THE **VALUE** AND **EFFICACY** OF **MASSAGE THERAPY** IN **INTEGRATED HEALTH CARE**

Published by the
American Massage Therapy Association

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INTRODUCTION

This publication of the American Massage Therapy Association (AMTA) examines several aspects of massage therapy in integrated health care. It is intended to foster a more extensive discussion among massage therapists, health care administrators and other health care professionals about the value and efficacy of massage therapy in a variety of health care environments. This dialog and analysis has become more important as a result of national health care reform and the Triple Aim of reform – better health care, better patient outcomes and lower overall costs. Likewise, the evolving situation presents new opportunities for massage therapists to be full participants in health care delivery systems, based on existing clinical research, examples of already integrated care using massage therapy, and the financial advantages for both payers and patients of such integration.

The areas of focus in this document are far from exhaustive, and the categories included are not meant to minimize the role of massage therapy in improving health and wellness, and in addressing a wide array of health conditions. While valuable and high quality research on both efficacy for specific conditions and on cost analysis for massage therapy already exists, all of it is still in its early stages. Based on what already is available, the challenge for all in health care is to learn more about the efficacy and cost-effectiveness of massage therapy provided by professional massage therapists.

AMTA's approach to this document was to engage a variety of experts in a summary analysis of these three areas of value within the context of health care reform. Massage therapy is already integrated into patient care in many health care environments. However, it is not yet fully a part of average medical insurance plans, Medicaid or Medicare. As this document shows, it is clearly time for a more systematic approach to including massage therapy as specific health care delivery systems, such as Accountable Care Organizations (ACOs) and Patient-Centered Medical Homes (PCMH), evolve and become more prominent parts of health care in the U.S. As this document indicates, there are many possibilities for this to occur, all of which have the potential to provide better care and better outcomes in an economically sound manner.

AMTA encourages hospital and clinic administrators, physician and other health care provider groups, and both state and federal government health care administrators to evaluate the information presented herein and use it as a stepping stone for further study and collaboration with massage therapists.

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Part 1: The Therapeutic Value of Massage Therapy

EXECUTIVE SUMMARY

Key Themes

- Health care reform initiatives demand care integration focused on improving patient care and reducing overall costs.
- Growing evidence supports the value that massage therapy offers to integrated health systems for a range of patient health conditions.
- This presents an opportunity to integrate massage therapists as full participants in emerging care delivery models.

Health care reform creates new opportunities for massage therapists to be full participants in health care delivery systems. "Integrated care" is a core concept of health care reform initiatives at both the federal and regional levels. In integrated care models, health professionals and institutions who provide services to patients work together to share information and coordinate care across multiple settings. For example, primary care physicians must work closely with hospitals, specialist physicians, and other providers to ensure that patients get the best overall care. Integrated care models require a "whole person" orientation, rather than care processes that treat patients as collections of different body parts.

To get a clearer idea of what is meant by integrative medicine, consider this definition offered by the Consortium of Academic Health Centers for Integrative Medicine: "Integrative medicine is the practice of medicine that reaffirms the importance of the relationship between practitioner and patient, focuses on the whole person, is informed by evidence, and makes use of all appropriate therapeutic approaches, health care professionals and disciplines to achieve optimal health and healing." Such a holistic approach aligns well with the goals and techniques of massage therapy.

Another fundamental goal of health reform is enhancing the value of the health care system, which requires that health care providers seek to maximize quality of care and improve patient outcomes while minimizing costs. In this context, "costs" include the total cost of care to treat a patient (or a population of patients), not the price of a specific health service. To succeed under health reform, integrated delivery systems will need to maximize value by managing the overall cost and quality of care for their patients. Therefore, individual massage therapists and the massage therapy profession as a whole must define and demonstrate the value they offer to the health system in terms of improving quality and lowering cost.

This paper focuses on the overall value that the massage therapy profession offers to the health system in the context of health reform. Specific topics addressed in this paper include:

- How is "value" defined in emerging models of integrated health care delivery?
- How do new care models create opportunities for integration of massage therapists?
- For which clinical conditions does the evidence most strongly support improved outcomes and/or lower costs through massage therapy?

Focusing the content of this document on these categories is not meant to minimize massage therapy's role in improving health and well-being for a host of other health conditions in many different settings. Rather, this document highlights how massage therapy can contribute to the overall goals of health care reform, especially in partnership with other health care providers. Massage therapy has considerable value across the health care spectrum. The integrated care models demanded under health care reform create new opportunities to demonstrate that value.

OVERVIEW OF MASSAGE THERAPY

Massage therapy is the manual manipulation of soft tissue intended to promote health and well-being.[1] It includes under its umbrella many types of massage that can be applied by trained massage therapists.

According to AMTA's 2013 consumer survey,[2] an average of 16 percent of adult Americans received at least one massage between July 2012 and July 2013, and an average of 26 percent of adult Americans received a massage in the previous five years. Forty-three percent of those who had a massage in that time frame received it for medical or health reasons, such as pain management, soreness/stiffness/spasms, injury rehabilitation, or overall wellness.

Overall, 88 percent of consumers believe massage can be effective in reducing pain and the same percentage believes massage can be beneficial to health and wellness. These numbers have been consistent over the past decade, showing that consumers view massage as an important health care option. Likewise, massage therapy is increasingly integrated into customary care in many hospitals. According to studies conducted for the American Hospital Association[3], 64 percent of hospitals offered massage as an outpatient service in 2010 and 44 percent offered it as part of inpatient care. Given the prominent role of massage therapy in many individuals' wellness regimens, and the contributions it can make to patient health, it is important to integrate massage into new health care delivery models.

OVERVIEW OF HEALTH DELIVERY SYSTEM REFORM

During the past several years, the United States has been engaged in an active debate about health care reform. The federal government's enactment of the Affordable Care Act is one result of this process, to which numerous state governments have responded with efforts to improve the health care system in their states. Public and media attention to health care reform has focused primarily on access to health coverage, specifically to provisions in the federal law that require individuals to obtain health insurance.

While health coverage is a critical issue, there are other key aspects of health care reform that have not received as much public attention. Most importantly, federal and state reform efforts include provisions to improve the health care delivery system, with the goal of achieving the "Triple Aim" of better health care, better patient outcomes, and lower overall costs. For decades, health care costs in the United States have been rising much faster than the Gross Domestic Product. This means health care consumes an increasingly greater share of our nation's resources, a trend that is not sustainable in the long-term.[4] More recently, some studies have shown that some patients do not receive the most appropriate care for their conditions[5] and that patient outcomes in certain cases in the United States are worse than in other developed countries.[6] Although the United States continues to lead in the treatment outcomes of serious disease, such as cancer, our shortcomings in prevention and promotion of health and well-being suggest that quality of care is not as good as it could be, even though we are spending more on health care than any other nation. Health care leaders in government and the private sector have linked the issues of cost and quality together. They believe improving quality has the potential to reduce overall costs of care by helping patients avoid expensive complications and poor outcomes that can drive up the cost of care. In other words, the United States can increase "value" in the health care system by simultaneously improving quality and decreasing cost.[7] This concept of value is the cornerstone of health delivery system reform, and an area where the massage therapy profession can make an important contribution.

Many policymakers believe that integrated care delivery models are necessary to achieve the goal of a high-value health system. Integrated care means that health care providers need to work together as a team to coordinate and manage care for a patient, rather than having each health care provider act separately. To successfully implement integrated care models, health care providers need efficient mechanisms to communicate with each other about a patient's treatments and health status, and need to organize their activities to achieve the patient's best possible outcome. With their focus on connecting health care services and overall well-being, massage therapists are well-suited to contribute to team-based care processes. Note that integrated delivery does not require providers to join together to form a single health care organization. That is one approach, but providers can also maintain their independence while agreeing to coordinate services with one another.

These concepts of health delivery reform pre-date the 2010 passage of the Affordable Care Act, but the new law has created

1 Moyer CA, Rounds J, Hannum JW (2004) A meta-analysis of massage therapy research. Psych Bull 130: 3–18.

2 http://www.amtamassage.org/research/Consumer-Survey-Fact-Sheets.html

3 Ananth S (2011) 2010 complementary and alternative medicine survey of hospitals. Samueli Institute report.

4 Ginsburg P, Hughes M, Adler L, Burke S, Hoagland G W, Jennings C, and Lieberman S (2013) What is driving U.S. health care spending: America's unsustainable health care cost growth. Bipartisan Policy Center report.

5 McGlynn EA, Asch SM, Adams J, Keesey J, Hicks J, DeCristofaro A, Kerr EA (2003) The quality of health care delivered to adults in the United States," N Engl J Med 348:2635-2645.

6 Commonwealth Fund Commission on a High Performing Health System (2011) Why not the best? Results from the National Scorecard on U.S. Health System Performance.

7 A common definition of value is that Value = Quality ÷ Cost. Under this definition, Value increases when Quality increases or Cost decreases.

momentum for the development and implementation of integrated care models. Health care systems are experimenting with a variety of models, which will continue to evolve for many years. However, some common design elements of new health systems have begun to emerge:

- Health care providers should be accountable for the quality and value of the care they deliver to patients. Health care providers' performance should be measured and a portion of their compensation should be tied to how well they do.
- The "Patient-Centered Medical Home" or "PCMH" is an advanced primary care model that proactively manages patients' health care needs.[8]
  - PCMH envisions a team-based care model that includes different health professionals, each practicing to the top of his or her license.
  - There is a special emphasis on managing patients with chronic health conditions.
  - Most PCMHs are led by an M.D. or D.O.
  - Typically, the PCMH has financial incentives to monitor quality and lower overall costs of care.
- "Accountable Care Organizations" or "ACOs" are vertically integrated care networks that include primary care, specialty care, inpatient care, and other health care services.[9]
  - An ACO is usually assigned a population of patients, and is expected to coordinate care for individuals in that population.
  - ACOs often accept some level of financial risk for quality and cost within their population.
  - Like PCMHs, ACOs are focused on chronic condition management.
  - Some ACOs are hospital-led; others are led by physician groups.
- Massage therapists can work with PCMHs and ACOs (and other integrated care delivery models) to help patients achieve the best possible outcomes at the lowest costs.

To take advantage of this opportunity, massage therapists, both individually and as a profession, must be able to articulate the value that they offer. The remainder of this paper focuses on a review of evidence demonstrating the value of massage therapy (see table below) and its potential contribution in integrated care models. This paper addresses why integrated health systems should work with massage therapists.

HOW MASSAGE THERAPY SUPPORTS THE "TRIPLE AIM"

As described earlier, reform of the health care delivery system is focused on the "Triple Aim" of better health care, better patient outcomes, and lower overall cost.[10]

Better Health Care. This means patients get the right health services based on their particular needs. Research has shown that, as much as half the time, patients do not receive the appropriate health services for their condition as recommended by health care research and clinical guidelines. New delivery models need to close this gap, especially for chronically ill patients who have complex needs that must be managed over an extended period of time.

OPPORTUNITIES FOR MASSAGE THERAPY

CHRONIC PAIN MANAGEMENT	BEHAVIORAL HEALTH TREATMENT	REHABILITATION/PHYSICAL TRAINING	ACUTE MEDICAL TREATMENT
• Back pain • Headache • Carpal tunnel syndrome • Osteoarthritis • Neck and shoulder pain • Fibromyalgia • Hospice	• Anxiety and stress • Depression • PTSD • Substance abuse disorder recovery	• Athletic training/injury treatment • Ergonomic injury • Cardiac rehab • Joint replacement rehab • Scar management	• Cancer management • Post-surgical pain management • Lymphatic drainage • Maternity and newborn care

8 For more background information on PCMH, see www.pcpcc.net.

9 For a useful Q&A on accountable care organizations, see http://www.kaiserhealthnews.org/stories/2011/january/13/aco-accountable-care-organization-faq.aspx.

10 Berwick DM, Nolan TW, Whittington J (2008) The triple aim: care, health, and cost. Health Affairs 27: 759-769.

Better Patient Outcomes. This means patients are healthier, are more satisfied with their care, and enjoy more productivity and quality of life. Compared to other developed countries, the U.S. fares poorly on several patient outcome measures, especially considering we spend more on health care than any other nation.

Lower Overall Cost. This means health care inflation should slow to levels comparable to the overall economy (it doesn't mean that costs will actually go down). Lower costs can be achieved through better care coordination, avoidance of complications and duplication, and better preventive care. In general, costs will be measured at an overall level, such as total cost for a patient over a full year, instead of focusing on the cost for a specific health service. However, each individual health service should add value to the overall care process.

Where massage therapy can demonstrate contributions to the Triple Aim, it can make a strong case for inclusion in integrated care delivery models. The table on page eight lists some of the conditions in which massage therapy can be an effective contributor to patient care delivery.

BETTER HEALTH CARE

Massage therapy can be an important part of the treatment plan for a variety of health conditions. Including massage therapy as part of an integrated care model can help ensure that patients get the appropriate care to manage both the causes and symptoms of poor health, with the goal of improving outcomes. This section details evidence supporting the inclusion of massage therapy in the system to treat a number of important patient health conditions.

Although research continues to quantify what massage therapists see in their practices everyday—that massage therapy can be effective in helping with a wide variety of health conditions—work still needs to be done on this front. For further reading, resources such as the National Center for Complementary and Alternative Medicine[11] provide information on the science behind the benefits of massage therapy.

Care for Chronic Pain Management

Massage therapy is a well-accepted therapy for managing pain, particularly chronic pain. Ample research and evidence supports the use of massage therapy for a variety of specific chronic pain issues.

Back pain. Numerous studies demonstrate that massage therapy can provide relief for patients with chronic back pain.[12,13,14,15,16] A 2011 study done by Cherkin et. al., for example, compared the effects of two types of massage therapy to usual care on 401 participants suffering from nonspecific low-back pain and found that participants who received massage had superior functional outcomes and symptom improvement than those in the usual care group. Another study on the effectiveness of massage therapy for subacute low-back pain found that participants who received massage had improved function and a decrease in their level of pain when compared to those who received a placebo. These results suggest that massage therapy is a viable, effective option for people who deal with chronic back pain.

Headache. Massage therapy has also shown promise for individuals who deal with the pain of chronic headaches and migraines. Patients who experience tension headaches (which can be connected to ergonomic issues as well as emotional issues) and who receive massage therapy, for example, experience a decrease in the physical pain of the headache and an easing of the emotional distress associated with the headaches.[17,18] Additionally, a 2006 study[19] investigating the effects of massage therapy on migraine randomly assigned 47 participants to massage or a control group. Participants completed daily assessments of migraine experiences and sleep patterns for 13 weeks, with those assigned to massage receiving weekly massage therapy during weeks five and 10 of the study. Anxiety levels, heart rate and salivary cortisol were assessed before and after each massage session. Perceived stress and coping efficacy were evaluated at weeks four, 10 and 13. Results showed that massage participants had greater improvements in migraine frequency and sleep quality during the intervention weeks, as well as the three follow-up weeks.

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11 http://nccam.nih.gov/health/massage/massageintroduction.htm

12 Furlan AD, Yazdi F, Tsertsvande A, Gross A, Van Tulder M, Santaguida L, Gagnier J, Ammendolia C, Dryden T, Doucette S, Skidmore B, Daniel R, Ostermann T, Tsouros S (2012) A systematic review and meta-analysis of efficacy, cost-effectiveness, and safety of selected complementary and alternative medicine for neck and low-back pain. Evidence-Based Comp Alt Med 2012:1-61 Article ID 953139.

