

Geriatric UPDATE

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From the Division of Geriatric Medicine



Message from the Chief

It's a pleasure to share our latest newsletter, and also some updates. First, the updates:

- We launched a new geriatric trauma service to improve the care of > 2,000 older trauma patients/year.
- Our initiative to enhance emergency care of older patients, conducted in conjunction with the American College of Emergency Physicians, will ensure that every senior in the ED is screened for delirium.
- Our approach to reducing unplanned admissions from 19 nursing homes, funded by a \$19 million CMS Innovation Center award, was just renewed, allowing us to replicate it in 20 more nursing homes while sustaining it in the current group.
- We are inaugurating a geriatric palliative care fellowship in collaboration with **Bob Arnold, MD**. Dr. Arnold is a past recipient of the AAHPM's Visionary in Palliative Care Award.
- We are seeking a leader for each of two exciting initiatives. The first will enhance geriatrics at the VA Pittsburgh Healthcare System, which is a 10-minute walk from our medical school, main hospitals, and our Division. Since the VA already sponsors a GRECC and a Special Fellowship in Aging, the goal is to expand its geriatric capacity in care, training, and research and, in doing so, to synergize with the existing strengths of our Division and Aging Institute. The second initiative, Biology of Aging, will provide leadership in geroscience to 75 university investigators already engaged in such basic research.

In this issue of *Geriatric Update*, we feature the work of three of our investigators. **Debra Weiner, MD**, is transforming the approach to chronic pain in seniors. Building on her decades of work, she's now publishing a 12-part series in Pain Medicine, developing new teaching tools through her NIH-funded Center of Excellence in Pain Education, and initiating a newly-funded randomized controlled trial to test her innovative method. **Subashan Perera, PhD's** seminal study extends his earlier research with Stephanie Studenski, MD (*JAMA* 2011), which demonstrated a strong relationship between gait speed and mortality. His new study reveals an even stronger relationship between gait speed and future disability, and provides complementary information to further assist with shared decision making. Finally, **Steve Handler, MD, PhD**, shares his framework for adoption of health information technologies in the nursing home. He is using this study not only to develop an exciting new approach to telemedicine for nursing homes, but also to launch a new startup company! More on this and many of our other initiatives to improve geriatric care in our next newsletter.

Thank you for your interest in our programs and research. We hope that you enjoy this issue and, as always, we welcome your comments and suggestions.

Neil M. Resnick, MD

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Chronic Low Back Pain: A New Treatment Approach in Older Adults



Chronic low back pain (CLBP) in older adults affects many individuals, and with the increasing number of older adults (>65 years) in the general population, the numbers that experience CLBP will steadily rise. And so too will diagnostic imaging, pharmacological interventions, and surgeries to attempt to diagnose and ultimately correct the underlying causes in individuals with unrelenting or intractable pain. However, a large percentage of the diagnostic imaging and treatment interventions for CLBP in an older adult population may be unwarranted, misguided, and in the end, ineffective or even harmful. **Debra K. Weiner, MD**, a geriatrician and professor of medicine, with appointments in Geriatric Medicine, Psychiatry, Anesthesiology, and Clinical & Translational Science, is seeking to transform the assessment and management of older adults with chronic low back pain by establishing a comprehensive, new paradigm in patient care.

Current Modalities of Assessment and Treatment

The current assessment and treatment approaches for CLBP in older adults are utilization-intensive, expensive, and provide, in many cases, suboptimal outcomes. As Dr. Weiner explains, imaging tests (MRI, x-ray) of most older adults will show a variety of abnormal findings or degeneration of the lumbar spine or discs, even in patients with no reported pain or symptoms.

Taken alone, without consideration of other possible factors or contributing pathologies, the ubiquitous findings of abnormalities in lumbar imaging of older adults may be responsible for misidentification of the root cause(s) of pain and thus end with treatments that do not address the possible underlying cause or causes, fail to relieve symptoms adequately, or recommend treatments that may be entirely unnecessary or in some instances harmful for some patients.

“In our current approaches, we are doing one of two things. We are either treating chronic low back pain as a vital sign, and we are prescribing medications to lessen a patient’s pain, or we are treating chronic low back pain as a condition that is exclusively based on degenerative disease of the spine. The problem with using these approaches is virtually all older adults, whether or not they have back pain, have very similar disease in their spine. My feeling is that we have to look outside the spine to see what other conditions or factors are modifying what is happening with an individual’s lumbar spine,” says Dr. Weiner.

