

The evolution of the Department of Population Health Sciences

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Two score and 10 years ago, our fore-faculty brought forth upon the University of Wisconsin campus a new department. Conceived as prevention as opposed to intervention, it was dedicated to the proposition that “to avoid was better than to treat,” and it changed the way we look at health care. As we describe the evolution and revolution this department has wrought, it is good to reflect upon those whose accomplishments served as the cornerstone upon which this department was built. However, the story of the department extends back much further than its christening in 1959.

Sowing the Seeds

What would become the Department of Preventive Medicine began with a 1903 decision by the Wisconsin State Legislature to establish a “hygienic laboratory.”¹ The Legislature established the laboratory on the university campus to provide benefits from the university’s scientific capabilities and promote public health. The melding of science with public health paralleled the development of academic medical centers championed by Abraham Flexner and pioneered at Johns Hopkins University where the education of physicians would have a scientific foundation to build upon their clinical skills. Various individuals headed the laboratory until 1918, the year of the devastating Spanish flu pandemic, when Dean Charles Bardeen appointed W.D. Stovall, MD, as director, a post he held until 1958. In 1948, in the aftermath of World War II, the medical school recognized the efforts of Stovall and others by creating a new division within the Department of Medicine called Preventive Medicine. This new division was strongly linked not only to the laboratory but later to the Student Health Services. The Wisconsin State Laboratory of Hygiene (WSLH) building on Henry Mall was com-

pleted in 1953 with funds obtained by Dr Stovall from a federal grant. WSLH opened at about the same time that the Warren Grant Magnuson Clinical Center opened on the National Institutes of Health (NIH) campus in Bethesda, Maryland. Both facilities were designed to bring research laboratories into close proximity with hospital wards to promote productive collaboration between laboratory scientists and clinicians.

When Alfred S. Evans, MD, MPH, joined the medical faculty from Yale in 1952, he was assigned research space and resources by Dr Stovall in the WSLH building. Doctor Evans was trained in infectious diseases with particular interests in mononucleosis, hepatitis, and the evolving field of respiratory virology.

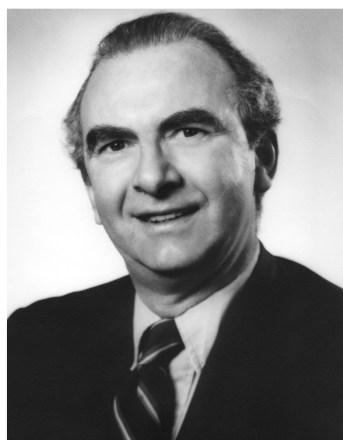
The Beginnings

Upon Dr Evans’ return to Madison in 1959 after a sabbatical leave, the newly constituted Department of Preventive Medicine was born and he was appointed to be the first chair as well as director of WSLH. He initially staffed the department by giving faculty status to several laboratory directors within WSLH. He also began recruiting new faculty with a research focus in microbiology. Given his interests and the expertise of the laboratory, the initial research focus of the department involved the epidemiology of infectious diseases. He subsequently developed a strong medical student teaching program, often with intriguing lecture titles (eg, “Sneezes, Wheezes and Other Diseases”). Courses in the medical curriculum, *Epidemiology of Infectious Diseases* and *Epidemiology of Chronic Diseases* in the second year became popular offerings. Between the second and third years, students carried out a survey of public health agencies in the community in which they were located.

Doctor Evans was among the first to develop and employ an effective computer program for a public health laboratory to assist in epidemiological studies. Through longitudinal observations and a collection of carefully documented stored serum specimens, he established the value of college student populations as well as other groups both in Wisconsin and as far away as the Philippines for descriptive, comparative, and serological epidemiologic studies.

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John Rankin, MD

John Rankin, MD, led the original Department of Preventive Medicine, taking the position of chair of the new department in 1968. As health care, research, and the needs of the department changed over time, the department's name was changed to the Department of Population Health Sciences in 2001 to better reflect the scope and breadth of the department's research and educational activities that went beyond prevention. F. Javier Nieto, MD, PhD, arrived in 2002 to chair this newly renamed department and has helped expand the breadth and scope of the department's activities even further.