13 Kumar S, Beaton K, Hughes T (2013) The effectiveness of massage therapy for the treatment of nonspecific low back pain: a systematic review of systematic reviews. Int J Gen Med 6: 733-741.

14 Cherkin DC, Sherman KJ, Kahn J, Wellman R, Cook AJ, Johnson E, Erro J, Delaney K, Deyo R (2011) A comparison of the effects of 2 types of massage and usual care on chronic low back pain: a randomized controlled trial. Ann Intern Med 155: 1-9.

15 Cherkin, DC, Eisenberg, D.Barlow W, Kaptchuk TJ, Street J, Deyo RA (2001) Randomized trial comparing traditional chinese medical acupuncture, therapeutic massage, and self-care education for chronic low back pain. Arch Intern Med. 161:1081-8.

16 Preyde, M. Effectiveness of massage therapy for subacute low-back pain: a randomized controlled trial (2000). CMAJ. 162(13):1815-20.

17 Moraska A, Chandler C (2009) Changes in psychological parameters in patients with tension-type headache following massage therapy: a pilot study. J Man Manip Ther 17: 86-94

18 Moraska A, Chandler C (2008) Changes in clinical parameters in patients with tension-type headache following massage therapy: a pilot study. J Man Manip Ther 16: 106-112.

19 Lawler SP, Cameron LD (2006) A randomized, controlled trial of massage therapy as a treatment for migraine. Behav Med 32: 50-59.

Carpal tunnel syndrome. Consumers looking to ease hand and arm pain due to conditions such as carpal tunnel syndrome are also finding success with massage therapy.[20, 21] A 2011 study of 46 adults with hand pain were randomly assigned to a massage therapy or standard treatment control group. The massage group received massage on the affected hand once a week for four weeks, as well as being taught self-massage techniques. When compared to the control group, those participants receiving massage had less pain and greater grip strength after the first and last session. Lower scores on anxiety, depressed mood and sleep disturbance scales were also realized.[15] Additionally, a 2008 study with 27 participants assigned to either a general massage or CTS-targeted massage therapy program found that both general massage and CTS-targeted massage proved beneficial, though grip strength was improved only with the CTS-targeted massage protocol.[16]

Osteoarthritis. The pain from the slow degeneration of the knee joint caused by osteoarthritis is also reduced with massage therapy. A recent study showed that a one-hour course of massage given for eight weeks provided better pain relief and range of motion than usual medical care.[22] In this study, 125 patients with osteoarthritis of the knee were randomized to one of four eight-week regimens of a standardized Swedish massage protocol (30- or 60-minute weekly or biweekly) or a usual care control group. Outcomes included the Western Ontario and McMaster Universities Arthritis Index (WOMAC), visual analog pain scale, range of motion, and time to walk 50 feet, assessed at baseline, eight, 16 and 24 weeks. At eight weeks, the group receiving 60 minutes of massage therapy saw significant improvement in WOMAC Global scores when compared to usual care, though no significant change was seen with range of motion.

Neck and shoulder pain. Additionally, there is growing evidence of the influence of massage therapy on neck and shoulder pain.[23] Some initial studies have shown that massage therapy is not only effective in treating musculoskeletal causes of shoulder and neck pain, [24] it can also help relieve cervicogenic headaches caused by neck pain.[25]

Fibromyalgia. Massage therapy can relieve pain in conditions that aren't localized to a specific part of the body, such as fibromyalgia. Fibromyalgia is a syndrome that can produce chronic fatigue, muscle pain and depression, among other symptoms. Massage therapy has been shown to relieve pain and attenuate the general effect of symptoms in fibromyalgia patients,[26,27] and to be more effective than other options.[28] Experts have recommended that massage therapists be regular partners in a team-based treatment of the syndrome, along with physicians, psychologists and physical and exercise therapists.[29] It is estimated that between one-quarter and one-half of fibromyalgia patients seek therapy from a massage therapist.[30]

According to care guidelines from the benefit management company CareCore National, massage therapy can be used effectively to "resolve pain, restore the highest level of function possible, and educate patients to prevent recurrent symptoms" for back, neck, shoulder, arm, hand, hip, leg and foot pain. In most of the cases they list, CareCore recommends that massage therapy can help patients achieve goals of 50 percent reductions in pain frequency and severity and 50 percent improvement in ability to perform daily tasks within four weeks of regular massage therapy.[31]

Hospice. For those who are coping with terminal illnesses, massage therapy can be a particularly effective method of providing comfort and easing pain, stress, depression, nausea and fatigue. The benefits of massage therapy make for a compelling argument for its presence in palliative care facilities.[32]

Care for Behavioral Health (Including Stress Reduction)

A key aspect of integrated, "patient-centered" care is helping patients manage both their physical and behavioral health care needs. In traditional systems, physical and behavioral symptoms are often treated as separate issues that are treated by individual health care professionals who don't or rarely communicate with one another.

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20 Field T, Diego M, Delgado J, Garcia D, Funk CG (2011) Hand pain is reduced by massage therapy. Comp Ther Clin Prac 17: 226-229.

21 Moraska A, Chandler C, Edmiston-Schaetzel A, Franklin G, Calenda EL, Enebo B (2008) Comparison of a targeted and general massage protocol on strength, function and symptoms associated with carpal tunnel syndrome: a randomized pilot study. J Altern Complement Med 14: 259-267.

22 Perlman AI, Ali A, Njike VY, Hom D, Davidi A, Gould-Fogerite S, Milak C, Katz DL (2012) Massage therapy for osteoarthritis of the knee: a randomized dose-finding trial. PLoS One 7: PMID: 22347369

23 Ezzo J, Haraldsson BG, Gross AR, Myers C, Morien A, Goldsmith CH, Bronfort G, Peloso PM, The Cervical Overview Group (2007) Massage for mechanical neck disorders: A systematic review. Spine 32:353-362.

24 Kong LJ, Zhan HS, Cheng YW, Yuan WA, Chen B, Fang M (2013) Massage therapy for neck and shoulder pain: a systematic review and meta-analysis. Evid Based Complement Alternat Med Epub. PMCID: PMC3600270

25 Youssef EF, Shanb A-S A (2013) Mobilization versus massage therapy in the treatment of cervicogenic headache: a clinical study J Back Musculoskelet Rehabil 26: 17-24

26 Yuan SLK, Bersanetti AA, Marques AP (2013) Effects of shiatsu in the management of fibromyalgia symptoms: a controlled pilot study. J Manipulative Physiol Ther 36: 436-443

27 Brattberg G (1999) Connective tissue massage in the treatment of fibromyalgia. Eur J Pain 3: 235-244.

28 Sunshine W, Field TM, Quintino O, Fierro K, Kuhn C, Burman I, Schanberg S (1996) Fibromyalgia benefits from massage therapy and transcutaneous electrical stimulation. J Clin Rheumatol 2:18-22.

29 Gilland RP, Talavera F, Foye PM, Lorenzo CT (2013) Rehabilitation and fibromyalgia. Medscape
http://emedicine.medscape.com/article/312778-overview?src=wnl_edit_specol&uac=74941CX#showall

30 Lind BK, Lafferty WE, Tyree PT, Diehr PK, Grembowski DE (2007) Use of complementary and alternative medicine providers by fibromyalgia patients under insurance coverage. Arthritis Rheum 57: 71-76.

31 CareCore National (2013) Muskuloskeletal benefit management for massage services. Issued October 1, 2013. http://www.carecorenational.com/content/pdf/33/3E6B44F5698B494A8A18EE7B1068853F.pdf

32 Beider S (2005) An ethical argument for integrated palliative care. Evidence-Based Comp Alt Med. 2:227-231.

New care models are beginning to recognize that physical health outcomes are closely tied to mental and emotional well-being, and so behavioral health is now more often being integrated into patients' physical care plans. Massage therapy is in the unique position of being a part of treatment plans that address both the physical and behavioral aspects of a wide variety of health conditions, as well as the myriad symptoms that accompany these conditions.

Anxiety and stress. Anxiety and stress are common life experiences that, when prolonged over days or experienced at extreme levels, can seriously impact mental and physical health.[33, 34] Both can also be associated with existing health problems—particularly chronic problems—or may be experienced as part of a work environment. In fact, the need for stress and anxiety reduction are among the most common physician referrals and patient requests for massage therapy. Massage therapy has been shown to help address stress and anxiety while simultaneously addressing some of their physical repercussions.

For example, a 2012 pilot study[35] assessed the feasibility and effect of chair massage for nurses during work hours to help relieve stress. Thirty-eight nurses were offered weekly 15-minute massages during work hours. Symptoms were assessed at baseline, five and 10 weeks. At 10 weeks, assessment scores showed that massage helped reduce stress-related symptoms during work hours.

More recently, a 2013 study investigated the effect back massage might have on chemotherapy-related fatigue and anxiety for cancer patients.[36] Researchers found that for the 40 study participants, back massage given during chemotherapy significantly reduced anxiety and acute fatigue, suggesting that massage therapy may play a key role in helping patients better manage symptoms associated with cancer treatment.

Additionally, massage therapy can be used in combination with other relaxation techniques, psychiatric methods, and therapeutic interventions for those whose constant anxiety is at the extreme of severity.

Depression. Depression is a severe mental health disorder that can be aided by massage therapy. A 2010 meta-analysis indicated a significant association between massage therapy and alleviated symptoms of depression.[37] The National Quality Forum (NQF) rated clinical depression as the most important high-impact Medicare condition capable of significantly raising the price of health care and reducing the health of patients.[38] Clinical depression can manifest concurrently with a number of other medical conditions, and contribute to the outcomes patients achieve for those conditions.

For example, one study of HIV patients found that massage therapy helped to reduce depression significantly compared to no interventions or light touching.[39] Pregnant mothers, both before and after delivery, can experience bouts of depression that can affect their infant. Massage therapy can reduce depression in pregnant women and is correlated to better birth outcomes, especially when used with other effective modalities, such as yoga.[40] Not only can massage therapy help ease the emotional pain of depression itself, it can be effective for helping to deal with some of the side effects of depression medications, which can include headaches, anxiety and insomnia.

Stress, anxiety and depression may also have physiological symptoms that can be helped by massage therapy. For example, hypertension is associated with stress, and is a risk factor for many cardiovascular illnesses. Massage therapy has been shown to acutely reduce blood pressure and heart rate, so can be used to supplement plans that include combinations of medical and behavioral interventions to reduce blood pressure, particularly when a patient's need for reduced blood pressure is considered urgent.[41, 42]

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33 NIMH (2013) Fact sheet on stress. Downloaded 10/7/2013. http://www.nimh.nih.gov/health/publications/stress/stress_factsheet_ln.pdf

34 Watkins L, Koch GG, Sherwood A, Blumental JA, Davidson JRT, O'Connor C, Sketch MH Jr (2013) Association of anxiety and depression with all-cause mortality in individuals with coronary heart disease. J Amer Heart Assoc PMID: 23537805

35 Engen DJ, Wahner Roedler DL, Vincent A, Chon TY, Cha SS, Luedtke CA, Loehrer LL, Dion LJ, Rodgers NJ, Bauer BA (2012) Feasibility and effect of chair massage offered to nurses during work hours on stress-related symptoms: a pilot study. Complement Ther Clin Pract 18:212-215.

36 Karagozoglu, S., Kahve, E (2013) Effects of back massage on chemotherapy-related fatigue and anxiety: supportive care and therapeutic touch in cancer nursing. Appl Nurs Res 26: 210-217.

37 Hou WH, Chiang PT, Hsu TY, Chiu SY, Yen YC (2010). Treatment effects of massage therapy in depressed people: a meta-analysis. J Clin Psych 71:894-901.

38 National Quality Forum (2010) Prioritization of high-impact Medicare conditions and measure gaps. May 2010 Measure prioritization advisory committee report. Downloaded 11/7/13 at http://www.qualityforum.org/projects/prioritization.aspx

39 Poland RE, Gertsik L, Favreau JT, Smith SI, Mirocha JM, Rao U, Daar ES (2013) Open-label, randomized, parallel-group controlled clinical trial of message for treatment of depression in HIV-infected subjects. J Altern Complement Med 19: 334-340

40 Field T, Diego M, Hernandez-Reif M, Medina L, Delgado J, Hernandez A (2012) Yoga and massage therapy reduce prenatal depression and prematurity. J Bodyw Mov Ther 16:204-209

41 Supa'at I, Zakaria Z, Maskon O. Amminudin A, Nordin NA (2013) Effects of Swedish massage therapy on blood pressure, heart rate, and inflammatory markers in hypertensive women. Evid Based Complement Alternat Med 2013, PMCID:PMC3759268

42 Olney CM (2005) The effect of therapeutic massage in hypertensive persons: a preliminary study. Biol Res Nurs 7: 98-105.

PTSD. In 2012, research published in Military Medicine[43] showed that massage therapy helped military veterans significantly reduce anxiety, depression, worry and physical pain. Declining levels of tension and irritability following massage were also reported.

Substance use disorder recovery. Massage therapy might also be helpful for consumers who are recovering from substance use, specifically when a person is dealing with withdrawal symptoms, for example, or the anxiety, stress and sleep problems that often accompany recovery.[44,45]

BETTER PATIENT OUTCOMES

Besides direct therapy for certain health care conditions, massage can also be used to improve the efficacy of other health care treatments, thereby improving patient outcomes. This can occur when the patient achieves positive results more quickly, is better able to endure other aspects of their treatment or is more satisfied with their overall care.

Care for Rehabilitation/ Physical Training

Just as massage therapy is effective for helping patients deal with chronic physical pain, it can aid in healing and rehabilitation following bodily injury. In concert with exercise, physical therapy and other treatment plans, massage therapy can help to reduce pain and improve range of motion in patients dealing with injuries.

Athletic training/injury treatment. Massage therapy has long been included in recovery plans for athletes. A 2008 review of the literature on sports injuries noted several studies in which athletes with some form of injury (ligament tears, sub-acute back pain, etc.) were able to recover fully from their injuries through a combination of physical therapy, exercise and massage therapy.[46] Further work published recently in Science Translational Medicine showed that massage therapy after exercise attenuated production of cellular inflammatory signals in muscle tissue, thereby supporting post-exercise healing and making the case for massage therapy as part of the wellness regimen for athletes and others.[47]

Ergonomics and Job-Related Injuries. Injuries can also occur due to less-than-optimal ergonomic configurations in the workplace (for example, poor configurations of office space, or workers in assembly lines who must perform repetitive functions in awkward positions).[48] These injuries can lead to acute and chronic issues, such as carpal tunnel syndrome and neck pain.

People who are receiving workers' compensation for injuries incurred on the job frequently seek massage therapy to aid in their recovery. Generally, workers' compensation programs around the country will cover massage therapy if the therapy is referred by a physician as a potential means of getting the individual back to the workplace.

The frequency of use of massage therapy sessions for people injured in the workplace suggests a high level of national recognition of the value of massage therapy in helping people return to productivity. It is confirmed by research on its effects. For example, in 2013 the Department of Labor recognized the potential benefit of massage therapy in helping injured employees under the Energy Employees Occupational Illness Compensation Program Act (EEOICPA), which provides compensation to those who work on certain high-risk projects for the Department of Energy. The Department cited the potential benefits of massage therapy as "reducing pain and muscle tension, increasing flexibility and range of motion, and improving blood circulation."[49]

Cardiac rehab. Massage therapy may be particularly helpful for patients recovering from cardiac surgery who may, in some cases, also suffer from back pain, anxiety and stress. One study on the effects of massage in the postoperative cardiovascular surgery setting looked at 113 patients who were randomized to either receive massage therapy or quiet relaxation time. Results showed the 62 participants who received massage had significantly decreased pain, anxiety and tension.[50]

Joint replacement rehab. Patients who have undergone joint replacement surgery can also benefit from massage therapy. For

43 Collinge, W., Kahn, J., Soltysik, R. Promoting reintegration of National Guard veterans and their partners using a self-directed program of integrative therapies: a pilot study. Mil Med. 2012 Dec;177(12): 1477-85.

