



# Review of Findings on Chronic Disease Self-Management Program (CDSMP) Outcomes:

*Physical, Emotional & Health-Related Quality of Life, Healthcare Utilization and Costs*

## Summary of health effects

The major published studies on healthcare utilization & CDSMP were reviewed; all were accessed through the National Library of Medicine (see attached chart, and summary of studies below). There is strong evidence across studies that CDSMP has a beneficial effect on physical & emotional outcomes, and health-related quality of life. This statement is based on high-quality information, standardized measures and is made with a high degree of confidence. The program consistently results in greater energy/reduced fatigue, more exercise, fewer social role limitations, better psychological well-being, enhanced partnerships with physicians, improved health status, and greater self efficacy. It is generally (although not always) associated with reductions in pain symptoms.

## Summary of utilization effects

There is evidence that CDSMP results in reductions in healthcare expenditures. There is a range in the amount of money saved and the healthcare settings in which these cost savings/utilization decreases occurred, but the research points to moderate expenditure reductions. The statement “CDSMP results in reductions in healthcare expenditures” is made with a reasonably high degree of confidence. This finding is consistent with the available evidence, but is limited by the fact that measurement approaches differ across studies and utilization decreases are not uniform. In four studies there were fewer emergency room (ER) visits, in three studies there were fewer hospitalizations, and in four studies there were fewer days in the hospital. In two studies there were reductions in outpatient visits. All of the preceding studies were able to demonstrate statistical significance. We found no studies in which costs were increased.

There is evidence to support the notion that CDSMP saves enough money in healthcare expenditures within the first year to pay for the program. This statement is made with a moderate degree of confidence. This degree of confidence reflects the range of cost estimates used for CDSMP and that there is no common cost accounting used to calculate program costs.

The available evidence also suggests that CDSMP results in more appropriate utilization of healthcare resources, addressing healthcare needs in outpatient settings rather than ER visits and hospitalizations. While CDSMP is not a cost-cutting strategy in

and of itself, it almost certainly results in improved health-related outcomes and reduced healthcare utilization sufficient to render the program cost neutral. Further work will be needed to more precisely calculate the CDSMP return on investment in various settings and with various populations, using uniform cost methodologies and utilization metrics.

### Summary of other benefits

Effective across chronic diseases: The program addresses a wide variety of chronic illnesses. This can result in efficiencies of scale, as CDSMP is designed to meet the needs of those with a variety of diseases. This obviates the need for many different disease-specific classes with the accompanying recruitment and scheduling problems.

Effective across socioeconomic and educational levels: The program's benefits are also seen across the spectrum of socioeconomic and educational levels. CDSMP is used among various ethnic groups in the US and internationally. CDSMP is currently offered through the National Health Services of England and Denmark, and in many parts of Australia, Japan, China, Norway and Canada. This attests to the program's broad reach and appeal.

Enables participants to manage progressive, debilitating illness: Those who have taken CDSMP do not experience greater healthcare utilization, even when their disability worsens. ER visits and hospitalizations would be expected to increase with progressive disability, but this is not the case for those who have taken CDSMP. While disability does tend to progress in those with chronic illness, those who participate in CDSMP classes generally do not use more healthcare resources.

Important health benefits persist over time: Those who enroll in CDSMP maintain many of their health and behavioral improvements over time. Significant improvements in exercise and social/role limitations can be seen over a two-year period.

Supported by decades of federal research: CDSMP has been developed through 20+ years of federally-funded grants from the National Institutes on Health, the U.S. Agency for Healthcare Research and Quality, and the Centers for Disease Control & Prevention.

### Summary finding

CDSMP results in significant, measurable improvements in patient outcomes and quality of life. CDSMP also saves enough through reductions in healthcare expenditures to pay for itself within the first year.

## Summary of studies reviewed

Thirteen CDSMP studies were reviewed. Analysis was conducted on eight studies which contained sufficient utilization data. Six studies are domestic and two are from the UK. Two of the six domestic studies targeted Spanish-speaking Hispanics. CDSMP participants were generally 40+ years of age. Sample sizes ranged from a low of 171 to a high of 1,140 with a mean of 682.

