD program from a traditional model comprising separate MD and PhD curriculum phases delivered in sequence to an integrated model that allows students to progress within the MD and PhD components of their education simultaneously. This includes options to intermix clinical clerkships with research activities in ways that best support the educational goals of individual students. This model provides students the opportunity to decrease the total length of their MD–PhD training.

Assessment

Students receive frequent formative and summative assessment throughout medical school. We employ the full breadth of assessment methods, with emphasis on observation-based assessments of clinical skills, communication, and professionalism. Each summative assessment is linked to a learning objective, an ACGME competency, and one or more educational program objectives. The objectives are framed within Mayo Clinic’s core values: respect, integrity, compassion, healing, teamwork, excellence, and stewardship.
See List 1—Educational Program Objectives.

Over the course of 4 years, MCASOM compiles a large body of summative assessments for each student. The Student Promotion and Assessment Review Committee monitors all summative assessment and ensures the satisfactory progression of each student.

Formative assessment is provided to each student at the midpoint and end of each course and clerkship, as well as longitudinally within the curriculum and in the context of coaching or mentoring relationships.

**Pedagogy**

In the first 2 years, the predominant pedagogical methods are lecture, small-group case-based learning, and clinical skills practice (with both real and simulated patients). We have implemented online learning and flipped classroom models in select courses. We continue efforts to reduce the number and length of lectures, replacing them with active learning methods and/or independent learning.

**Clinical experiences**

The longitudinal clinical skills curriculum begins early in year 1 and spans the first 2 years. Students complete traditional clerkships (block model) in year 3 and choose from a wide range of electives in year 4. Students provide care to underserved patients in community-based clinics in Rochester and Phoenix. Students may complete clerkships and electives at affiliated hospitals in Arizona and Florida.

**Curriculum Governance**

The Curriculum Committee is responsible for ensuring the overall integration, design, management, continuous quality improvement, and evaluation of the MCASOM curriculum. The Medical School Education Committee, chaired by the dean, grants the Curriculum Committee primary responsibility for the curriculum.

See Figure 1—Curriculum Committee.

**Education Leadership and Staff**

The medical school is led by the dean and chief academic officer, who is responsible for the conduct and quality of the medical education program for all campuses. Each regional campus has a vice dean who reports to the dean and is responsible for day-to-day operations of the campus. Medical school functions are carried out across the campuses via 4 offices: Academic Affairs, Admissions, Faculty Affairs, and Student Affairs. Each office is led by a senior associate or associate dean, and includes associate deans at both regional campuses.

See Figure 2—Decanal staff.

Operational and administrative support for planning, implementation, evaluation, and management of the curriculum is provided by staff within MCASOM, the Mayo Clinic College of Medicine and Science, and the Office of Applied Scholarship and Education Science.

**Faculty Development and Support**

Professional development for faculty and residents is provided centrally by MCASOM Office of Faculty Affairs as well as by individual departments. Academic promotion decisions are made by an institutional committee outside the medical school. Excellence in education, including education scholarship, teaching service, teaching awards, curriculum development, and education leadership contribute to academic promotion. The Mayo Clinic College of Medicine and Science has an Academy of Educational Excellence that serves to inspire, develop, recognize, and support Mayo Clinic educators.
Regional Medical Campuses

MCASOM has 2 regional campuses. All students have the opportunity to rotate across all Mayo Clinic locations to maximize the diversity of their educational experience and allow them to benefit from interactions with the many expert clinicians and scientists across the Mayo Clinic enterprise. MCASOM subsidizes students’ travel expenses.

See Table 1—Regional Campuses.

Initiatives in Progress

In recent years, MCASOM has not only expanded to 3 geographically dispersed campuses, but we have also incorporated new content such as health systems science, created online learning resources, and implemented robust student wellness programs. With these foundational elements established, MCASOM is now creating an educational model that will empower students to customize their education, as well as enable faculty coaches to tailor curricula to meet individual needs.
student needs. All students will complete core requirements for the medical degree; however, we will leverage our 3-campus structure to offer flexible course sequencing and numerous opportunities for academic enrichment.

A flexible model should provide students autonomy, alignment with interests, and ability to adapt to change (such as life events, changes in career choice, etc.). These curriculum features may also buffer against student burnout. Longitudinal relationships between students and faculty coaches, supported by performance analytics, will facilitate student reflection, goal setting, curriculum choices, career planning, competency-based advancement, and remediation.

Core components of the new model include:

- Active learning
- Longitudinal clinical experiences with students serving in authentic roles that advance education and add value to clinical practice
- Curriculum phases in variable sequence
- Defined criteria for entry and progress within pathways

Opportunities for academic enrichment within this new model include existing and newly planned master’s degree programs, certificate programs, and research fellowships in emerging areas such as artificial intelligence, innovation and entrepreneurship, regenerative science, and individualized medicine.

### Table 1

**Regional Campuses**

<table>
<thead>
<tr>
<th>Regional campus</th>
<th>Type</th>
<th>Student enrollment (target)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mayo Clinic Alix School of Medicine–Arizona</td>
<td>Entire MD program</td>
<td>200</td>
</tr>
<tr>
<td>Mayo Clinic Alix School of Medicine–Florida</td>
<td>Clinical</td>
<td>28</td>
</tr>
</tbody>
</table>

- Frequent observation-based assessment and feedback
- Technology enabling individualized scheduling, student performance analytics, and monitoring
- Trained and supported faculty coaches

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