



PARTNERS IN SERVICE:
UMass Medical School and the Community





MESSAGE FROM MICHAEL F. COLLINS, MD

It was a privilege to represent the University of Massachusetts Medical School as a co-sponsor of Worcester's Martin Luther King Jr. Community Breakfast in January. The breakfast, highlighting the life and legacy of Dr. King, served as a powerful reminder to all of us in attendance to carry on with his unfinished work and to live "A Day On, Not a Day Off," which was the theme of this year's breakfast. Such a message is especially significant to our Medical School as it is central to our work and our mission.

Since joining UMass Medical School in the summer of 2007, I have observed frequently Dr. King's message in action throughout our university community. Our students, faculty and staff work diligently at learning, teaching and contributing to our institution's success, and while doing so, they proudly fulfill our mission of service to our community. This mission is ingrained in the culture of the Commonwealth of Massachusetts' public medical school. Indeed, there is never a day off when it comes to ensuring health and enhancing education for underserved individuals, families and children. This publication highlights only a few of the initiatives UMass Medical School undertakes in a tradition of service that began in earnest when our doors opened for the first time more than three decades ago.

We understand completely that only through meaningful and sustained engagement with advocates and experts in our Central Massachusetts neighborhoods, can we accomplish our institutional mission. Therefore, this publication is offered to you, our friends and partners in the communities we serve, to acknowledge all that you contribute to health, well-being and quality of life. It's never a day off for you, either, and we salute you and thank you.

Michael F. Collins, MD

Interim Chancellor, University of Massachusetts Medical School

Senior Vice President for the Health Sciences, University of Massachusetts

ABOUT *PARTNERS IN SERVICE*



The University of Massachusetts Medical School and its many partners provide numerous and varied outreach initiatives, represented in these spotlighted programs.

Infant Mortality Reduction | *page 5*

UMass Medical School faculty are founding members of the Worcester Infant Mortality Reduction Task Force, and with community partners, are responding to the City's higher than average infant mortality rate. Medical and nursing students are exploring solutions too.

Newborn Screening | *page 6*

The New England Newborn Screening program provides unique, optimized analysis of newborn blood samples by creating a profile that more definitively indicates a disorder or disease for treatment.

Foster Child Health Care | *page 7*

FaCES—the Foster Children Evaluation Services program—promotes consistent and streamlined health care for foster children through timely health screenings, comprehensive exams and uniformity in health care delivery.

Oral Health Care and Access | *page 9*

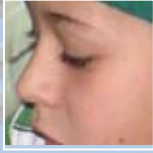
UMass Medical School's comprehensive endeavor offers academic, clinical and community programs to provide oral health care and improve access to preventive care for underserved people.

Injury-Free Coalition for Kids | *page 10*

The Coalition's Goods for Guns buyback program with the City of Worcester and local retailers raises community awareness about gun violence and gives incentives to get guns off the streets, out of homes and away from children.

At-Home Care for Children | *page 11*

Community Case Management assists families with medically fragile children in coordinating medical services, providers and equipment, providing streamlined and cost-effective services and helping parents simply be parents.



Latino Community Partnerships | *page 13*

Health, educational and professional opportunities offered by UMass Medical School and its partners respond to the needs of this vital yet often underserved population.

Student Volunteerism | *page 14*

Students initiate service projects that bring real change to the community's health and well-being as they prepare for their futures as physicians, nurses and scientists.

Teacher Development | *page 15*

The Regional Science Resource Center provides teacher network and professional development programs as part of its commitment to assisting school districts in their delivery of K-12 math, technology, engineering and science education.

Cultural Immersion Medical Education | *page 17*

Students in the International Medical Education Program span the globe to develop their cross-cultural and language skills so they may practice medicine more effectively in Massachusetts for foreign-born populations.

Career Success in Science and Health | *page 19*

Worcester Pipeline Collaborative helps to prepare, educate and train minority and economically disadvantaged students for careers in health care and science.

Vaccine Research and Development | *page 20*

Massachusetts Biologic Laboratories improves public health through creation of vaccines to combat infectious disease in the state, the nation and now, the world.



UMass Medical School faculty are founding members of the Worcester Infant Mortality Reduction Task Force, comprising clinicians, state and city public health departments, social service agencies, and community members and groups to respond to Worcester's higher than average infant mortality rate.

The Task Force's research has found that infants at highest risk of death in Worcester are born to women who emigrated from West African countries such as Ghana and Liberia.

An interdisciplinary team of medical and nursing students studied Worcester's Ghanaian immigrant families to develop plans for action in partnership with the Task Force.

One such initiative is a series of public service announcements to educate the public about risk factors for infant mortality and what individuals can do to reduce those risks.

INFANT MORTALITY REDUCTION

The Infant Mortality Rate (IMR), defined as the rate at which infants do not survive their first year of life, is monitored and compared throughout the world as a critical indicator of the health of populations. Although the differences are very small, Worcester has had a persistently higher IMR than Massachusetts and the United States overall.

The puzzle of why so many babies are not surviving in a city that has superb prenatal and newborn care galvanized a group of community leaders, including faculty and clinicians from UMass Medical School and UMass Memorial Health Care, to work together in search of causes and solutions; in the mid-1990s they established the Worcester Infant Mortality Reduction Task Force. Members looked at the known risk factors for infant mortality, such as mothers being smokers, teenagers or unmarried, and were taken aback when it was discovered that these risk factors did not apply to the population of women whose babies were dying. Rather, the Task Force determined that many of these babies had been born to immigrant women from Western Africa, predominantly Ghana.