F. Javier Nieto, MD, PhD

Photo Credit: Lulu Zhang

The Division of the Department and WSLH

In 1966, Dr Evans returned to Yale to become the director of the World Health Organization Regional Serum Reference Bank with a named professorship in the Department of Epidemiology and Public Health. Following his departure, the positions of WSLH director and chair of Preventive Medicine were separated. Although WSLH and Department of Preventive Medicine would become administratively and financially separate, they continue to have a strong affiliation; the director of WSLH has been a full-time faculty member of the Department of Preventive Medicine to this date. However, as units, they have had distinct trajectories.

WSLH 1966-2009

Stanley Inhorn, MD, who served as assistant laboratory director with Dr Evans for 6 years, became laboratory director after Evan's departure. Under Dr Inhorn, WSLH greatly expanded testing for infectious diseases, drugs of abuse, and environmental contaminants.¹ Newborn screening, prenatal screening, and screening for tuberculosis, hypertension, diabetes, and cervical cancer bolstered WSLH's role in preventing diseases in Wisconsin. Doctor Inhorn became chair of the Department of Pathology and Laboratory Medicine in 1978 and was succeeded as director of the WSLH by Ron Laessig, PhD, in 1980. Dr Laessig, a clinical chemist, expanded newborn screening to more than 40 conditions, and consolidated all environmental, occupational health, and forensic toxicology testing in a new 76,000-square-foot laboratory.² During Dr Laessig's tenure, WSLH established testing for HIV/AIDS, hantavirus and West Nile infections, SARS, and agents of biological and chemical terrorism. WSLH provided support for many high-profile epidemiologic investigations of toxic shock syndrome (1980), cryptosporidium (1993), monkeypox (2003), and contamination of Great Lakes

fisheries. Dr Laessig became an Emeritus Professor in Population Health Sciences upon his retirement in 2006, was succeeded by Charles Brokopp, MPH, DrPH, current WSLH director.

Department of Preventive Medicine 1966-2009

The recruitment that began in 1966 for the chair of the Department of Preventive Medicine culminated in 1968 with the appointment of John Rankin, MD, from his position as professor of medicine and head of the Pulmonary Disease Section in the Department of Medicine.

Doctor Rankin was a native of Glasgow, Scotland. His early publications in the 1950s produced the Rankin (or Glasgow) scale for stroke diagnosis and prognosis, which is still used in clinical trials throughout the world. Doctor Rankin's research interest at UW-Madison was in occupationally related pulmonary disease. With his colleague, Helen Dickie, MD, MACP, he provided the first description of farmer's lung as a hypersensitivity pneumonitis.

Doctor Rankin's vision for the Department of Preventive Medicine included interdisciplinary integration of biology, medicine, epidemiology, and health policy. He began development of a health services research/administration program that led to the initiation of a masters of arts (MA) degree program in Health Services Administration jointly with the Business School in 1972. This program also had tracks through which students in the Industrial Engineering Department and La Follette Institute for Public Policy (now called the La Follette School of Public Affairs) could develop a health administration emphasis.

In 1978, based on the recruitment of additional epidemiology and biostatistics faculty and their attendant research programs, a master of science (MS) degree pro-



Photo Credit: Bob Rashid

In the trace elements clean room, Wisconsin School of Medicine and Public Health scientists quantify a variety of metals and other elements to the parts per trillion level in clinical and environmental samples. Research conducted here includes analyzing urine samples for trace elements, such as cadmium, to assess environmental exposure and possible correlation to cancer, as well as analyzing 2000-year-old Celtic bones for exposure to lead and other metals as part of cystic fibrosis research.

gram in epidemiology was initiated. The program emphasized epidemiologic research methods and required a thesis for the degree. The students who achieved this degree were a motivated group who were served well by the program's limited size, research orientation, and academic rigor. Alumni of this program hold positions in academic institutions and national, state, and local health agencies. In 1979, as an outgrowth of the health services administration program, a residential MS degree program in Administrative Medicine for physicians and other clinician managers was initiated, organized, and directed by David Kindig, MD, PhD, and Jay Noren, MD, MPH. The program was later reorganized into an innovative, nonresidential, distance-learning format that enabled the training of mid-career clinicians nationwide. There are more than 250 alumni of this program throughout the United States, most occupying leadership positions in a variety of health care organizations.

