

Aging, the Medical Subspecialties, and Career Development: Where We Were, Where We Are Going

Arti Hurria, MD,^a Kevin P. High, MD, MS,^b Lona Mody, MD,^c Frances McFarland Horne, PhD, MA,^d Marcus Escobedo, MPA,^e Jeffrey Halter, MD,^f William Hazzard, MD,^b Kenneth Schmader, MD,^{g,h} Heidi Klepin, MD, MS,ⁱ Sei Lee, MD, MAS,^j Una E. Makris, MD, MSCS,^k Michael W. Rich, MD,^l Stephanie Rogers, MD,^m Jocelyn Wiggins, BM, BCh,^f Rachael Watman, MSW,^e Jennifer Choi, BS,^a Nancy Lundebjerg, MPA,ⁿ and Susan Zieman, MD, PhD^o

Historically, the medical subspecialties have not focused on the needs of older adults. This has changed with the implementation of initiatives to integrate geriatrics and aging research into the medical and surgical subspecialties and with the establishment of a home for internal medicine specialists within the annual American Geriatrics Society (AGS) meeting. With the support of AGS, other professional societies, philanthropies, and federal agencies, efforts to integrate geriatrics into the medical and surgical subspecialties have focused largely on training the next generation of physicians and researchers. They have engaged several subspecialties, which have followed parallel paths in integrating geriatrics and aging research. As a result of these combined efforts, there has been enormous progress in the integration of geriatrics and aging research into the medical and surgical subspecialties, and topics once considered to be geriatric concerns are becoming mainstream in medicine, but this integration remains a work in progress and will need to adapt to changes associated with healthcare reform. *J Am Geriatr Soc* 65:680–687, 2017.

From the ^aCancer and Aging Research Program, City of Hope National Medical Center, Duarte, California; ^bSchool of Medicine, Wake Forest University, Winston-Salem, North Carolina; ^cUniversity of Michigan, Ann Arbor, Michigan; ^dAssociation of Specialty Professors, Alexandria, Virginia; ^eJohn A. Hartford Foundation, New York, New York; ^fUniversity of Michigan Health System, Ann Arbor, Michigan; ^gDuke University, Durham, North Carolina; ^hGeriatric Research Education and Clinical Center, Durham Veterans Affairs, Durham, North Carolina; ⁱWake Forest University, Winston-Salem, North Carolina; ^jUniversity of California, San Francisco, San Francisco, California; ^kUniversity of Texas Southwestern Medical Center, Dallas, Texas; ^lWashington University in St. Louis, St. Louis, Missouri; ^mWichita State University, Wichita, Kansas; ⁿAmerican Geriatrics Society, New York, New York; and ^oNational Institute on Aging, National Institutes of Health, Bethesda, Maryland.

Address correspondence to Arti Hurria, Cancer and Aging Research Program, City of Hope, 1500 E Duarte Rd, Duarte, CA 91001. E-mail: ahurria@coh.org

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As recently as 20 years ago, the medical and surgical subspecialties were not focused on the needs of older adults. At that time, Drs. William Hazzard and Donna Regenstreif of the John A. Hartford Foundation (JAHF) outlined a vision and launched an initiative to integrate geriatrics and aging research into the subspecialties of internal medicine (later called the T. Franklin Williams Scholars (TFWS) Program), and the late Dr. Dennis W. Jahnigen articulated a vision for and led an analogous JAHF-sponsored effort focused on surgical and related medical specialties.^{1,2} The internal medicine specialties program engaged the breadth of internal medicine subspecialties through their professional societies, and realization of this integration vision accelerated in 2006, with the efforts of a small, interdisciplinary group of investigators who established a home for internal medicine specialists within the annual meeting of the American Geriatrics Society (AGS). Since then, many subspecialties have followed parallel paths to integrate geriatrics and aging research (Table 1). With the aging of the U.S. population and the emerging realization by all specialties that care of older adults is central to their spheres of practice, these topics are becoming mainstream in internal medicine specialties.