44 Field, T., Quintino, O., Henteleff, T., Wells-Keife, L. & Delvecchio-Feinburg, G. Job stress reduction therapies. Alternative Therapies in Health and Medicine. 1997 3, 54-56.

45 Black S, Jacques K, Webber A, Spurr K, Carey E, Hebb A, Gilbert R (2010). Chair massage for treating anxiety in patients withdrawing from psychoactive drugs. J Altern Complement Med 16:979-87.

46 Brummitt J (2008) The role of massage in sports performance and rehabilitation: current evidence and future direction. Nor Amer J Sports Phys Ther 3:7-22

47 Crane JD, Ogborn DI, Cupido C, Melov S, Hubbard A, Bourgeois JM, Tarnopolsky MA (2012) Massage therapy attenuates inflammatory signaling after exercise-induced muscle damage. Sci Transl Med 4: 119ra13.

48 Sanchez-Lite A, Garcia M, Domingo R, Angel Sebastian M (2013) Novel ergonomic postural assessment method (NERPA) using product-process computer aided engineering for ergonomic workplace design. PLoS One 16: e72703. PMID: 23977340.

49 Department of Labor (2013). EEOIPCA Bulletin 13-01, issued Jan 2, 2013.

http://www.dol.gov/owcp/energy/regs/compliance/PolicyandProcedures/finalbulletinshtml/EEOICPABulletin13-01.htm

50 Wentworth LJ, Brisee LJ, Timimi FK, Sanvick CL, Bartel DC, Cutshall SM, Tilbury RT, Lennon R, Bauer BA (2009) Massage therapy reduces tension, anxiety, and pain awaiting invasive cardiovascular procedures. Prog Cardiovascular Nurs 24: 155-161.

example, a 2013 study on the effects of relaxation techniques and back massage on postoperative pain, anxiety and vital signs of patients who had undergone total hip or knee arthroplasty found that both these interventions helped decrease both pain and anxiety.[51]

Massage therapists, in close collaboration with physical therapists, can help to reduce pain perception and anxiety in patients both before and after hip or knee joint replacements.[52,53]

Scar management. Massage therapy can also be effective for scar tissue management, such as scars resulting from surgical incisions. Once a wound has closed, healed and is approved as safe to work on by a physician, massage therapists can apply techniques to break down the scar tissue and promote minimum observability of the healed scar.[54,55,56]

Care for Issues Associated with Acute Medical Treatments

Both the symptoms of medical conditions and treatments for those conditions can have effects that significantly impair quality of life, sometimes generating pain, anxiety, discomfort and depression. Massage therapy can help relieve those effects and make the healing process more successful. The proven use of massage for inpatient conditions in hospitals illustrates how massage therapy can apply to a wide range of health issues.

Cancer management. The effectiveness of massage therapy in helping patients cope with both illnesses and treatments has been demonstrated in studies of cancer care. In one example, the Memorial Sloan-Kettering Cancer Center in New York City studied their use of massage therapy for their patients. At the time of the study they employed 12 massage therapists across their inpatient and outpatient centers that cared for patients who either requested the service themselves, or were referred by their physician. As a result of massage therapy, patients who had reported relatively high levels of pain, fatigue, anxiety, nausea, and depression subsequently reported a nearly 50 percent reduction in the levels of all of their symptoms. Both patients and staff reported generally high approval and appreciation for massage therapy.[57] Other studies have corroborated the helpful role of massage therapy in reducing cancer-related discomfort[58,59,60] including reduction of pain for those experiencing severe bone metastases.[61]

Additionally, organizations such as the Society for Integrative Oncology, dedicated to advancing evidence-based, comprehensive, integrative health care to improve the lives of people affected by cancer, strongly endorse the role of massage therapy in helping people better manage various symptoms and side effects associated with cancer and cancer treatment.

Postsurgical pain management. Several studies have been undertaken to examine the effectiveness of massage therapy to aid in healing following other inpatient medical interventions. Extensive research at the Mayo Clinic in Minnesota has demonstrated reductions in postoperative pain and anxiety and improved patient disposition following thoracic surgeries,[62] mastectomies[63] and heart surgeries.[64, 65, 66]

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51 Buyukyilmaz F. Asti T (2013) The effect of relaxation techniques and back massage on pain and anxiety in Turkish total hip or knee arthroplasty patients. Pain Manag Nurs 14: 143-154.

52 Morien A(2014) Understanding a patient's surgical journey: what joint replacement surgery entails and the role massage therapy plays in pre- and post- surgery. Mass Ther J 66-78.

53 Ebert JR, Joss B, Jardine B, Wood DJ (2013) Randomized trial investigating the efficacy of manual lymphatic drainage to improve early outcome after total knee anthroplasty. Arch Phys Med Rehabil. 94: 2103-2111.

54 Taspinar F, Bas Aslan U, Sabir N, Cavlak U (2013) Implementation of matrix rhythm therapy and conventional massage in young females and comparison of their acute effects on circulation. J Alternat Complement Med 19: 1-7

55 Martinez Rodriguez R, Galan del Rio F (2013) Mechanistic basis of manual therapy in myofascial injuries. Sonoelastographic evolution control. J Bodyw Mov Ther 17: 221-34.

56 Roh, YS., Cho, H. Oh JO., Yoon, CJ (2007) Effects of skin rehabilitation massage therapy on pruritus, skin status, and depression in burn survivors. Taehan Kanho Hakhoe Chi. 37:221-6.

57 Cassileth BR, Vickers AJ (2004) Massage therapy for symptom control: outcome study at a major cancer center. J Pain Symptom Manage 28:244-249

58 Myers CD, Walton T, Small BJ (2008) the value of massage therapy in cancer care. Hematol Oncol Clin North Am 22:649-660.

59 Khiewkhern S, Promthet S, Sukprasert A, Eunhpinitpong W, Bradshaw S (2013) Effectiveness of aromatherapy with light Thai massage for cellular immunity improvement in colorectal cancer patients receiving chemotherapy. Asian Pacific J Cancer Prev 14: 3903-3907.

60 Ferrell-Torry AT, Glick OJ (1993) The use of therapeutic massage as a nursing intervention to modify anxiety and the perception of cancer pain. Cancer Nurs 16: 93-101.

61 Jane SW, Wilkie DJ, Gallucci BB, Beaton RD, Huang HY (2009) Effects of a full-body massage on pain intensity, anxiety, and physiological relaxation in Taiwanese patients with metastatic bone pain: a pilot study. J Pain Symptom Manage 37: 754-763.

62 Dion L, Rodgers N, Cutshall SM, Cordes ME, Bauer B, Cassivi SD, Cha S (2011) Effect of massage on pain management for thoracic surgery patients. Int J Ther Massage Bodywork 4: 1-5

63 Drackley NL, Deqnim AC, Jakub JW, Cutshall SM, Thomley BS, Brodt JK, Vanderlei LK, Case JK, Bungum LD, Cha SS, Bauer BA, Boughey JC (2012) Effect of massage therapy for postsurgical mastectomy recipients. Clin J Oncol Nurs 16: 121-124.

64 Wentworth LJ, Brisee LJ, Timimi FK, Sanvick CL, Bartel DC, Cutshall SM, Tilbury RT, Lennon R, Bauer BA (2009) Massage therapy reduces tension, anxiety, and pain awaiting invasive cardiovascular procedures. Prog Cardiovascular Nurs 24: 155-161

65 Cutshall SM, Wentworth LJ, Engen D, Sundt TM, Kelly RF, Bauer BA (2010) Effect of massage therapy on pain, anxiety and tension in cardiac surgical patients who received standard care. Complement Ther Clin Pract 16: 92-95.

66 Bauer BA, Cutshall SM, Wentworth LJ, Engen D, Messner PK, Wood CM, Brekke KM, Kelly RF, Sundt TM 3rd. (2010) Effect of massage therapy on pain, anxiety and tension after cardiac surgery: a randomized study. Complement Ther Clin Pract 16: 70-75.

Other physical side effects may be addressed by massage therapy as well. Another recent case study examined the effectiveness of massage therapy following spinal fusion and standard physiotherapy treatment, demonstrating improvements in pain management and hip flexor length.[67]

Lymphatic drainage. There are instances when massage therapy can be used to help manage unwanted physical side effects or repercussions of surgery. For example, lymphedema can occur when the lymphatic system is damaged during surgery (such as breast cancer surgery), causing severe swelling from lymph accumulation in a limb or other body part. Massage is commonly employed for reducing the swelling of lymphedema. Massage is at least as effective, and possibly more comfortable, as other common swelling-reduction measures (such as compression clothing).[68,69,70,71,72]

Maternity and newborn care. Pregnancy and child birth is another area where massage therapy can improve outcomes. Massage has been shown to be beneficial for easing the soreness associated with the increased weight gain and change in body shape that comes with pregnancy.[73] In addition, women who are in labor can benefit from massage therapy to ease pain in the time period leading up to delivery.[74, 75] There is some evidence that infant massage can reduce the number of hospitals days of premature neonates and lead to better growth, but more research is needed to confirm these results.[76]

PATIENT ENGAGEMENT AND SATISFACTION

One important aspect of patient-centered care is shared decision-making, which depends on physicians thoroughly communicating with their patients so patients can make informed decisions about their care and treatment plans. Reviews of literature about the results of shared decision-making show that when patients are presented with multiple options, they are more likely to choose options that are more conservative and less invasive. For example, patients with back pain are less likely to pursue back surgery or prolonged use of pain killers if there are other less invasive (and less costly) alternatives.[77] Therefore, in cases where massage therapy is an appropriate option, it is likely to be preferable over other options for many patients because it is the most conservative—yet still effective—option.

Patient satisfaction is another important outcome of such a process focusing on patient-centered care, both as an indicator of patient engagement in their own care, and as an outcome unto itself. Efforts to measure patient satisfaction have increased in recent years, and will be an important factor in the evaluation of integrated care systems. The Medicare program has included patient satisfaction as a factor in payment to both hospitals[78] and accountable care organizations.[79] Patients who utilize massage therapy are generally satisfied with their care,[80] and contributing to patient satisfaction is an opportunity for massage therapy to further add value to the health system.

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67 Keller G (2012) The effects of massage therapy after decompression and fusion surgery of the lumbar spine: a case study. Int J Ther Massage Bodywork 5: 3-8

68 Dayes IS, Whelan TJ, Julian JA, Parpia S, Pritchard KI, D'Souza DP, Kligman L, Reise D, Leblanc L, McNeely ML, Manchul L, Wiernikowski J, Levine MN (2013) Randomized trial of decongestive lymphatic therapy for the treatment of lymphedema in women with breast cancer. J Clin Oncol PMID:24043733

69 Forchuk C, Baruth, P, Prendegrast M, Holiday R, Brimner S, Schulz, V, Chan YC, Yammine N (2004) Postoperative arm massage: a support for women with lymph node dissection. Cancer Nurs. 27: 25-33.

70 Bertelli DF, de Oliveira P, Gimenes, AS, Moreno MA (2013) Postural drainage and manual lymphatic drainage for lower limb edema in women with morbid obesity after bariatric surgery: a randomized controlled trial. Am J Phys Med Rehabil 92: 697-703.

71 Leduc O, Crasset V, Pastouret F, Wilputte F, Leduc A (2011) Impact of manual lymphatic drainage on hemodynamic parameters in patients with heart failure and lower limb edema. Lymphology 44: 13-20.

72 Molski P, Kruczynski J, Molski A, Molski S (2013) Manual lymphatic drainage improves the quality of life in patients with chronic venous disease: a randomized controlled trial. Arch Med Sci 9: 452-458.

73 Field T (2010) Pregnancy and labor massage. Exp Rev Obstet Gynecol 5:177-181.

74 Ibid.

75 Silva Gallo RB, Santana LS, Jorge Ferreira CH, Marcolin AC, Polineto OB, Duarte G, Quintana SM (2013) Massage reduced severity of pain during labour: a randomised trial. J Physiother 59:109-116.

76 Wang L, He JL, Zhang XH (2013) The efficacy of massage on pre-term infants: a meta-analysis. Am J Perinatol 30: 731-738.

77 Stacey D, Bennet CL, Barry MJ, Col NF, Eden KB, Holmes-Rovner M, Llewellyn-Thomas H, Lyddiatt A, Legare F, Thomas R (2014) Decision aids for people facing health treatment or screening decisions. Cochrane Database Syst 1: Art. No.: CD001431

78 CMS Hospital Value-Based Purchasing Program Fact Sheet, http://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/downloads/Hospital_VBPurchasing_Fact_Sheet_ICN907664.pdf

79 Quality Performance Standards Narrative Measure Specifications, http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/sharedsavingsprogram/Downloads/ACO-NarrativeMeasures-Specs.pdf

80 Oldendick, R, Coker A, Wieland, D., Raymond J, Probst J (2000) Population-based survey of complementary and alternative medicine usage, patient satisfaction, and physician involvement. South Med J 92: 375-381.

COST EFFECTIVENESS

Accountable care models require joint efforts by caregivers to reduce the overall cost of care, while still maintaining high quality. Health care providers who can help the system to save money while maintaining high quality care for patients are rewarded. Health care providers can contribute to savings in at least four different ways:

- Providing therapies that are less expensive than similar treatments provided by other professionals or in different settings
- Eliminating duplicate, repetitive, or unnecessary treatments or visits
- Providing treatments that ease the overall burden of care
- Helping patients avoid expensive complications or other adverse health events

Massage therapy can potentially contribute in all four of these areas. The use of massage therapy for easing chronic symptoms or preventing ergonomic injury can prevent unnecessary medical treatments and relieve the overall burden of care. The role of massage therapy in lowering blood pressure, easing stress, and reducing anxiety and depression can help patients avoid adverse health events.[81, 82]

The evidence base that demonstrates the medical effectiveness of massage therapy also suggests a role for massage therapy in reducing the overall cost of care. Studies of the cost-effectiveness of access to complementary and integrative therapies have noted the economic favorability of those therapies compared to standard medical care, particularly to those who have high-deductible plans.[83, 84] Studies have also shown that those therapies have an increasing value to patients with complex health needs. The potential of integrative therapies such as massage therapy to provide cost savings is greater for patients who have larger "disease burdens", and who therefore spend more on health care than the average patient. A 2010 analysis showed that a patient with major medical issues requiring multiple visits will generally pay less overall when they utilize complementary modalities.[85]

Although the cost effectiveness of massage therapy will be discussed in-depth in Part Three of this document, we do know that cost is one important way massage therapy has demonstrated value, and further research and analysis is emerging to further confirm it. In one recent study, the cost-effectiveness of massage therapy for patients with back pain was maximized when massage therapy was used in conjunction with exercise, physical therapy or movement therapy.[86, 87] As the role of massage therapy in young and evolving models of accountable care continues to grow, it is likely that the contribution of massage therapy to savings will be directly connected to its effective integration into the team-based care process.

STRATEGIES FOR INTEGRATING MASSAGE THERAPISTS

The ways in which a massage therapist can best add value for a health care provider or health system can vary greatly based on the local factors, including the type of health care organization, its relationship to third-party payers, and the needs of the patient population. Programs currently exist—both within the massage therapy profession and health care facilities such as The Mayo Clinic—that are designed to prepare massage therapists to safely and effectively work within health care settings. More detailed information focused specifically on helping health care providers better understand how massage therapists can enhance and play a meaningful role in various health care environments is covered in Part Two of this document.

