

Intellectual Development Statement
Jane Doe, MD

Introduction, Education, and Training

I am a geriatrician and clinical investigator with appointments in Medicine and Ophthalmology. My overall professional goal is to improve care and patient-centered outcomes (e.g., independence, quality of life) for medically complex older adults with multiple chronic conditions (MCC). The over-arching theme of my research is to understand interactions between common conditions and to mitigate their combined effect on late-life well-being. I have developed a specific research focus on concurrent, age-related changes in the eye and brain, which relates to the link between sensory loss and cognitive impairment.

My passion for aging-related research was ignited early in my career. I received my Bachelor's degree from Stanford University in 1998 (Phi Beta Kappa, Honors in Research, Departmental Distinction in Biological Sciences), and I attended Weill Medical College of Cornell University with a goal to pursue research that directly impacts patient outcomes. With support from the John A. Hartford Foundation, I participated in a two-month geriatrics research immersion experience on the Harvard Medical school campus. The experience was transformative, and I entered residency committed to pursuing an academic career aimed at re-tooling healthcare for an aging society. I completed my residency in Internal Medicine in 2003 and my fellowship in Geriatric Medicine in 2006, both at Duke University Medical Center. I was selected as an Internal Medicine chief resident, and I served in that role 2004-2005. As a geriatrics fellow, I participated in the Clinical Research Training Program and earned a Master's degree in Health Sciences. During my training years, I worked with geriatrics faculty members to analyze existing datasets in the Duke Aging Center and VA Health System.

Through early projects and my clinical experiences, I became increasingly aware of the critical need in modern American medicine for an alternative to the traditional "single disease paradigm." Based on the single disease paradigm, most clinical practice guidelines, medical interventions, and clinical research agendas focus on a particular disease or condition. The single disease paradigm is an appropriate way to develop and deliver aggressive, thorough treatments for individual diseases. However, when the single disease paradigm is applied to a person who has many chronic conditions, the resulting care plan is often fragmented, impractical, unaffordable, less effective or potentially harmful, or inconsistent with patient goals of care. **My mission as a physician investigator is to cultivate new knowledge, paradigms, and models of care that support a more coordinated, high value, preference-driven approach for medically complex patients.** I work to achieve this mission through my independent and collaborative research activities as well as through opportunities to influence policy and population health, such as my current service on an Institute of Medicine (IOM) Committee and various leadership roles within the American Geriatrics Society.

My clinical and translational research agenda includes outcomes research in people with MCC as well as mechanistic studies that probe questions related to pathological processes that span organ systems and may underlie disease co-occurrence. Patients with MCC or "multimorbidity" are at increased risk of many bad health outcomes, but I am most interested in understanding how to modify pathways that lead from MCC to poor quality of life. Therefore, I have focused on patient-centered outcomes that reflect independence and subjective well-being. I have developed a niche that investigates the interface between two of the most common and disabling conditions experienced by older adults: vision impairment and cognitive decline/dementia.

Academic Research Accomplishments and Scholarship

Within the broad field of MCC, I have particular expertise related to co-existing impairments in vision and cognition. My work at the interface of visual and cognitive health has led to novel avenues of research that are investigating mechanistic links between age-related changes in brain and eye as well as developing new models of care for seniors with MCC. The work has been personally rewarding and

Intellectual Development Statement

Jane Doe, MD

productive; I've sustained external funding streams since fellowship and have produced >50 peer-reviewed papers (24 first author/4 senior author).

My interest in MCC has evolved since I arrived at Duke, but my research has maintained a consistent focus on understanding and improving care for medically complex older adults. As an intern, I collaborated with Dr. Kenneth Lyles on an analysis to evaluate depressive symptoms as a predictor of fracture (#15), and my work on that project led to further collaboration with researchers at the Canadian Multicentre Osteoporosis Study (CaMOS). One of our papers (CV ref #7) demonstrated a significant relationship between daily use of selective serotonin re-uptake inhibitors (SSRIs) and subsequent fracture risk. That study has influenced further research and clinical guidelines, and has been cited over 200 times.

The common theme in my early projects, and the aspect of clinical geriatrics that I find most compelling, is the interaction between medical conditions. I am especially interested in how one condition may lead to another, or how multiple health problems complicate treatment decisions when standard treatment for one condition is less effective – or less safe – in the presence of co-existing conditions. My ultimate goal is to find ways to prevent disease accumulation and to preserve well-being and independence in patients who have accumulated a heavy morbidity burden. As my interest in MCC crystallized, Dr. Lyles encouraged me to discuss my ideas with Dr. Harvey Cohen, director of the Duke Aging Center and international expert on functional decline.