This finding caught the attention of Rosemary Theroux, RNC, PhD, assistant professor in the Graduate School of Nursing, who saw the IMR issue as an opportunity for study by her Community Health Clerkship group (pictured left with Dr. Theroux). UMass Medical School is currently the only medical school in the nation that requires first-year medical students to

study health problems of populations traditionally neglected in medical education by spending a two-week clerkship in local communities; Dr. Theroux's group was the first to include nursing students.

The group found that, rather than the usual risk factors associated with infant mortality, Ghanaian infant deaths can be traced to indigenous cultural outlooks and practices, such as not considering pregnancy a medical condition and, therefore, not seeking prenatal care. The students noted that physicians can make improvements in communication with patients by acknowledging and encouraging the need for an interpreter; adjusting the patient interview to account for culturally sensitive topics such as sexual history and mental health; and conferring with community case managers. Community outreach to African women, through trusted entities such as churches, is also effective in persuading them to seek prenatal care in earlier stages of pregnancy than is customary in their culture.

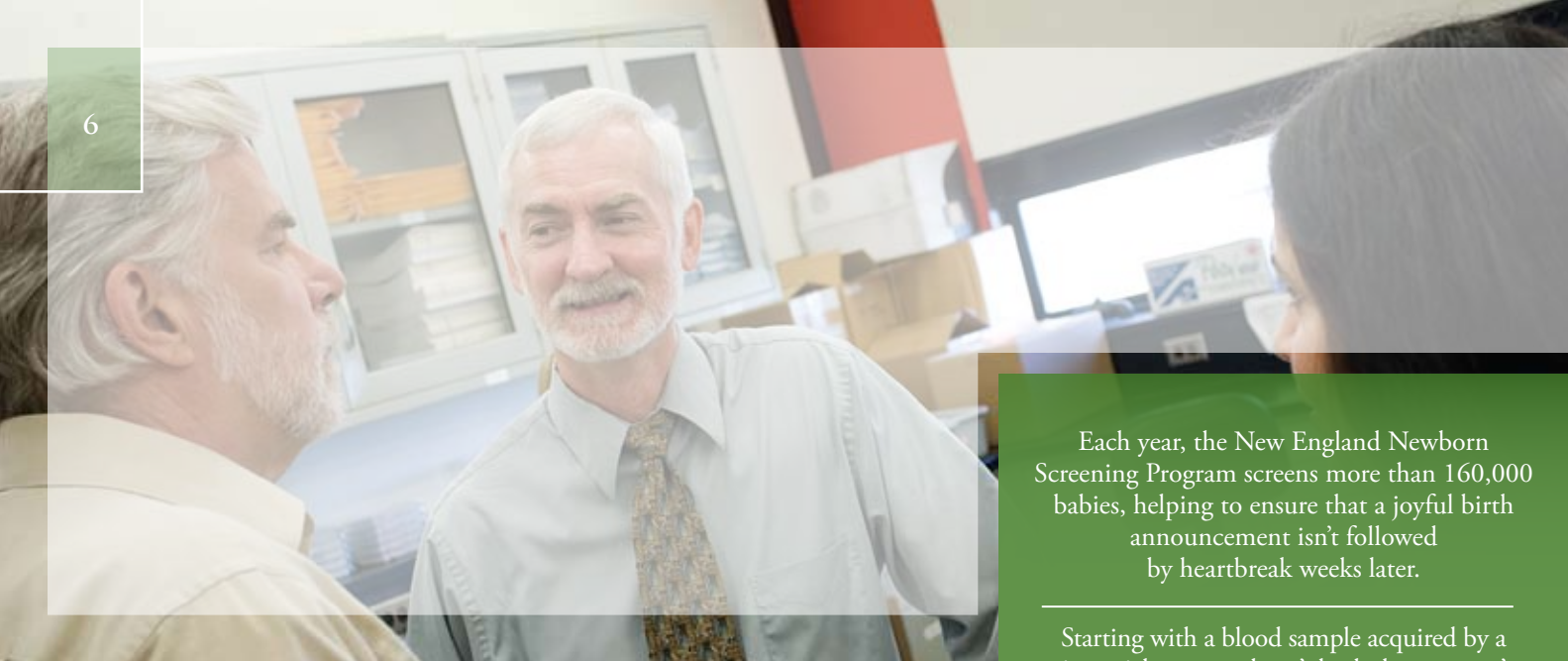
Theroux encouraged the students to present their findings to the Infant Mortality Reduction Task Force. Their

presentation validated one of the Task Force's key objectives, according to its chair, Marianne E. Felice, MD, professor and chair of pediatrics at the Medical School. "To reduce infant mortality, doctors, nurses and caregivers must be culturally respectful to help encourage women to seek prenatal care."

ONLINE:

<http://www.umassmed.edu/pap/Newsletters/2007/Newsletters.aspx>
(April)

“To reduce infant mortality, doctors, nurses and caregivers must be culturally respectful to help encourage women to seek prenatal care.”