Under Dr Rankin's leadership, the department grew to reflect his and the faculty's diverse interests. It soon included not only the "laboratorians" at WSLH but also pulmonary physiologists, occupational medicine physicians, health care administrators, and epidemiologists. Modern epidemiology and public health continued to be the common factors linking the department's varied interests. Doctor Rankin fostered strong links to the Wisconsin Department of Health and Family Services and Wisconsin Department of Natural Resources that

continue to this day. In addition, he and colleagues in the Department of Medicine undertook a series of studies of pulmonary disease in grain elevator and rubber industry workers.

During his almost 3 decades of service to UW-Madison, Dr Rankin was honored as a Rockefeller and Markle Scholar, awarded a Rennebohm Professorship in Medicine, and made an honorary member of the Royal College of Physicians. He was an extraordinary mentor to many young scientists and physicians in the department and at UW-Madison. A visiting professorship and travel award stipends in Dr Rankin's name have been awarded to research trainees annually since 1984.

Upon Dr Rankin's untimely death in 1981, Donn D'Alessio, MD, was appointed chair. Doctor D'Alessio had been vice-chair of the department, director of the epidemiology graduate program, and a member of the Infectious Disease Section of the Department of Medicine. Like Dr Rankin, he maintained his appointment and has remained an active clinician throughout his career. Doctor D'Alessio was trained in internal medicine and infectious diseases and spent 2 years in the Epidemic Intelligence Service at the Centers for Disease Control (now the Centers for Disease Control and Prevention) before coming to UW-Wisconsin.

With this change in leadership, the work in occupationally-related lung disease came to an end and the emphasis shifted to enlarging the faculty numbers in epidemiology, biostatistics, and health services research, and to focus research and training in those areas. The group of pulmonary physiologists who were brought to the department during Dr Rankin's tenure continued a strong research and training program in the control of breathing and sleep apnea. WSLH continued to provide faculty members and training opportunities to the department's students.

The mid-1980s saw a number of changes in the department's teaching programs. The department's course in the second year medical school curriculum was combined with 2 other courses to form a course focused on the preparation for medical practice. This change occurred concurrently with major changes in the department's graduate training program.

Although the department had 3 different master's programs, there was no formal doctoral (PhD) program. After a prolonged planning effort led by Dr D'Alessio and involving the entire faculty, a unique MS/PhD program was developed that combined core training in epidemiologic, biostatistical, and health services research methodology prior to students completing an emphasis in 1 of these areas. The proposal for this new integrated degree program was approved by the Graduate

School and an MS/PhD degree program in Population Health was initiated in March of 1997. The first cohort of 11 students entered the new graduate program in the fall of 1997. Between 1997 and 2000, the number of entering students fluctuated between 15 and 20 annually.

To launch the new degree program Dr D'Alessio prevailed on the medical school administration to geographically unify the departmental faculty who would be most directly involved in teaching and mentoring in the Population Health Graduate Program. In November 1998, the health services research and epidemiology/biostatistics groups were geographically united for the first time in 30 years in the Wisconsin Alumni Research Foundation (WARF) Building, which remains the department's home. By necessity, WSLH faculty remain separated to this day as do the Pulmonary Physiology group and 1 epidemiology research group that require wet laboratory space not available in the WARF Building.

During the 1980s and 1990s, the department continued active research programs and consistently ranked in the top of the school's departments in total extramural grant funds obtained as well as in extramural grant dollars per faculty member. In addition to individual research programs in the late '80s and early '90s, 4 NIH-funded population-based cohort studies were launched, studying low-birthweight infants (Mari Palta, PhD), sleep apnea (Terry Young, PhD) hearing (Karen Cruickshanks, PhD), and type 1 diabetes (Dr D'Alessio). These studies continue federally funded follow-up of these populations over the course of more than 20 years.

Doctor D'Alessio retired in 2000, ending 33 years at the university, 19 as chair. John Mullahy, PhD, served as interim chair of the department while a national search was conducted to find a permanent chair. During Dr Mullahy's tenure, the department officially changed its name to the Department of Population Health Sciences (DPHS) in July 2001.

As we entered the new millennium, Dean Philip Farrell, MD, PhD, and his initiative, set the medical school on a course for embracing the public health mission and transforming itself into a school of medicine and public health. Several faculty from the department worked closely with Dean Farrell on major public health efforts, including the development of plans for the Wisconsin Partnership Program (created from interest income on a \$300 million gift from Blue Cross Blue Shield), the creation of a new Master of Public Health Program, and changing the name of the medical school to the first School of Medicine and Public Health (SMPH) in the nation. The recruitment of a new departmental chair was part of the vision and planning for this eventuality.