For example, a hospital that treats cancer patients will likely want a massage therapist trained in and experienced with oncology massage. A PCMH with a high number of elderly patients may need someone who has experience with geriatric massage. A practice may want to hire one or more massage therapists to work on site, or may refer patients on an agreed-upon basis. ACOs may wish to survey their patients to find out how and when they would like to use massage therapy. Health care organizations should use a reliable source for seeking out qualified massage therapists. The American Massage Therapy Association's (AMTA) website features a national directory of association members that can be searched by region and specialty.[88]

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81 NIMH (2013) Fact sheet on stress. Downloaded 10/7/2013. http://www.nimh.nih.gov/health/publications/stress/stress_factsheet_ln.pdf

82 Watkins L, Koch GG, Sherwood A, Blumental JA, Davidson JRT, O'Connor C, Sketch MH Jr. (2013) Association of anxiety and depression with all-cause mortality in individuals with coronary heart disease. J Amer Heart Assoc PMID: 23537805

83 Lafferty WE, Tyree PT, Bellas AS, Watts CA, Lind BK, Sherman KJ, Cherkin DC, Grembowski DE (2006) Insurance coverage of subsequent utilization of complementary and alternative medicine providers. Am J Manag Care 12: 387-404

84 Martin BI, Gerkovich MM, Deyo RA, Sherman KJ, Cherkin DC, Lind BK, Goertz CM, Lafferty WE (2012) The association of complementary and alternative medicine use and health care expenditures for back and neck problems. Med Care 50: 1029-1036.

85 Lind BK, Lafferty WE, Tyree PT, Diehr PK (2010) Comparison of health care expenditures among insured users and nonusers of complementary and alternative medicine in Washington State: a cost minimization analysis. J Alt Complementary Med 16:411-417.

86 Hollinghurst S, Sharp D, Ballard K, Barnett J, Beattie A, Evans M, Lewith G, Middleton K, Oxford F, Webley F, Little P (2008) Randomised controlled trial of Alexander technique lessons, exercise, and massage (ATEAM) for chronic and recurrent back pain: economic evaluation. BMJ 337:a2656 1-8

87 Lin C-W C, Haas M, Maher CG, Machado LAC, van Tulder MW (2011) Cost-effectiveness of guideline-endorsed treatments for low back pain. Eur Spine J 20:1024-1038

88 https://www.amtamassage.org/findamassagetherapist

CONCLUSION

When viewed in the context of integrated care delivery models focused on the whole patient, massage therapy offers obvious benefits for improving the care process. These benefits are supported by a growing body of research demonstrating massage's value as a direct therapy for certain medical conditions, and as part of integrated care to help patients achieve better outcomes. Massage therapy has always concerned itself with the overall well-being of patients, and new health delivery models are now trying to implement this philosophy.

Each integrated care delivery system will be different. Some will be PCMHs, focused on primary care, prevention, and general care coordination. Other systems, such as ACOs, will include a much broader range of health care providers such as hospitals specialists, and ancillary providers. Regardless of their specific organization, the goals of these emerging health provider systems are consistent with the "Triple Aim" of health care reform: to drive value through better patient care, better outcomes, and managing cost.

Massage therapists have much to offer under the new paradigms of health care. Whether the massage therapist is simply a practitioner coordinating with other providers, or a formal member of the health care team, individual patients and the system as a whole will benefit from the inclusion of massage therapy in integrated care models.

Part II: A Vision for the Ongoing Integration of Massage Therapy in Emerging Health Care Systems

EXECUTIVE SUMMARY

Health care reform is placing new demands and expectations on health care providers. Providers are being asked to improve the quality of care while simultaneously lowering costs. To meet these demands, many providers are organizing themselves into "accountable care systems," which coordinate care delivery across different types of health care providers and settings.

Massage therapy has been shown to improve patient care and satisfaction, result in better patient outcomes and help manage overall health care costs[1]. Part One of this document explored areas of evidence for how massage therapy demonstrates value for better health care outcomes. Part Two presents a vision for the ongoing integration of massage therapy into emerging health care systems and explores opportunities for massage therapists to make important contributions to accountable care systems.

Key Findings

- Massage therapists have been working effectively in different health care settings for many years, and have gained increasing recognition for their contributions.
- New models of health care, such as ACOs and PCMHs, are exerting an influence on health care institutions that can open new opportunities for massage therapy integration.
- Massage therapists are finding new ways to thrive in more collaborative working environments in primary care practices and hospitals.
- Healthcare administrators have incentives to pursue collaborations with massage therapists to implement team-based care.

"Team-based care" is a fundamental principle of accountable care. This team-based approach is well-aligned with a massage therapist's role in providing integrated care that supports better overall patient well-being. However, to fully realize the potential of integrated care models, health care systems and massage therapists must define and create partnerships to share responsibility for delivering and coordinating patient care. Case studies of collaborations occurring today demonstrate how massage therapists can function within team-based care models and deliver better patient results.

In this section, we outline new models of health care that are creating openings for massage therapy to be further integrated. Case studies illustrate how massage therapists are engaging in partnerships across health care systems and improving patient outcomes. The national move toward new models of care can create opportunities for massage therapists to assume new positions within the care system.

1 For a comprehensive review of the research supporting massage therapist' role in a better health care system, please see Part I of this report, "The Therapeutic Value of Massage Therapy"

HEALTH CARE REFORM AND MASSAGE THERAPY

As a result of changing models in health care, the ways health care institutions operate are evolving as well. This shift in operation has redefined what is considered "valuable" in health care delivery. Practices and hospitals are seeking ways of improving care and reducing costs, while making concerted efforts to ensure that their delivery of care is centered on patient needs. Providers are being incentivized to consider episodes of care from a wider perspective, and to take into account patient satisfaction in their care models.

Because of these changes, massage therapists are finding a more collaborative climate in both primary care and hospitals. As outlined in Part I of this report, massage therapists provide services that add to value by helping to provide better health care, better patient outcomes and improved cost-effectiveness of care—the "Triple Aim" of health care reform. Massage therapists have been working with other health care providers for many years in hospital and primary care settings, as well as on a referral basis. But, new models of care are broadening the opportunities for massage therapists to be more fully integrated into the process of care and to provide massage therapy where and when it is most effective.

Two specific new health care models, ACOs and PCMHs, are examples of opportunities where massage therapy can flourish in clinical settings to a greater degree than it has previously. In addition, "traditional" medical providers such as hospitals and physician clinics may find new ways to work with massage therapists, as health care reform asks all types of health care providers to improve care delivery.

PCMHs. Patient-centered medical homes (PCMHs) are an advanced primary care model that proactively manages patients' health care needs[2]. Typically a PCMH is run by an M.D. or D.O., although it may be owned by a hospital system or large physician group. (A recent trend has been for hospitals to purchase primary care practices because effective primary care is a core principle of health care reform.) The level of implementation of PCMH initiatives varies by communities, and is especially prevalent in markets where large plans have offered financial incentives to primary care practices.

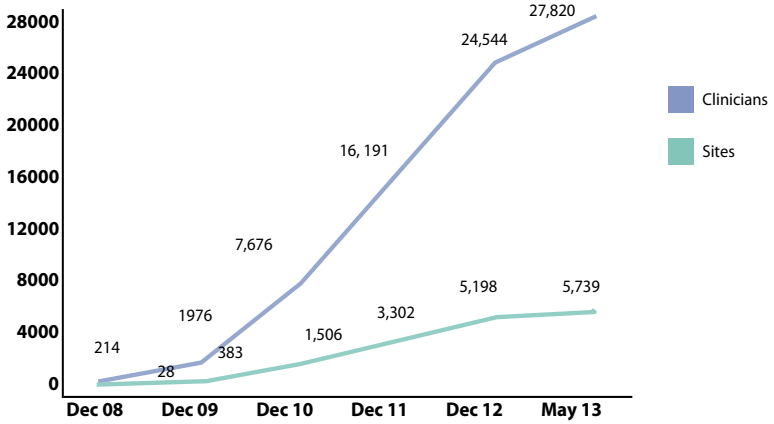
In many programs, PCMHs must achieve recognition from the National Committee for Quality Assurance to demonstrate adherence to patient-centered care principles. NCQA's web site is an excellent resource to identify PCMHs within a community. (See: http://recognition.ncqa.org/) The NCQA standards require PCMH practices to:

- Enhance Access/Continuity
- Identify/Manage Patient Populations
- Plan/Manage Care
- Provide Self-Care/Support/Community Resources
- Track/Coordinate Care
- Measure/Improve Performance

To achieve these objectives, the PCMH requires close collaboration and teamwork between primary care physicians and other care providers. In this model, physicians may find more opportunities to work directly with massage therapists, not only in treating the patient, but also in helping to create an overall care plan for a patient. Care managers, whose responsibility is to engage patients in addressing their chronic health needs, can also work with massage therapists to help patients overcome physical and behavioral barriers to better health.

PCMHs also are likely to be engaged in shared savings programs, in which practices can receive a percentage of the money that they save. Shared savings calculations are often based not only on cost reductions, but also on quality measure reporting and patient satisfaction survey results. Insofar as massage therapists are able to improve the quality of care in a practice through effective inclusion in care plans, and are able to lower costs by reducing the need for medications, surgeries and other expensive interventions, massage therapy holds significant value for PCMHs.

Figure 1 **PATIENT-CENTERED MEDICAL HOME GROWTH**



2 For more background information on PCMH, refer to Part 1 of this report and also see www.pcpcc.net

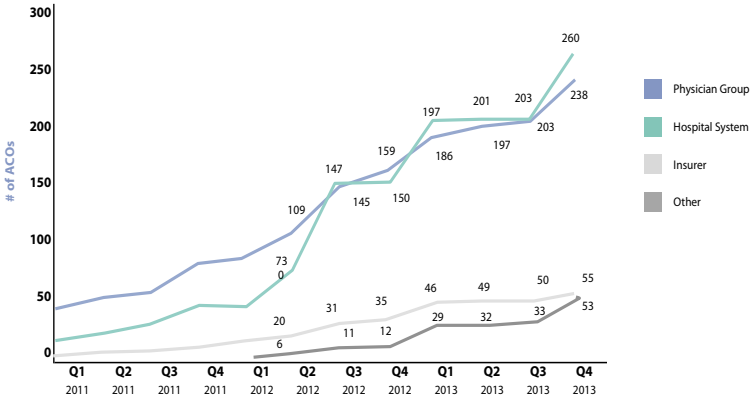
ACOs. Accountable care organizations (ACOs) are integrated care networks that include primary care, specialty care, inpatient care and other health care services[3]. ACO programs vary across the country, but most assign a population of patients to the ACO, which is then expected to coordinate care for individuals in that population. Some ACOs are hospital-led; others are led by physician groups. ACOs manage care by establishing referral systems, standardizing electronic health record systems, and coordinating care, especially for patients with complex care needs.

Payments models for ACOs can encourage treatment of the patient through extended "episodes of care," which can include care management for a significant amount of time following an acute delivery of care. For example, an episode of care for a patient receiving a hip replacement can extend for months following the actual surgery, so the health and rehabilitation of the patient are viewed as part of a complete continuum of care.

Massage therapists can be integrated into the ACO model through several different means. They can work as salaried employees of hospitals or primary care practices that are members of ACOs. They can operate private practices that are part of the ACO's extended network. ACOs create a framework for massage therapists to operate more closely with an entire network of care providers. Massage therapists working with an ACO can access patient records through an electronic health system used by all the member providers and record the care that they render. Through their ability to improve patient outcomes and lower the need for costly interventions, massage therapists, regardless of where they work, can add value to an ACO network in many of the same ways they add value to PCMHs.

Figure 2

TOTAL ACCOUNTABLE CARE ORGANIZATIONS BY SPONSORING ENTITY



Hospitals. While hospitals are among the most traditional of care settings, health care reform is creating new pressures on hospitals and driving innovation. For example, the Medicare program now adjusts hospital payment based on a long list of performance criteria. These include measures such as patient satisfaction and readmissions rates. This means that hospitals not only have incentives to provide the best care during the inpatient stay, but also to follow up after the patient is discharged. For a range of patients and health conditions, hospitals should identify opportunities to integrate massage therapy as a health improvement strategy where it enhances performance and patient satisfaction. This may also help the hospital succeed under new measurement and payment programs, while also creating additional patient referrals for massage therapy. The cost effectiveness possibility will be looked at further in Part Three.

Collaborations. The health reform environment also can provide new opportunities for collaborations between massage therapists and fellow health care providers through a variety of other venues and referrals. For example, the increasing focus on patient engagement and choice has prompted health care providers to consider the range of care options they make available to patients. In some cases, this focus has prompted the development of integrative care[4] departments in hospitals or primary care practices that include features of integrative care.[5,6] Such organizations allow for modalities and therapy options that were not previously considered part of traditional care to be included in the care process. Demand for integrative care is primarily driven by patient demands for more options, particularly when they are confronted by the possibility of invasive procedures. An increasing movement toward integrative care is creating new opportunities for massage therapists. In turn, physicians are becoming increasingly more aware of the benefits of adding massage therapy to their practices and care processes.

Of note, these opportunities for closer collaboration are not specific to any one workplace environment. While ACOs, PCMHs, hospitals and integrated care networks do provide formal opportunities for referrals and employment, patients can benefit from relationships between primary care providers and massage therapists that result in new client recommendations and, ultimately, improved care. Referral arrangements, even when not included in a patient's health care plan, continue to be an option.

3 For a useful Q & A on accountable care organizations, see http://www.kaiserhealthnews.org/stories/2011/january/13/aco-accountable-care-organization-faq.aspx.

4 The term "Integrative Care " is sometimes confused with the term "Integrated Care". Integrative care specifically refers to the inclusion of care modalities that were not previously part of traditional care procedures, and seek to address patients' overall wellness instead of focusing on specific conditions. Integrated care is a term in health reform discussions that broadly refers to a healthcare system that is more collaborative and more networked. ACO and PCMH models are illustrative of the move towards more integrated care, but they can include Integrative Care into their system.

5 Sierpina VS, Dalen JE (2013) The future of integrative medicine. AM J Med 126:661-662.

6 Maizes V, Rakel D, Nieniec JD (2009) Integrative medicine and patient-centered care. EXPLORE 5: 277-289.

NATIONAL TRENDS IN HEALTH CARE AND MASSAGE THERAPY

Research confirms the connections being made between patients, health care providers and massage therapists. According to AMTA's 2013 consumer survey[7], more than fifty million American adults (16 percent) had discussed massage therapy with their doctors or health care providers in the previous year. Of those, 62 percent of their doctors or health care providers strongly recommended massage therapy or encouraged them to get a massage. This percentage has steadily increased over the past ten years. As shown in Figure 3, while physicians led the way in recommending massage, many chiropractors and physical therapists also recommended massage therapy.

Furthermore, the 2013 survey data shows that, between 2011 and 2013, the percentage of massage therapists who received referrals from hospitals was up by seven percentage points. Referrals from other providers went up during that time as well (see Figure 4 below):

Massage therapy is increasingly integrated into customary care in many hospitals. According to studies conducted for the American Hospital Association[8] massage therapy is the top complementary therapy offered in outpatient settings and the second highest complementary therapy offered in inpatient settings. In 2007, 54 percent of hospitals offered massage as an outpatient service. In 2010, that number rose to 64 percent. Inpatient use of massage went from 40 percent in 2007 to 44 percent in 2010. Hospitals place great priority on their patients' feedback: 78 percent said they chose therapies based on patient demand, 74 percent based on evidence, and 58 percent based on the availability of practitioners. Massage therapy ranks high on all three measures.