With Dr. Cohen as my primary mentor, I explored various aspects of the relationship between co-existing chronic conditions and the outcomes of disability or frailty (CV refs #10, 13, 14, 16, 22, 23, 25). Informed by these analyses, I proposed a new approach to confronting the issue of comorbidity. The new approach focused on particular combinations of impairments. According to classical models of disablement, "impairment" refers to an abnormality at the tissue, organ, or body system level and is typically experienced by the patient as a symptom, such as muscle weakness, pain, or sensory loss. Geriatricians have long emphasized the importance of addressing impairments in older patients, rather than delivering care that is dictated exclusively by the conventional, disease-oriented paradigm. Treatment plans that focus on impairments and symptoms frequently address the downstream, cumulative, and interacting effects of multiple diseases in complex patients. An added advantage of focusing on combinations of impairments, rather than diseases, is that the list of potential disease combinations is overwhelming, whereas there is a more limited list of impairments that contribute significantly to disability (e.g., sensory impairment, cognitive impairment, mobility impairment). It is thus feasible to focus on specific pairs or clusters of impairments with a goal of maximizing health and independence for patients with that combination of problems.

After careful consideration, I chose to focus on vision impairment and cognitive impairment. I chose these two impairments because 1) they are both common and disabling, 2) I was intrigued by epidemiological evidence that they co-occur more often than expected by chance, suggesting that they are mechanistically linked, and 3) I observed clinically that patients have more difficulty coping with late-life vision loss in the presence of comorbid cognitive deficits. My work has highlighted the high prevalence (3.5-4.0%) of this comorbidity among older adults (see CV refs #9, 38, 52). Indeed, comorbid vision/cognitive impairment is more prevalent than important age-related diseases such as Parkinson's Disease and emphysema.

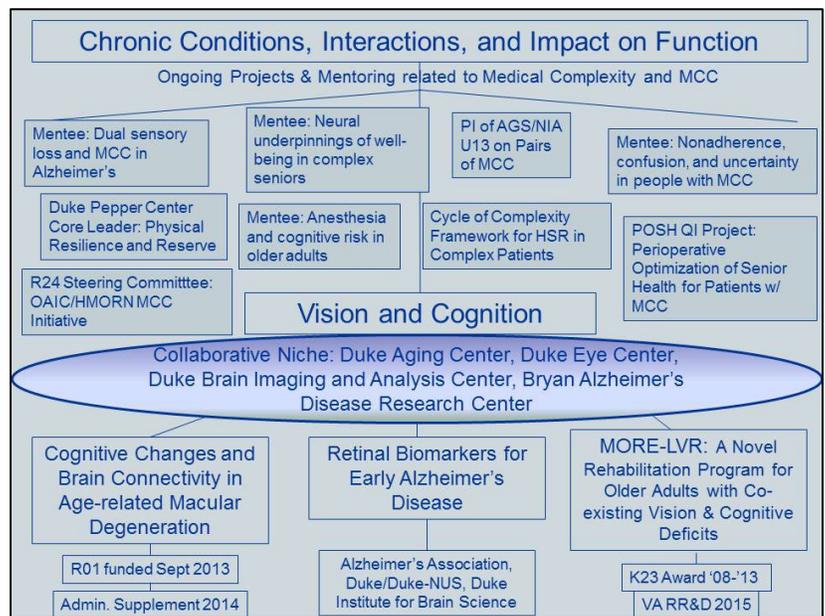
I established collaborations in the Duke Eye Center that led to my Paul B. Beeson Career Development Award (K23) from the National Institute of Aging. We demonstrated that community-dwelling seniors with co-existing cognitive and vision impairments are significantly more likely to become disabled than their peers with either single impairment (CV ref #9). We then showed that deficits in memory and executive function are present in >40% of older adults referred to low vision rehabilitation (LVR), and cognitive deficits predict worse functional outcomes in standard LVR programs (CV ref #18, 24, 27, 31). We designed a novel, enhanced LVR program for people with comorbid visual and cognitive impairments, called Memory or Reasoning Enhanced Low Vision Rehabilitation (MORE-LVR). In our

Intellectual Development Statement
Jane Doe, MD

pilot study, patients who participated in MORE-LVR experienced statistically and clinically significant improvements in visual function (measured subjectively and objectively), memory, satisfaction with independence, and rehabilitation goal attainment (CV ref # 36). I am currently the PI of a multi-site study funded by VA Rehabilitation Research and Development which is developing a similar intervention for Veterans with co-existing vision and cognitive impairments. My work in vision rehabilitation, particularly as it relates to adapting the service to better accommodate common comorbidities, has led to work on policy issues that affect visually impaired seniors (CV ref #42) as well as my current service on an Institute of Medicine (IOM) Committee on Public Health Approaches to Reduce Vision Impairment and Promote Eye Health.

