Geriatric Cardiology: An Emerging Discipline

John A. Dodson, MD
Assistant Professor of Medicine and Population Health
Director, Geriatric Cardiology Program
New York University School of Medicine

Case History
Case History

• 92 year-old male with history of aortic stenosis, hypertension, post-herpetic neuralgia
• Admitted after a fall at home
• Poor historian, speaking in short sentences

Case History

• CXR: Perihilar opacities, consolidation R base
• ECG: RBBB, LAFB, TWI I + AVL
Case History

TAVR?
(Transcatheter Aortic Valve Replacement?)
ICD?
(Implantable Cardioverter Defibrillator?)

HOSPICE?
World Death Rate Holding Steady At 100 Percent

JANUARY 22, 1997 / ISSUE 31-02

GENEVA, SWITZERLAND—World Health Organization officials expressed disappointment Monday at the group’s finding that, despite the enormous efforts of doctors, rescue workers and other medical professionals worldwide, the global death rate remains constant at 100 percent.

Death, a metabolic affliction causing total shutdown of all life functions, has long been considered humanity’s number one health concern. Responsible for 100 percent of all recorded fatalities worldwide, the condition has no cure.

"I was really hoping, with all those new radiology treatments, rescue helicopters, aerobics TV shows and what have you, that we might at least make a dent in it this year," WHO Director General Dr. Gerst Bladt said. "Unfortunately, it would appear that the death rate remains constant and total, as it has inviolably since the dawn of time."

The “Silver Tsunami”
Terminology

Young old: 65-74
Medicare
Middle old: 75-84
“Older adults”
Oldest old: ≥85
“Oldest old”

Projected U.S. older adult population, 2000-2050

- 5.5 million age 85+ in 2010
- 18 million age 85+ in 2050

Dodson JA et al. Canadian J Cardiol 2016;32:1056–64
Revascularization trends in patients ≥80 - AMI

![Graph showing revascularization trends](image)

1996: PCI 2%
2006: PCI 25%
2016: PCI ~55% (SILVER-AMI)

Dodson JA & Maurer MS. Aging Health 2011;7:283-295

---

Heart failure and cardiomyopathies

Trends in left ventricular assist device use and outcomes among Medicare beneficiaries, 2004–2011

Julianna F Lampropulos,1,2 Nancy Kim,1,3 Yun Wang,1,2,4 Mayur M Desai,1,5 José Augusto S Barreto-Filho,1,6 John A Dodson,7 Daniel L Dries,8 Abeel A Mangl,8 Harlan M Krumholz1,2,9,10

Lampropulos JF et al. Open Heart 2014;1:e000109
LVAD Implants age ≥65, 2004-2011

Source: American Geriatrics Society (www.americangeriatrics.org)

Population getting older – and # of geriatricians is stagnant

Source: American Geriatrics Society (www.americangeriatrics.org)
The Elderly Are Not Just “Older Adults”

Children are not just “little adults”
CELLULAR CHANGES
- Telomere shortening
- Oxidative stress
- Protein misfolding
- Autophagy
- Inflammation
- Advanced glycosylation

Ungvari Z et al. J Gerontol Ser A 2010; 65:1028-1041

VASCULAR CHANGES
- Arterial stiffening
- Systolic hypertension

MYOCARDIAL CHANGES
- LV thickening
- Diffuse fibrosis

Dodson JA & Maurer MS. In Cardiology: an Illustrated Textbook, 2012
Phenotype of Aging

- More bleeding after PCI
- More complications after cardiac surgery
- More readmissions after heart failure discharge
- More difficult-to-control hypertension
- Higher mortality after AMI

Bleeding Avoidance Strategies and Outcomes in Patients ≥80 Years of Age With ST-Elevation Myocardial Infarction Undergoing Primary Percutaneous Coronary Intervention (from the NCDR CathPCI Registry)

John A. Dodson, MD\textsuperscript{a,b}, Yongfei Wang, MS\textsuperscript{a}, Sarwat I. Chaudhry, MD\textsuperscript{c}, and Jeptha P. Curtis, MD\textsuperscript{a,d,e}