Efforts to integrate geriatrics and aging research into the subspecialties have focused largely on career and curriculum development. Annual AGS meetings and biennial alumni meetings have included sessions on job searches, mentoring relationships, grant-writing skills, and research methodologies critical to aging populations, among others. Outside the AGS meetings, the TFWS programs have supported the integration of aging research into career development within the medical subspecialties, which the

Table 1. Progress in Integrating Geriatrics into the Subspecialties of Internal Medicine

Component	American Academy of Allergy, Asthma, and Immunology	American College of Cardiology	American College of Chest Physicians	American Diabetes Association	American Gastroenterological Association	American College of Rheumatology	American Society of Hematology	American Society of Nephrology	American Society of Clinical Oncology	Infectious Diseases Society of America	Society of General Internal Medicine	Society of Hospital Medicine
Involves aging component into other aspects of the society	++++	+++	++	+++	+++	++++	+++	+++	+++	+++	+++	+++
T. Franklin Williams Scholars partner	++++	++++	+	++++	++	++++	++	++++	++	++++	+	++++
Current aging component	++++	++++	+	++++	+++	+++	+++	++++	++++	++++	++++	++++
Has competed for small project grant	++++	++++	+	++++	++	++++	++	++++	++++	+++	++++	++++
Has held meeting to set research agenda	+++	+++	+++	+++	++	++	++	+++	+++	++	+++	+++
Geriatrics section in journal	++	+++	++	++++	+++	++	++	+++	+++	+++	+++	++
Fellowship curriculum in aging	++++	++++	N/A	+++	++++	++++	N/A	+++	+++	++	N/A	N/A
Continuing medical education material in aging	+++	+++	+++	+++	+++	++	+++	+++	+++	+++	+++	+++
Geriatric content in training examinations	++	++++	N/A	+++	++	++	+++	++++	+++	++	+++	N/A

Four pluses indicate the greatest advances; one plus indicates that efforts have just begun. N/A, not applicable.

Atlantic Philanthropies and JAHF have funded and the Association of Specialty Professors (ASP), part of the Alliance for Academic Internal Medicine (AAIM), have administered. Similarly, AGS administered the Dennis W. Jahnigen Scholars Program, which supported career development for surgical and related medical specialists. Approximately 15 grants that the National Institute on Aging (NIA) awards annually through its Grants for Early Medical and Surgical Specialists Transition to Aging Research (GEMSSTAR) program and a number of professional societies across internal medicine now support these efforts.

Since its inception in 2002, the TFWS program has represented an investment of just over \$10 million, with TFWS scholars garnering approximately \$151 million in grant funding from the National Institutes of Health (NIH) and additional funding from foundations (e.g., JAHF, Atlantic Philanthropies) and other federal sources (e.g., Department of Veterans Affairs). The program has received more than 300 applicants and sparked the careers of 99 scholars. TFWS scholars have matured into valued faculty at every level (including full professors and division chiefs) in 12 internal medicine specialties and have conducted ground-breaking research in their fields (e.g., connections between impaired mitochondrial fatty acid oxidation and insulin resistance in aging,³ interventions to prevent infections in nursing home residents⁴). Other TFWS scholars have identified potential therapeutic targets in hypertension-associated left ventricular hypertrophy,⁵ explored new research directions in high-impact areas such as venous thromboembolism in older adults after joint replacement,⁶ shown efficacy of high-dose influenza vaccine in older adults,⁷ promoted antimicrobial stewardship in long-term care facilities,⁸ reviewed management of persistent pain in older adults,⁹ developed tools to understand pelvic floor dysfunction,¹⁰ predicted toxicity and survival in older adults undergoing chemotherapy,^{11,12} and conducted randomized controlled trials of interventions against pneumonia.¹³ Among the most recent scholars, one is now an NIA Paul Beeson Career Development awardee who has established the prognostic value of frailty in liver transplantation,¹⁴ and another has recently published a paper on the overtreatment of diabetes mellitus in older adults with tight glycemic control.¹⁵

This is the last year that TFWS scholars will be funded through the Atlantic Philanthropies and the JAHF, because the Atlantic Philanthropies are completing their mission, and the JAHF is moving in new directions. It is therefore a good time to reflect on the progress made in integrating geriatrics and aging research into the medical subspecialties, particularly with respect to career development. This was the focus of a May 16, 2015, session at the annual AGS meeting.