A New Approach

In ongoing publication in the journal *Pain Medicine*, Dr. Weiner and colleagues outline the rationale for, and a new approach to, the consideration of chronic low back pain in older adults through a 12-part series titled “Deconstructing Chronic Low Back Pain in the Older Adult: Shifting the Paradigm from the Spine to the Person.” With the research and proposed guidelines, “We are trying to figure out an approach that could work in current clinical practice with the many barriers that exist,” says Dr. Weiner. Primary care providers often don’t have time to do thorough evaluations. Pain specialists often don’t do this kind of evaluation. And physical therapists often have not been trained in the chronic care model. These barriers and others pointed out by Dr. Weiner are several important issues that must be addressed long-term within the greater health care system.

At the crux of Dr. Weiner’s shift in understanding chronic low back pain in older adults are the ideas that “degenerative discs and facet joints of the lumbar spine [are] weak links instead of diseases and CLBP [is] a syndrome, a final common pathway for the expression of multiple contributors.” (Weiner D. *Pain Medicine*. 2015; 16:881-885) She goes on to say in the introductory



paper to the series that they are, “Written from the vantage point that the lumbar spine is a weak link or one of multiple treatment targets rather than the sole treatment target in older adults with CLBP.”

The scope of the research touches many common conditions that older adults experience, and that either individually, or in some aggregate, along with degenerative changes of the lumbar spine, can contribute to or otherwise manifest as an individual’s experience of chronic low back pain. Dr. Weiner and colleagues have identified and developed recommendations for evaluating and treating as contributors to CLBP the following conditions:

- Hip Osteoarthritis
- Myofascial Pain
- Lumbar Spinal Stenosis
- Sacroiliac Joint Syndrome
- Lateral Hip/Thigh Pain Syndrome
- Leg Length Discrepancy
- Insomnia
- Fibromyalgia
- Depression
- Anxiety
- Maladaptive Coping
- Dementia

While there may be other contributing factors, the commonality of these 12 conditions “should be evaluated routinely as potential contributors to pain and disability.” (Weiner D. *Pain Medicine*. 2015; 16:881-885)

While each of the 12 contributing factors is discussed in detail in separate papers, Dr. Weiner indicates that the body of work is meant to be used in tandem, as a single assessment tool, with each aspect coming into play, or not, as the case may be, during patient evaluation and subsequent ongoing management.

Developing the Assessment Algorithms

For each of the common contributing conditions discussed above, Dr. Weiner and colleagues developed an evidence-based assessment and treatment algorithm using a modified Delphi approach. Initial drafts of each algorithm were developed by Dr. Weiner, “Based on a comprehensive review of the literature and knowledge of medications and resources that are commonly available to patients.” Drafts of each algorithm were assessed and refined by members of a multidisciplinary, expert panel of clinicians and a panel of primary care providers (PCPs) through the iterative Delphi process until a consensus was achieved. These assessment and treatment algorithms provide the basis for each of the papers in the series, and are illustrated through a clinical case study.

“I was encouraged by how all the contributors enthusiastically embraced the project. They recognized what a huge problem CLBP is in this patient population. I’ve never had so much uniform enthusiasm about a project,” says Dr. Weiner.

For a detailed explanation and figures illustrating the algorithm development process, see Weiner D. *Pain Medicine*. 2015; 16:881-885.

Hip Osteoarthritis as a Contributor to CLBP

Part I of Dr. Weiner’s “Deconstructing Chronic Low Back Pain” series deals with the incidence, prevalence, and contribution of hip osteoarthritis (OA) in CLBP, and offers an illustrative case study of an 85-year-old individual with an extensive history of low back pain. As Dr. Weiner points out, there are data that suggest nearly 25% of older adults “with CLBP may have physical examination evidence of hip OA that is typically one of multiple contributors to their pain and disability.” (Weiner D. *Pain Medicine*. 2015; 16:886-897)

The pain associated with hip osteoarthritis can often manifest for patients as if from the lumbar spine. Findings upon MRI of abnormality or degeneration of the lumbar spine is a possible “red herring,” given the evidence from several studies that point to an exceptionally high incidence of degenerative lumbar spine disease in older adults, even those who are completely asymptomatic. Thus, evaluation for possible hip OA makes clinical sense, and can allow for more appropriately targeted and likely more effective treatment should the presence of hip OA be confirmed.