F. Javier Nieto, MD, PhD, arrived in Madison as

the new department chair in January 2002, following a national search. A native of Spain with training in medicine and public health in Spain, Cuba, and the United States, Dr Nieto was on the faculty of the Department of Epidemiology at the Johns Hopkins Bloomberg School of Public Health at the time of his recruitment. He is a nationally and internationally known cardiovascular disease epidemiologist with significant research contributions involving emerging cardiovascular risk factors including chronic infections, psychosocial factors, and sleep disorders. Owing to the combination of his epidemiology expertise, public health background, training as a family physician, and experience in health care services organizations, Dr Nieto was uniquely poised to lead the multidisciplinary DPHS.

With Dr Nieto's arrival, a combination of meeting standing needs and the new chair's recruitment package initiated a wave of faculty hiring and new initiatives. A retreat held in the fall of 2002 led to priorities in hiring for areas of: infectious diseases, behavioral sciences, chronic disease epidemiology, health services research, health outcomes research, health economics, and health policy. As a result of new hires and retirements, as of June 2009, the department's faculty ranks changed dramatically from being mostly tenured professors to being comprised of 10 assistant professors, 3 associate professors, and 12 professors.

Research and Extramurally Funded Programs

Under Dr Nieto's leadership, the breadth and scope of research and extramurally funded programs have greatly expanded. Department faculty and staff were instrumental in the successful effort in 2007 to win an NIH Clinical & Translational Sciences Award (CTSA) worth more than \$40 million and the subsequent creation of the UW Institute for Clinical & Translational Research (UW-ICTR), with matching funds provided by the Wisconsin Partnership Program. Maureen Smith, MD, MPH, PhD, directs UW ICTR's Community-Academic Partnerships core, which aims to support collaborative, multidisciplinary research that solves problems in translating new and existing knowledge into improvements in clinical practice and community health ("Type 2" translational research). ICTR-CAP's infrastructure leverages and links a network of more than 10 organizations from across the UW and the State of Wisconsin. This multi-pronged approach, in which unique translational research resources and funding mechanisms are integrated with educational and community engagement activities, has been nationally recognized as a model for building and support-

ing translational research that engages communities and clinical practices. Doctor Smith also directs the Health Innovation Program, which supports innovative health services research focused on improvements in local and statewide health care delivery. The Health Innovation Program has been successful in engaging trainees, recruiting faculty, and supporting a diversity of projects. In addition to Dr Smith, Dr Nieto and D. Paul Moberg, PhD, also have leadership roles in ICTR programs as assistant directors for population-based research and evaluation, respectively.

Doctor Nieto led a team of faculty that successfully obtained a grant from the Wisconsin Partnership Program to plan for and then initiate the Survey of the Health of Wisconsin (SHOW), an annual statewide survey of the health of Wisconsin residents. Modeled after the National Health and Nutrition Examination Survey, SHOW was launched in June 2008 as the only such survey in the nation with a state focus. Because of its annual and modular character, SHOW is designed to serve as a core infrastructure for ancillary studies to be added; these could include the addition of exam components, community-specific studies (including the evaluation of community-wide interventions), and prospective follow-up studies.

In collaboration with the Medical College of Wisconsin, DPHS was 1 of the first wave recipients of a Vanguard Center for the National Children's Study located in Waukesha County (directed by Maureen Durkin, PhD, DrPH). The extremely successful long-term studies begun under Dr D'Alessio's leadership also continue to flourish. This includes Dr Palta's Newborn Lung Project and the type 1 diabetes study that is still underway (with Dr Palta replacing Dr D'Alessio as the primary investigator). Likewise, NIH funding for the Wisconsin Sleep cohort led by Dr Young and Paul Peppard, PhD, will help complete what will be the longest population-based cohort study of sleep disorders in the world. Dr Cruickshanks' sensory/aging research has expanded dramatically to include the Epidemiology of Hearing Loss Study in Beaver Dam, Wis., the Beaver Dam Offspring Study, and the EpiSense Audiometry Reading Center for the Hispanic Community Health Study, a multicenter national study of 16,000 Latinos.