PROGRESS IN INTEGRATING GERIATRICS INTO THE MEDICAL SUBSPECIALTIES

American Academy of Allergy, Asthma, and Immunology

In 2007, the American Academy of Allergy, Asthma, and Immunology (AAAAI) formed a task force to explore care

of older adults with asthma. This task force has become a standing committee that promotes clinical care, education, and research on asthma and allergy in older adults. Other accomplishments include symposia at the annual AAAAI meeting, development of a teaching slide set, a wide range of articles on asthma and allergic rhinitis in older adults, inclusion of geriatrics questions on fellowship in-training examinations, and an education brochure targeted to older adults with asthma. With support from an ASP Small Project Grant, AAAAI has developed an online curriculum on allergy and immunology in older adults, piloted implementation of the curriculum in select fellowship programs, and released a final version to all fellowship programs in allergy and immunology.

American College of Cardiology

The American College of Cardiology (ACC) has established a Geriatric Cardiology Section (GCS) that now includes approximately 2000 members and more than 400 fellows. The GCS has several working groups focused on advocacy and public policy, palliative care, communications, education, international activities, early-career physicians (including fellows in training), and research related to geriatrics and cardiology. These groups participate in monthly calls with the GCS Leadership Council and hold face-to-face meetings at the annual conferences of the ACC and American Heart Association. ASP supported a cardiology fellows' retreat that led to the establishment of a Fellows-in-Training Working Group, a clinical care project that allows fellows to gain experience in conducting online assessments of older adults with cardiovascular disease and the development of a pilot study designed to set the stage for a future geriatric cardiology research network. In addition, with support from the JAHF, the GCS and ACC have developed a curriculum, *Essentials of Cardiovascular Care for Older Adults*, which is available on the ACC website (www.acc.org/eccoa) and is being translated into Chinese. The GCS published two seminal papers in the ACC's flagship journal, the *Journal of the American College of Cardiology*.^{16,17} In collaboration with AGS and supported by a collaborative conference grant from the NIA (U13 AG047008), the GCS developed a conference series addressing geriatric cardiology. Members of the GCS Leadership Committee are also working to incorporate training in geriatric cardiology into the ACC's Core Cardiovascular Training Statement.

American College of Rheumatology

With support from an ASP Small Project Award, the American College of Rheumatology (ACR) has developed and disseminated self-assessment questions focused on geriatric conditions in musculoskeletal health. These questions, which are available online, are widely used and have become part of a set of self-assessment and preparatory tools. To reinvigorate its Geriatrics Rheumatology Special Interest Group, a proposal has been developed focusing on evaluating gaps in clinical practice and research, understanding and addressing barriers to achieving successful careers in aging and rheumatology, and planning symposia to bring in speakers who normally do not attend meetings

on rheumatology. ACR also has a committee on research that includes a subcommittee focused on early careers, and it is working to increase awareness of its activities to integrate geriatrics and rheumatology. ACR invited an NIA representative, Dr. Susan Ziemann, to its Rheumatology Research Workshop, which served to promote GEMSSTAR and focus on career development for junior faculty.