The purpose of our study was to evaluate the use of bleeding-avoidance strategies (BAS) and risk-adjusted bleeding over time in patients ≥80 years of age undergoing primary percutaneous coronary intervention (PCI) for ST-segment elevation myocardial infarction. We analyzed data from the CathPCI Registry from July 1, 2006 through June 30, 2009. Patients were included if they were ≥80 years old, presented with ST-segment elevation myocardial infarction, and underwent primary PCI. We evaluated trends in use of BAS (direct thrombin inhibitors, vascular closure devices, and radial access) and risk-adjusted bleeding over time. Of 10,469 patients ≥80 years old undergoing primary PCI, 1,002, (9.6%) developed a bleeding complication. Use of direct thrombin inhibitors and vascular closure devices increased over time (12.8% to 24.9% and 29.2% to 32.7%, p <0.01 and <0.05 for trends, respectively). Radial access was extremely uncommon (<1%) and did not change over the course of the study. In multivariable analyses, use of BAS was associated with lower bleeding. However, over the course of the study period, overall risk-adjusted bleeding did not decrease significantly (9.9% to 9.4%, p = 0.14 for trend). In conclusion, patients ≥80 years old undergoing primary PCI are at high risk of bleeding, and despite significant increases in use of BAS, the overall rate of bleeding complications remains high. © 2012 Elsevier Inc. All rights reserved. (Am J Cardiol 2012xxxxx)
Methods

- NCDR CathPCI Registry
- Primary PCI for STEMI (103,575 pts)
- Subgroup ≥80 years (N=10,469)
- Outcome: Major bleeding (∩ Hb>3 or transfusion)

Bleeding after PCI for STEMI (unadjusted)

Dodson JA et al. Am J Cardiol 2012;110:1-6
Multivariable adjustment

- Female gender
- Weight
- Heart failure
- Hypertension
- Prior PCI
- Cerebrovascular disease
- Cardiogenic shock
- Balloon pump
- Renal failure
- NYHA class
- Peripheral vascular disease

Dodson JA et al. Am J Cardiol 2012;110:1-6

Bleeding after PCI for STEMI (adjusted)

Dodson JA et al. Am J Cardiol 2012;110:1-6
Warfarin and traumatic ICH

• 31,951 Veterans age ≥75 newly prescribed warfarin for A-Fib
• Outcome: hospitalization for traumatic intracranial hemorrhage (ICH) after starting warfarin (based on inpatient claims)
Warfarin and traumatic ICH

- Traumatic IC bleeding among Veterans starting warfarin: 4.80 per 1000 person years
- Absolute event rates:
  - 0.54% (1 yr)
  - 2.10% (3 yrs) -> 1 in 50
**Warfarin and all-cause bleeding**

- Subsequent study (same cohort): 1 in 5 Veterans hospitalized for *any* bleeding within 30 months of starting warfarin

---

**Breakdown by bleeding subtype**

- 7288 of 31,951 patients (23%) admitted for bleeding
- 39% of bleeding patients had >1 admission
- Stroke hospitalization over same period: 5%

---

Dodson JA et al. AHA Scientific Sessions 2015
(Making Sense of)
Geriatric Impairments

Phenotype of Aging
Comorbidity in CV disease

Traditional
• Renal failure
• COPD
• Cancer
• Diabetes

Geriatric impairments
• Cognitive impairment
• Frailty
• Falls
• Incontinence
Geriatric Impairments

• Frailty = increased physiologic vulnerability to stressors

• Criteria:
  ➢ Unintentional weight loss
  ➢ Self-reported exhaustion
  ➢ Weakness (grip strength)
  ➢ Slow walking speed
  ➢ Low physical activity


Association Between Gait Speed as a Measure of Frailty and Risk of Cardiovascular Events After Myocardial Infarction