The treatment algorithm, developed by Dr. Weiner and colleagues for the assessment and management of CLBP hip OA patients, is shown on Page 4.

Putting It into Practice

The reasons for the experience of chronic low back pain in older adults is often difficult to assess and likely the culprits are multimodal in many individuals. Imaging results alone more often than not show anatomical abnormalities or degeneration that may be misleading as to the root cause of a patient’s pain, thereby possibly leading to incorrect or unnecessary interventions. “To meet the needs of future patients, we need to educate clinicians who are in training to know how to do musculoskeletal assessments and to understand the

Continued on Page 4

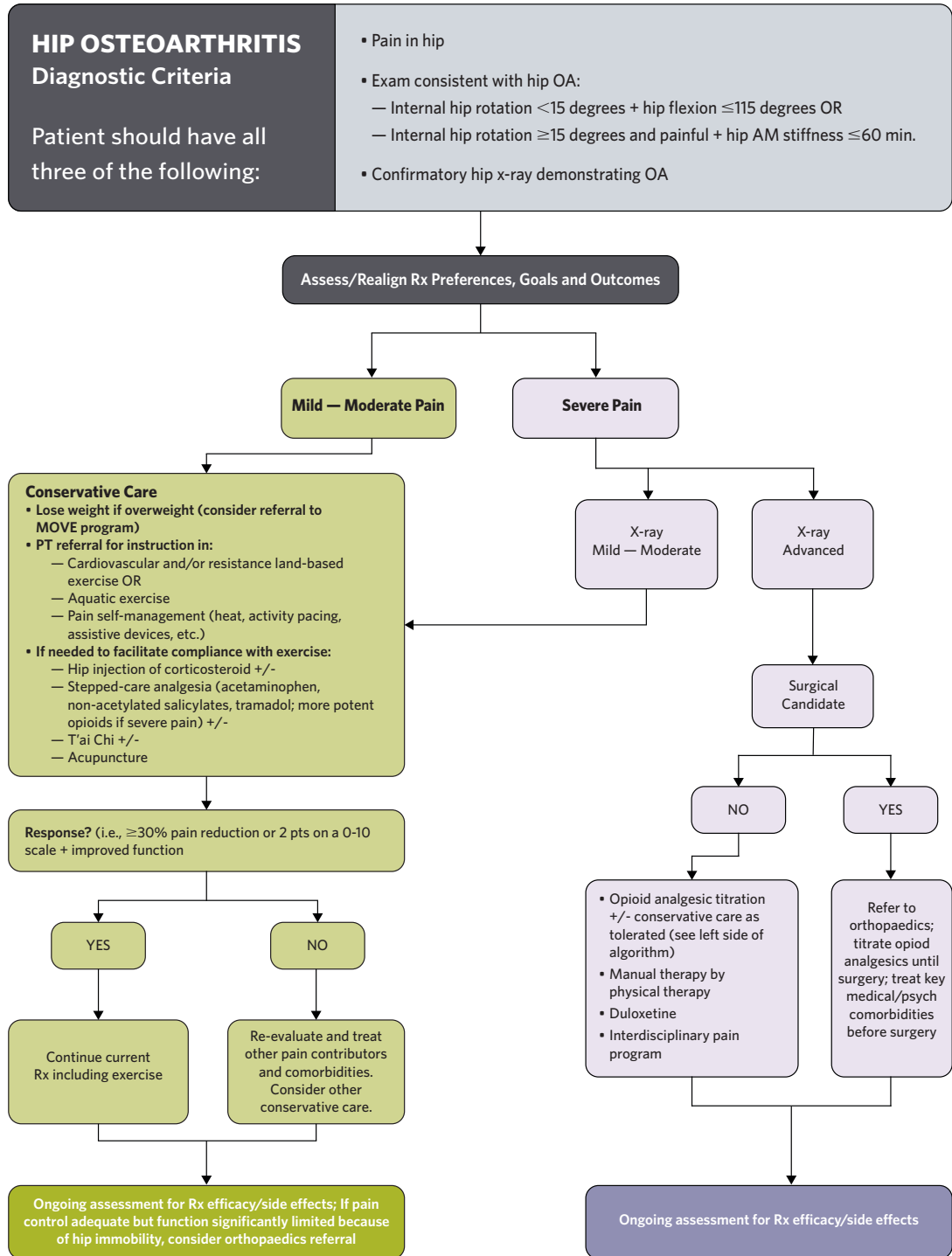


Figure 1. Algorithm for the Evaluation and Treatment of Hip OA in an Older Adult

biopsychosocial nature of chronic pain. Only then are we going to stop exposing people to expensive and potentially dangerous procedures and medications that don't help them," says Dr. Weiner.