American Diabetes Association

Unlike many other professional societies, the American Diabetes Association (ADA) is a large, diverse organization that includes professionals, individuals with diabetes mellitus, and their families. The Older Adults Working Group of ADA, which has been in place for several years, has promoted the acceleration of several activities. Among these is an ADA consensus conference, organized by ADA and supported by a JAHF ASP Small Project Grant. That conference led to the joint publication of clinical recommendations for improving care of older adults.¹⁸ These recommendations have been incorporated into the ADA's annual update: Standards of Medical Care in Diabetes. A workshop supported by ADA and NIA on diabetes mellitus and cardiovascular disease in older adults led to a 2014 publication in *Diabetes*.¹⁹ The Older Adults Working Group is also developing a position statement on diabetes mellitus in long-term care, given the many challenges for individuals in this setting, who often are transferred from acute hospitals with complex insulin regimens. In addition, the ADA Academy, a series of Grand Rounds programs focused on the latest evidence-based research related to diabetes mellitus prevention and management, includes Diabetes in Older Adults as one of five current topics. ADA has also developed the Diabetes and the Older Adults Self-Assessment Program, targeted to the diverse group of health professionals who work with older adults.

American Society of Clinical Oncology

The American Society of Clinical Oncology (ASCO) began its integration of aging components with the development of geriatric oncology fellowships in collaboration with the JAHF. This collaboration spurred the development of programmatic integration throughout the ASCO's annual meeting, with inclusion of geriatric oncology in all tracks, a clinical science symposium dedicated to geriatrics research, an extended education session focused on integrating geriatric oncology into practice, and the B.J. Kennedy Award and Lecture for scientific excellence in geriatric oncology. Additional educational resources are available through ASCO University, ASCO's online learning platform, which features a curriculum in geriatric oncology, and in ASCO's publications, including the Special Series on Geriatrics in the *Journal of Clinical Oncology* and a monthly geriatric oncology section in the *ASCO Post*. The ASCO Geriatric Oncology Special Interest Group supports broad-based efforts across ASCO and is undertaking a project to digitize and centralize geriatric oncology tools and educational resources. In addition, ASCO's patient website, Cancer.Net, has a section dedicated to geriatric oncology. ASCO advocates for advancement of research benefitting older adults with cancer,

including a recently published manuscript, "Advancing the Evidence Base for Treating Older Adults with Cancer." Outside of ASCO, the Cancer and Aging Research Group provides a forum for mentoring and collaboration and holds NIA-supported meetings on research methodology. The *Journal of Geriatric Oncology* is in its sixth year, and its influence is growing.

American Society of Hematology

Until recently, there has been little formal activity to integrate geriatrics and aging research into hematology, but the Special Interest Group on Hematology and Aging of the American Society of Hematology (ASH) lobbied the ASH Executive Committee to promote attention to aging-related topics at ASH, with an emphasis on the missions of research and education. With encouragement from the Executive Committee, the special interest group successfully applied to hold a scientific workshop focused on hematology and aging. Held in December 2014, this workshop convened more than 300 participants and explored new research related to stem cells, aging, and disease pathogenesis; preclinical models and clinical implications of the biology of aging; aging phenotypes linking clinical observations with biologic mechanisms; and funding opportunities from NIA and the National Heart, Lung, and Blood Institute. This workshop and other interest group efforts have stimulated further interest in aging and hematology and the inclusion of aging experts in several ASH committees. Several of these experts have been recipients of the GEMSSTAR, TFWS awards, or Paul B. Beeson Career Development Awards in aging research.

American Society of Nephrology

In 2008, the American Society of Nephrology (ASN) offered a 2-day course in geriatric nephrology for its membership that has become a standard offering at the ASN's annual meeting. In 2009, the ASN approved the formation of the Geriatric Nephrology Advisory Group, which has spearheaded a number of initiatives to integrate geriatrics into the field of nephrology. In addition to updating the ASN's Geriatric Nephrology Pre-Course, ASP-supported initiatives of this group include the development and maintenance of an online geriatric nephrology curriculum accessible through the ASN website; collaboration with other professional societies to conduct a landmark workshop on supportive care for individuals with kidney disease; conducting a workshop to support teaching of communication skills needed for advance care planning for junior faculty members in nephrology; development of an online video series titled "Nephrology Rounds" focusing on the relevance of geriatrics to the care of individuals with kidney disease; and establishment of visiting professor and small grants programs to support clinical care, teaching, and research in geriatric nephrology. The Nephrology Self-Assessment Program also has a dedicated geriatric edition.