Yasushi Matsuzawa, MD,*† Masaaki Konishi, MD, PriD,‡ Eiichi Akiyama, MD,*† Hiroyuki Suzuki, MD,* Naoki Nakayama, MD, PriD,*† Masayoshi Kiyokuni, MD, PriD,* Shinichi Sumita, MD, PriD,* Toshiaki Ebina, MD, PriD,* Masumi Kosuge, MD, PriD,* Kiyoshi Hibi, MD, PriD,* Kengo Tsukahara, MD, PriD,* Noriaki Iwahashi, MD, PriD,* Mitsuki Endo, MD, PriD,* Nobuhiko Maejima, MD,* Kenichiro Saka, MD,* Katsutaka Hishiba, MD,* Kozo Okada, MD,* Masataka Taguri, PriD,† Satoshi Morita, PriD,† Seigo Sugiyama, MD, PriD,† Hisao Ogawa, MD, PriD,† Hironobu Sashika, MD, PriD,§ Satoshi Umemura, MD, PriD,|| Kazuo Kimura, MD, PriD*

Yokohama and Komamoto, Japan

Slow gait speed post-AMI and cardiac events

Geriatric impairments are common and important prognostically

Are we recognizing them?
Cognitive Impairment in Older Adults with Heart Failure: Prevalence, Documentation, and Impact on Outcomes

John A. Dodson, MD, a,b Tuyet-Trinh N. Truong, MD, c Virginia R. Towle, MS, c Gerard Kerins, MD, c
Sarwat I. Chaudhry, MD a

"Sections of Cardiology, Geriatrics, and General Internal Medicine, Departments of Internal Medicine, Yale University School of Medicine, New Haven, Conn; "Section of Geriatrics, Department of Internal Medicine, Hospital of Saint Raphael, New Haven, Conn.

ABSTRACT

BACKGROUND: Despite the fact that 80% of patients with heart failure are aged more than 65 years, recognition of cognitive impairment by physicians in this population has received relatively little attention. The current study evaluated physician documentation (as a measure of recognition) of cognitive impairment at the time of discharge in a cohort of older adults hospitalized for heart failure.

METHODS: We performed a prospective cohort study of older adults hospitalized with a primary diagnosis of heart failure. Cognitive status was evaluated with the Folstein Mini-Mental State Examination at the time of hospitalization. A score of 21 to 24 was used to indicate mild cognitive impairment, and a score of ≤ 20 was used to indicate moderate to severe impairment. To evaluate physician documentation of cognitive impairment, we used a standardized form with a targeted keyword strategy to review hospital discharge summaries. We calculated the proportion of patients with cognitive impairment documented as such by physicians and compared characteristics between groups with and without documented cognitive impairment. We then analyzed the association of cognitive impairment and documentation of cognitive impairment with 6-month mortality or readmission using Cox proportional hazards regression.

RESULTS: A total of 282 patients completed the cognitive assessment. Their mean age was 80 years of age, 38.8% were women, and 47.3% had mild cognitive impairment. Of these patients, only 39.2% had cognitive impairment documented by the discharge summary. Patients with mild cognitive impairment had a significantly higher 6-month mortality than those without cognitive impairment (22.7 vs 10.4%, P = 0.03). The hazard ratio for mild cognitive impairment was 1.82 (95% CI, 1.03 to 3.20). The association of cognitive impairment and documentation of cognitive impairment with 6-month mortality or readmission was not significant.

Methods

- Why does this matter?
  - Lasix
  - Metoprolol
  - Lisinopril
  - Spironolactone
  - Aspirin
  - Digoxin

- Weigh yourself once a day

- Avoid foods high in salt

- Follow-up in clinic in one week

Methods

• 282 patients age ≥65 hospitalized for heart failure
• Cognitive testing (MMSE)
• Reviewed MD discharge summaries
• Analyzed 6-month mortality/readmission

### Recognition of cognitive impairment

<table>
<thead>
<tr>
<th></th>
<th>Recognized at Discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild cognitive impairment</td>
<td>8/71 (11%)</td>
</tr>
<tr>
<td>Moderate-severe</td>
<td>24/61 (39%)</td>
</tr>
</tbody>
</table>


### Recognition and 6-month mortality/readmission

<table>
<thead>
<tr>
<th></th>
<th>Unadjusted*</th>
<th></th>
<th>Adjusted</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HR (95% CI)</td>
<td>P</td>
<td>HR (95% CI)</td>
<td>P</td>
</tr>
<tr>
<td>Cognitive impairment recognized</td>
<td>1.42 (0.86-2.37)</td>
<td>0.17</td>
<td>1.27 (0.72-2.25)</td>
<td>0.41</td>
</tr>
<tr>
<td>Cognitive impairment unrecognized</td>
<td>1.60 (1.14-2.25)</td>
<td>&lt;0.01</td>
<td>1.53 (1.06-2.20)</td>
<td>0.02</td>
</tr>
</tbody>
</table>

