ACRM
AMERICAN CONGRESS OF REHABILITATION MEDICINE

Archives of Physical Medicine and Rehabilitation

journal homepage: www.archives-pmr.org

Archives of Physical Medicine and Rehabilitation 2013;94:622-9

JOURNAL-BASED CME ARTICLE

# Does Postacute Care Site Matter? A Longitudinal Study Assessing Functional Recovery After a Stroke

Leighton Chan, MD, MPH,[a] M. Elizabeth Sandel, MD,[b] Alan M. Jette, PhD, PT,[c] Jed Appelman, PhD,[b] Diane E. Brandt, PhD, PT,[a] Pengfei Cheng, MS,[d] Marian TeSelle, MD,[e] Richard Delmonico, PhD,[b] Joseph F. Terdiman, MD, PhD,[d] Elizabeth K. Rasch, PhD, PT[a]

*From the [a]National Institutes of Health, Mark O. Hatfield Clinical Research Center, Rehabilitation Medicine Department, Bethesda, MD; [b]Kaiser Foundation Rehabilitation Center, Vallejo, CA; [c]Boston University Medical Campus, School of Public Health, Health & Disability Research Institute, Boston, MA; [d]Division of Research, The Permanente Medical Group, Kaiser Permanente Northern California, Oakland, CA; and [e]Kaiser Permanente Capital Service Area, Sacramento, CA.*

**Statement of Need**

Stroke is one of the most common causes of disability, and stroke rehabilitation places an enormous burden on health care systems worldwide. In the United States, 800,000 people experience a stroke annually, and many require postacute care after an initial hospitalization. Currently, postacute care treatment patterns and settings of care for patients with stroke vary, and there are no consistently applied guidelines for determining whether a patient should receive therapy in home health care, outpatient, or institutional settings or inpatient rehabilitation facility.

Lack of clinical consensus about poststroke rehabilitation is concerning given 2 health care reform related—issues: bundling of acute and postacute care payments, and the "minimal essential coverage" that will be provided to new patients covered under the Patient Protection and Affordable Care Act (PPACA) of 2010. Changes that are mandated in PPACA could radically alter, and perhaps decrease, patient access to a number of postacute care treatment sites.

An investigation as to outcomes for postacute care after a stroke in different rehabilitation settings was identified to offer evidence of best practices and improved functional recovery.

This journal-based CME activity has been planned and developed in accordance with the Essential Areas and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the sponsorship of Professional Education Services Group (PESG).

**Accreditation Statement**

PESG is accredited by the ACCME to provide continuing medical education (CME) for physicians.

**Credit Designation Statement**

PESG designates this journal-based CME activity for a maximum of 2.0 *AMA PRA Category 1 Credit(s)*™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

All other health care professionals completing continuing education credit for this activity will be issued a certificate of participation.

**Educational Objectives**

To support the attainment of knowledge, competence, and performance, the learner should be able to achieve the following objectives:

1. List patient care settings associated with postacute care stroke treatment patterns.
2. Assess functional status comparing different rehabilitation settings.
3. Identify activities contributing to optimal results.

**Planning Committee**

Leighton Chan, MD, MPH, M. Elizabeth Sandel, MD, Alan M. Jette, PhD, PT, Jed Appelman, PhD, Diane E. Brandt, PhD, PT, Pengfei Cheng, MS, Marian TeSelle, MD, Richard Delmonico, PhD, Joseph F. Terdiman, MD, PhD, Elizabeth K. Rasch, PhD, PT, Allen W. Heinemann, PhD, ABPP (RP), FACRM, PESG CME Planning Committee, ACRM Editorial Office Staff.

**Faculty Profiles and Disclosure Information**

As a provider accredited by the ACCME, it is the policy of PESG to require the disclosure of anyone who is in a position to control the content of an educational activity. All relevant financial relationships with any commercial interests and/or manufacturers must be disclosed to participants at the beginning of each activity. The faculty and planners of this educational activity disclose the following:

**Leighton Chan, MD, MPH**
National Institutes of Health, Mark O. Hatfield Clinical Research Center, Rehabilitation Medicine Department, Bethesda, MD
No relevant financial relationships to disclose.