Dr. Weiner's and colleagues' approach to the assessment and treatment of chronic low back pain in older adults advocates for CLBP to be viewed as a syndrome with

many possible contributors, both physical and psychological, that either alone or when paired with degenerative elements of the lumbar spine, cause pain and/or disability. Her research and series of papers on "Deconstructing Chronic Low Back Pain in the Older Adult" is providing guidance and a new approach for geriatricians and PCPs in the assessment and treatment of their older adult patient population experiencing CLBP.

Predicting Incident Disability With Gait Speed



There is a growing body of evidence surrounding geriatric patient gait speed and its ability to reliably predict such things as patient mortality risk. Recent research on gait speed by **Subashan Perera, PhD**, associate professor of medicine, and Stephanie Studenski, MD, MPH, former professor of medicine, have investigated the correlations between gait speed and the risk of incident disability in patients 65 years and older.

In some respects, older adults tend to fear becoming disabled even more so than death itself. The reasons for this are most likely many, and individual, but may ultimately have to do with the great desire not to live one's life in a diminished state, with diminished physical capacity to take care of one's self, and concern about being a burden on others. If there were ways to predict, at least somewhat reliably, who may be at risk for certain kinds of disability, interventions may eventually be possible to mitigate or reverse the risk, or at a minimum, assist in planning care and living arrangements.

Dr. Perera's and colleagues' recent paper, "Gait Speed Predicts Incident Disability: A Pooled Analysis" (Perera S, et al. *J Gerontol A Biol Sci Med Sci*. 2016; 71(1):63-71), looked at seven studies of ≥ 65 -year-old community-dwelling older adults to determine whether or not baseline gait speed could be a reliable predictor of incident disability risk. For this analysis, Dr. Perera and colleagues defined disability using personal care and mobility activities that were common across all seven of the pooled studies, and representing different levels of disability. The study restricted the function measures to incident dependence in bathing/dressing and difficulty walking/climbing over a 3-year period, and recorded self-reported disability status in these activities against their gait speed. Gait speeds were measured in meters per second (m/s), categorized to 0.2 m/s wide intervals.

The findings were clear and provided a strong and consistent association between gait speed and incident disability. As the results reveal (see Table 3 in the paper), the relative risk of disability in bathing/dressing and walking "show incident disability in a clearly graded fashion, with little evidence of a threshold," and absolute rates follow a similar pattern that could be used to construct clinically usable nomograms. (Perera, et al) As gait speed increases, independent of age, an individual's 3-year risk of disability decreases and, "The overall estimated magnitude of risk ratios appear to indicate that the association with disability within 3 years might be even greater (~30% risk reduction per 0.1 m/s) than that previously reported with death (18%–24% risk reduction." (Studenski, et al)

"After completing the pooling and total analysis of the seven studies, we were surprised by the level of consistency across all of the patient groups in the study. We didn't expect that this effect would show up again and again in every single subgroup that was analyzed. The magnitude of association was actually pretty tight in males, females, individuals with illness, etc. We knew from other studies that walking speed is associated with

mortality and disability outcomes, but it turns out that the association is still there even after accounting for other factors likely to be known at a typical clinic visit such as age, gender, disease history, BMI, hospitalizations, and the like," says Dr. Perera.

Given the conclusions of the study and the predictive ability of gait speed and disability, it may be natural to assume that increasing an individual's gait speed will result in a proportional decrease in risk of mortality and disability. Dr. Perera cautions that, "Our study shows an association between gait speed and poor outcomes. However, we cannot say right now that if you somehow improve a person's gait speed, for example from 0.3 m/s to 0.4 m/s, they are going to live longer, or their risk of disability will be decreased. This may eventually be proven to be true, but we do not currently have evidence to support such a theory."