Infectious Diseases Society of America

The field of infectious diseases has had the highest number of TFWS Scholars (14) of all subspecialties and a number

of additional GEMSSTAR recipients. Examples of areas in which these scholars have made critical discoveries include immune senescence,²⁰ influenza vaccine efficacy,⁷ antibiotic stewardship,⁸ and infections in older adults, including nursing home residents.^{13,21,22} Since 2003, the Infectious Diseases Society of America (IDSA) has held an annual interest group meeting on infection in older adults and has included aging and infection as a topic at Fellows Day symposia during its annual meetings. IDSA has also developed and updated guidelines on fever and infection in long-term care residents (<http://cid.oxfordjournals.org/content/48/2/149.full.pdf+html>) and has received small grants from the JAHF to hold a fellowship survey and symposium and to develop a website on nursing home infections. TFWS awardees have developed guidelines to revolutionize the approach to infection control and prevention in long-term care settings and to develop surveillance criteria to define infections within these settings.^{23,24}

Society of General Internal Medicine

ASP support has had tremendous influence in catalyzing and sustaining geriatric initiatives in the Society of General Internal Medicine (SGIM). The most visible and enduring accomplishment is the ongoing Distinguished Professor of Geriatrics series, which is now in its twelfth year and that other groups in general medicine have copied, including those focused on women's health and cancer research. ASP support has also allowed SGIM to offer travel awards to trainees focused on geriatrics and to support walk rounds for posters focused on geriatrics at every annual meeting. With ASP support, SGIM held a retreat in 2012 to generate a research agenda focused on geriatric topics in general medicine. SGIM also held a geriatrics symposium in 2014, leading to the publication of six articles in the *Journal of General Internal Medicine* on topics related to the interface between general medicine and geriatrics. ASP support has also enabled the development of educational tools to assess competencies in geriatric medicine among general medicine residents and the broad dissemination of this toolkit to improve patient care and obtain feedback data. SGIM has focused on care transitions between nursing homes and ambulatory providers with a retreat focused on developing a checklist and an educational guide of best practices for care transitions.

Society of Hospital Medicine

Since 2011, the Society of Hospital Medicine (SHM) has facilitated career development for hospitalists interested in geriatrics by supporting early-career aging research through the GEMSSTAR and TFWS programs. SHM has also supported efforts to improve end-of-life care, for example through collaboration with the Hastings Center to develop educational resources, including user tool kits, implementation guides, and research support, and has focused on patient care through its Acute Care for Older Persons project, a series of interviews with 17 stakeholder organizations to identify unanswered questions and research priorities. This project, which has led to publications in the *Journal of General Internal Medicine* and the *Journal of Hospital Medicine*, has identified priorities in

the areas of advanced care planning, care transition, dementia, depression, medical management, physical function, surgery, medical care, and geriatrics training. Results from the project were presented at the 2014 meetings of SHM, AGS, and the Gerontological Society of America.

LOOKING AHEAD: OPPORTUNITIES

National Institute on Aging

The NIA furthers its mission to improve the health and well-being of older Americans in part by supporting and conducting research on aging processes and physiological changes that affect vulnerability to and management of disease; the effects of the processes underlying age-related diseases; and age-associated complexities such as comorbidity, polypharmacy, and geriatric syndromes such as frailty. Like other institutes at the NIH and like the research community in general, the NIA is undergoing a philosophical shift from a disease-specific focus to a collaborative, problem-based one. Specific priorities and interests are outlined in NIA's Strategic Directions (<http://www.nia.nih.gov/about/living-long-well-21st-century-strategic-directions-research-aging>), which was developed through extensive communication within NIA and with the research community.