Supporting this trend toward less invasive procedures and complementary approaches to common health conditions, the American College of Physicians and the American Pain Society issued joint clinical practice guidelines[9] that include massage therapy as one of the nonpharmacologic treatment options that should be considered for patients with low-back pain who do not improve on their own.

Figure 3

Health Care Professionals Who Recommended Massage

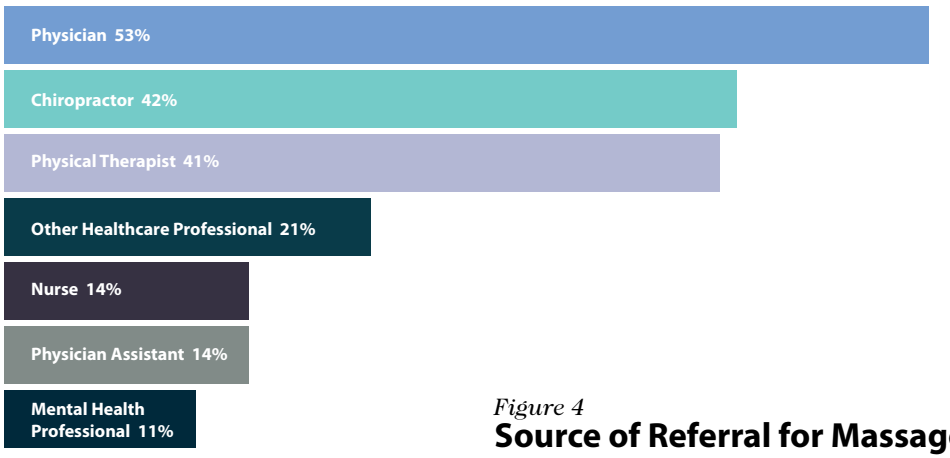


Figure 4

Source of Referral for Massage Therapy

	2011	2013
Hospitals and Medical Facilities	46%	53%
Chriropractors and Integrated Health Clinics	63%	70%
Other Health Care Professionals	65%	73%
Other Massage Therapists	76%	79%

7 http://www.amtamassage.org/research/Consumer-Survey-Fact-Sheets.html

8 Ananth S (2010) Complementary and alternative medicine survey of hospitals. http://www.samueliinstitute.org/File%20Library/Our%20Research/OHE/CAM_Survey_2010_oct6.pdf

9 Chou R, Qaseem A, Snow V, Casey D, Cross JT Jr, Shekelle P, Owens DK; Diagnosis and treatment of low back pain: a joint clinical practice guideline from the American College of Physicians and the American Pain Society. Ann Intern Med. 2007 Oct 2;147(7):478-91. Clinical Efficacy Assessment Subcommittee of the American College of Physicians; American College of Physicians; American Pain Society Low Back Pain Guidelines Panel

CASE STUDIES

CASE STUDIES OF MASSAGE THERAPY IN HEALTH CARE

As previously mentioned, massage therapists have already been working in the health care system for many years.[10] Some are employed by hospitals or primary care practices, and some collaborate with both of them through private massage therapy practice. As new models of health care have recently emerged, massage therapists are already adjusting and finding new ways to work more effectively and more collaboratively in clinical settings.

The following case studies discuss ways in which specific massage therapists have been able to work within the context of PCMHs and other care models. These snapshots provide a glimpse into the potential of massage therapy integration. The case studies include examples of massage therapists in primary care, hospitals and integrated health networks.

Case Study #1
Casey Health Institute (CHI)

CHI is a Maryland PCMH practice established in 2011. The practice emphasizes integrative care in its delivery model.

How massage therapy is included:

CHI employs a licensed massage therapist on a salary basis. Prior to joining CHI, she spent more than a decade working in physical therapy clinics associated with hospitals, as well as in a private massage therapy practice. In addition to her salary at Casey, she receives employee health benefits and is eligible for paid opportunities to pursue continuing education courses in her field. Her business hours are regular and predictable.

The massage therapist collaborates closely with medical staff and attends weekly staff and clinical meetings, where she offers recommendations on the needs of individual, and often complex, patients. She indicates to the physicians when massage would or would not be appropriate. She also participates in smaller work group meetings and has regular personal consultations with the other providers in the practice. She has full access to the electronic health records of each patient and includes her notes on the care that she delivers.

Case Study #2
CLINIX

CLINIX is a practice in Colorado founded in 1984. It was the first physician practice in Colorado to receive PCMH recognition from the National Center for Quality Assurance (NCQA). It is a member of a shared savings program.

How massage therapy is included:

CLINIX had a massage therapist and a chiropractor on staff before the practice made the transition to a PCMH. They also employ an exercise therapist. All are considered team members with the physician.

They have found that referring a patient to the massage therapist has been beneficial in reducing the need for expensive procedures. For example, when a patient presents with back pain, the primary care physician will discuss various options with the patient. Often, the physician will refer the patient to the chiropractor, and the chiropractor will refer the patient to the massage therapist and/or exercise therapist. Through their collaborative treatment, the patient's problems are often resolved, thus saving the patient expensive and unnecessary procedures and tests that the patient would otherwise have used if the problem lingered. Therefore, the massage therapist is part of a process that benefits the patient and potentially saves the practice, patient and insurer from unnecessary expenses.

Case Study #3
Zanjabee Integrative Medicine

Zanjabee is an independent primary care practice with an emphasis on integrative health, founded in 2010. The founder of the practice, a primary care physician, is also an instructor of Internal Medicine at Harvard University and holds an MBA from the Massachusetts Institute of Technology.

How massage therapy is included:

The practice employs at least one massage therapist who is an integral part of the practice and care team. They invest at least a year toward developing and training their massage therapists to optimize their full integration into their clinical care process.

Zanjabee has several standard protocols for incorporating massage into treatment for ergonomic injuries to the shoulder and neck, anxiety and depression, migraine, tension headache, sports injuries, PTSD and limb pain. When the physician recommends massage, she indicates the massage referral on the patient's electronic medical records and also consults with the massage therapist directly to check in.

10 For massage therapists exploring careers in the health care field, this exploration of the topic is useful: http://www.amtamassage.org/uploads/cms/documents/amta_healthguide_2013.pdf

Case Study #4
Memorial Sloan-Kettering Cancer Center (MSKCC)

MSKCC is a renowned cancer center in New York City. It is credited with being the oldest and largest cancer center in the world. It is designated by the National Cancer Institute as a Comprehensive Cancer Center, meaning that it serves patients and conducts population-based research.

How massage therapy is included:

Researchers at MSKCC were interested in the possible contribution of massage therapy to patients undergoing cancer treatments. For a study they published in 2004[11], they selected more than 1,000 cancer patients. They employed 12 massage therapists to work in both the inpatient hospital and the outpatient centers. The results of the study suggested that massage therapy was beneficial for patients as it helped patients to cope with pain, stress, nausea and other results of their treatments. They still employ 12 massage therapists to work throughout the center. Patients can select from a range of massage therapy options, including Swedish, shiatsu and aromatherapy massage. Inpatients at the hospital can self-refer for a massage, or can be referred by a physician, while outpatient requests are exclusively self-referred. Currently, whether inpatient or outpatient, those who would like a massage are given the option to purchase a one-time session, or a set of ten sessions for a bulk price. In 2013, MSKCC reported that they provided about 75 hours a week of 20-30 minute massage sessions to cancer patients.

Case Study #5
Gritman Medical Center

Gritman Medical Center in Moscow, Idaho, is an award-winning, not-for-profit, Critical Access Hospital dedicated to providing excellent health care services to its patients. Gritman Medical Center has been a member of its community for more than 100 years. By providing useful information and educating residents on ways to stay healthy through prevention programs, Gritman is dedicated to creating a healthy community.

How massage therapy is included:

Gritman Massage Therapy provides skilled, professional massage therapy services, with or without a physician's referral, to inpatients of Gritman Medical Center and on an outpatient basis. For individuals who have been admitted to Gritman Medical Center's Family Birth Center, Medical Surgical Unit, or Critical Care Unit, complimentary massage therapy is available with a physician's referral. Massage therapy services include orthopedic and sports massage; prenatal, labor and postpartum massage; relaxation and stress management; oncology massage; massage for pain relief and hospice massage therapy. Gritman also has a satellite office at the University of Idaho and provides hospice massage through a collaboration with a regional homecare company and the Gritman Foundation. Gritman employs three massage therapists as part of its Therapy Solutions service.

Case Study #6
Northwestern Memorial Hospital

Northwestern Memorial Hospital in Chicago, Illinois, offers integrative care as part of treatment plans and employs massage therapists. Their physicians are trained in both conventional medical care and integrative medicine to ensure that they can offer the best course of treatment and lifestyle plan for each patient. Practitioners include trained specialists in acupuncture, massage therapy, naturopathic medicine and health psychology.

How massage therapy is included:

Northwestern offers massage at its main hospital and at several other locations. The physicians group (Northwestern Integrative Medicine) offers a full range of complementary and integrative therapies, including massage therapy. Physicians and practitioners work as colleagues and in partnership to benefit patients' health. The complementary physicians and practitioners intentionally blend the best of conventional medicine, cutting-edge diagnosis and treatment with appropriate therapies. This specific group employs three massage therapists.

Northwestern Integrative Medicine offers several different types of massage, including manual lymphatic drainage, myofascial, neuromuscular, trigger point therapy, prenatal massage and deep tissue. Conditions commonly cared for include stress-related muscle tension, whiplash, muscle tension headaches, post-operative soft tissue pain, carpal tunnel syndrome, fibromyalgia, multiple sclerosis, hypertension, low back pain, temporomandibular joint pain, repetitive use injuries, traumatic muscle-strain injuries, and rotator cuff injuries. Insurance may be billed if massage is provided as part of a chiropractic service.

Case Study #7
Mayo Clinic

Mayo Clinic's complementary and integrative medicine physicians and other health professionals offer patients and their referring physicians' recommendations to help integrate appropriate complementary medicine therapies and wellness programs into the patients' overall treatment plan. Recommendations are meant to complement rather than replace conventional medical care.

11 Cassileth BR, Vickers AJ (2004) Massage therapy for symptom control: outcome study at a major cancer center. J Pain Symptom Manage 28: 244-249

How massage therapy is included:

The CIM program supports a clinical service center for the campus in Rochester, Minnesota. Patients can request consultations with CIM personnel, who make recommendations on potential services the program can offer, or their physicians can refer patients directly to practitioners. The CIM program employs a minimum of two massage therapists.

CIM personnel also seek ways to employ massage therapy both for patients and for hospital staff members. Their published research has shown positive effects of massage for pre- and post-surgical pain following a variety of procedures[12,13,14], and has found application for massage therapy for hospital staff who perform ergonomically-stressful procedures.[15]

Case Study #8
Duke Health System

Duke University, in Durham, North Carolina, has an extensive health system that includes the medical school hospital and Duke Integrative Medicine. Duke Integrative Medicine is committed to transforming the way health care is delivered in the 21st century. Expert providers integrate the best of conventional medicine with proven complementary therapies to address the whole person—body, mind, spirit and community. The innovative model of care includes primary care, physician consultations, health coaching, and an array of clinical services, classes, workshops and trainings.

How massage therapy is included:

Massage therapy services are offered throughout the Duke health system. To receive massage therapy, patients do not require a physician referral; they can go to the integrative health program and request it.

An employed massage therapist who practices throughout the Duke health system enjoys extensive interaction with physicians, nutritionists, acupuncturists and other caregivers. They share space and discuss patient needs in informal settings, and also have formal treatment team meetings when difficult cases arise. The teams are diverse and allow for discussions about the patient that approach care from many different perspectives. The massage therapist is seen as an equal in the care team; physicians, nurses and patients can approach the massage therapist and ask for consultations. The massage therapist works with the system's electronic health records. In addition, the massage therapist is given the opportunity to address different groups of caregivers, including medical students, to educate them on the benefits of massage therapy.

CONCLUSION

The movement toward new models of health care represents an opportunity to more effectively integrate massage therapy into the health care system. To make the most of this opportunity to improve patient care, hospitals, physicians and other health care providers should seek practical solutions to include massage therapy in their care models, especially because of the broad range of patient types and conditions for which massage therapy is an important service. The specific relationships between health care providers and massage therapists vary and will continue to vary. As case studies show, some massage therapists are employed within hospitals or physician practices, while in other cases, providers create referral relationships that include community-based massage therapists as part of the care team.

A willingness to innovate will be critical to success in a fast-evolving health care system. Many massage therapists are developing new ways to increase their care for patients and to provide massage therapy when and where it can be most useful. Ultimately, patients will benefit from these closer collaborations and there is every indication that outcomes also will result in lower costs.

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12 Dion L, Rodgers N, Cutshall SM, Cordes ME, Bauer B, Cassivi SD, Cha S (2011) Effect of massage on pain management for thoracic surgery patients. Int J Ther Massage Bodywork 4: 1-5

13 Drackley NL, Deqnim AC, Jakub JW, Cutshall SM, Thomley BS, Brodt JK, Vanderlei LK, Case JK, Bungum LD, Cha SS, Bauer BA, Boughey JC (2012) Effect of massage therapy for post-surgical mastectomy patients. Clin J Oncol Nurs 16: 121-124.

14 Wentworth LJ, Brisee LJ, Timimi FK, Sanvick CL, Bartel DC, Cutshall SM, Tilbury RT, Lennon R, Bauer BA (2009) Massage therapy reduces tension, anxiety, and pain awaiting invasive cardiovascular procedures. Prog Cardiovascular Nurs 24: 155-161

15 Keller SR, Engen DJ, Bauer BA, Holmes DR Jr, Rihal CS, Lennon RJ, Loehrer LL, Wahner-Roedler DL (2012) Feasibility and effectiveness of massage therapy for symptom relief in cardiac catheter laboratory staff: a pilot study. Comp Ther Clin Pract 18: 4-9

Part III: The Economic Value of Massage Therapy

EXECUTIVE SUMMARY

As parts one and two of this document explored, massage therapy can be an effective part of an integrative care approach to medicine and can be effective for many conditions. While often performed independently, massage therapy is also used in conjunction with a number of conventional medical services used to address a variety of health conditions. And, massage therapy is increasingly recognized by consumers as a meaningful option for reducing pain and addressing their health and wellbeing. However, few government third-party payment programs and even fewer private insurance companies recognize massage therapy as a viable medical option and therefore do not cover patients – even when the therapy is prescribed by a physician.[1]

To begin a conversation on the detailed cost effectiveness of massage therapy, AMTA commissioned John Dunham and Associates to look at the relationship between massage therapy coverage and costs of care. This analysis is intended to provide a starting point for conversations with health care providers. It examines data from the federal Medicaid and Medicare systems to see if patient care costs can be reduced by providing better access and insurance coverage for medically prescribed massage therapy. Based on an econometric analysis that takes into account a number of demographic and economic variables, the weighted average cost for 19 specific types of treatments was about $64 lower per treatment in states where massage is covered as part of Medicaid.

While the savings per individual treatment may not appear significant, when the total number is analyzed cumulatively across approximately 66 million outpatient services, the research indicates that private insurers could save as much as $4.55 billion in costs if they were to cover massage therapy nationally. These potential savings are substantial and reach as high as $439 million in Texas, and $426 million in California. Government third-party payers could also see substantial savings – as much as $1.39 billion if all 46 states that do not cover massage under their Medicaid programs were to do so.