Predicting mortality or the risk of disability to a certain degree based on gait speed can give a good basis for discussion between the geriatrician and the patient. Dr. Perera hopes that ultimately, geriatricians will more frequently adopt measuring the gait speed of patients into their clinical practices. "I hope that practicing geriatricians would take from our study that it is not that burdensome to measure a patient's gait speed and do so reliably. There are simple ways this can be done in practice. Using the measure can allow the physician another, easily gathered 'vital statistic' that can help them assess the patient and intervene in ways that may be beneficial in helping older adults avoid a temporary or permanent disability," says Dr. Perera. (For further reading, see the previously published abstract: Woolley DC, Studenski S, Perera S, Rogers N. Feasibility and Reproducibility of Walking Speed as a Geriatric Vital Sign in Community Practice. *J Am Geriatr Soc*. 2004; 52(suppl 1):S195.)

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Health Information Technology and the Nursing Home



Understanding how health information technology adoption in the nursing home affects clinical care and clinical care processes is the focus of a recent research study conducted by Howard Degenholtz, PhD, Abby Resnick, MA, Michael Lin, PhD, of the University of Pittsburgh Department of Health Policy and Management, and **Steven Handler, MD, PhD**, associate professor of geriatric medicine, biomedical informatics, and clinical and translational research. Dr. Handler also is the director of geriatric telemedicine programs, as well as chief medical informatics officer for the UPMC Community Provider Services division.

The use of various health information technologies (HIT) has, and is being increasingly integrated into the day-to-day operations of acute care hospitals, physician practices, health care insurance entities, and the like. In virtually every aspect of patient care, operations, communications, financial systems, etc., HIT have been deployed to increase efficiencies, improve quality of

care, reduce errors, comply with regulatory guidelines, and meet other objectives. The same cannot currently be said about the level of HIT integration in nursing homes and skilled nursing and rehabilitation facilities. Dr. Handler's and colleagues' research and objectives are designed to "present an empirically derived framework for understanding and measuring the actual application of HIT that bridges the generic gap between taxonomies and the application

to specific clinical care processes." (Degenholtz H, Resnick A, Lin M, Handler S. Development of an Applied Framework for Understanding Health Information Technology in Nursing Homes. *JAMDA*. 2016; 17:434-440)

As Dr. Handler and colleagues explain, there have in the past been two distinct yet somewhat overlapping "taxonomies that identify a large array of potential uses of HIT" in nursing homes, but they do not afford a good framework for being able to study the impact of technologies on any specific aspects of patient care or clinical processes within the nursing home environment. They can allow one to measure or assess what systems are in place, but not what effects they may have on specific processes or outcomes. These systems of classification (one developed by the Institute of Medicine, and another recommendation from the U.S. Department of Health & Human Services Office of Disability, Aging, and Long-Term Care Policy) are quite different in scope and have little overlap or correlation.

As the authors explain in the paper, this study was undertaken to "identify care processes in the nursing home that could benefit from the use of HIT from the perspective of multiple stakeholders: midlevel practitioners (i.e., adult, family, or geriatric nurse practitioners and physician assistants), certified nursing assistants (CNAs), consultant pharmacists (i.e., RPh and PharmD), physicians (including but not limited to medical directors), directors of nursing (DONs), and nursing home administrators (NHAs). The results of those sessions were then analyzed by the study team to produce a conceptual framework that can be used to guide future research."

In terms of a new framework, Dr. Handler's and colleagues' proposal looks at two major classifications of HIT for "Care-Related Processes" and "Cross-Cutting Technological Uses." Specific areas of HIT usage are then placed accordingly under each area (Transfer of Data; Regulatory; Quality Improvement; Structured Clinical Documentation; Medication Use Process; and Communication) and all align with the Care-Related Processes classification. Knowledge Management, Operations, and Technology/Infrastructure are part of the latter "domain" of Cross-Cutting Technological Uses. Each of the sub areas of HIT has been given a definition to allow for clarity.

Dr. Handler and his research colleagues hope that this new framework for the classification of HIT in nursing homes will allow for future research that can attempt to measure the effects that health information technology has on the quality of care provided in nursing homes, how processes are shaped and affected by the implementation of various HIT solutions, and how these processes or changes in processes ultimately affect quality measures.

For a thorough examination of the proposed new framework for understanding HIT in nursing homes, and the data analysis that generate the findings, see the full text of the paper: Handler, S. et al. Development of an Applied Framework for Understanding Health Information Technology in Nursing Homes, *JAMDA* 2016; 17:434-440.

HITs have been deployed to increase efficiencies, improve quality of care, reduce errors, and comply with regulatory guidelines.