*Reference group: no cognitive impairment

Geriatric impairments are under-recognized

Does identification and management improve outcomes? TBD

**SILVER-AMI**
- NHLBI-funded cohort study
- 3000 AMI patients age ≥75
- Aims: 6-month risk models
- PI: Sarwat Chaudhry (Yale)
Analysis Plan

- Slow gait speed
- Weak grip strength
- Cognitive impairment
- Visual impairment
- Hearing impairment
- Unintentional weight loss
- Depression
- Difficulty ambulating

Geriatric impairments measured:

[www.cdc.gov/steadi](http://www.cdc.gov/steadi)

![Geriatric impairments: STEMI](image)

Nanna M...Dodson JA. ACC Scientific Sessions 2016
Geriatric impairments: NSTEMI

<table>
<thead>
<tr>
<th>Impairment</th>
<th>Men (N=622)</th>
<th>Women (N=474)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slow gait speed</td>
<td>P&lt;0.01</td>
<td></td>
</tr>
<tr>
<td>Weak grip strength</td>
<td>P&lt;0.01</td>
<td></td>
</tr>
<tr>
<td>Cognitive impairment</td>
<td>P=0.01</td>
<td>P=0.09</td>
</tr>
<tr>
<td>Visual impairment</td>
<td>P=0.12</td>
<td></td>
</tr>
<tr>
<td>Hearing impairment</td>
<td>P&lt;0.01</td>
<td></td>
</tr>
<tr>
<td>Unintentional weight loss</td>
<td></td>
<td>P=0.03</td>
</tr>
<tr>
<td>Depression</td>
<td></td>
<td>P&lt;0.01</td>
</tr>
<tr>
<td>Difficulty ambulating</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Nanna M...Dodson JA. ACC Scientific Sessions 2016

Beyond Mortality
Coronary disease – mortality vs. prevalence

Beyond Mortality

- Burden of CV disease
  - Angina (CAD)
  - Dyspnea (heart failure)
  - Fatigue (heart failure, atrial fibrillation)
  - Hospital admission (all)
  - Disability (CAD, heart failure)
  - Adverse effects of therapy (e.g. ICD)

Adapted from Davies AR et al. Eur Heart J 2007;28:2142-2147
Physical function and independence 1 year after myocardial infarction: Observations from the Translational Research Investigating Underlying disparities in recovery from acute Myocardial infarction: Patients' Health status registry

John A. Dodson, MD, a,b Suzanne V. Arnold, MD, c Kimberly J. Reid, MS, d Thomas M. Gill, MD, e Michael W. Rich, MD, f Frederick A. Masoudi, MD, MSPH, f John A. Sperman, MD, MPH, f,g Horlon M. Krumholz, MD, MS, a,b,h,i and Karen P. Alexander, MD f New Haven, CT, Kansas City, and St Louis, MO; Aurora, CO, and Durham, NC.

Methods

- 2002 patients post-AMI (TRIUMPH)
- Outcomes at 1 year:
  - Decline in physical function (=new activity limitation) (SF-12)
  - Decline in independence (=problems caring for self) (EQ-5D)
Physical function decline 1 year after AMI

- Physical function preserved: 69.8%
- Physical function decline: 30.2%

Dodson JA et al. Am Heart J 2012;163:790-796

Independence loss 1 year after AMI

- Independence preserved: 72.2%
- Independence loss: 27.8%

Dodson JA et al. Am Heart J 2012;163:790-796
Geriatric Cardiology Program

• Goals:
  ➢ To identify and incorporate geriatric impairments into decision making for older adults with cardiovascular disease
  ➢ To establish multidisciplinary collaborations (cardiology, geriatrics, palliative care, nursing, pharmacy) to improve care
  ➢ To pursue innovative clinical research that can improve outcomes
Geriatric Cardiology Program

