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The Aging Imperative—Innovations in Research, Education, and Care in Geriatric Medicine

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Over the past century, the number of older adults in the United States and throughout the world has increased dramatically. In Wisconsin today, individuals aged 65 and over comprise more than 15% of the population, accounting for more than \$7.9 billion of Medicare spending annually. Since 1900, in the United States alone, the number of persons aged 65 years and older has increased more than three-fold, and this segment of the population is projected to exceed 98 million by 2060, comprising nearly 25% of the population at that time. This remarkable demographic shift has major societal and economic implications, including health care utilization and expenditures, economic growth, and intergenerational and intragenerational equity.

The University of Wisconsin (UW) School of Medicine and Public Health's (SMPH) Division of

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Sanjay Asthana, MD, is the associate dean for gerontology, University of Wisconsin (UW) School of Medicine and Public Health, and director, Wisconsin Alzheimer's Disease Research Center; Robert N. Golden, MD, is the dean of the UW School of Medicine and Public Health and vice chancellor for medical affairs, UW-Madison.

Geriatrics and Gerontology, one of the premier such divisions in the country, supports state-of-the-art clinical, research, and educational programs in geriatrics and healthy aging. With substantial support from the National Institutes of Health (NIH), Department of Veterans Affairs (VA), and SMPH, the division sponsors several internationally renowned programs in aging research.

Aging Research Programs at the SMPH

This portfolio targets common age-associated diseases and applies the full spectrum of research, including basic science, translational, clinical, community-based, and dissemination studies. External reviewers often comment on the innovation, translatability, and direct relevance to patient care that characterize the research activities. The focus of the school's current aging research programs includes Alzheimer's disease (AD), biology of aging, care transitions, dysphagia, health disparities, and dissemination and implementation.

The Division of Geriatrics and Gerontology—within the school's Department of Medicine—is home to the NIH-funded Wisconsin Alzheimer's Disease Research Center (ADRC), the nation's only geriatrics-based ADRC led by a geriatrician. The ADRC's overarching scientific goals are to discover novel preclinical biomarkers of AD and

their utility for early diagnosis, and to foster a better understanding of the mechanisms underlying the disease's pathology and progression.

The ADRC is internationally renowned for its research in neuroimaging and cerebrospinal fluid biomarkers of AD in at-risk populations. Under the auspices of the ADRC and the Wisconsin Alzheimer's Institute (WAI), the SMPH's AD research program features Investigating Memory in Preclinical AD-Causes and Treatment (IMPACT) and the Wisconsin Registry for Alzheimer's Prevention (WRAP), two large, NIH-funded studies of adult children whose parents have AD. Together, these studies involve the largest and longest-followed cohort of more than 2,000 middle-aged adults at risk for AD. Over the years, collaborative studies involving IMPACT and WRAP participants have identified novel brain imaging and cerebrospinal fluid biomarkers that could identify persons who have AD pathology without any symptoms. Such individuals will be ideal candidates for clinical trials of emerging treatments and prevention strategies that could slow or stop AD progression at asymptomatic stages.

The Division of Geriatrics and Gerontology also sponsors multiple extramurally funded aging research programs in areas other than AD, such as:

- Molecular studies in the biology of aging

Box. Characteristics of the UW School of Medicine and Public Health Division of Geriatrics and Gerontology

- One of the largest geriatrics divisions in the United States
- Supports a large, interdisciplinary, translational research program in aging with substantial extramural funding, currently exceeding \$73 million
- Houses a National Institutes of Health-funded Alzheimer's Disease Research Center
- Provides state-of-the-art primary and specialty care to older, frail patients from across Wisconsin and beyond
- Supports a large training program in geriatrics for learners of varied levels and backgrounds

around the theme of **metabolism of aging**.

- **Care transitions research** evaluating the utility and validity of Coordinated Transitional Care, an innovative, nurse-led, low-cost model of care targeting older, frail adults transitioning between multiple clinical settings;
- Studies examining the **efficacy of lingual and oropharyngeal muscle strengthening** in reducing dysphagia in patients with stroke and dementia.
- **Health disparity and equity research** focused on African American and Native American populations.
- Community-based studies assessing the efficacy of **multidisciplinary interventional programs** through a community-academic aging research network that involves a unique partnership between UW-Madison faculty members and community-based workers.

Interdisciplinary, Patient-Centered Geriatric Clinical Programs

UW Health sponsors multiple ambulatory and inpatient clinical care programs that provide evidence-based approaches for delivering exceptional care to older, often frail adults with multiple comorbidities. The inpatient program includes a multidisciplinary consultation team comprised of a geriatrician, pharmacist, social worker, advanced practice provider, dietician, and physical or occupational therapist who evaluate complex patients admitted to various medical and surgical wards at University Hospital. The majority of consultations focus on classic geriatric syndromes—including delirium, cognitive deficits, and mobility impairments—and result in interventions that enhance coordination of care, reduce the incidence of polypharmacy, decrease rehospi-

talization rates, and improve quality of care. Ambulatory programs include multiple primary care and specialty clinics in the areas of memory impairment, falls, sleep disorders, geriatric oncology, and comprehensive geriatric evaluation. Overall, specialty care constitutes about 60% of geriatric practice at UW Health and adheres to the principle of patient comanagement with referring primary care physicians throughout Wisconsin and beyond.

Training the Next Generation of Physicians, Researchers, Clinician Educators, and Other Health Care Professionals in Geriatrics

The Division of Geriatrics and Gerontology has nationally acclaimed educational programs that train learners from varied backgrounds, including medical students, residents, fellows, nurses, pharmacists, social workers, and speech-language pathologists.

To date, the Geriatric Medicine Fellowship Program has trained more than 100 physician fellows; of these graduates, over half are pursuing academic careers across the country. Notably, some fellows have become prominent leaders who are directing geriatric programs at major institutions around the nation and world. Educators within the division collaborate with key partners at the Medical College of Wisconsin, Marquette University, and Aurora Healthcare in Milwaukee. Several serve on the US Health Resources and Services Administration-sponsored Wisconsin Geriatrics Workforce Enhancement Program. This initiative focuses on developing innovative educational programs that support primary care providers in delivering competent care to older adults throughout the state. With support from an NIH T32 training grant and VA fellowships in

advanced geriatrics and older women's health, the Division of Geriatrics and Gerontology trains up to 12 postdoctoral and physician fellows in aging research each year. Most of the program's graduates now serve on the faculties of academic institutions or in research positions at pharmaceutical companies.

The Division of Geriatrics and Gerontology is advancing the health of our growing older population through innovative research, clinical, and educational programs. Its faculty members make novel discoveries in all aspects of aging research, which are translated into improved care and widely disseminated. The division's clinical programs provide state-of-the-art primary care and specialty consultations for complex older patients, and its educational programs provide competency-driven, outcomes-based training to learners of all backgrounds and training.

Representing medical professionals facing professional discipline.

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