



## Florida Medical School Pipeline Project

Like much of the nation, Florida is experiencing a critical shortage of physicians sufficient to care for its ever-growing and progressively aging population. A recent survey revealed that two-thirds of Florida's actively-licensed physicians are 50 years of age or older, 32% are age 60 or older, and almost 6,000 of those who were practicing medicine at the time of the survey planned to retire within five years.<sup>1</sup>

In response to this need, the Physician Workforce Advisory Council (PWAC), a group made up of physicians from a wide array of medical specializations within both public and private-sector organizations, was created to help address this critical professional shortage. Starting in 2013 PWAC began to explore what types of programs existed within Florida's institutions of higher learning for promoting and encouraging the pursuit of careers in medicine, referred to as "Pipeline Programs." In the end, it is hoped, these efforts could create more transparent and plausible paths into the profession for those who possess the aptitude for and interest in becoming a physician.

Following is a synopsis of what is currently known about programs within the state aiming to increase the pipeline of students prepared to enter medical schools in Florida. On July 29, 2013, Dr. Alma Littles (FSU College of Medicine) took an important early step by sending a letter to liaisons at the following colleges of medicine soliciting information about their pipeline programs:

- Florida International University
- Florida State University
- NOVA Southeastern University
- University of Central Florida
- University of Florida
- Lake Erie College of Medicine
- University of Miami
- University of South Florida
- Florida Atlantic University

(All responded, with the exception of Lake Erie College and the University of Miami.)

### **Summary of Responses**

- All respondent colleges offer a middle and high school track intended to instill confidence, increase knowledge, and make access to the appropriate resources for pursuing a career in medicine easier for these students.

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<sup>1</sup> <http://www.floridahealth.gov/provider-and-partner-resources/community-health-workers/physician-workforce-development-and-recruitment/2015%20Physician%20Workforce%20Report.pdf>

- COM pipeline programs target economically and ethnically diverse student populations and provide an array of opportunities and experiences to help them realize their potential success in the health care fields.
- Pipeline activities include both college residential and summer study experiences; tours of clinics and medical schools; tutoring in math and science course work; after-school activities, mentoring, practice presentations, and support and social activities; partnerships with middle and high school vocational, science, and math teachers, and associated school administrators--who together encourage these students to develop and maintain a vision of working in the medical fields.

### **Programs Aimed at Middle/High School Students**

#### ***Health Explorers and Leaders (HEAL) at the University of Central Florida***

The *Health Explorers and Leaders Program (HEAL)* is designed to be a sustainable model for increasing diversity in the health professional workforce through its emphasis on middle and high school students from diverse backgrounds. The program's goal is to better prepare these students for a college education that might lead to advanced careers in the health professions.

- Program focus areas include academic excellence, mentoring and support, and teen wellness and life skills.
- Monthly sessions are delivered to cohorts of 20 students at an Orlando middle school located in a predominantly African American and Hispanic, low socioeconomic area.
- Monthly outreach and special program activities are provided to cohorts of 15 students at an Orlando high school in a predominantly African American, low socioeconomic community (14 of 15 students were underrepresented minorities in medicine).

More information about HEAL can be found at:

<https://med.ucf.edu/about/diversity-and-inclusion/pipeline-program/>

#### ***Student Science Training Program (SSTP) at the University of Florida***

The *Student Science Training Program (SSTP)* for secondary school teachers and talented/motivated secondary school students focuses on STEM, with the majority of student participants being interested in pursuing careers in biomedical research or clinical practice. In existence for over 55 years, this program accommodates approximately 90 rising junior/senior high school students per year in a 7-week research apprenticeship program supplemented with a daily research lecture/discussion series, and an evening seminar course with 5 of the 8 concurrent sections focusing on medical or bioengineering topics. Participants also engage in oral presentations, a research paper, social activities, and overall preparation for college. Program features include:

- Seven-week residential program with total cost of \$4000 per participant. All faculty research mentors volunteer to host students in research projects, and a total of 6 dual enrollment credits can be earned.
- Topics for seminars and discussions led by physicians and other health professionals include health protection, disease prevention, community health and health disparities, and clinical and translational research.
- About 30% of the students are from economically-disadvantaged rural and urban families—and almost all are first-time college-bound in their family). Many receive scholarships from various donors, including Florida Alliance for Health Professions Diversity, federal and foundation grants, and individual donors. Most participants are identified and recruited through teachers from high-poverty schools who participate in the Center for Precollegiate Education and Training (CPET) program at the University.
- All SSTP students enter college, most major or minor in STEM, more than 99.5% earn at least a college degree, and many apply for graduate or professional postgraduate programs. In 2013 there were 12 SSTP students in the UF Medical School and at least 8 in graduate school in STEM departments across the Health Science Center.