NIA also furthers its mission by training and developing highly skilled researchers and clinician-scientists. Funding opportunities are available at various time points in a research career and can help particularly with the challenges associated with transitioning to independence. Although TFWS Scholars and the analogous JAHF-sponsored process in the surgical specialties (Dennis W. Jahnigen Scholars) funding is ending, GEMSSTAR (<http://www.nia.nih.gov/research/dgcg/grants-early-medical-surgical-specialists-transition-aging-research-gemsstar>), which was initiated in 2010 and is co-funded by NIA and several other partners, is a unique funding opportunity targeting early-career physician-scientists focused on aging research in the specialties. These annual awards, which combine a small, 2-year NIA-funded research project (R03) and a professional development plan funded by other sources such as specialty society partners, continue to gain popularity, and several awardees have successfully garnered subsequent K awards, including the NIA Beeson Award and R01s. A biennial GEMSSTAR conference series, launched through an NIA U13 conference grant to the AGS, convenes all past and current GEMSSTAR awardees with several past TFWS and Jahnigen scholars as mentors. Each conference includes sessions on aging research, mentoring, and career development, along with a poster session and an opportunity to interact with NIA and NIH staff and leaders in specialty aging research. These conferences, as well as TFWS and Jahnigen activities at AGS (e.g., the session on Medical Subspecialties) and resultant mentorships, have been integral to the success of the TFWS, Jahnigen, and GEMSSTAR programs. Together, these activities remain the most-supportive mechanisms for reaching out to the medical and surgical specialties. Mentored career development awards, such as the K08 and K23 mechanisms (including Beeson awards), are also available, as well as the underused K99/R00 Pathway to Independence award. For investigator-initiated awards such as the R03

Small Research Grant, the R21 Exploratory/Developmental Research Grant, and the R01 independent Research Project Grant, special consideration, in the form of percentage points added to the priority score, is given to new and early-stage investigators. Other NIA-supported resources include longitudinal cohorts, clinical trials, large databases, online resources, Older Adults Independence Centers (Pepper Centers), and the NIA research blog: “Inside NIA.” Sample federal resources are listed in Table 2. Nonfederal opportunities are available from AGS, the Gerontological Society of America, the American Federation for Aging Research, and others.

In addition to expanding the GEMSSTAR program, NIA staff meet annually with the leadership of professional societies to communicate on research priorities and to assist in implementing interest groups and sections in geriatrics and aging research. Investigators are also encouraged to keep society leadership informed of aging-related research, clinical and training developments, and needs in their fields. NIA encourages researchers to contact staff to discuss ideas for workshops and research projects and offers several specific infrastructure grants (R24) to build communities that will advance the science of aging and geriatrics around a particular problem (e.g., delirium, human immunodeficiency virus in aging, multiple chronic conditions), and it welcomes input for similar collaborative resource-building initiatives for the future. Spearheaded by NIA staff, the NIH has recently launched a trans-NIH interest group on aging, the GeroScience Interest Group, and is considering the establishment of a clinically focused, trans-NIH interest group in aging and geriatrics. NIA is

also interested in augmenting its cadre of reviewers with expertise in aging research to serve on review committees for the GEMSSTAR program and for NIA-assigned applications and aging-related applications in general. The NIH Center for Scientific Review has launched a program (<http://public.csr.nih.gov/ReviewerResources/BecomeAREviewer/ECR/Pages/default.aspx>) to help early-stage investigators gain experience as reviewers.