NEWBORN SCREENING

Massachusetts law requires that all newborns in the state be screened for 10 treatable disorders or conditions within 24 to 72 hours of birth. In addition, Massachusetts offers screening for 20 more conditions. The New England Newborn Screening program optimizes its analysis of samples by creating a profile that more definitively indicates the presence of a specific disorder or disease. This analysis and the subsequent profile are unique in the realm of newborn screening.

One example shows the method's effectiveness. A newborn at a Boston hospital was exhibiting mild symptoms that were attributed to low birth weight. Within 24 hours of receiving this newborn's sample, the program performed the analysis, created the profile and notified the hospital that the baby almost certainly had a serious metabolic disorder that could lead to severe developmental delays, and even death, if not treated quickly. As a result of the screening, the baby's treatment course was immediately adjusted. At a five-month follow up, the baby was doing well. Earlier practices might have narrowed the disorder to one of five, but this new protocol pointed to a specific disorder, enabling the appropriate clinical care sooner.

Even though all Massachusetts hospitals have procedures for mandatory screening, infants are sometimes transferred to new units or hospitals soon after birth and occasionally, some newborns are released without having been screened. In response, the program developed a method for comparing the state's electronic birth

certificates against the samples they receive to catch any missed screenings. In the last six months of 2006, the program identified 18 babies who had not been screened. "We're among a handful of states taking this comprehensive public health approach to newborn screening," said the program's director, Roger Eaton, PhD (pictured above).

The program also excels in research to improve the field of newborn screening. A recent discovery showed that an increasing number of newborns who screen positive for a cystic fibrosis gene mutation once considered to be benign for respiratory symptoms were in fact having respiratory problems in childhood. This finding could lead to more aggressive evaluation of babies identified with this type of CF and encourage other programs to screen for the mutation.

ONLINE:
New England Newborn Screening Program
www.umassmed.edu/nbs

Each year, the New England Newborn Screening Program screens more than 160,000 babies, helping to ensure that a joyful birth announcement isn't followed by heartbreak weeks later.

Starting with a blood sample acquired by a tiny prick to a newborn's heel, the program's technicians screen for certain medical conditions, aiding early detection and intervention to prevent death, mental retardation and other serious health problems.

Established in 1962, the program became part of UMass Medical School in 1997, immediately enhancing the program's mission of research, quality control and sample analysis.

New England Newborn Screening has grown to serve six New England states and parts of Mexico and is broadening its reach to developing countries such as Guatemala and El Salvador.

“We’re among a handful of states taking this comprehensive public health approach to newborn screening.”

The FaCES program set out to resolve the lack of timely health screenings and comprehensive exams for children in foster care and to improve communication among health care providers, the Department of Social Services and foster families.

FaCES also tackled the need for uniformity in health care delivery and provider understanding of the unique medical and developmental issues facing foster children.

In its February 2007 evaluation of the FaCES program, the UMass Center for Adoption Research found that the goals set at the program's inception had been achieved by 2005.

FaCES patients received health care more consistently and in a more timely fashion than other children in foster care, medications were corrected, immunizations updated and 92 percent of all referral appointments were completed.

“When I first looked at this, it made me wonder why we couldn't develop a system that met the needs of these kids and made sure that, at the very minimum, we started their health care in foster care the right way,” said Linda D. Sagor, MD, MPH, associate professor of pediatrics at UMass Medical School (pictured above with a pediatric patient) and director of the Division of General Pediatrics at UMass Memorial Medical Center.

As chair of the Foster Care Committee for the Massachusetts Chapter of the American Academy of Pediatrics, Dr. Sagor met with many concerned individuals in the Worcester community. Their commitment, coupled with philanthropic and logistical support from local agencies, corporations, health care organizations

and the Medical School's Office of Community Programs, produced the Foster Children Evaluation Services (FaCES) program, now in its fourth year and directed by Sagor, who also serves on the Academy's National Task Force on Foster Care.

A collaboration of the Department of Pediatrics, the Office of Community Programs and the Central Region of DSS, FaCES provides foster children up to age 12 with a repository to house their medical records, as well as a clinic for evaluations and screenings that promote consistent and streamlined health care. All children under age three are referred to the UMass Memorial Children's Medical Center Early Intervention and Family Support Program. Children over three are referred for mental health and dental evaluation and treatment.

Laboratory evaluations are also completed and immunizations updated as needed.


The FaCES clinic also provides a re-screening visit to children already in the Worcester DSS system when they move to a new foster home after a comprehensive medical assessment is completed. This visit ensures that no adverse treatment occurred in the prior foster home and evaluates any acute illness, updates medications and identifies the community health care provider to promote continuity of care. Sagor noted that discussions are currently underway concerning potential replication of the FaCES program throughout the state.

ONLINE:
FaCES

www.umassmed.edu/ocp/faces

FOSTER CHILD HEALTH CARE

The state's Department of Social Services (DSS) requires that every child entering foster care have a medical exam within seven days of entering a new home and a full evaluation within 30 days. A November 2003 DSS audit documented, however, that these objectives were not being met. Auditors found that only 25 percent of children received a visit within 30 days after a first home removal, and that the number decreased to 11 percent after a second home removal.



An estimated 125,000 people in Central Massachusetts have no access to dental care, undermining their overall health.

UMass Medical School responds with academic, clinical and community programs to improve access and promote preventive care.