## About the authors

The Centers for Disease Control & Prevention (CDC) is working in partnership with the National Council on Aging on the issue of financial sustainability for evidence-based health programs for older adults. Catherine Gordon, RN, MBA is a Senior Public Health Analyst in the Office of the Director, and Tracy Galloway, MPH is a Public Health Analyst in the National Center for Health Marketing at CDC.

| Study  | Population Characteristics   | Physical, Emotional, Health-Related Outcomes  | Utilization & Cost Outcomes   | Length of Study      |
|--|--|---|---|----------------------|
| <p><b>Journal of Epidemiology and Community Health (UK) 2007; 61:254-261 (Kennedy, Reeves, et al.)</b></p> | <p>Study conducted in the UK.</p> <p>629 patients with a wide range of long-term chronic conditions.</p> | <ul style="list-style-type: none"> <li>• Greater self-efficacy</li> <li>• Greater energy</li> <li>• Considerably greater health-related quality of life</li> <li>• Fewer social role limitations</li> <li>• Better psychological well-being</li> <li>• Lower health distress</li> <li>• More exercise and relaxation</li> <li>• Greater partnerships with clinicians</li> </ul> | <ul style="list-style-type: none"> <li>• No statistically significant reductions in routine health services at 6 months.</li> <li>• The overall small reduction in inpatient utilization meant that the costs of provision of the program were offset. This reduction was not statistically significant.</li> <li>• Authors' conclusion: Overall CDSMP is associated with improvements in health-related quality of life at no increased cost, and is likely to be cost effective. 70% probability that it's cost effective.</li> </ul> | <p>6 month study</p> |

|   |  |  |  |                                       |
|---|--|--|--|---------------------------------------|
| <p><b>The Diabetes Educator; 2005, 31; 401 (Lorig, Ritter, and Jacquez)</b></p> | <p>445 persons<br/>2/3rds with diabetes<br/>Hispanic<br/>Mean age 61</p> | <p><u>At 4 months:</u></p> <ul style="list-style-type: none"> <li>• Significant improvements in eating breakfast, mental stress, self-reported health, aerobic exercise, shortness of breath, pain, activity limitation</li> </ul> <p><u>At 1 Year:</u></p> <ul style="list-style-type: none"> <li>• Improvements in eating breakfast, mental stress management, self-reported health, aerobic exercise, health distress, C15self-efficacy, communication with physicians</li> </ul> | <p><u>At 4 months:</u></p> <ul style="list-style-type: none"> <li>• No significant changes in hospital or ER use</li> <li>• Physician utilization showed a statistically significant increase</li> </ul> <p><u>At 1 year:</u></p> <ul style="list-style-type: none"> <li>• Fewer hospital days</li> <li>• Data indicates increased use of physicians while decreasing hospitalizations, suggesting more appropriate health care use</li> </ul> | <p>Results at 4 months and 1 year</p> |
|---|--|--|--|---------------------------------------|

|  |   |   |   |  |
|--|---|---|---|--|
| <p><b>British Journal of Health Psychology 2005 (UK); 10, 589-599 (Barlow, Wright, et al.)</b></p> | <p>171 participants<br/>Mean age of 54 years<br/>Mean duration of disease = 16 years</p>  | <ul style="list-style-type: none"> <li>• The purpose of this study was to determine whether changes identified at 4 months were maintained over time.</li> <li>• No significant changes in self-efficacy, cognitive symptom management, communication with physicians, fatigue, anxiety and depressed mood and health distress occurred between month 4 and month 12, indicating that the effects of the program are long lasting.</li> </ul> | <ul style="list-style-type: none"> <li>• Most had no change from 4 month to 12 month follow-up with respect to the number of nights hospitalized and number of visits to accident and emergency rooms, specialists and GPs.</li> <li>• No significant <i>changes</i> in the median number of visits to specialists and GPs occur between month 4 and month 12.</li> </ul> | <p>The study was a 12-month follow up.</p>         |
| <p><b>Nursing Research 2003; Nov/Dec Vol 52, #6 (Lorig, Ritter, and Gonzalez)</b></p>              | <p>Hispanic – majority born in Mexico. Spanish speakers, residing in northern California. 551 individuals included (327 in intervention and 224 in control) 79% female. Mean age was 57 years</p> | <ul style="list-style-type: none"> <li>• Improvements in: <ul style="list-style-type: none"> <li>- health status</li> <li>- health behavior</li> <li>- self-efficacy</li> <li>- self-reported health, distress, fatigue, pain/physical discomfort, role function</li> <li>- exercise- communication with physicians</li> <li>- mental stress management</li> </ul> </li> </ul>  | <ul style="list-style-type: none"> <li>• Fewer ER visits</li> <li>• Reduction in ER visits was small, with a .2 difference in first 4 months, and .12 fewer in months 8 and 12. The high costs of ER visits suggest that these differences are important.</li> <li>• No difference in hospitalizations</li> <li>• No difference in physician visits</li> </ul>            | <p>Results examined at 4 months and at 1 year.</p> |