More information about SSTP can be found at: <https://www.cpet.ufl.edu/students/sstp/>

***Mini Medical School (MMS) and Interdisciplinary Center for Ongoing Research and Education (ICORE) at the University of Florida***

MMS has existed since 2001, with a different topic of focus each year. This one-day program accommodates 100 teachers out of a large number of applicants from across Florida. Here secondary science, health, and vocational teachers interact and exchange ideas about medical education outreach with university faculty and medical researchers. Recent topics include diabetes, regenerative medicine, psychiatry, exploring immunity, and neuroscience. The topic for November, 2013 was “Personalized Medicine” (information about previous and subsequent topics may be found at the link below). Highlights of the MMS program include:

- Program focuses on providing ongoing university partnership support to teachers.
- Opportunity for high school teachers to engage in innovative professional development.
- Teachers perform hands-on research with scientists. These ideas can be incorporate into classroom-ready modules
- Results of their experiences can be presented to colleagues at professional meetings

More information about MMS can be found at: <https://www.cpet.ufl.edu/teachers/mms/>

Information about the ICORE program (which ran from 2008-2013) can be found at: <https://www.cpet.ufl.edu/about-cpet/previous-programs/icore/program-information/>

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### ***Health Careers Option Program (HCOP) at Florida Atlantic University***

The mission of the Florida Atlantic University Charles E. Schmidt College of Medicine (FAU COM) Healthcare Careers Outreach Program (HCOP) is to provide students from diverse backgrounds with the opportunity to realize their potential for success in the health care fields. HCOP seeks to establish the infrastructure necessary to support a community-based initiative in diverse communities; encourage and develop middle and high school students from disadvantaged and economically distressed communities in their desire to enter the healthcare fields; and prepare those students to successfully compete at the highest levels of college and post-graduate study. Some program features include:

- High school HCOP students participate in a residential summer program on the FAU campus which provides exposure to campus life, high-level academic and cultural experiences and research and shadowing opportunities.
- Targeted disciplines include medicine, biomedical science, the 4-year nursing degree, and other graduate professions related to health care.
- FAU COM program leaders also provide guidance on professional development to the classroom teachers.

More information about HCOP can be found at: <http://med.fau.edu/home/diversity/programs.php>

### ***Students in Healthcare and Research Professions Program (SHARP) at Florida International University***

SHARP was developed in September 2011 as a pipeline program to prepare and inspire talented, underrepresented minority high school students (9-12 grade) to pursue careers in medicine, health science, or health-related research. The mission of SHARP is to establish a lasting liaison between Upward Bound Math-Science (UBMS)/Pre-Collegiate Programs and FIU's College of Medicine that fosters academic success in the pursuit of a medical education, healthcare education, or related fields. Some program features include:

- 17-sessions conducted bi-weekly (September to May) during each academic year, piloted under the auspices of an existing Saturday Academy for Upward Bound Math and Science (UBMS).
- Program topic areas include biology, chemistry, physics, and environmental science, with a focus on how these scientific disciplines pertain to medical problems.
- Selection method involves assessing 50 students from UBMS using Kuder Navigator, a career assessment tool developed for middle and high school students to help identify their interests, skills, and motivations for a particular career. Of the 50 students, 15 showed a keen interest in health sciences and/or the STEM fields. Those 15 students were selected for participation in SHARP for 2011-2012.
- The continuing performance of participants, who are Haitian American, African American, or Hispanic, and are low-income and/or first generation to go to college, will be tracked for the duration of their high school careers and in college up to graduation.