• Components (Clinical Program):
  ➢ Geriatric Cardiology Clinic - NYU
  ➢ Multidisciplinary patient conference (monthly)
  ➢ Skilled nursing facility consultations

Geriatric Cardiology Clinic

• Provides longitudinal care of older adults (age ≥70) with CV disease – typically multiple comorbidities / geriatric impairments
Geriatric Cardiology Clinic

- Components of visit: Comprehensive geriatric assessment
  - Grip strength
  - Gait speed
  - Cognition
  - Physical function
  - Fall history
  - Orthostatic vital signs
Geriatric Cardiology Clinic

• Components of visit: Medication management (pharmacist)
  ➢ Pharmacist co-located in clinic
  ➢ Sees selected patients at time of visit (drug interactions, medication reconciliation)
  ➢ Provides medication list (large font)
  ➢ Calls patient if needed for home reconciliation

Multidisciplinary conference

• Tuesday 8 AM (monthly)
• Cardiology, geriatrics, CV subspecialty (e.g. CHF), other relevant fields (e.g. surgery)
• Comprehensive treatment plan
Multidisciplinary conference

- 91 y.o. M with systolic HF EF 35%, HTN, HLD, arthritis, SVT, CKD, cardiomyopathy, chronic hyperkalemia, hypothyroidism, presumed CAD, chronic stable angina, s/p mitral valve repair 2003

- Followed by Dr. Dodson (Cardiology) and Dr. Perskin (Geriatrics)

- Admitted 4/2015 for chest pain -> conservative strategy

- Stable over summer -> then 10/2015 multiple complaints (dizziness, nausea, weight loss, weakness). Also experienced 2 falls at home.

Multidisciplinary conference

- Medications:
  - Lasix 20 mg
  - Toprol-XL 25 mg
  - Aspirin 81 mg
  - Lipitor 20 mg
  - Synthroid 25 mg
  - Imdur 30 mg
  - Proscar 5 mg
  - Nitrostat 0.4 mg PRN
  - Vitamin D3 1,000 unit
  - Restasis
  - Claritin 10 mg
  - Peridex
  - Temovate
  - Lumigan
  - Pred Forte
  - Prilosec
**Decision points:**

- Hold beta blocker and long-acting nitrate in patient with chronic stable angina?
- Extent of cardiac workup?
- Management of hyperkalemia?
- Pursue imaging workup for weight loss?
- Can we reduce burden of his non-cardiac medications?
- Counseling on end-of-life issues?

---

**Skilled Nursing Facility Visits**

Jewish Home

Amsterdam House

106th & Columbus Ave

112th & Amsterdam Ave
Cardiac Care for Older Adults

Time for a New Paradigm

Daniel E. Forman, MD,*† Michael W. Rich, MD,‡ Karen P. Alexander, MD,§
Susan Zieman, MD,¶ Mathew S. Maurer, MD,¶ Samer S. Najjar, MD,¶
Joseph C. Cleveland, Jr, MD,** Harlan M. Krumholz, MD,†† Nanette K. Wenger, MD‡‡

Boston, Massachusetts; St. Louis, Missouri; Durham, North Carolina; Bethesda, Maryland;
New York, New York; Washington, DC; Denver, Colorado; New Haven, Connecticut;
and Atlanta, Georgia

Forman DE et al. JACC 2011;57:1801-1810
“Mainstream cardiology has become, de facto, geriatric cardiology, but it still lacks a systematic approach that incorporates age-related complexities into clinical decision-making.”

COUNCIL PERSPECTIVES

What to Expect From the Evolving Field of Geriatric Cardiology

Susan P. Bell, MBBS, MSc; Nicole M. Orr, MD; John A. Dodson, MD, MPH; Michael W. Rich, MD; Nanette K. Wenger, MD; Kay Blum, NP, PhD; John Gordon Harold, MD; Mary E. Tinetti, MD; Mathew S. Maurer, MD; Daniel E. Forman, MD