SELECTED RECENT PUBLICATIONS

Perera S, Patel KV, Rosano C, Rubin S, Satterfield S, Harris T, Ensrud K, Orwoll E, Lee CG, Chandler JM, Newman AB, Cauley JA, Guralnik JM, Ferrucci L, Studenski SA. **Gait Speed Predicts Incident Disability: A Pooled Analysis.** *J Gerontol- A: Med Sci.* 2016; 71:63-71.

In a prior study (*JAMA*, 2011), Drs. Perera and Studenski found that gait speed correlated strongly with mortality, even after adjusting for a variety of other factors. In this study, they combined data from 7 longitudinal elderly cohorts (N=27,220) to examine the association between baseline walking speed and subsequent mobility difficulty and disability. Impressively, the correlations were even stronger than those with death. Equally important, the resulting nomograms can be used to project absolute risk in subgroups of seniors and also to facilitate shared decision making on screening, treatment, and advance care planning.

Newman AB, Sanders JL, Kizer JR, Boudreau RM, Odden MC, Al Hazzouri AZ, Arnold AM. **Trajectories of Function and Biomarkers With Age: The CHS All Stars Study.** *Int J Epidemiol.* 2016 Jun 6. pii: dyw092. [Epub ahead of print].

Although function declines with age, the roles of age and disease are unclear. In this important study, Dr. Newman and colleagues assessed the trajectory of decline in 5,888 participants of the Cardiovascular Health Study, all of whom were > 65-years-old at enrollment and were followed for up to 18 years. For the first time, sociodemographic factors, function, diseases, medications, and biomarkers were all tracked prospectively and concurrently. The study found that functional decline: (1) occurred in all participants, (2) accelerated late in life, even for those who remained free of disease, and (3) tracked with known biomarkers, especially cystatin-C.

Nayak S, Greenspan SL. **Cost-effectiveness of Osteoporosis Screening Strategies for Men.** *J Bone Miner Res* 2016; 31:1189-99.

Osteoporosis affects up to 25% of older men, but the best screening strategy for this group is unclear. To address this gap, Drs. Nayak and Greenspan developed an individual-level state-transition model to identify the cost-effectiveness of different strategies. Not screening was more expensive than any strategy that included screening with dual energy X-ray absorptiometry (DXA). Of those examined, a strategy that included age, femoral neck DXA, and vertebral fracture assessment was the most effective one within accepted cost-effectiveness parameters.

Bell SP, Orr NM, Dodson JA, Rich MW, Wenger NK, Blum K, Harold JG, Tinetti M, Maurer MS, Forman DE. **What to Expect from the Evolving Field of Geriatric Cardiology.** *J Am Coll Cardiol.* 2015; 66:1286-99.

Spurred by its Section of Geriatric Cardiology, created and led by Dr. Forman, the American College of Cardiology published both this White Paper and a Scientific Statement. The White Paper focuses on the rationale and priorities for the new and

growing field of geriatric cardiology, and it includes a suggested core curriculum to improve cardiovascular practice. The Scientific Statement (*J Am Coll Cardiol.* 2016;67:2419-40) identifies knowledge gaps in the existing cardiovascular guidelines and the urgent need for more extensive research.

Weiner DK. **Introduction to Special Series: Deconstructing Chronic Low Back Pain in the Older Adult: Shifting the Paradigm From the Spine to the Person.** *Pain Medicine* 2015; 16:881-5.

Led by Dr. Weiner, content experts and primary care providers created practical, age-appropriate, evidence- and expert opinion-based algorithms. The goal was to guide evaluation and treatment of common contributors to pain and disability in older adults with chronic low back pain. These patient-centered algorithms are for: hip osteoarthritis, fibromyalgia, myofascial pain, depression, anxiety, maladaptive coping, insomnia, sacroiliac joint, leg length inequality, lateral hip/thigh pain, lumbar spinal stenosis, and dementia. Publication of the 12 articles is ongoing in 2015-2016 in *Pain Medicine*, the official journal of the American Academy of Pain Medicine.

Culley CM, Perera S, Marcum ZA, Kane-Gill SL, Handler SM. **Using a Clinical Surveillance System to Detect Drug-Associated Hypoglycemia in Nursing Home Residents.** *J Am Geriatr Soc.* 2015; 63:2125-9.