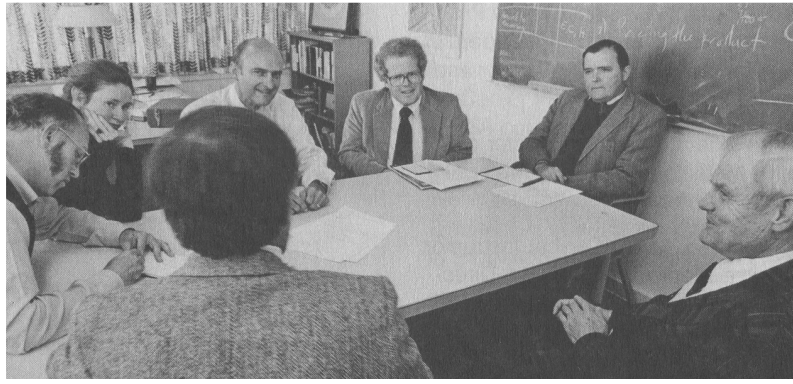
The department's recent hires provide us with even greater capability to meet the needs of the university, state, national and international communities. The 2006 recruitment of Jonathan Patz, MD, MPH, an internationally known researcher in global health, provides us not only with a more solid link with the Center for Global Environmental Health and an expanded capability for research and teaching in global health, but with a

window of visibility that transcends academia. Together with emerging research by our faculty in such areas as disease clusters and hospitalizations (Ronald Gangnon, PhD), community interventions (Ana Martinez-Donate, PhD), infectious disease epidemiology (Ajay Sethi, PhD, MHS), prostate and breast cancer (Halcyon Skinner, PhD, MPH and Amy Trentham-Dietz, PhD), hypertension epidemiology and treatment (Leonelo Bautista, MD, MPH, DrPH), caregiver and family initiatives (Whitney Witt, PhD, MPH), health economics (Thomas DeLeire, PhD, Dr Mullahy, and Bobbi Wolfe, PhD), health care professional practice change modeling (Dr Albanese), environmental contamination (Marty Kanarek, PhD, MPH), health policy (Thomas Oliver, PhD, MHA), genetic epidemiology (Corinne Engelman, MSPH, PhD), epidemiology of childhood disabilities (Dr Durkin) and translational research (Dr Smith); we have a strong foundation for the future.

Education

The nature of the graduate program has also evolved to reflect the growth of DPHS. In 2007, DPHS added a concentration in Clinical Research in addition to the existing concentrations in Epidemiology and Health Services Research. In 2008, Social and Behavioral Health Sciences was added as another concentration. At the beginning of Dr Nieto's leadership, the graduate program experienced rapid growth in student enrollment. As of the Summer of 2009, the program will have produced a total of 121 masters and 32 PhD graduates. Graduates of this program have assumed academic positions (professor and scientist positions) at universities such as Yale, Duke, Illinois, Michigan, Michigan State, Johns Hopkins, and Harvard. Others have gone on to become epidemiologists for the state of Wisconsin and the Centers for Disease Control and Prevention. Still other graduates work for profit and nonprofit corporations such as the American Cancer Society, the Mayo Clinic, Eli Lilly and Company, Merck and Company, the Moffitt Cancer Center, and the Center for Urban Population.

In 2004, a new interdisciplinary Master of Public Health (MPH) program was approved with Patrick Remington, MD, as founding director. Administratively, the MPH is housed in DPHS, but the 8 core and 50 program faculty come from across the campus, including the departments of Biostatistics and Medical Informatics, and Family and Community Medicine; schools of Nursing, Veterinary Medicine, and Pharmacy; and the Nelson and La Follette Institutes. The first class of 20 students matriculated in the fall of 2005. The program has steadily increased both in applicants and enrollment. As of the Spring of 2009,



Faculty in the Administrative Medicine Program circa 1980. Clockwise from far left: David Gustafson, Betty Chewning, Rockwell (Rocky) Shultz, then Dennis Fryback, John Bracken, Alton Johnson, and with his back to the camera, Jerry Sanders.

it has almost 70 students enrolled and 50 graduates. In June 2009, the MPH received national accreditation by the Council on Education for Public Health.