ABSTRACT

The population of older adults is expanding rapidly, and aging predisposes to cardiovascular disease. The principle of patient-centered care must respond to the preponderance of cardiac disease that now occurs in combination with the complexities of old age. Geriatric cardiology melds cardiovascular perspectives with multimorbidity, polypharmacy, frailty, cognitive decline, and other clinical, social, financial, and psychological dimensions of aging. Although some assume that a cardiologist may instinctively cultivate some of these skills over the course of a career, we assert that the volume and complexity of older cardiovascular patients in contemporary practice warrants a more direct approach to achieve suitable training and a more reliable process of care. We present a rationale and vision for geriatric cardiology as a melding of primary cardiovascular and geriatrics skills, thereby infusing cardiology practice with expanded proficiencies in diagnosis, risks, care coordination, communications, end-of-life, and other competences required to best manage older cardiovascular patients. (J Am Coll Cardiol 2015;66:1286-99) © 2015 by the American College of Cardiology Foundation.
## Key roles for geriatric cardiology (Bell et al.)

### Diagnosis:
- Assessing symptoms amidst multimorbid conditions
- Diagnosing cardiac disease in relation to geriatric syndromes (e.g. syncope, weakness)

### Risk assessment:
- Comprehensive assessment prior to TAVR, LVAD, heart transplant, cardiac surgery
- Immediate and short-term risk assessment/prognosis in very elderly

### Processes of care:
- Coordination to improve transitions (readmission reduction programs)
- Providing continuity of CV care across settings (clinic, hospital, SNF)

### Communications:
- Goals of care discussions
- End of life discussions

---

**Bell SP et al. JACC 2015;66:1286-99**

---

**American College of Cardiology**

**Geriatric Cardiology Section**

- Geriatric Cardiology Section Membership
- About Us
- Meetings

Easily Sign Up for ACC Digest Emails and Manage the E-Newsletters You Receive

Subscribe to daily or weekly ACC digest emails customized to your professional interests or manage the ACC e-newsletters you receive by visiting [ACC e-newsletters](http://www.acc.org/membership/sections-and-councils/geriatric-cardiology-section).

The ACC’s Geriatric Cardiology Member Section and Leadership Council is the home for geriatric cardiologists within the ACC, advocating for and advancing the priorities of the community.

ACC Geriatric Cardiology Section

- One of 20 Sections of the ACC
- Charged with member education, advocacy, and setting research agenda for ACC

Current U.S. Geriatric Cardiology Programs

- Vanderbilt University  Nashville, TN
- NYU Langone  New York, NY
- University of Pittsburgh  Pittsburgh, PA
- UCLA  Los Angeles, CA

www.acc.org/membership/sections-and-councils/geriatric-cardiology-section
The Future: Research

AHA/ACC/AGS Scientific Statement

Knowledge Gaps in Cardiovascular Care of the Older Adult Population
A Scientific Statement From the American Heart Association, American College of Cardiology, and American Geriatrics Society

Michael W. Rich, MD, FAHA, FACC, Chair; Deborah A. Chyun, PhD, RN, FAHA, Co-Chair;
Adam H. Skolnick, MD, FACC; Karen P. Alexander, MD, FAHA, FACC;
Daniel E. Forman, MD, FACC; Dalane W. Kitzman, MD, FAHA, FACC;
Mathew S. Maurer, MD, FACC; James B. McClurken, MD, FACC;
Barbara M. Resnick, PhD, CRNP; Win K. Shen, MD, FAHA, FACC;
David L. Tirschwell, MD, MSc, FAHA; on behalf of the American Heart Association Older Populations Committee of the Council on Clinical Cardiology, Council on Cardiovascular and Stroke Nursing, Council on Cardiovascular Surgery and Anesthesia, and Stroke Council; American College of Cardiology; and American Geriatrics Society

Findings:

“A pervasive lack of evidence to guide clinical decision making in older patients with cardiovascular disease.”

“A paucity of data on the impact of diagnostic and therapeutic interventions on outcomes that are particularly important to older patients.”