The Figure summarizes my current research portfolio, active lines of independent research, and main funding streams. Through my K award project, I developed an inter-disciplinary network that

includes ophthalmologists, neuropsychologists, cognitive neuroscientists, and imaging engineers. I developed a niche for myself as a “bridge” between silos of expertise relevant to understanding links in late-life changes in the eye and brain. My work at the intersection of sensory and cognitive health raised mechanistic questions that this research team was uniquely positioned to address. Leveraging connections across several Centers at Duke, I am currently the PI of two studies that probe the potential link between degenerative diseases of the brain and eye, incorporating brain MRI, retinal imaging, and neurocognitive data. One study investigates retinal biomarkers as a potential means of detecting early Alzheimer’s Disease, while the other study investigates brain and cognitive changes that develop in the context of age-related macular degeneration. Both studies are in the data collection phase, but preliminary results (presented at national meetings) are promising and have already generated significant interest in the relevant scientific communities and in local and international media.



Education and Teaching Activities

(See comments from learners’ evaluations [page 11 and 12 of CV] + Tabular Summaries)

I am passionate about teaching students and house officers evidence-based, guiding principles related to the care of older adults with MCC. Whether in classroom settings, case conferences, or on the wards, I enjoy teaching on geriatric-specific topics such as multimorbidity, disability, frailty, and geriatric syndromes (e.g., delirium, falls, exhaustion). One of my teaching philosophies is that case examples are powerful tools, and I typically incorporate cases into didactic lectures. When I was asked to lecture at Department of Medicine Grand Rounds in 2013, I brought my father-in-law and presented his illustrative case of MCC; we were thrilled when the lecture received the Department’s “Best Grand Rounds of the Year” award. Another teaching philosophy that I apply on the wards is to ask learners to explicitly identify when they are applying a “disease-oriented” approach to care decisions and when they are applying a “patient-oriented” approach. Engaging in this metacognitive activity is an important step toward helping the learner to understand how these approaches may yield conflicting recommendations

Intellectual Development Statement

Jane Doe, MD

and how to develop strategies to resolve the conflict, if needed. A third teaching philosophy is that I believe that it is an attending physician's duty to model respectful and compassionate behavior, toward patients and families as well as toward all other members of the care team.

In 2012, when the Internal Medicine Program created its five "Stead Societies," I was honored to be selected to serve as the first Faculty Leader of Kerby Society. During my three years in that role, I conducted individual mentoring sessions and organized career development and networking opportunities for the 30-33 house officers per year who were assigned to Kerby Society. Through my close interactions with those residents, I realized that a by-product of the evolving model of academic medicine is that our students and trainees are exposed to many dedicated clinical educators, master clinicians, and hospitalists, but relatively few physician scientists. Exposure to physician scientists is necessary to enable students and trainees to make informed decisions about whether to pursue research as a career path and how to position themselves for a successful career as a physician scientist, if they so desire. I therefore make a special effort to discuss with learners why I love research and my own career trajectory. I try to share practical information such as how I spread my time between clinical, educational, administrative, and research activities; my monthly travel schedules; how and why I apply for grants; and how I integrate family and self-care into the mix. I have recently been tapped by the Department of Medicine's Vice Chair for Research Council to coordinate an educational program geared toward career development of our Department's research-oriented fellows, and I look forward to contributing to their medical education in this role.

On a national level, I have participated in and led several teaching initiatives. I contributed a lecture on "Comorbidity and Frailty" as part of the Veterans Affairs (VA) Rural Health Initiative Educational Series. The 30-minute video is available on the VA intranet and has been viewed by hundreds of VA clinicians in rural settings as part of a web-based continuing medical education program. For the past two years, I have offered a similar lecture as a live Webinar for the VA's Employee Education System, and the most recent Webinar had >100 attendees. I lectured on diabetes management in older adults in a Continuing Medical Education (CME) pre-conference session for the 2014 American College of Physicians meeting. In my role on the Steering Committee of the R24-funded national AGING Initiative on MCC, I co-lead an educational Webinar series that draws attendees from fourteen academic institutions as well as the Health Care Systems Research Network (a consortium of HMOs). Through my work with the American Geriatrics Society (AGS), I have been involved in multiple educational offerings. I've coordinated the annual AGS mentor-mentee matching program for four years and served as a mentor for that program. I've developed and moderated educational and career development sessions for AGS annual meetings, including sessions on how to design a more effective scientific poster and how to craft an effective academic "message." This year, I have served as the Program Chair for the AGS meeting with responsibility for creating an educationally balanced and evidence-driven meeting agenda.