While a model of this type cannot predict causality, economic theory suggests that the savings are the result of the benefits of increasing the supply of practitioners to meet the demands of the medical marketplace. Medical costs have been rising faster than inflation in part because the number of practitioners is limited. By covering massage therapy as part of a system of integrative care, the potential pool of practitioners would grow, since as many as 300,000 massage therapists and approximately 16,760 massage service firms are added. The benefits of massage therapy accrue when it is taken as part of a comprehensive treatment system. It is by making a trip to the massage therapist in place of additional hours at the hospital or doctor's office, or by substituting massage in place of some other treatments, where the savings truly emerge.

1 Massage therapy is often available in cases of auto insurance and worker's compensation claims; however it is typically not presented as a medical option in the general case.

INTRODUCTION

This analysis examines how the inclusion of massage therapy services as part of an integrative care approach can help lower costs for certain conditions and types of treatments. The analysis uses a comprehensive database of service costs to estimate how massage therapy can help increase the number and types of service providers. By increasing the size of the market for providing medical care, massage therapy reduces costs to the government and to private insurers.

Massage has long been acknowledged as an important therapy for the treatment of pain and chronic illness. Unfortunately, while significant clinical research confirms its efficacy, these benefits are at times dismissed by both public and private insurers as non-essential or optional. Little to no research has been done in the past to quantify the potential benefits of encouraging the use of massage treatments in terms of insurance dollars saved. Any savings would benefit both consumers and the insurance companies that decide to extend coverage – something that is of particular importance during a period when the entire health care sector is undergoing a major transition with a focus on reducing costs.

This analysis examines the statistical link between the recognition of medically approved massage therapy under insurance coverage and the cost of medical care for several outpatient treatment procedures. It uses data from an extensive database of treatments covered by Medicare and Medicaid programs across the country.[2] These data are used as a proxy[3] for all medical coverage, and were selected because they were related to the medical conditions where massage therapy might show efficacy as a form of treatment.[4] In all, 19 of 30 outpatient treatment types available from the dataset were used in the analysis.[5]

The economic rationale for the probability of cost savings is the result of medical treatment (supply) meeting patient needs (demand). While the number of medical conditions can be considered to be fixed whether or not insurance companies cover certain types or instances of massage therapy, the number of service providers would significantly increase. As such, particularly for specific treatment types, the pool of providers (the supply part of the equation) would grow, while the demand part (care provided to injured and sick people) would be fixed. The economic theory behind this is discussed in more detail later.

Based on the models developed for this analysis, if all 46 states that do not currently cover medically prescribed massage therapy[6] were to do so, the overall savings to state and federal Medicaid systems could be nearly $1.39 billion for just the 19 treatment types covered.

Were all private insurers to decide to cover massage therapy in these same 46 states, savings for these outpatient treatment types could be as high as $4.55 billion.[7]

THE USE OF MASSAGE THERAPY IN PATIENT CARE

The National Center for Complementary and Alternative Medicine maintains a large repository for data on the efficacy of massage therapy for medical outcomes.[8] As discussed in depth in Part One, scientific research points to the benefits of massage for chronic pain, mental health, headaches, and numerous other symptoms and side effects. A recent study, for example, concluded that the benefits of massage therapy for chronic back pain were significant and may last as long as 6 months.[9] The benefits of massage therapy are even noted, as part of an integrative care package, in the treatment plans of HIV/AIDS, fibromyalgia, cancer, and other debilitating illnesses. Massage therapy is not necessarily a substitute for medical procedures, but it is assumed that it may work effectively alongside conventional medicine either to directly address the ailments or to address some of the pain and anxiety issues that result from certain medical procedures. Recognizing this, the American College of Physicians and the American Pain Society have issued joint clinical practice guidelines that include massage therapy as one of the non-pharmacologic approaches that should be considered for patients with low-back pain.

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2 Medicare Provider Charge Data-Outpatient, Medicare Provider Charge Data, Centers for Medicare & Medicaid Services, February 2014. Available online at www.cms.gov. Data for Maryland was not available in the CMS Outpatient database.

3 It is not possible to obtain comprehensive patient and payment data on private insurers. While some private insurers or workman's compensation plans may cover massage therapy for certain conditions, this represents individual company decisions and would not be appropriate to use for modeling purposes.

4 According to the US Department of Health and Human Services, massage may be a potential therapy in varying capacities for cases of pain, cancer, mental health, fibromyalgia, headaches, HIV/AIDS, infant care, and more. In some cases benefits are documented, while in others research is ongoing. See Massage Therapy for Health Purposes: What You Need To Know, National Center for Complementary & Alternative Medicine, The U.S. Department of Health and Human Services, February 1, 2014.

5 Additional research was conducted into the potential benefits of inpatient care; however, the complexity of inpatient services at hospitals prevented JDA from reaching any specific conclusions about the cost effectiveness of utilizing massage therapy in a hospital environment. Even so, the modest savings that were calculated for outpatient care combined with the large potential patient pool could potentially lead to significant savings for inpatient care for patients or third-party payers. The potential direct and indirect savings on inpatient therapy could be significant and warrants further research.

6 Florida, Maine, Michigan, Ohio and the District of Columbia specifically cover certain massage treatments when prescribed by a physician as part of a covered service. It is possible to get a special dispensation for medically prescribed massage therapy in Indiana and Massachusetts if there are no other options available; however, this is very rare. For the purpose of this analysis, Indiana and Massachusetts are not considered to be states that cover massage therapy.

7 Note that Medicaid coverage is being used as a proxy for private insurance plans. If a state covers medically prescribed massage therapy then it is assumed that insurance plans in that state provide similar coverage. Since individual insurance plans may vary (even under the Affordable Care Act guidelines) this assumption may need to be relaxed. The assumption may overstate potential gains in those states where private insurers already recognize and cover massage therapy.

8 Massage Therapy for Health Purposes: What You Need To Know, National Center for Complementary & Alternative Medicine, The U.S. Department of Health and Human Services, February 1, 2014.

9 Cherkin, Daniel, Karen Sherman, and Richard Deyo, A Comparison of the Effects of 2 Types of Massage and Usual Care on Chronic Low Back Pain: A Randomized, Controlled Trial, Annals of Internal Medicine, July 2011.

More than 20 percent of cancer patients use massage therapy to manage the stress and anxiety associated with conventional medicine, and the possibility of additional benefits is being researched.[10] Massage is a therapeutic approach, and like any other therapeutic option it works well in certain circumstances and is less effective in others. Table 1 outlines specific conditions for which massage therapy might be part of the therapeutic care. These ailments form the basis of the outpatient service approaches examined for this analysis.

CONDITIONS/CLASSIFICATIONS FOR WHICH MASSAGE THERAPY MIGHT BE PRESCRIBED

The Center for Medicare and Medicaid Services (CMS), maintains data on the number of specific treatments submitted for payment, as well as the cost billed to Medicaid and payments made to providers for both inpatient and outpatient treatment types. Inpatient treatments are listed according to diagnosis-related-grouping (DRG) and are broken down to the hospital level.[11] Outpatient treatments are listed according to their ambulatory payment classifications (APC) and are likewise compiled at the hospital level.[12]

In all, these datasets provide information on 100 specific inpatient and 30 specific outpatient treatment types. Of the 30 common outpatient codes, 19 were selected for further analysis as they were related to the medical conditions where massage therapy was expected to be an effective part of a treatment plan. Table 2 shows those treatments examined in this analysis.

Data for use in this analysis come from different sources that are not necessarily perfectly aligned. For example, Medicare, the federal government's health insurance program for the elderly, is

Table 1

CHRONIC PAIN MANAGEMENT	BEHAVIORAL HEALTH TREATMENT	REHABILITATION/PHYSICAL TRAINING	ACUTE MEDICAL TREATMENT
• Back pain • Headache • Carpal tunnel syndrome • Osteoarthritis • Neck and shoulder pain • Fibromyalgia • Hospice	• Anxiety and stress • Depression • PTSD • Substance abuse disorder recovery	• Athletic training/injury treatment • Ergonomic injury • Cardiac rehab • Joint replacement rehab • Scar management	• Cancer management • Post-surgical pain management • Lymphatic drainage • Maternity and newborn care

Table 2 **Ambulatory Payment Classifications Used in Analysis[13]**

Level 1 Hospital Clinic Visits	Level I Nerve Injections
Level 2 Hospital Clinic Visits	Level II Nerve Injections
Level 3 Hospital Clinic Visits	Level III Nerve Injections
Level 4 Hospital Clinic Visits	Level IV Nerve Injections
Level 5 Hospital Clinic Visits	Level I Electronic Analysis of Devices
Level I Diagnostic and Screening Ultrasound	Level II Electronic Analysis of Devices
Level III Diagnostic and Screening Ultrasound	Level I Excision/Biopsy
Level II Echocardiogram Without Contrast	Level II Excision/Biopsy
Level III Echocardiogram Without Contrast	Level II Extended EEG,Sleep and Cardiovascular Studies
MRI and MRA Without Contrast	

10 Corbin, Lisa, Safety and Efficacy of Massage Therapy for Patients With Cancer, Cancer Control, July 2005.

11 Medicare Provider Charge Data-Inpatient, Medicare Provider Charge Data, Centers for Medicare & Medicaid Services, February 2014. Available online at www.cms.gov.

12 Medicare Provider Charge Data-Outpatient, Medicare Provider Charge Data. Centers for Medicare & Medicaid Services, Feb. 2014. Available online at www.cms.gov . Data for Maryland was not available in the CMS Outpatient database.

13 The various "levels" are related to the complexity of treatment. In general, the higher the numeric the more complex the particular treatment.

basically the same across the country. As such, any massage therapy services covered in one state are likely to be covered in all states. On the other hand, the Medicaid program, which provides coverage to the economically disadvantaged and certain other individuals, is managed at the state level and states provide coverage for different types of services. In conducting this analysis, cost and patient data are based on Medicare coverage, while the availability of coverage options is based on Medicaid programs. In other words, the model examines how Medicare payments differ across states depending on whether or not state Medicaid covers massage therapy. The postulate being that payments in general would be lower in those states where Medicaid has enhanced the number of providers.

As shown in Figure 1, Medicare and Medicaid provide approximately 30 percent of all health care coverage in America, while employer plans and private insurers represent about 54 percent of the market.[14] Based off of projections from Medicare discharges, there were approximately 28.27 million Medicaid outpatient services in 2012, just over 24.70 million of which were in states that are not currently covering massage therapy.[15] The approximate number of privately insured outpatient services for fiscal year 2011 is 77.21 million, with 66.72 million occurring in states that do not cover massage therapy.

The fact that so much of the market is covered by private insurance suggests that if the price effect correlated with lower Medicare rates is extended to private insurers, sizable cost savings beyond the immediate effects on Medicare could be realized. States in which private insurers already cover massage therapy are likely to have a smaller impact than those in which private insurance policies follow Medicaid policy and do not support massage therapy coverage. Estimates of private insurer savings are based on each state's anticipated Medicare savings projected on the size of the state's private insurance market.

THE ECONOMICS BEHIND THE COST SAVINGS

One of the principles of economics is that in a market for a particular good or service, prices are set by the relationship between the demand for that good or service, and the available amount – or the supply. The concept is hundreds of years old, but was popularized beginning in 1776 when Adam Smith published ***The Wealth of Nations***.

This concept is particularly important in this analysis and in the market for medical care. Because of the complex nature of medical care, and the specialized training that doctors, nurses, and massage therapists require, the number of practitioners is limited—there is a limited supply. On the other hand, the demand for care is growing as more and more people enter the market.

With a fixed supply of services, and an increase in demand, medical costs have been growing faster than inflation. Figure 2 compares medical cost inflation with the overall consumer price index for the past two decades.

Figure 1 **Health Insurance Coverage By Provider**

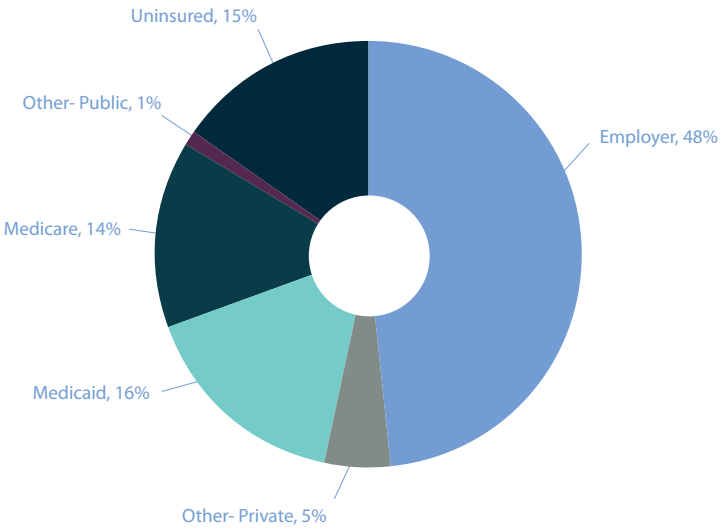
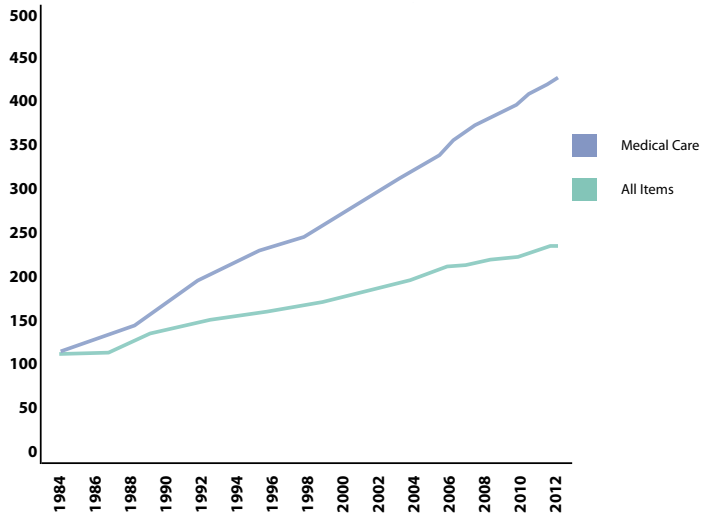


Figure 2 **Health Care Costs Have Been Rapidly Growing**



14 Note that this is prior to the implementation of all of the provisions of the Affordable Care Act which will dramatically change the way coverage is provided.

15 Data are given in terms of outpatient services and not patients or consumers. It is possible for the same individual to be counted as receiving a service on multiple occasions throughout the year.

If insurance carriers and government third-party payers were to include medically prescribed massage therapy as part of a system of integrative care, the potential pool of practitioners could grow substantially as 61,630 therapists in 16,760 massage service firms, and more than 200,000 part-time and self-proprietor massage therapists, are added.[16] As Figure 3 shows, by increasing the number of practitioners, prices should fall.