The John A. Hartford Foundation

Like other funders, the John A. Hartford Foundation (JAHF) has historically funded aging-focused faculty development efforts in siloed programs in the fields of medicine, nursing, and social work, although congruent with its new strategic vision to improve care of older adults, the JAHF now aims to bring together investigators, educators, and clinicians from across these disciplines to enhance the way care is delivered to older Americans. Building on the ongoing work detailed in this article, a new initiative—the Hartford Change AGEnts—was launched in 2013 to provide the skills, tools, and resources to effect changes in health care through offerings such as an online platform, a small grants program, and training institutes. The program was successful in engaging and assisting leaders in aging research and practice. Concluding at the end of 2016, the initiative included a number of subspecialists who wanted to contribute to real and sustained change in the care of an aging society. Additional efforts to support TFWS program scholars and other subspecialists will continue through JAHF co-funding of the NIA U13 conference series mentioned in the previous section. The JAHF is also engaging subspecialists in its three new priority areas: age-friendly hospitals and health systems, end-of-life and serious illness care, and family caregiving. For example, cardiologists and oncologists are actively engaged in the development, testing, and dissemination of models of care that align clinical decisions with health outcome goals and preferences.

Table 2. Federal Resources for Researchers in Geriatrics and Aging

Resource	Website
National Institute on Aging Strategic Directions	http://www.nia.nih.gov/about/living-long-well-21st-century-strategic-directions-research-aging
Grants for Early Medical and Surgical Specialists Transition to Aging Research	http://www.nia.nih.gov/research/dgcg/grants-early-medical-surgical-specialists-transition-aging-research-gemsstar
Online resources, including standardized toolkits	http://www.nia.nih.gov/research/scientific-resources
Inside NIA, a blog for researchers	http://www.nia.nih.gov/research/blog
Claude D. Pepper Older American Independence Centers	http://www.nia.nih.gov/research/dgcg/claude-d-pepper-older-american-independence-centers-oaics
Edward R. Roybal Centers for Translation Research in the Behavioral and Social Sciences of Aging	http://www.nia.nih.gov/research/dbsr/edward-r-roybal-centers-translation-research-behavioral-and-social-sciences-aging
Resource Centers for Minority Aging Research	http://www.nia.nih.gov/research/dbsr/resource-centers-minority-aging-research-rctmar
Geriatric Research Education and Clinical Centers	http://www.va.gov/greccc/

CONCLUSION: THOUGHTS FROM DR. WILLIAM HAZZARD

As subspecialty sections within AGS and the work described here demonstrate, much progress has been made in integrating geriatrics and aging research into the subspecialties under the umbrella of AAIM, the Atlantic Philanthropies, and the JAHF, but the Atlantic Philanthropies is completing its mission in 2015, and the JAHF is pursuing new directions, especially related to the preparation of the workforce required to meet the healthcare needs of the aging U.S. population. Moreover, despite the efforts of the SGIM and SHM in advocating for the inclusion of geriatrics in general internal medicine, these closely related fields are not fully integrated. Thus, progress in merging general internal medicine, hospital medicine, the medical subspecialties, and geriatrics remains a work in progress in a time of uncertain funding for all of these disciplines, especially research and training in academic centers.

The process of healthcare reform, especially since the passage of the Affordable Care Act, in which increasing safety, especially in the hospital and with respect to

iatrogenic complications in the care of elderly adults, is a centerpiece of the movement, is deeply affecting efforts to integrate geriatrics and aging research into the subspecialties. Efforts are underway not only to increase safety at the hospital, but also to change the focus of care away from the hospital to postacute care and primary care practices. Under the auspices of the Center for Medicare and Medicaid Innovation under the Affordable Care Act, emphasis (and payment) will shift from the quantity of care provided (notably of high-cost procedure-based care in a fee-for-service model) to supporting measures reflecting the value of care to each individual at the center of attention, often in a multidisciplinary team-based fashion. In this context, the subspecialties will be needed, but the successful subspecialists will be those who are more aware of where people receive their care, offer better care to older adults in a variety of settings, and work in teams. Thus funding agencies and institutions will prize people skills and team-building skills, which are often not specified in the review criteria for extramural grant applications or promotion of faculty, in grant review as they consider faculty promotions and compensation for faculty. Subspecialties will have to account for these skills as they consider how they will train future specialists and meet the needs of the most rapidly growing and vulnerable population needing care: older adults.

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