The school's dental residency program, one of the few in the country where dental education is integrated into the medical school curriculum—trains practitioners at long-standing and well-established community health centers in Worcester: Family Health Center and Great Brook Valley Health Center.

Since 2003, a grant-funded program has placed 34 dentists in 18 community health centers throughout Massachusetts.

ORAL HEALTH CARE AND ACCESS

When the discussion turns to oral health and access to dental care in Massachusetts, public health officials, physicians and dentists are quick to describe the situation with one word: crisis. It is a crisis affecting low-income, disabled and elderly populations, where Medicaid cuts and a sagging economy have left more than two million state residents without coverage. In Central Massachusetts alone, the few clinics that offer free or subsidized oral health care are swamped, with thousands on waiting lists for treatment.

Given the magnitude of the crisis, UMass Medical School initiated a multifaceted effort, involving academic, clinical and community programs, to provide oral health care for those with acute needs and to work at restructuring the care delivery system to improve access and promote preventive care.

“Oral health is a key to maintaining good health, and traditionally, medical schools haven’t paid a lot of attention to them,” said Daniel H. Lasser, MD, MPH, professor and chair of family medicine & community health. On the academic front, Dr. Lasser’s department established a program in oral health in 2003, with oral health education integrated into its teaching programs.

“A major problem we face in oral health is that physicians often think the area between the lips and the tonsils is off-limits. So teaching our medical students how to deal with things in the mouth and to make the appropriate referrals for treatment is very important,” Dr. Lasser said. In addition, a dental residency

program was designed by the Medical School’s Office of Community Programs and established with the state’s leading dental universities through funding from the W.K. Kellogg Foundation and the Health Foundation of Central Massachusetts. In 2008, six residents are expected to enroll in the General Practice Residency in Dentistry of the Department of Family Medicine & Community Health, increasing participation three-fold since the first year of the program.

At the community level, the issue is access to care by underserved and medically compromised patients. That’s where the dental residency program and a loan repayment program is beneficial, providing a training ground for dentists with a community health component. A loan repayment program encourages dentists to work part-time in a public setting, such as a community health center, while simultaneously pursuing private practice opportunities, according to Mick Huppert, MPH, whose Office of Community Programs created the

program five years ago.

In the program’s first year, participating dentists increased the volume of dental services delivered at community health centers while maintaining high quality standards in the community. Based on data collected from the community health centers, the seven dentists saw 5,286 patients and delivered approximately 13,374 procedures. In 2004, the program expanded loan repayment to hygienists and now supports dentists working full time in community health settings.

ONLINE:

Office of Community Programs
Oral Health Initiatives
www.umassmed.edu/ocp/dts

“Oral health is a key to maintaining good health... teaching our medical students how to deal with things in the mouth and to make appropriate referrals for treatment is very important.”

In 2001 UMass Medical School and UMass Memorial Children's Medical Center were selected by the Robert Wood Johnson Foundation to join the Injury Free Coalition for Kids, a nationwide organization aimed at reducing the number and severity of childhood injuries.

For the sixth straight year, the Coalition in Worcester has teamed up with the Worcester Police Department and local retailers to get guns off the streets and out of homes with the Goods for Guns buyback program.

More than 1,490 guns have been turned in since the program's start in 2002; in return, approximately \$70,000 in store vouchers has been distributed.

The annual average cost of the Goods for Guns program is dwarfed by the cost of caring for just a single gunshot wound victim.

When Professor of Surgery and Pediatrics Michael P. Hirsh, MD, joined UMass Medical School and UMass Memorial in 2002, the pediatric trauma surgeon set out to establish an Injury Free Coalition for Kids in the Worcester area that would provide educational awareness programs designed to keep kids safe. The subsequent funding from the Robert Wood Johnson Foundation has helped the Medical School and UMass Memorial educate parents and caregivers about health hazards and dangers in the community.

program. The two-day annual drive gives the public an opportunity to turn in operable firearms in exchange for a gift certificate. The program has recovered an average of 255 guns per year since its inception.

"This is a proactive approach to get guns off the street before they can get into the hands of bad people or people who are going to cause an accident and hurt someone," said Worcester District Attorney Joseph D. Early Jr.

"Goods for Guns offers us tremendous

value in raising community awareness about gun violence," said Mariann M. Manno, MD, clinical associate professor of pediatrics and emergency medicine and Injury Free Coalition for Kids co-principal investigator along with Dr. Hirsh. (Dr. Manno is pictured above.) "It and other Injury Free Coalition programs give us endless opportunities to teach patients and the public about risky behaviors and ways to prevent injury." Implemented in collaboration with a broad array of city and state agencies, additional Injury Free Coalition for Kids programs include bicycle helmet safety education and car seat checks.

ONLINE:

Injury Free Coalition for Kids of Worcester
www.umassmemorial.org/MedicalCenterIP.cfm?id=2058

INJURY-FREE COALITION FOR KIDS

Injury is the leading cause of childhood death and hospitalization in the United States. Each year in Worcester alone, hundreds of children under age 19 are injured seriously enough to require medical treatment.

Driven by one particularly grim statistic—that a gun in the home is 22 times more likely to kill a family member or friend than to kill an intruder—a highlight of Worcester's Injury Free Coalition for Kids is the Goods for Guns buyback

"Goods for Guns offers us tremendous value in raising community awareness about gun violence."