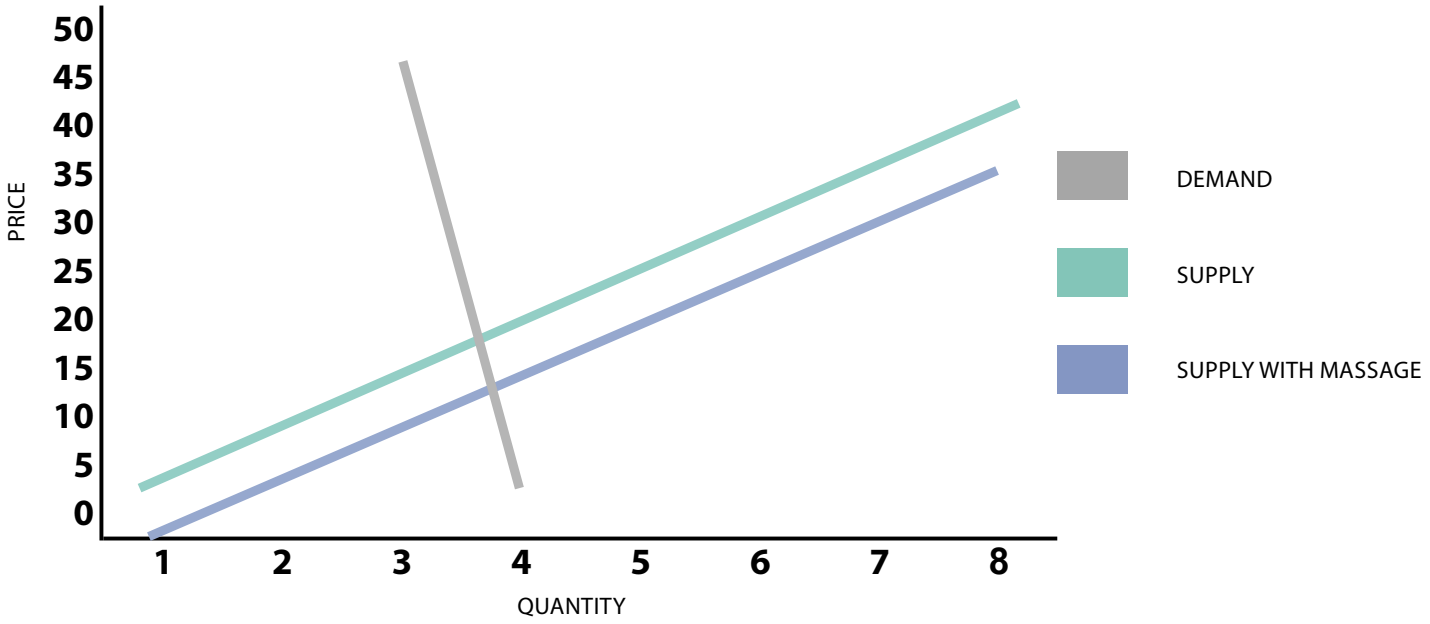
There is a great deal of discussion in medical economics journals about the issue of supplier induced demand and how this changes the normal market for medical care. In short, the idea of supplier induced demand is that practitioners (particularly doctors) can create their own demand since they have more information than consumers. It's the old idea of a doctor saying take these pills and then come back and see me in two weeks. The fact remains that medical practitioners are heavily involved in determining the types and amounts of medical treatments/therapies that their patients receive.

While there is some evidence to indicate that medical practitioners do play an important role in creating their own demand and therefore may increase the amount of charges that would otherwise occur in a market, this should not impact this analysis which examines the supply of practitioners, and postulates that more practitioners will reduce costs with demand being fixed. Since the number of prescribing entities, or physicians, does not change, any supplier induced demand that exists in a particular market would be relatively fixed. Also, massage therapists must rely on these same physicians to prescribe services, so these practitioners will not necessarily have the ability to create substantial new demand.[17] There may be circumstances where the allowance of massage therapy might open up entirely new markets for health care services and thereby increase demand, but again, that is already taken into account by the cross-sectional analysis used in this study.

THE ECONOMIC VALUE OF MASSAGE THERAPY

Based on the analysis of Medicaid and Medicare data, costs associated with certain outpatient treatments are significantly lower in states where massage therapy is covered as part of a comprehensive plan, when controlling for numerous demographic and socio-economic factors.[18] While the per-session savings are

Figure 3 **Providing Insurance Coverage for Massage Therapy Reduces Provider Prices**



16 Employed massage therapist data comes from the Bureau of Labor Statistics' "Occupational Employment and Wages, May 2012."available online at http://www.bls.gov/oes/current/oes319011. Total estimates for massage therapists, including self-proprietorships and graduating students are based on projections from state licensing boards. Location data is based on those businesses that have reported that they are in the therapeutic massage business. Data are from Dun & Bradstreet's Hoovers data system and are as of January 2013.

17 This removes the direct incentive to overprescribe massage therapy.

18 See methodology section.

typically a modest fraction of total cost, the volume of outpatient services makes the savings very large on the state and national level.

While both inpatient and outpatient treatments were examined, the model was only robust enough to determine cost savings for outpatient services. The section "A Note on Massage Therapy and Inpatient Treatment"(p. 36) explores the limitations in finding correlations in inpatient services. Outpatient treatments are the area most clearly and consistently impacted by the inclusion of massage therapy in a comprehensive treatment structure. In fact, for 16 of the 19 outpatient treatments studied, state coverage of massage is associated with lower overall treatment costs. Were all payers (private insurance, Medicaid and Medicare) in the remaining states to permit massage therapy, the estimated savings would be as high as $5.94 billion.

Table 3 details the cost effects on a treatment-by-treatment basis. Savings range from about $15 to just under $532, depending on the service examined. Of the three treatments that show positive price correlation (massage therapy is associated with higher costs,) the effect ranges from about $34 to over $456.[19] Since this is a statistical model it is expected that not all of the equations will reach the same conclusion and, while it is not theoretically likely that covering massage services provided by a physician would actually increase costs, to ensure that the results are modest, and that treatments are not "cherry picked," these instances are included in the final numbers.

As Table 3 shows, based on cost data for approximately 22.35 million outpatient services in 2012, the coverage of massage therapy as part of an integrative care approach leads to substantial potential savings—an average of about $80 in savings across all procedure types, and when weighted for the proportion of types a total of about $64 in savings per treatment.[20]

The approximate number of privately insured outpatient services is 77.21 million, with 66.72 million occurring in states that do not

Table 3

Modeled Provider Cost Differentials Between States That Cover Massage Therapy and Those That Do Not

OUTPATIENT MEDICAL TREATMENT	COEFFICIENT, IMPACT ON COST
Level I Excision/Biopsy	-$532
Level II Excision/Biopsy	-$145
Level II Extended EEG, Sleep and Cardiovascular Studies	$166
Level I Nerve Injections	-$286
Level II Nerve Injections	-$137
Level III Nerve Injections	-$155
Level IV Nerve Injections	$456
Level I Diagnostic & Screening Ultrasound	-$24
Level III Diagnostic & Screening Ultrasound	-$129
Level II Echocardiogram Without Contrast	-$64
Level III Echocardiogram Without Contrast	-$227
MRI and MRA Without Contrast	-$238
Level 1 Hospital Clinic Visits	-$15
Level 2 Hospital Clinic Visits	-$40
Level 3 Hospital Clinic Visits	-$43
Level 4 Hospital Clinic Visits	-$69
Level 5 Hospital Clinic Visits	-$32
Level I Electronic Analysis of Devices	$34
Level II Electronic Analysis of Devices	-$40
AVERAGE	**-$80**
WEIGHTED AVERAGE	**-$64**

19 There is a significant amount of variability in terms of the financial benefits of covering massage therapy across treatment types. Much of this is due to the complexity, cost and frequency of the treatment itself. In addition, this is a statistical analysis and the savings coefficients are based on differences in pricing between states that offer massage therapy as part of Medicaid treatments and those that do not. Actual costs are the result of a large number of factors, only 24 of which are controlled for in the analysis. Also, statistical analyses of this type can only measure correlation or a relationship between different data points. It cannot measure causality. The underlying theory that a larger supply of practitioners will reduce costs is tested and shown to be reasonable.

20 Note that data is given in terms of outpatient services and not patients or consumers. It is possible for the same individual to be counted as receiving a service on multiple occasions throughout the year.

cover massage therapy. Were all of these insurers to begin to cover prescribed massage therapy, the potential savings could be as high as $4.55 billion per year. In addition, states could save $1.39 billion by including massage therapy in their Medicaid programs. Figure 4[21] outlines potential savings by state for large markets, and Table 4 shows the savings for all states.[22]

CONCLUSION

The practice of allowing massage therapy as an insured coverage is correlated, for most treatments examined, with lower coverage costs when controlling for demographic and economic factors. The channels through which increased coverage may result in reduced costs are based on a straightforward assessment of supply and demand in the medical treatment market. State and private coverage of massage therapy would result in an increase in massage consumers as the price is partially mitigated through insurance.

The benefits of massage therapy accrue when it is taken as part of a comprehensive treatment system. It is by making a trip to the therapist in place of additional hours at the hospital or doctor's office, or by substituting massage in place of some drug prescriptions, where the savings emerge. On a single service basis, the savings are relatively small—about $64 on average—but when summed across all potential consumers, the true impact is in billions of dollars for both private insurers and government third-party payers.

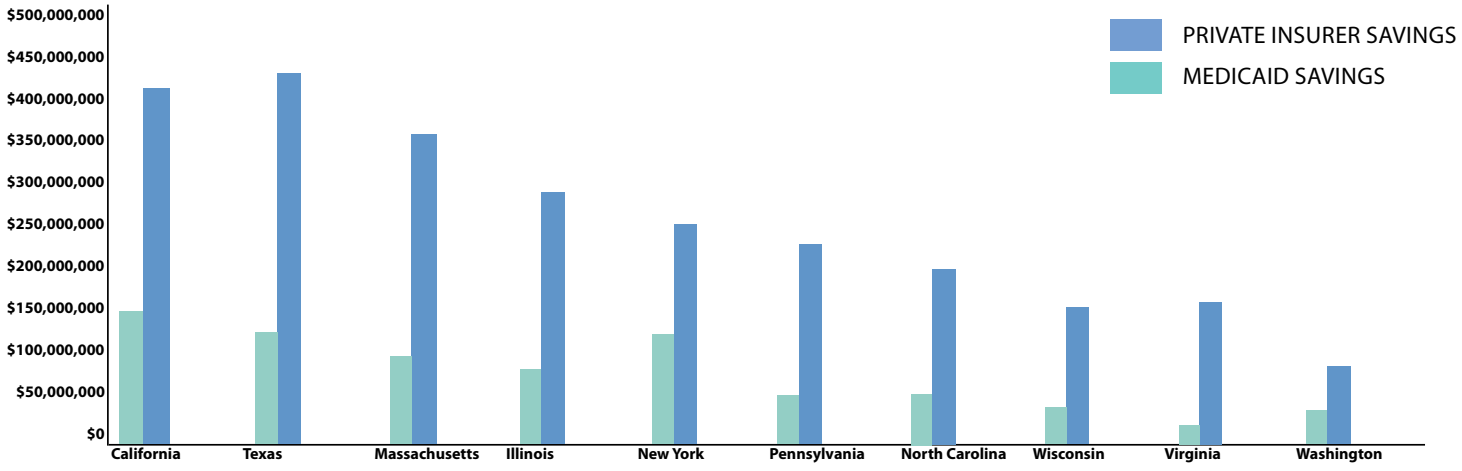
A Note On Massage Therapy and Inpatient Care

As it stands, there are not enough detailed data to report on efficacy of massage therapy in reducing costs of inpatient treatments. The Center for Medicare and Medicaid Services releases data for the top 100 diagnosis related groupings (DRGs), which gives total patients (discharges) and average costs. This leaves more than 350 DRGs unaccounted for. In addition, multiple DRGs may be applied to any given patient. For this reason, and the fact that length of stay is also not listed, it is not possible to account for the effect of massage therapy availability on treatment costs in any statistically significant manner. Based upon the benefits of massage therapy for outpatient care, further research into inpatient treatments is strongly recommended.

Several of the DRGs that might be expected to benefit from massage therapy (for example, medical back pain and back & neck procedures) do show some promise. These have negative coefficients associated with massage therapy coverage, again indicating that accepting massage therapy might lead to lower costs. Ultimately, however, there is not enough data to create a viable model at this time.

Figure 4

Providing Insurance Coverage for Massage Therapy Can Lead to Substantial Savings for State and Private Insurers



21 The model assumes that private insurers cover patients in a manner similar to those covered by state Medicaid insurance. This is not always the case as private plans may have either more or less generous benefits.

22 Data for Maryland were not available.

23 Medicare Provider Charge Data-Inpatient, Medicare Provider Charge Data, Centers for Medicare & Medicaid Services, February 2014. Available online at www.cms.gov.

24 Medicare Provider Charge Data-Outpatient, Medicare Provider Charge Data. Centers for Medicare & Medicaid Services, Feb. 2014. Available online at www.cms.gov . Data for Maryland was not available in the CMS Outpatient database.

Table 4

Providing Insurance Coverage for Massage Therapy Can Lead to Substantial Savings for Private Insurers

STATE	ESTIMATED MEDICAID SAVINGS[1]	ESTIMATED SAVINGS TO PRIVATE INSURERS
Alabama	$17, 952, 595	$58,345,933
Alaska	$2,162, 221	$7,639,847
Arizona	$17,005,204	$46,291,945
Arkansas	$17,830,626	$41,292,975
California	$158,736,920	$426,083,313
Colorado	$17,469,638	$79,285,278
Conneticut	$15,721,305	$66,029,480
Delaware	$4,135,600	$12,636,556
District of Columbia	$14,455,516	$32,380,355
Florida	$43,940,490	$144,375,895
Georgia	$37,685,648	$139,975,265
Hawaii	$6,339,800	$20,076,034
Idaho	$6,757,148	$26,063,285
Illinois	$93,376,010	$302,098,856
Indiana	$32,853,319	$106,290,148
Iowa	$17,669,184	$66,259,441
Kansas	$10,313,167	$44,425,952
Kentucky	$28,128,190	$79,696,537
Louisiana	$20,494,336	$47,136,973
Maine	$25,891,409	$58,537,099
Maryland	N/A	N/A
Massachusetts	$124,583,218	$345,435,287
Michigan	$47,332,987	$153,136,134
Minnesota	$26,126,431	$117,568,938
Mississippi	$20,047,669	$49,116,789
Missouri	$34,979,027	$139,916,108
Montana	$4,014,533	$15,131,701
Nebraska	$5,821,968	$32,285,457
Nevada	$3,610,314	$18,773,633
New Hampshire	$10,929,499	$87,435,996
New Jersey	$19,002,007	$93,426,535
New Mexico	$12,002,426	$24,576,395
New York	$121,256,327	$274,144,739
North Carolina	$64,495,428	$205,579,175
North Dakota	$8,631,719	$63,299,271
Ohio	$67,164,660	$230,878,519
Oklahoma	$19,611,156	$56,526,272
Oregon	$13,403,793	$41,788,296
Pennsylvania	$58,206,548	$225,065,319
Rhode Island	$3,959,014	$12,808,575
South Carolina	$18,356,386	$58,510,981
South Dakota	$4,805,281	$19,564,359
Tennessee	$28,122,983	$78,119,398
Texas	$134,511,298	$439,403,573
Utah	$10,354,368	$66,267,956
Vermont	$12,308,008	$26,667,350
Virginia	$27,327,833	$161,234,212
Washington	$40,658,202	$139,762,569
West Virginia	$$9,660,831	$27,845,926
Wisconsin	$45,996,948	$156,930,763
Wyoming	$725,013	$3,443,810
Total Potential Savings	**$1,388,139,137**	**$4,550,256,203**

1 Estimated savings are the estimated correlative of massage therapy on coverage costs. For states which already permit MT, this estimated saving is already realized, but for states that do not permit MT coverage this represents an opportunity to reduce coverage costs.
2 Total Potential Savings reflects the sum of those states which do not currently cover massage

METHODOLOGY

Data for The Economic Value of Massage Therapy is compiled from several sources, including the Center for Medicare and Medicaid Services (CMS), U.S. Census Bureau's "American Community Survey", as well as a phone survey conducted by John Dunham and Associates.