**M. Elizabeth Sandel, MD**
Kaiser Foundation Rehabilitation Center, Vallejo, CA
No relevant financial relationships to disclose.

**Alan M. Jette, PhD, PT**
Boston University Medical Campus, School of Public Health, Health & Disability Research Institute, Boston, MA
Dr Jette holds stock in CRE Care, LLC, a business that disseminates the AM-PAC assessment tool.

**Jed Appelman, PhD**
Kaiser Foundation Rehabilitation Center, Vallejo, CA
No relevant financial relationships to disclose.

**Diane E. Brandt, PhD, PT**
National Institutes of Health, Mark O. Hatfield Clinical Research Center, Rehabilitation Medicine Department, Bethesda, MD
No relevant financial relationships to disclose.

**Pengfei Cheng, MS**
Division of Research, The Permanente Medical Group, Kaiser Permanente Northern California, Oakland, CA
No relevant financial relationships to disclose.

**Marian TeSelle, MD**
Kaiser Permanente Capital Service Area, Sacramento, CA
No relevant financial relationships to disclose.

**Richard Delmonico, PhD**
Kaiser Foundation Rehabilitation Center, Vallejo, CA
No relevant financial relationships to disclose.

**Joseph F. Terdiman, MD, PhD**
Division of Research, The Permanente Medical Group, Kaiser Permanente Northern California, Oakland, CA
No relevant financial relationships to disclose.

**Elizabeth K. Rasch, PhD, PT**
National Institutes of Health, Mark O. Hatfield Clinical Research Center, Rehabilitation Medicine Department, Bethesda, MD
No relevant financial relationships to disclose.

**Allen W. Heinemann, PhD, ABPP (RP), FACRM**
Co-Editor-in-Chief, *Archives of Physical Medicine and Rehabilitation,* Chicago, IL

**PESG Staff**
No relevant financial relationships to disclose.

**ACRM Editorial Office Staff**
No relevant financial relationships to disclose.

**Resolution of Conflict of Interest**

PESG has implemented a process to resolve conflicts of interest for each CME activity. In order to help ensure content objectivity, independence, and fair balance, and to ensure that the content is aligned with the interest of the public, PESG has resolved the conflict by external content review.

0003-9993/13/$36 - see front matter 
http://dx.doi.org/10.1016/j.apmr.2012.09.033

**Unapproved/Off-Label Use Disclosure**
PESG requires CME faculty to disclose to the participants:
1. When products or procedures being discussed are off-label, unlabeled, experimental, and/or investigational (not US Food and Drug Administration [FDA] approved); and
2. Any limitations on the information presented, such as data that are preliminary or that represent ongoing research, interim analyses, and/or unsupported opinion. Faculty may discuss information about pharmaceutical agents that is outside of FDA-approved labeling. This information is intended solely for CME and is not intended to promote off-label use of these medications. If you have questions, contact the medical affairs department of the manufacturer for the most recent prescribing information.

**Endorsement**
PESG and the accreditation organization do not endorse or support any product or service mentioned in this continuing education activity.

**Intended Audience**
This program is intended for physicians and health care professionals responsible for the comprehensive care for individuals with chronic illness and disabilities.

## Method of Participation

In order to claim credit, participants must complete the following:
1. Read the activity
2. Complete the CME Test and Evaluation. Participants must achieve a score of 70% on the CME Test.

Participants can complete the CME Test and Evaluation online by logging on to http://acrm.cds.pesgce.com. Upon successful completion of the online tests and evaluation form, you can instantly download and print your certificate of credit.

## CME Inquiries

For all CME certificate inquiries, please contact us at support@pesgce.com.