Throughout Massachusetts, families with medically fragile children struggle to care for them at home. The state asked UMass Medical School to pilot a program to respond called Community Case Management (CCM).

CCM is the single point of contact for families, providing coordination of medical services, benefits and equipment. Emergency room visits and hospitalizations of these children have been reduced as a result.

CCM professionals understand the latest equipment, techniques and coverage available to medically complex cases. Their efficiency brings cost savings to Massachusetts—more than \$5 million each year when third-party payments are applied before MassHealth.

CCM was initiated in 2003 through a pilot program with MassHealth; the pilot was in response to a shortage of visiting pediatric nurses that resulted in children being treated in intensive care units rather than at home. An immediate success, CCM became a full-fledged program in 2006 that now serves almost 600 families.

Upon referral, each family is visited by a CCM nurse case manager authorized to approve and coordinate MassHealth services. The case manager assesses the family situation, home environment, medical and other care needs and private insurance availability, then approves services in consultation with a pediatrician, pharmacist, social worker, and physical, occupational, respiratory and speech therapists.

Renee Reitano's daughter was diagnosed with metachromatic leukodystrophy at age three. "One of the greatest benefits of CCM is that it has made our family organized, which is so crucial with a child with a horrendous disease. It's physically impossible to do it all," said Reitano (pictured with her daughter in background above). "Having someone here with us, I've been able to start a foundation to help eradicate the disease."

With this sort of medical intervention—and innovation—many chronically ill children are living longer, and larger numbers of critically ill premature infants are surviving, according to CCM Medical Director Julie Meyers, MD, assistant professor of pediatrics at UMass Medical School. CCM's Nurse Liaison program brings nurses to neonatal

intensive care units to help medically complex newborns make the transition from hospital to home, while two CCM nurse case managers specialize in transitioning older adolescents to adult service programs.

"Families are incredibly pleased to have one person who knows their child well. With CCM, the family doesn't have to coordinate care; they can just love and care for their medically fragile child," said Dr. Meyers. "We help parents be parents."

ONLINE:
Community Case Management
www.umassmed.edu/commed/clinical/community_case_mgmt.aspx

AT-HOME CARE FOR CHILDREN

Coordinating care providers, services and supplies for children with complex, chronic medical problems creates challenges for parents equal to those of the care itself. And state agencies that try to help often face the related issue of cost-effectively providing these families with high quality long-term care services from many providers. Community Case Management (CCM), a partnership of UMass Medical School's Commonwealth Medicine division and MassHealth, the state's public health insurance program, creates a single point of entry for services to these families.





UMass Medical School is a leader in improving access to health care resources and human services for the commonwealth's Latino population.

The Worcester Latino Coalition and other initiatives respond to the unique health care and related educational and professional development needs of this growing population.

Health care education programs established for members of the Latino community include medical interpreter training and a college credit program for community health workers.

Federally funded Medical School clinical trials target the high incidence of diabetes among Latinos with community-based weight control, nutrition and exercise programs.

LATINO COMMUNITY PARTNERSHIPS

Massachusetts is home to a half-million Latinos, a vital community that is concerned with the increase in the rate of diabetes among its members, limited access to health care, and educational and professional opportunities that lag behind those available to non-Latino groups. For 20 years UMass Medical School has taken a leading role in creating partnerships with Latino advocates, community organizations and higher education institutions to address these quality-of-life issues.

In 1989 the Office of Community Programs established the Worcester Latino Coalition in response to the local Latino population's underserved health care needs. In one of its first successes, members identified access to health services as a critical issue and noted that language was one of the greatest barriers to service. The coalition brought together the city's largest health care institutions to discuss the importance of developing interpreter services at all local hospitals, and the Worcester citywide interpreter service dispatch system, "Language Link," was born. The coalition also created the Latino Health Advocacy Program, an easily accessible information and resource referral service.

The coalition further addresses Latino health care needs through education and workforce development. The Health Scholarship Fund at the Greater Worcester Community Foundation was established to provide scholarships for Latinos pursuing college degrees, and in 1999 the Next Step Initiative created an educational collaborative between the Office of Community Programs, Quinsigamond Community College, Worcester State College,

and the University Without Walls/UMass-Amherst. The program facilitates professional development among Latino health care workers who don't have the college degrees needed to advance in their careers, enabling them to use prior work experience toward college credits, as well as take courses, to obtain the necessary credentials.

To address the rising incidence of diabetes among the Latino population of Lawrence, Massachusetts, UMass Medical School and the Greater Lawrence Family Health Center launched an ambitious clinical trial to test a program that researchers hope will help reverse the trend. The Lawrence Latino Diabetes Prevention Project, (now called REACH 2010 Latino Health) brings together an array of community groups including the Lawrence Council on Aging/Senior Center and the YWCA of Greater Lawrence to offer healthy cooking classes, exercise classes, strategies for food shopping and choosing the right foods while dining out.

"This is an excellent partnership between academic researchers and the community," said Trinidad Tellez, MD, assistant professor of family medicine &

community health at the Medical School (pictured left). "The burden of diabetes in Lawrence is high and there are a lot of challenges delivering this intervention. We believe that if we can prevent diabetes here, anybody should be able to do it anywhere."