Drug-induced hypoglycemia is common, hazardous, and under-detected in nursing homes (NH). Dr. Handler's team devised a clinical surveillance system, which included computer-generated alerts for residents with glucose \leq 70 mg/dl who were taking a potentially-contributing medication. The system detected 772 alerts involving 141 residents, 64% of whom had a glucose \leq 55 mg/dL, and 30% a glucose \leq 40 mg/dL. Insulin was associated with 99% of alerts. The incidence of drug-associated hypoglycemia was substantial at 9.5/1000 resident-days. Future studies will determine the impact on real-time detection and treatment of hypoglycemia.

Gray SL, Anderson ML, Dublin S, Hanlon JT, et al. **Cumulative Use of Strong Anticholinergics and Incident Dementia: A Prospective Cohort Study.** *JAMA Intern Med* 2015; 175:401-7.

Anticholinergic drugs can cause delirium. Although it usually abates with drug discontinuation, dementia may ensue. Dr. Hanlon and colleagues examined prospective data from > 3,000 community-dwelling seniors who were enrolled in an HMO for at least 10 years, cognitively intact at baseline, and screened biannually. Use of a minimum effective geriatric anticholinergic dose for 3 years was associated with a 54% increased risk of dementia, even after adjusting for other risk factors, comorbidities, and medications. Confirmation of this relationship is required, but these results add one more reason to be cautious in prescribing agents with anticholinergic side effects, especially for chronic conditions over several years.

About the UPMC Division of Geriatric Medicine

Ranked among the nation's top hospitals for geriatric care by *U.S. News & World Report*, UPMC offers older adult patients access to a multidisciplinary network of comprehensive clinical care. Our geriatricians, all specialists in internal medicine, have additional subspecialty training in geriatrics.

- We focus on the prevention, diagnosis, and treatment of geriatric syndromes, including:
 - Memory loss/dementia
 - Falls or unsteadiness
 - Decreased appetite or weight loss
 - Multiple medical issues
 - Osteoporosis
 - Depression or agitation
 - Incontinence
 - Generalized weakness
 - Multiple medications with possible side effects
 - Functional decline
- Our physicians provide integrated care to patients in acute care, ambulatory care, home and community-based care, and long-term care.
- Each year the Division hosts the *Clinical Update in Geriatric Medicine*, a three-day seminar featuring timely, relevant topics from a range of experts in geriatric medicine.

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25th Annual Clinical Update in Geriatric Medicine

April 6-8, 2017 • Marriott Pittsburgh City Center

This 3-day conference features speakers selected not only on the basis of their nationally-recognized expertise, but also their ability to share it in a succinct and practical fashion that is easy to immediately incorporate into your practice.

Continuing Medical Education

A selection of free CME courses from the Division of Geriatric Medicine are now available by visiting UPMCPhysicianResources.com. These include:

Breaking Falls

Rollin Wright, MD

Geriatrics and Cardiovascular Disease: Bench to Bedside

Daniel Forman, MD, and Sruti Shiva, MD

Geriatrics: Bench to Bedside to Policy

Neil M. Resnick, MD

Drug Rounds: Inappropriate Medications in the Elderly

Joseph T. Hanlon, PharmD, MS

Geriatric Urinary Incontinence

Neil M. Resnick MD

Incomplete Response in Late-Life Depression: Getting to Remission

Charles F. Reynolds III, MD

The Difference an Age Makes: What's so Special About Seniors?

Neil M. Resnick, MD

Preoperative Evaluation of Elderly Patients in 2015

Fred Rubin, MD

Negotiating Diabetes Management in the Elderly

Mary Korytkowski, MD

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A world-renowned health care provider and insurer, Pittsburgh-based UPMC is inventing new models of patient-centered, cost-effective, accountable care. It provides nearly \$900 million a year in benefits to its communities, including more care to the region's most vulnerable citizens than any other health care institution. The largest nongovernmental employer in Pennsylvania, UPMC integrates 60,000 employees, more than 20 hospitals, more than 500 doctors' offices and outpatient sites, and a more than 3 million-member Insurance Services Division, the largest medical and behavioral health services insurer in western Pennsylvania. Affiliated with the University of Pittsburgh Schools of the Health Sciences, UPMC ranks No. 12 in the prestigious *U.S. News & World Report* annual Honor Roll of America's Best Hospitals. UPMC Enterprises functions as the innovation and commercialization arm of UPMC, while UPMC International provides hands-on health care and management services with partners in 12 countries on four continents. For more information, go to UPMC.com.