Authors recommend study designs that:
(1) do not exclude patients from enrollment based on age or comorbidities
(2) include outcomes beyond mortality (e.g. physical function, independence, quality of life)
Potential research areas

- Performing RCTs exclusively age ≥75
- Deprescribing medications
- Modifying functional and cognitive decline
- Developing geriatric-specific risk stratification tools
The Future: Patient Care

Mobile Health (mHealth) app use

*Estimated total downloads of mHealth apps (billions)*

- 2013: 1.7 billion
- 2014: 2.3 billion, +56%
- 2015: 3.0 billion, +7%
- 2016: 3.2 billion

Source: research2guidance - mHealth App Developer Economics study 2016, m2000
As Aging Population Grows, So Do Robotic Health Aides

“Dr. Hovakimyan refers to the drones as “Bibbidi Bobbitti Bots” to make them seem less intimidating”
Robear

Japan's long-term care dilemma: Immigrants or robots?

• “Japan is running out of caretakers for its aging population...more and more Japanese are living alone.”
• “The country has been reluctant to let in outsiders.”
• But there is one last option – robots.”

“Robear is plastic and metal, and like a real bear, he could do damage to a patient.”
• “So attached to a long tail robear has a red panic button.”
Feature
Health and Technology

Uber for healthcare

As physicians with roots in the Bay Area, we use Uber all the time. The service is convenient, (usually) swift and consistently pleasant. With a few taps of a smartphone, we know where and when we'll be picked up — and we can see the Uber driver coming to get us in real time. When the vagaries of San Francisco public transit don't accommodate our varying schedules, it's Uber that's the most reliable form of transportation. (It might be that we like having some immediate gratification.)
The Future

- Smart technology that assists both patients and us
- Imperative for both patients and clinicians to be at the center of design
- Research on effectiveness of technology-based interventions
Identification of eligible patients through EPIC

RC approaches & consents patient

RC Baseline Visit

Randomisation

Intervention

Control

App data uploads to M. A. dashboard

Intervention arm receives tailored PT rehabilitation plan by NYUMC PT's, along with moving analytics app

All participants receive Fitbits and tablets with Your Activities of Daily Living surveys

YADL data is uploaded to Cornell Tech's secure Ohmage Dashboard

Fitbit data uploads to dashboard

Data Analysis

RESILIENT Pilot

Eating

Over the past week how difficult was this activity for you?

1 of 13

Not Difficult Somewhat Difficult Very Difficult
Conclusions

• Geriatric Cardiology aims to integrate longstanding principles of geriatric medicine into routine CV care
• Field is young; will continue to grow
Geriatric Cardiology: An Emerging Discipline

John A. Dodson, MD, MPH,a,b Daniel D. Matlock, MD, MPH,c and Daniel E. Forman, MDd,e

aLen H. Changy Division of Cardiology and Department of Medicine, New York University School of Medicine, New York, New York, USA
bDepartment of Population Health, New York University School of Medicine, New York, New York, USA
cDivision of Geriatrics, Department of Medicine, University of Colorado School of Medicine, Aurora, Colorado, USA
dGeriatric Cardiology, Department of Medicine, University of Pittsburgh Medical Center, University of Pittsburgh, Pittsburgh, Pennsylvania, USA
eGeriatric Research, Education, and Clinical Center, VA Pittsburgh Healthcare System, University of Pittsburgh, Pittsburgh, Pennsylvania, USA

ABSTRACT
Given changing demographics, patients with cardiovascular disease in developed countries are now older and more complex than even a decade ago. This trend is expected to continue into the foreseeable future; accordingly, cardiologists are encountering patients with a greater number of comorbid illnesses as well as “geriatric conditions,” such as cognitive impairment and frailty, which complicate management and influence outcomes. Simultaneously, techno-

RÉSUMÉ
L’évolution démographique a fait en sorte que les patients atteints de maladies cardiovasculaires (MCV) dans les pays développés sont désormais plus âgés et présentent un état de santé plus complexe qu’il y a une décennie à l’auscultation, et en s’attend à ce que cette tendance se maintienne dans un avenir prochain. Par conséquent, les cardiologistes voient désormais des patients présentant un plus grand nombre de comorbidités ainsi que des affections gériatriques comme des

Figure 1. PubMed search of scientific articles that include term “geriatric cardiology” or terms “geriatrics” and “cardiology” from 2004-2014.
Acknowledgments

• NIH/NIA K23 AG052463
• AHA Mentored Clinical and Population Research Award
• Peter A. Lefkow Charitable Trust

Thank you

John.Dodson@nyumc.org
@JDodsonMD
www.aginghearts.org