In addition to educational sessions about diabetes, the risk factors that lead to the disease and its consequences if left unchecked, the program also helps people deal with psychological and social issues that play a pivotal role in a person's ability to change behaviors. All sessions are presented by a team of bilingual nutritionists, and supportive materials are available in English and Spanish.

ONLINE:

Greater Lawrence Family Health Center
<http://www.glfhc.org>

Massachusetts Area Health
Education Centers

www.umassmed.edu/ahec/centers

"The burden of diabetes in Lawrence is high and there are a lot of challenges delivering this intervention. We believe that if we can prevent diabetes here, anybody should be able to do it anywhere."

Students of the three schools that comprise UMass Medical School—future physicians, researchers and advanced practice nurses—consider their volunteer efforts as important as their academic pursuits.

Students are on the scene at free clinics, homeless shelters, in middle and high school classrooms. They organize blood drives, read to pediatric patients, assemble quilts for orphanages, and teach young people about the perils of HIV and AIDS.

Community service projects are undertaken to bring value to students' educations—they gain knowledge as they give their time to issues affecting children.

One initiative, the Center for Healthy Kids, has spurred the development of an optional enrichment course by and for first- and second-year medical students.

"We've received very good feedback from the children involved, the medical students who have volunteered and the parents with whom we've interacted. We're working to further improve parental involvement," said Sarah Teasdale, Class of 2008. "We're in our second year of operation and developing ways we can evaluate our work."

Teasdale and second-year medical student Michelle St. Fleur, the center's current program director (pictured above), and others are taking steps to establish an optional enrichment elective based on students' experiences at the center. Students are known for their active involvement in the development and enhancement of the medical school curriculum, and these optional enrichment electives are often established by students to explore in depth an area of

study that has piqued their professional and personal interests or to elaborate on a subject they've learned about through the regular curriculum.

There are other benefits as well. "By making the Center for Healthy Kids a course, we will add a structure to the program and be able to provide more year-to-year continuity," said Teasdale. Faculty mentors will monitor the students' work at the center, and the elective's curriculum will allow each student participant to create an advocacy project based on their experiences there.

Advocacy truly underscores student volunteerism at the Medical School, and accomplishments of the Fighting Obesity Legacy Project in 2007 emphasized the objective to improve health for underserved groups often stymied by issues of access. Student efforts included

assistance for overweight individuals to overcome barriers of language, self-confidence and lack of familiarity when it comes to exercise programs, as well as the construction of an outdoor exercise park with track and fitness stations.

ONLINE:

Student organizations
www.umassmed.edu/studentaffairs/organizations/studentorgs.aspx

STUDENT VOLUNTEERISM

The Center for Healthy Kids provides programs for children living at Worcester's Great Brook Valley public housing facility that focus on nutrition, fitness and making choices that lead to a healthy lifestyle. The center brings more than 50 kids in contact with UMass Medical School students who enhance their teaching, coaching and leadership abilities as they participate in nutrition classes, yoga instruction, and reading and tutoring programs with their young charges.



The Regional Science Resource Center (RSRC) at UMass Medical School and its education, business and non-profit partners help 138 state school districts enhance K-12 math and science education.

More than a third of these districts use three of the five RSRC programs—teacher networks, professional development, math and science library, student lab and *Science To Go!*—with networks and professional development the most popular.

Since 2004, 84 teachers have been trained to incorporate the scientific inquiry process into their existing curricula through a course developed and supported by the RSRC and its partners.

Teachers pass along their enhanced scientific knowledge to their students—40 percent of the 2007 Massachusetts Middle School Science and Engineering Fair top finishers came from schools served by the RSRC.

The RSRC houses a fully equipped laboratory where teachers and their students can “do science” in an applied way; in some cases, this will be their only opportunity for hands-on science because of the limited resources at their own schools. Lab experiments at the RSRC cover a range of topics—some of the most popular include isolating DNA in an onion, solving a crime using DNA fingerprinting and using gel electrophoresis to discover whether a subject is carrying the gene for cystic fibrosis. The lab also offers Advanced Placement molecular biology experiments.

For students and teachers alike, science comes to life as they develop basic biotechnology skills and become familiar with the research process. “The Science Resource Center has allowed my students to do some molecular genetics labs which

otherwise can’t be completed because of lack of funding for equipment and chemicals,” said Tahanto Regional High School teacher Alice Apostolou.

Another RSRC offering is *Science To Go!*, which saves money for school districts and the time of teachers and curriculum coordinators. By purchasing materials in bulk and prepackaging them for classroom use, *Science To Go!* helps school districts easily and successfully use standards-based science materials developed by the National Science Foundation. *Science To Go!* also replenishes consumable materials that elementary teachers use in their classroom to explore basic scientific concepts with younger students.

In February 2008, the RSRC received news of funding that will advance its teacher development efforts—the

TEACHER DEVELOPMENT

“In Worcester and across the region, teachers and administrators experience significant demands on their time,” said Sandra Mayrand, MBA, director of UMass Medical School’s Regional Science Resource Center (RSRC). “Professional development that is ongoing, focused on the practice of teaching and centered on the classroom is what we aim to provide.” Science curricula, characterized by extensive materials and detailed lesson plans, can be particularly intimidating for teachers, so RSRC professional development courses allow them to explore the units before presenting them to students.