**This continuing education activity is active starting April 1, 2013 and will expire March 31, 2014.**

**Estimated time to complete this activity − 2.0 hours**

**Abstract**

**Objective:** To determine the impact of postacute care site on stroke outcomes.

**Design:** Prospective cohort study.

**Setting:** Four northern California hospitals that are part of a single health maintenance organization.

**Participants:** Patients with stroke (N=222) enrolled between February 2008 and July 2010.

**Intervention:** Not applicable.

**Main Outcome Measure:** Baseline and 6-month assessments were performed using the Activity Measure for Post Acute Care (AM-PAC), a test of self-reported function in 3 domains: Basic Mobility, Daily Activities, and Applied Cognition.

**Results:** Of the 222 patients analyzed, 36% went home with no treatment, 22% received home health/outpatient care, 30% included an inpatient rehabilitation facility (IRF) in their care trajectory, and 13% included a skilled nursing facility (but not IRF) in their care trajectory. At 6 months, after controlling for important variables such as age, functional status at acute care discharge, and total hours of rehabilitation, patients who went to an IRF had functional scores that were at least 8 points higher (twice the minimally detectable change for the AM-PAC) than those who went to a skilled nursing facility in all 3 domains and in 2 of 3 functional domains compared with those who received home health/outpatient care.

**Conclusions:** Patients with stroke may make more functional gains if their postacute care includes an IRF. This finding may have important implications as postacute care delivery is reshaped through health care reform.

Archives of Physical Medicine and Rehabilitation 2013;94:622-9



Stroke is one of the most common causes of disability, and stroke rehabilitation places an enormous burden on health care systems worldwide.[1] In the United States, 800,000 people experience a stroke annually,[2] and many require postacute care after an initial hospitalization.[3] Currently, postacute care treatment patterns and settings of care for patients with stroke vary, and there are no consistently applied guidelines for determining whether a patient should receive therapy in home health care (HH), outpatient (OP), or institutional settings (skilled nursing facility [SNF] or inpatient rehabilitation facility [IRF]).[4-9]

Lack of clinical consensus about poststroke rehabilitation is concerning given 2 health care reform−related issues: bundling of acute and postacute care payments, and the "minimal essential coverage" that will be provided to new patients covered under the Patient Protection and Affordable Care Act (PPACA) of 2010. Changes that are mandated in PPACA could radically alter, and perhaps decrease, patient access to a number of postacute care treatment sites.[10] This may occur for 2 reasons. First, as new accountable care organizations (ACOs) take on additional patients, they may alter traditional patient postacute care referral patterns. Second, the details of "minimal essential coverage" for patients have yet to be decided and may or may not include a number of postacute care options.

To help inform clinicians and policymakers about postacute care after a stroke, we performed a prospective cohort study that compared 6-month functional outcomes for patients with stroke whose trajectories of postacute care included an IRF, versus those whose care trajectory included an SNF, HH/OP, or no treatment. Previous research[11-13] has suggested that postacute care after a stroke that includes IRF has been related to improved functional recovery compared with care provided in other settings. However, these studies have been limited by the lack of functional outcome measures, long-term follow-up, or diagnostic specificity. Our hypothesis was that patients with stroke who received IRF care, which offers more rehabilitation services, would have better 6-month functional outcomes than those who received postacute care in other settings after controlling for patients' severity of illness, baseline functional status, and other important variables.

## Methods

We performed a prospective, longitudinal cohort study analyzing data from 222 patients after a stroke. These patients were enrolled from February 2008 to March 2010, and came from 4 acute care

Presented as a poster to the American Congress of Rehabilitation Medicine, November 18, 2011, Atlanta, GA.

Supported by the National Institutes of Health Intramural Research Program and by the National Institute for Neurologic Diseases and Stroke (grant no. 5RC1NS068397).

No commercial party having a direct financial interest in the results of the research supporting this article has or will confer a benefit on the authors or on any organization with which the authors are associated (Chan, Sandel, Appelman, Brandt, Cheng, TeSelle, Delmonico, Terdiman, Rasch).

A commercial party having a direct financial interest in the results of the research supporting this article has conferred or will confer a financial benefit on the author or 1 or more of the authors. Jette holds stock in CRE Care, a small business he created to disseminate the AM-PAC assessment tool.