Local, National, and International Leadership

On a local level (and in addition to activities listed elsewhere in this Statement), I am the Leader of the Pilot and Exploratory Studies Core of the recently renewed Claude D. Pepper Older Americans' Independence Center (Notice of Award pending, but the Duke Center received the best score nationally). I am a founding member of the Duke Aging Center's Junior Faculty Laboratory, an innovative peer mentoring model (CV ref #26). I organized a Duke/Durham VA Special Interest Group for Medical Complexity/MCC, which led to the development of a novel framework for medical complexity (CV ref #49). I am the Co-Organizer of a Duke SOM Colloquium, funded by the Dean's Office, which will be held in September 2016 on the topic of Physical Reserve and Resilience (CV ref #50).

On a national level, my professional home is the American Geriatric Society (AGS), a ~6000-member organization in which I currently serve as the 2016 Program Chair as well as Vice Chair of the

Intellectual Development Statement
Jane Doe, MD

Research Committee. Last year I was asked to serve as the PI for the competing renewal of a U13 conference series jointly supported by AGS and NIA; the application, which focuses on particular pairs of MCC, received a perfect impact score of 10. I serve on the Steering Committee for the R24-funded AGING Initiative, a program grant that bridges two national networks of health researchers with a common focus on aging. I serve on the Editorial Board of the Journals of Gerontology: Medical Sciences. My national reputation as a leader in comorbidity research is demonstrated by my role as the Gerontological Society of America's reviewer for the AGS "Guiding Principles for the Care of Older Adults with Multimorbidity" and my invited authorship of an UptoDate™ card on "Managing Multiple Comorbidities."

Internationally, I have delivered invited talks at the Singapore Eye Research Institute (SERI) and the Duke-NUS Center for Aging Research and Education (CARE). I am the local PI of a newly funded Duke/Duke-NUS pilot award. In addition, I am listed as an international collaborator on two grant applications from SERI investigators (Tien Wong, Ecosse Lamoureux) and one application from a collaborator at the Chinese University of Hong Kong (Carol Cheung).

Institutional Service and Academic Leadership

Last year I was appointed by the Department of Medicine's Vice Chair for Research to serve on the DOM Research Council and as Vice-Chair of the Grant Development Committee. In this role, I organize and conduct research concept reviews for DOM fellows or faculty (typically 1 per month). I serve on the Organizational Committee for the Peri-Operative Optimization of Senior Health (POSH) service, a collaborative quality improvement initiative between geriatricians and surgeons to improve the care of older patients who receive surgery at Duke Hospital. I served on the Institutional Review Board (IRB) Committee from 2013-2015. I serve on the Faculty Advisory Committee to the Duke Office of Clinical Research (DOCR). I serve on the Center for Aging Administrative Committee and the Duke Pepper Center Internal Operating Committee. I serve on the Residency Recruitment Committee (as a speaker and interviewer) and have served on the Ranking Committee in past years. Other institutional service and leadership roles have been described elsewhere in this Statement.

Professional Development and Goals

My primary goal is to lead geriatrics research and innovation that will benefit older adults with MCC. Two environmental factors that I believe will enable my success as a productive and independent researcher are: 1) strong personal relationships with outstanding colleagues from other disciplines and 2) excellent didactic opportunities, mentoring, and critical skills development. Duke's academic environment is ideally suited to foster my particular research interests because of my existing and emerging relationships across Departments, Centers, and Institutes. Moreover, my career development has been aided by institutional programs such as the School of Medicine's Path to Independence Program and the Department of Medicine's Faculty Development Academy. I completed the 2015 Leadership Development for Researchers (LEADER) Program, and I am currently participating in the ALICE Leadership Program for mid-career women.

An important part of my professional vision is to ensure that my efforts translate into meaningful, real-world changes. I believe we face an impending healthcare crisis resulting from demographic shifts combined with unsustainable models of care and spending. My specialty (medically complex older adults) is at the center of this crisis and I want to publicize my work and lend my expertise in a manner that is appropriate and timely. To this end, I will continue active engagement and leadership in national organizations such as AGS and IOM. Ultimately, I aspire to lead a Program or Center that supports research and advocacy aimed at improving care options and outcomes for the aging population. To better prepare me for this goal, I am undertaking career development in the areas of program-building, fundraising, media interaction, negotiations, and finance management.