Massachusetts Board of Higher Education awarded it \$500,000 from the Science, Technology, Engineering & Math (STEM) Pipeline Fund, designed to increase student interest and teacher preparation in STEM subjects. The Medical School will lead development of a communications plan to raise awareness of STEM careers among middle school teachers, students, parents and guidance counselors in Central Massachusetts. Partners include the Colleges of Worcester Consortium, EcoTarium, Fitchburg State College, Mount Wachusett Community College, Quinsigamond Community College, Worcester Polytechnic Institute, and school districts in Fitchburg, Lunenburg and Worcester.

ONLINE:
Regional Science Resource Center
www.umassmed.edu/rsrc





In 2004, 34 million immigrants lived in the United States; in Massachusetts, the foreign-born population has increased 34 percent since 1990.

The top four foreign-born groups in the state include individuals from Portugal, Brazil, Southeast Asia and Central America.

UMass Medical School's global health education initiative sends students to these countries and regions, as well as others, to ensure competency in their future medical practices among newcomer populations in Massachusetts.

One result of this initiative: 60 percent of the Class of 2006 learned a second language versus an average of 26 percent of medical students nationwide; students who were immersed in Spanish use it significantly more than classmates when they interact with patients.

CULTURAL IMMERSION MEDICAL EDUCATION

“My entire trip, I have carried with me all of my memories, preferences and knowledge from my past experiences and tried to make them understood in this foreign culture. Now I will return home and try to do the same in their lives. A large piece of their experience is in a place far away, unknown by the world they now inhabit. As their life in a new place develops, their former culture may become less visible, but it remains the foundation on which everything grows. This is the image I want to hold in my mind as I visit with those patients who tell me they have come from places far away.”

– Heather Binder, UMass Medical School Class of 2004

Dr. Binder traveled to Guatemala at the end of her first year of medical school through the International Education Program, directed by the Office of Medical Education at UMass Medical School. She recently graduated from her residency program in the Department of Family Medicine at Boston Medical Center, after spending much of her practice—and speaking Spanish—at the South Boston Community Health Center.

Dr. Binder’s experience is one that will be repeated by other UMMS students who choose to perform community service, language and cultural immersion, public health projects and clinical electives overseas, in order to improve their future medical practices at home in Massachusetts. Ninety-eight UMass Medical School students spanned the globe in the 2005-2006 academic year, an impressive number considering that the school’s mandate is to admit just 100 applicants each year as first-year medical students.

“Students learn language and cross-cultural skills they can use in a U.S. practice by experiencing cultures and

medical practices in their indigenous settings,” said International Medical Education Director Mick Godkin, PhD. Dr. Godkin notes that such immersion enhances students’ appreciation of primary care and public health, two areas in which the Medical School is a local and national leader.

A Pathway on Serving Multicultural Underserved Populations is the initiative’s cornerstone program. Students spend the summer following their first year in a foreign land. When they return, they must have a completed journal that will aid in a required presentation before faculty and peers; perform a community service project with a cross-cultural population in the Worcester area; and complete an assignment with a family representative of a newcomer group. In addition, students can enroll in a primary care clerkship at sites serving cross-cultural populations and complete international electives in their fourth year.

Godkin has recorded some striking results of students’ cultural immersion. “Cultural competence in Pathway students becomes significantly greater

than for non-Pathway students during medical school,” he noted. “Pathway students become more comfortable with patients of cultures different than their own and become more knowledgeable about health beliefs and health needs of other cultures.”

Of equal importance are the intangible attributes students gain through international medical education that emerge in subtle ways when they are doctors. Empathy is one such quality. The following is an excerpt from a student’s journal describing her fear of being a stranger in a new country:

“As fearful as I will be entering a clinic of a country like Honduras, so too will people of these countries have fear in visiting the huge, advanced hospitals of the U.S. This emotion, fear, will provide a bond between my patients and me and provide a common ground for understanding each other.”

ONLINE:
[International Medical Education Program
 www.umassmed.edu/intmeded](http://www.umassmed.edu/intmeded)

“Pathway students become more comfortable with patients of cultures different than their own and more knowledgeable about health beliefs and needs of other cultures.”

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Development for Science and Math Teachers

is a

The Worcester Pipeline Collaborative (WPC) helps prepare minority and economically disadvantaged students for success in the health care and science professions, where they are traditionally underrepresented.

Current WPC activities involve more than 6,000 K-12 students in eight Worcester elementary schools, a middle school and two high schools.

In a recent academic year, all high school seniors who participated in the WPC's After School Science program were accepted into two-year and four-year higher education institutions.

Based on a survey of participants of the High School Health Careers Program, 99 percent said they would recommend the program to others and all indicated that it increased their awareness of health careers and helped solidify their choice of a career in research or medicine.

CAREER SUCCESS IN SCIENCE AND HEALTH

A decade ago, as it continues to do so today, the health care job market in Worcester offered viable and exciting career opportunities. Yet, few Worcester public school students were pursuing post-secondary science education at UMass Medical School or other local colleges and universities, and those who did find employment in the health care field did so in low-paying, entry-level positions that offered little opportunity for career growth.

A partnership was forged between the Medical School and the Worcester Public Schools to reshape this reality. The resulting Worcester Pipeline Collaborative (WPC) is a national model of teamwork among many constituents to prepare, educate and train a health care workforce that reflects the community's diversity. The WPC is grounded in the belief that students from under-represented groups must gain the scientific and mathematic literacy necessary to thrive as members of the local work force, particularly in the health, science and biotechnology industries on the rise in the region.