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### ***AHEC Summer Health Careers Camp Program at Nova Southeastern University***

The Area Health Education Council's (AHEC) Health Careers Camps, which take place each year in both south and central Florida, place particular emphasis on the recruitment of youth from minority and underserved communities to help address their underrepresentation in the overall health care workforce. Each year nearly 100 minority and other secondary students (from within the 19 counties of their region and in areas the AHECs have determined to be underserved) participate in this exciting and innovative recruitment initiative. Noteworthy aspects of this program include:

- Active collaboration with the College's local chapter of the Student National Medical Association in providing mentoring relationships, career days at the University, and tutoring assistance for young students.
- Developing articulation agreements with traditionally minority colleges and universities offering accredited programs through international affiliations where disadvantaged populations are prevalent.
- Extensive middle school and high school health career recruitment programs in predominantly minority and underrepresented area schools.
- Participation by NSU-COM faculty/staff at national minority health conferences.
- Many program participants have now completed or are close to the completion of their college training.
- Several are in AHEC-affiliated training programs in their respective fields of interest

More information about the AHEC network can be found at:

<http://health.usf.edu/NR/ronlyres/0444B6A7-000F-4992-96BF-9DD122134659/39327/AHECNetworkFinalAnnualReport2010.pdf>

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### **Programs Aimed at Undergraduate and Graduate Students**

College level pipeline programs are designed to provide students interested in health care careers with an opportunity to learn about those careers, access to consult with professionals who work in the health care fields, and an opportunity to develop academic skills that promote success in the appropriate coursework needed for successful entry into their chosen profession.

#### ***Pre-Health Advising at Florida State University***

The Pre-Health Advising Program provides effective academic advising and career planning for students interested in careers in medicine or other health care professions. This program focuses on:

- Academic advising and career planning for students interested in careers in medicine or other health care professions.
- Academic intervention through group study and tutoring.

- Coordination with academic advising offices in various departments on campus so that students can be prepared to apply and gain admission to a wide array of health professional programs.

More information about this program can be found at:

<http://med.fsu.edu/index.cfm?page=AdvisingOutreach.premedOverview>

***Undergraduate Science Students Together Reaching Instructional Diversity and Education (U-SSTRIDE) and Minority Association of Pre-Health Students (MAPS) at Florida State University***

The mission of these college-level outreach activities is to prepare a diverse group of students for medical school and a life of service in the health professions. Undergraduate SSTRIDE is the college-level component of the outreach pipeline, while MAPS is an undergraduate student organization. These groups aim to stimulate the academic interest and preparation of a diverse population of middle and high school students for careers in science and health care by providing hands-on activities, academic support, intervention, and advisement. Particular features of USSTRIDE include:

- Students in these organizations participate in volunteer activities, are part of the advising program, participate in professional development workshops, community service, MCAT preparation, and leadership-building experiences.
- SSTRIDE high school students in Leon County, where the FSU main campus and College of Medicine are located, participate in a program of daily after-school tutoring and mentoring, in addition to their involvement with the in-school program at one middle school and one high school.
- The high percentage of mentors (71%) ultimately admitted to medical school (with another 15% admitted to other professional and graduate programs) highlights the success of the comprehensive vision of this program, and demonstrates the need for and effectiveness of pipeline programs built on a continuum.
- The Rural SSTRIDE program helps prepare rural middle and high school students in Florida for the college experience by providing academic support, hands-on experiences, pre-health advising, and science instruction.
- 95% of the Pre-College SSTRIDE and Rural SSTRIDE students who maintained involvement with the program until they graduated were admitted to colleges. The methods of this program have achieved a 55% retention rate within the Pre-College SSTRIDE program.
- The Pre-College Summer Institute SSTRIDE provides SSTRIDE students and students from high schools in Florida an opportunity to experience college life and medical school in a residential environment. The Institute exposes students to laboratories, lectures, research facilities, clinical experiences, and current medical students. The program also provides direct exposure to rural, geriatric, and other underserved communities to underscore the needs and opportunities for future physicians in these areas.

A recent review of USSTRIDE's achievements can be found at:

<http://med.fsu.edu/userFiles/file/MEO-19-24200.pdf>

### ***Honors Medical Scholars (HMS) at Florida State University***

Students who apply to the Florida State University and (1) are qualified to be invited to become part of the FSU Honors College and (2) also have an interest in medicine as a career may apply to the Honors Medical Scholars program in the College of Medicine. The Honors College requires an above-average score on the ACT/SAT, and an average GPA of 4.0 to be eligible. Following are some highlights of the program:

- Particular attention is given to students from rural and minority backgrounds, who are exposed to primary care medicine, provided with shadowing opportunities in rural primary care settings, and shown the dire need for basic health services in these communities.
- HMS recruits students interested in medicine, who have also demonstrated a high level of academic ability, a heart for service, and a sincere concern for vulnerable populations through volunteer work.
- Following the inception of the HMS program in 2006, the first three HMS students were admitted to the FSU College of Medicine in 2010 and were on track to receive their MD degrees in Spring 2014.
- In 2013 28 students were enrolled in the College of Medicine who entered through the HMS outreach program. At that time, 85 students had entered the program as freshmen at FSU, while six (6) decided not to remain in the program because of changes in their career plans. Two (2) left the program because they did not maintain the required 3.2 GPA to continue in the FSU Honors College, and one (1) transferred to another university.
- As of 2013 the program had achieved an 89.4% retention rate. Through ongoing efforts to refine the selection process and build a stronger sense of community, the program aims for even higher success in the area of student retention.

For more information on HMS, visit: <http://med.fsu.edu/?page=honorsMedicalScholars.home>

### ***Bridge to Clinical Medicine at Florida State University***

The mission of the Bridge to Clinical Medicine major of the Biomedical Sciences Master of Science degree program is to provide a transition year to medical school for underrepresented minority and rural students who have a high likelihood of meeting the mission of the FSU College of Medicine and of practicing primary care medicine in medically underserved communities. Highlights of the program include:

- A retention rate of 94.1% for the program, with 73.9% of its graduates entering primary care medicine.
- 56% of the participants were part of the FSU College of Medicine Outreach Program prior to entering the Bridge Program.

More information on the Bridge to Clinical Medicine can be found at:

<http://med.fsu.edu/?page=AdvisingOutreach.masters>

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***Medical Scholars Program collaborative between Florida Atlantic University and Florida Agricultural and Mechanical University: Enhancing Medicine through Diversity.***

The Florida Atlantic University Charles E. Schmidt College of Medicine (FAU COM) has a special agreement with Florida Agricultural and Mechanical University (FAMU), the oldest and largest historically Black university in the State of Florida, located in Tallahassee, Florida. Some highlights of the program include:

- The goal of attracting and enrolling outstanding high school seniors who have made early and informed decisions to become physicians. Admission to the FAMU MSP carries with it a conditional acceptance to the FAU COM.
- Begun in 2013 with four students, this innovative 4-year curriculum aims to prepare FAMU undergraduates to be highly competitive and successful in medical school and beyond.
- FAMU and FAU COM faculty deliver curriculum and mentor MSP students throughout their undergraduate careers at FAMU.
- No more than 10 students are expected to enter the FAU COM each year through the MSP and become part of the total class of 64 students. The small size of this cohort in the inaugural year of this program was intended to ensure appropriate academic and personal support for each student, while promoting COM's ability to deliver its innovative MSP curriculum.
- The first students admitted to the MSP are expected to matriculate to the FAU COM in 2017.

For more information on the FAMU/FAU MSP, visit:

<http://www.famu.edu/index.cfm?medicalsolarsprogram>

***Summer Science Training and Research (STAR) at Florida International University***

This program was launched in 2011 and is designed to provide an opportunity for college students to participate in an 8-week residential training program at FIU. The program offers:

- Partnership with Xavier University (an HBCU) designed to provide clinical research and enrichment experience. The program strives to enhance students' opportunity for success through observation of select medical school classes, lab experience, shadowing of physicians, and the presentation of research.
- Introduction to the concepts of health disparities, principles of clinical medicine, methods of public health research and interventions, and specific techniques for working with diverse populations in community settings.
- Weekly one-day sessions with the NHELP outreach team for special focus on the social determinants of health for at-risk populations in and around Miami-Dade.

(no current information on FIU's Summer Science Training and Research program is readily available online)

### ***Doctors of Tomorrow (DOT) Program at Florida International University***

This is a 1-week residential program for Florida residents who have completed their sophomore year in a pre-medical program at a college in Florida. Begun in 2011, the program had 12 participants in 2012. The program aims to introduce concepts of health disparities, principles of clinical medicine, methods of public health research, and interventions and special techniques for working with diverse populations in community settings. Participants must be minorities underrepresented in medicine or first-generation in college; applicants are nominated by their pre-health advisor. Program activities are designed to:

- Enrich students' knowledge of health careers.
- Develop communication skills.
- Guide students in making decisions that will best prepare them for their career choices.

More information on DOT can be found at: <https://dot.medicine.fiu.edu/>