Patient and Treatment estimates—Numbers of treatments as well as coverage rates are based off data from CMS's "Medicare Provider Charge Data" for both inpatient and outpatient treatments. Inpatient treatments are listed according to diagnosis-related-grouping (DRG) and are broken down to the hospital level.[23] Outpatient treatments are listed according to their ambulatory payment classifications (APC) and are likewise compiled at the hospital level.[24] Facility data is then aggregated to state level figures, such that each DRG or APC is associated with a single discharge count and a statewide average coverage charge for each of the fifty states, plus D.C.

Massage Therapy—The laws and standards regulating massage therapy coverage are complex and vary state-to-state. A series of phone calls were made to state Medicaid offices, as well as other government sources, to determine the policy of massage therapy insurance coverage. The large majority of states do not offer coverage for massage therapy. Those states where there was no clear policy or where a representative could not provide a clear policy answer were assumed to not permit coverage. In the end, there were five states, including DC, that have some policy allowing coverage of massage.

Demographic and Additional Data—In order to control for various non-massage related elements, state-level data on age, ethnicity, educational attainment, marital status, and numerous other factors were compiled from the U.S. Census Bureau's "Occupational Employment Statistics Survey." The number of massage therapists (per capita) is taken from the Bureau of Labor Statistics' "State and Area Employment Numbers," and the numbers of hospitals and clinics is taken from Hoovers. The same demographic data categories were used in each of the regressions.

Statistical Analysis—Multiple linear regression models were run based on the demographic data, per capita clinic counts, and dummy variables related to Medicaid coverage of massage and other complementary medicines. The coefficient on the massage therapy variable reflects the dollar increase or decrease correlated with massage coverage, controlling for all other variables. In the case of the outpatient services examined, 16 of the 19 services are associated with a negative coefficient for massage therapy coverage. This means that switching from massage therapy non-coverage to massage therapy coverage would result in decreased costs of care in these 16 services.

The statistical results are presented in Table 5 (page 40-41), Table 6 (page 42-43) and Table 7 (page 44-45).

Table 5 MEDICAID COVERAGE ANALYSIS

	Level I Excision/Biopsy		Level II Excision/Biopsy		Level IV Nerve Injections	
	Coefficient	p	Coefficient	p	Coefficient	p
ChDummy	808.78	0.15	469.38	0.18	251.85	0.81
PTDummy	-506.62	0.45	-391.57	0.36	2616.84	0.06
AcDummy	-83.4	0.88	-43.46	0.9	48.05	0.97
MTDummy	-531.59	0.35	-144.55	0.68	455.64	0.68
Massage + Hosp per Capita	2449874	0.76	3186446	0.53	-5150903	0.75
Pct65Plus	27301.85	0.72	31713.94	0.5	32151.66	0.83
Male	104.05	0.9	395.34	0.44	2891.6	0.09
Median age (years)	-144	0.64	-366.1	0.07	-608.4	0.32
Black or African American	73.31	0.19	44.7	0.19	66.21	0.53
Asian	-320.62	0.15	96.25	0.47	-371.24	0.38
Now married, except separated	-46.65	0.81	28.28	0.82	-98.71	0.8
Widowed	-55.99	0.97	589.34	0.53	2403.98	0.42
Divorced	413.91	0.32	592.74	0.03	110.8	0.89
Separated	-73.91	0.94	131.79	0.82	712.49	0.69
Less than high school graduate	-78.39	0.73	-182.49	0.21	-687.77	0.14
High school graduate, GED, or alternative	-65.43	0.61	-154.05	0.07	-640.26	0.02
Some college or associate's degree	-26.68	0.89	-340.62	0.01	-771.6	0.05
Civilian veteran	-56.06	0.87	-10.95	0.96	-224.04	0.74
With any disability	35.27	0.93	-304.4	0.25	876.13	0.29
Employed	-123.88	0.54	-110.44	0.39	183.76	0.64
Percent of civilian labor force	76.51	0.84	134.96	0.57	760.97	0.32
Mean earnings (dollars)	0.14	0.28	0.08	0.31	0.15	0.55
Median gross rent (dollars)	-3.73	0.64	-5.87	0.25	-11.09	0.48
Right To Work State	466.28	0.48	529.13	0.21	1468.27	0.26
gov cost multiplier	-675.46	0.85	-1542.21	0.5	-2141.92	0.77
const	-665.92	0.99	5047.05	0.87	-111793.9	0.24

Level I Nerve Injections		Level II Nerve Injections		Level III Nerve Injections		Level II Extended EEG, Sleep, and Cardiovascular Studies	
Coefficient	p	Coefficient	p	Coefficient	p	Coefficient	p
97.46	0.57	200.28	0.41	203.9	0.42	-146.06	0.66
-109.98	0.6	23.18	0.94	108.25	0.73	319.92	0.44
-61.03	0.73	-143.06	0.58	-21.19	0.94	-41.87	0.91
-285.64	0.12	-137.48	0.58	-154.89	0.56	166.35	0.64
225685.9	0.93	-494811	0.89	590736.7	0.88	-3613698	0.47
7226.61	0.76	10286.32	0.76	-20269	0.56	33368.58	0.47
89.39	0.73	304.5	0.41	-227.51	0.55	816.36	0.12
-136.47	0.16	-94.14	0.49	98.61	0.49	-157.96	0.41
-6.04	0.72	18.25	0.45	-7.94	0.75	13.58	0.68
-43.58	0.52	75.41	0.43	28.95	0.77	218.29	0.11
-3.48	0.96	-74.26	0.4	-75.83	0.41	-33.47	0.78
227.44	0.63	-34.97	0.96	199.24	0.78	-252.99	0.79
178.46	0.17	66.71	0.71	415.37	0.04	157.07	0.53
-158.56	0.58	-25.61	0.95	735.2	0.09	705.48	0.22
23.47	0.74	-58.03	0.56	-87.98	0.41	-84.79	0.55
3.54	0.93	-12.16	0.83	-13.99	0.81	-2.18	0.98
-66.78	0.26	-81.25	0.33	-16.65	0.85	-171.63	0.15
70.63	0.51	13.74	0.93	-146.1	0.36	-19.93	0.93
9.65	0.94	58.38	0.75	-314.59	0.12	105.5	0.68
98.09	0.14	30.99	0.73	-192.92	0.05	117.21	0.35
221.92	0.08	76.28	0.65	-258.91	0.16	208.18	0.38
0.03	0.4	0	0.94	0.07	0.26	0.05	0.54
-0.97	0.7	0.32	0.93	-4.29	0.26	-2.8	0.57
369.94	0.08	262.94	0.37	386.31	0.21	363.89	0.37
1186.32	0.31	-1309.7	0.42	-615.29	0.72	-1502	0.51
-11622.14	0.44	-8371.13	0.69	28397.5	0.21	-39828.35	0.19

Table 6 MEDICAID COVERAGE ANALYSIS

	Level I Diagnostic and Screening Ultrasound		Level III Diagnostic and Screening Ultrasound		Level II Echocardiogram Without Contrast	
	Coefficient	p	Coefficient	p	Coefficient	p
ChDummy	20.81	0.71	103.11	0.3	79.41	0.59
PTDummy	39.11	0.58	55.43	0.65	242.68	0.2
AcDummy	-49.88	0.41	-113.68	0.29	-299.74	0.07
MTDummy	-24.11	0.68	-129.42	0.22	-64.29	0.68
Massage + Hosp per Capita	-560372.4	0.51	-719885.7	0.63	332553	0.88
Pct65Plus	4254.64	0.59	9628.65	0.48	40553	0.06
Male	31.56	0.71	142.04	0.35	339.16	0.15
Median age (years)	-33.01	0.31	-41.6	0.46	-170.51	0.06
Black or African American	-4.36	0.44	-4.01	0.68	16.97	0.26
Asian	-4.55	0.84	31.26	0.43	36.28	0.54
Now married, except separated	-28.05	0.19	-56.8	0.13	-12.52	0.82
Widowed	3.03	0.99	-86.22	0.75	-408.31	0.33
Divorced	59.3	0.18	111.57	0.15	242.53	0.04
Separated	107.47	0.26	286.46	0.1	557.08	0.04
Less than high school graduate	-31.43	0.2	-62.08	0.15	-8.07	0.9
High school graduate, GED, or alternative	-12.34	0.36	-24.03	0.31	12.28	0.73
Some college or associate's degree	-28.83	0.15	-69.81	0.05	-90.07	0.09
Civilian veteran	-20.56	0.57	-29.43	0.64	-37.51	0.69
With any disability	-26.11	0.55	-36.13	0.63	-53.76	0.64
Employed	-8.81	0.68	-16.47	0.65	36.23	0.52
Percent of civilian labor force	9.78	0.81	1.7	0.98	133.35	0.21
Mean earnings (dollars)	0.01	0.38	0.02	0.48	0.06	0.11
Median gross rent (dollars)	-0.79	0.35	-1.56	0.29	-3.46	0.13
Right To Work State	69.13	0.32	145.3	0.23	-97.6	0.59
gov cost multiplier	-262.03	0.5	-9.53	0.99	-203.95	0.84
const	2646.76	0.6	1081.19	0.9	-16288.51	0.23

Level III Echocardiogram Without Contrast		MRI and MRA Without Contrast		Level 1 Hospital Clinic Visits		Level 2 Hospital Clinic Visits	
Coefficient	p	Coefficient	p	Coefficient	p	Coefficient	p
275.65	0.37	155.05	0.58	6.23	0.65	-4.31	0.73
496.67	0.2	182.24	0.6	0.6	0.97	-12.47	0.43
-84.66	0.79	-77.26	0.79	-5.3	0.71	-5.53	0.68
-226.94	0.48	-238.24	0.41	-15.17	0.3	-40.39	0.01
-5243209	0.26	390616.6	0.92	-185935.8	0.37	-154634	0.41
34198.61	0.42	-3052.5	0.94	-1336.95	0.48	162.58	0.93
431.03	0.36	68.1	0.87	19.81	0.34	5.26	0.78
-146.72	0.4	39.56	0.8	-1.48	0.85	-5.65	0.43
2.61	0.93	-1.97	0.94	-0.11	0.94	-0.3	0.81
107.53	0.38	-13.04	0.91	4.12	0.45	7.04	0.17
-211.91	0.07	-38.74	0.7	-0.03	1	-0.9	0.84
-345.58	0.69	216.89	0.78	65.88	0.1	45.66	0.2
320.63	0.18	230.69	0.28	18.48	0.09	30.7	0.01
711.47	0.18	403.91	0.39	3.61	0.87	35.91	0.1
-123.81	0.34	-21.16	0.86	-5.15	0.37	-11.87	0.04
34.81	0.63	-30.96	0.64	-4.88	0.14	-6.39	0.04
-62.57	0.55	-52.98	0.58	-1.39	0.77	-6.55	0.14
-50.34	0.79	-97.37	0.58	-9.14	0.3	-9.24	0.25
-78.46	0.74	-182.73	0.4	-2	0.85	-17.75	0.08
17.33	0.88	-25	0.81	-0.28	0.96	-5.04	0.29
38.43	0.86	23.47	0.9	-2.99	0.75	-8.07	0.36
0.09	0.25	0.04	0.53	0	0.79	0	0.79
-5.56	0.23	-2.47	0.55	0.14	0.48	-0.09	0.61
345.72	0.35	248.9	0.46	17.84	0.29	16.84	0.27
-1185.93	0.57	-824.55	0.66	57.69	0.53	44.04	0.6
-8628.39	0.75	1703.04	0.94	-901.15	0.46	769.35	0.49

Table 7 MEDICAID COVERAGE ANALYSIS

	Level 3 Hospital Clinic Visits		Level 4 Hospital Clinic Visits	
	Coefficient	p	Coefficient	p
ChDummy	-3	0.9	6.56	0.84
PTDummy	-3.01	0.92	7.01	0.86
AcDummy	-51.5	0.06	-39.37	0.26
MTDummy	-42.72	0.11	-69.19	0.05
Massage + Hosp per Capita	-431250.2	0.25	-338901.7	0.48
Pct65Plus	4796.02	0.17	958.94	0.83
Male	37.09	0.33	19.18	0.69
Median age (years)	-35.07	0.02	-24.02	0.19
Black or African American	1.18	0.63	-6.35	0.06
Asian	1.87	0.85	-5.86	0.64
Now married, except separated	-3.83	0.67	-30.61	0.02
Widowed	-8.57	0.9	3.8	0.97
Divorced	41.38	0.04	11.65	0.63
Separated	27.33	0.51	41.44	0.44
Less than high school graduate	-13.7	0.2	-4.62	0.73
High school graduate, GED, or alternative	-3.89	0.51	6.62	0.38
Some college or associate's degree	-11.93	0.17	1.51	0.89
Civilian veteran	-10.01	0.52	11.26	0.58
With any disability	13.61	0.48	15.57	0.53
Employed	7.54	0.42	13.64	0.26
Percent of civilian labor force	14.73	0.4	23.59	0.3
Mean earnings (dollars)	0.01	0.22	0	0.75
Median gross rent (dollars)	-0.27	0.45	0.13	0.77
Right To Work State	36.25	0.23	58.58	0.14
gov cost multiplier	-26.22	0.88	-54.75	0.8
const	-1476.22	0.5	-256.37	0.93

Level 5 Hospital Clinic Visits		Level I Electronic Analysis of Devices		Level II Electronic Analysis of Devices	
Coefficient	p	Coefficient	p	Coefficient	p
32.31	0.72	32.27	0.34	-51.13	0.7
4.33	0.97	51.92	0.22	89.83	0.59
-59.29	0.53	-39.87	0.27	-112.34	0.43
-31.6	0.73	-40.37	0.25	34.42	0.81
-1117594	0.4	-859678	0.1	1647439	0.41
7477.05	0.55	1925.82	0.68	1012.13	0.96
105.92	0.43	77	0.14	159.54	0.44
-37.44	0.46	3.96	0.83	-11.83	0.88
-3.75	0.67	2.94	0.38	-13.49	0.32
22.57	0.52	9.61	0.47	12.85	0.81
-42.56	0.2	-18.74	0.14	22.11	0.65
-112.08	0.65	-50.24	0.59	246.07	0.51
23.92	0.72	46.82	0.08	60.02	0.55
167.22	0.27	54.25	0.33	164.05	0.47
-11.71	0.75	-28.94	0.05	-21.38	0.7
12.55	0.55	-9.19	0.25	-67.19	0.05
-0.06	1	-18.02	0.13	-116.57	0.02
6.5	0.91	-18.18	0.39	-104.15	0.23
58.9	0.39	-26.77	0.3	16.7	0.87
60.7	0.08	-25.76	0.05	65.46	0.2
86.57	0.18	-24.22	0.31	144.42	0.14
0.01	0.71	0.01	0.26	0	0.99
-0.29	0.82	-0.89	0.08	-1.22	0.54
55.35	0.61	73.59	0.08	219.94	0.19
-1322.93	0.04	-115.16	0.61	-185.51	0.84
-7195.23	0.36	111.66	0.97	-8337.17	0.48

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Discern Health is a consulting firm that works with clients across the private and public sectors to improve health and health care. Their focus is enhancing the value of health care services through quality-based payment and delivery models. These models align performance with incentives by rewarding doctors, hospitals, suppliers, and patients for working together to improve health outcomes and health care processes, while lowering total costs.

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