Initiated with five-year Robert Wood Johnson Foundation matching funds for students enrolled in the North Quadrant of the Worcester Public Schools, the WPC has had a tremendous impact on students enrolled in its academic pathway programs, including the Health Science Academy at North High School and Worcester East Middle School and the Health Assistant Program at Worcester Vocational High School.

Teaching students to set high academic standards and expectations for themselves

is at the heart of the WPC's work. "It's so gratifying to introduce these students to real-world experiences in health care and science-related professions," said UMass Medical School's Robert Layne, MEd, the WPC's director (pictured left with Deborah Harmon Hines, PhD, WPC co-principal investigator). "Many of our economically or educationally disadvantaged participants appreciate the benefits of academic achievement more fully when provided the opportunity to job-shadow and intern, including the possibility of working after school, weekends or during the summer at host departments." Through the support of the Medical School and UMass Memorial Health Care partners in the WPC, who provide host sites that continually contribute to the success of the program's activities, many participants are graduating from high school and attending college with realistic health-related career goals.

WPC has expanded activities outside of the greater Worcester community, and many of its efforts have come to the attention of others. School administrators often seek advice for

creating partnerships with real depth and meaning for their districts. Initiatives such as the Graduate School of Nursing's Worcester Nursing Pipeline Consortium and the Carnegie Foundation-funded Small Learning Communities initiative, adopted by the Worcester Public Schools, were both modeled after the original "Pipeline" concept. Recently, the Association of American Medical Colleges (AAMC) invited the WPC to submit an article about health professions partnership initiatives; "Worcester Pipeline Collaborative: The First Decade," was published in *Academic Medicine*, the AAMC's flagship journal distributed to 126 accredited medical schools throughout the nation.

ONLINE:

Worcester Pipeline Collaborative
www.umassmed.edu/wpc

“It’s so gratifying to introduce these students to real-world experiences in health care and science-related professions.”

The Massachusetts Biologic Laboratories hold a remarkable place in the annals of public health. The labs introduced into general use vaccines to prevent smallpox, typhoid, diphtheria, pertussis and tetanus, saving millions of lives.

The scientist who developed the process used throughout the world for drawing blood to manufacture antibodies did much of his seminal work at MBL. The lab pioneered plasma products to protect infants and toddlers from infectious diseases.

In its latest effort to protect the lives of people here and around the globe, MBL has taken aim at rabies, a killer in the developing world, where 16 million people are exposed to rabid animals and some 60,000 die each year.

MBL and the Serum Institute of India will test and manufacture a new monoclonal antibody which neutralizes multiple strains of the rabies virus.

The only non-profit, public FDA-licensed manufacturer of vaccines and other biologic products in the United States, MBL produces tetanus vaccine, meeting 20 percent of the nation's total need. MBL also makes so-called "orphan" drugs intended for smaller populations suffering from rare diseases. Despite these products' importance to individuals and families around the state and country, commercial manufacturers are often reluctant to invest the resources required to market them; MBL, however, has developed or collaborated on five orphan products in the past 20 years. One of these, MBL's Cytomegalovirus Immune Globulin, was the first biologic product granted official "orphan drug status" by the FDA.

MBL's unique ability figured on the international scene in 2003 in response to

the outbreak of Severe Acute Respiratory Syndrome (SARS). Soon after the virus causing the quick-spreading disease was identified, the National Institutes of Health partnered with MBL to find a biologic product called a monoclonal antibody that could be effective against the SARS virus. That effort yielded results in just six months, producing a potential treatment for SARS.

In 2005, MBL opened its state-of-the-art vaccine manufacturing and filling facility in Mattapan; the facility sits on a section of the former Boston State Hospital property and helps spur economic development on and around the long-shuttered state hospital campus. Through this new facility, MBL will significantly expand its unique role in developing biologic products for both common and rare medical conditions. Both


aseptic filling and monoclonal antibody manufacturing are in short supply in the United States, and at the new Mattapan site, believed to be the largest public facility of its kind in the country, MBL will fill its own products as well as offer this limited resource for both private and public needs.

ONLINE:
[Massachusetts Biologic Laboratories
 www.umassmed.edu/massbiolabs](http://www.umassmed.edu/massbiolabs)

VACCINE RESEARCH AND DEVELOPMENT

The Massachusetts Biologic Laboratories (MBL) of UMass Medical School have their origins in a brick stable in Jamaica Plain, where workers once drew serum from horses to provide humans with inoculations against diphtheria. Today, in its singular focus to improve public health through applied research, development and production of biologic products, the labs continue to aggressively develop new ways of combating deadly infections.





UMass Medical School is the Commonwealth of Massachusetts' only public medical school, educating physicians, scientists and advanced practice nurses to heal, discover, teach and care, compassionately.

In addition to the programs and initiatives described in this publication, we join our clinical partner, UMass Memorial Health Care, in outreach efforts that involve thousands of health care professionals, faculty, students and employees in service.

A copy of the UMass Memorial Health Care annual Community Benefit Report, which details the organization's commitment to improving the health status of all those it serves and to addressing the health problems of the poor and other medically underserved populations, can be obtained by calling 508-334-7640.



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