Thanks to collaboration with the emergent UW Center for Global Health, directed by Cynthia Haq, MD, and with participation of faculty from Nursing, Veterinary Medicine, Pharmacy, the Nelson Institute, and the Division of International Studies, a new Certificate in Global Health was approved in 2008. Available as a graduate certificate to professional students in the health sciences, to graduate students in health-related fields, and as a capstone certificate to individuals with a minimum of a BA or BS in a health-related field, the Certificate in Global Health program is based in the DPHS and is administered by the Center for Global Health at UW-Madison.

The education portfolio of the department has also expanded beyond the graduate and professional programs. Denny Fryback, PhD, and Dr Young began an introductory survey course for undergraduates. This course has been an important means to showcase the department for the larger campus and recruit new graduate students. Moreover, under Dr Nieto's leadership as course director, the department has returned to teaching a required course in the medical student curriculum. In 2006, "Principles of Population Medicine and Epidemiology" became a required course in the first-year curriculum. The combination of lectures and faculty-facilitated small group case analyses involve the entire department as well as affiliated faculty. This new course is just a first step in the introduction to the basic science of epidemiology and public health for the "new medical student" in an integrated SMPH. The department faculty is currently working with the SMPH curriculum office and faculty from other departments to develop a new public and community health curriculum thread that will be integrated into all 4 years of the medical school curriculum.

Affiliated Institutes and Programs

The department continues to house major institutes and programs. The Population Health Institute (Institute) serves as a focal point for public health and health policy within the SMPH by bringing together faculty, staff, and students interested in applying their skills and experience to answer real-world questions. First established by Dr Kindig in 1984, the Institute serves as the bridge to public health and health policy practitioners in the state, through an active citizen board, frequent issue briefs and reports, and periodic conferences and educational programs. Under Dr Remington's leadership, the Institute has grown to include nearly 40 staff, with nationally recognized programs such as the Healthy Wisconsin Leadership Institute, the Population Health Fellowship Program, the Evidence-Based Health Policy Program, and the Wisconsin County Health Rankings. The Institute just received funding from the Robert Wood Johnson Foundation to extend the county health rankings program nationally to facilitate the use of population health data to engage communities in evidence-based programs and policies.

Under the leadership of Dr Kindig, Dr Mullahy, and Stephanie Robert, MSW, PhD, UW-Madison was designated as 1 of 6 national program sites of the Robert Wood Johnson Health & Society Scholars Program. The program, administered and housed in the DPHS, admits 3 post doctoral fellows each year who spend 2 years engaged in interdisciplinary mentored research. As of the Fall of 2009, the program has 15 graduates.

The John Rankin Laboratory of Pulmonary Medicine (named after the former department chair in 1981) enters its 47th year in 2009, funded continuously by NIH and responsible for the research training of over 65 pre- and post-doctoral scientists and more than 50 undergraduate students and the classroom teaching of basic and applied physiology to medical, graduate, and undergraduate science majors.

In embracing a broad determinants of health model³

and through these research and education programs, DPHS engages faculty from departments and programs from across the UW-Madison campus as well as other academic, private, and government institutions state-wide. Faculty from 39 UW departments have an affiliate appointment or are part of the graduate program faculty; the department also counts on the participation of 20 adjunct faculty from state agencies and other academic institutions including UW-Milwaukee and the Center for Urban Population Health, the Medical College of Wisconsin, Marshfield Clinic, US Geological Survey, and the Wisconsin Collaborative for Healthcare Quality, among others.

Looking Ahead

With this significant anchoring in interdisciplinary partnerships across the campus and the state, DPHS is poised to be a pivotal force in the transformation of the school of medicine to a school of medicine and public health. Doctor Remington was recently named the first Associate Dean for Public Health, in charge of coordinating school-wide efforts to make our school a model of integration. Under the leadership of Dr Remington and Dean Robert Golden, MD, this process of interdisciplinary transformation is likely to be a work in progress for many years.⁴

The role of DPHS in this transformation continues to evolve, but we anticipate being a critical component in some key areas, including but not limited to: (1) supporting innovative and collaborative research, including population, basic, and clinical sciences; (2) continuing the growth and integration of graduate and professional programs; (3) increasing presence in both UW-Madison undergraduate programs and the medical school curriculum, potentially including the development of new undergraduate public health certificates; and (4) developing partnerships and collaborations with researchers, clinicians, communities, and institutions to improve understanding of health and translate population health research findings into policy and practice.

Building on the successes of our past, we look forward to a bright future.

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