|  |  |  |  |                             |
|--|--|--|--|-----------------------------|
| <p><b>The Permanente Journal, Spring 2002, Vol 6, No 2 (Sobel, Lorig, and Hobbs)</b></p> | <p>952 patients</p> <p>50% Kaiser Permanente members</p> <p>Aged at least 40</p> | <p><u>At 6 months</u></p> <ul style="list-style-type: none"> <li>• Improvements in: <ul style="list-style-type: none"> <li>- frequency of cognitive symptom management</li> <li>- communication with physicians</li> <li>- health status, health distress</li> <li>- fatigue</li> <li>- disability</li> <li>- social activity limitations</li> </ul> </li> </ul> <p><u>At 2 years</u></p> <ul style="list-style-type: none"> <li>• Reduction in health distress</li> <li>• Increased self-efficacy</li> <li>• Self-rated health status improved</li> <li>• Improved fatigue</li> <li>• Increases in disability (consistent with what is expected)</li> </ul> | <p><u>At 6 months</u></p> <ul style="list-style-type: none"> <li>• Fewer hospitalizations (0.22 fewer hospitalizations)</li> <li>• Fewer nights in the hospital (0.8 fewer nights)</li> <li>• Used an average CDSMP program cost of about \$70; and hospital cost of \$1000/day which resulted in a saving of approximately \$750</li> </ul> <p><u>At 2 years</u></p> <ul style="list-style-type: none"> <li>• Made fewer visits to physicians and emergency departments (2.5 fewer visits)</li> <li>• No significant increases in numbers of hospitalization or days in the hospital, despite worsening disability</li> </ul> | <p>6 months and 2 years</p> |
|--|--|--|--|-----------------------------|

|   |   |  |   |                        |
|---|---|--|---|------------------------|
| <p><b>Effective Clinical Practice (ACP Online 2001; <a href="http://acponline.org/journals/ecp/novdec01/lorig.htm">acponline.org/journals/ecp/novdec01/lorig.htm</a> (Lorig, Sobel, et al.)</b></p> | <p>613 Kaiser Permanente patients; 489 had complete baseline and follow-up data</p> | <ul style="list-style-type: none"> <li>• Improvements in: <ul style="list-style-type: none"> <li>- exercise</li> <li>- cognitive symptom management</li> <li>- communication with physicians</li> <li>- self-efficacy</li> <li>- fatigue</li> <li>- health distress</li> <li>- shortness of breath</li> <li>- pain</li> <li>- role function</li> <li>- depression</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• Fewer visits to the ED (.04 visits in the 6 months prior to baseline; compared with .3 in the 6 months prior to follow up.)</li> <li>• Slightly fewer outpatient visits to physicians (not statistically significant)</li> <li>• Slightly fewer days in hospital (not statistically significant)</li> <li>• One year after exposure to the program, most patients experienced statistically significant improvements in a variety of health outcomes and had fewer ED visits.</li> </ul> | <p>1 year outcomes</p> |
|---|---|--|---|------------------------|



|  |  |   |  |   |
|--|--|---|--|---|
| <p><b>Medical Care, 2001 Vol 39, #11, pp 1217-1223 (Lorig, Ridder, et al.)</b></p> | <p>831 community-dwelling patients 40+ yrs old, average 2.2 diseases</p> | <ul style="list-style-type: none"> <li>• Improved health behaviors (exercise, cognitive symptom management, communication with physicians)</li> <li>• Improved self-rated health and participation in social/role activities</li> <li>• Reduced disability, fatigue, and distress over their health</li> <li>• An increase in disability was seen at one year. Even in the face of increasing disability, their activity and role functions did not decline.</li> </ul> | <p><u>At 1 year</u></p> <ul style="list-style-type: none"> <li>• Fewer visits to physicians and ERs (0.689 fewer visits) - this study groups physician visits with ER visits</li> <li>• Fewer days in hospital (0.111 fewer days)</li> <li>• Fewer hospitalizations (0.012 fewer hospitalizations)</li> </ul> <p><u>At 2 years (compared to baseline)</u></p> <ul style="list-style-type: none"> <li>• Fewer visits to physicians and ERs (0.564 fewer visits) - this study groups physician visits with ER visits. Author's conclusions:• Each year, participants made fewer visits to ERs and physicians, despite some increase in disability.</li> <li>• The total reduction during two years was approximately 2.5 visits per participant.</li> <li>• Two year savings due to reduced hospitalizations and outpatient visits was approximately \$590 per participant (\$490 in hospitalizations and \$100 in outpatient visits)</li> <li>• CDSMP cost was estimated at \$70-\$200 per participant, depending on economies of scale. Therefore, the actual amount of money saved over the two-year period was between \$390 and \$520 per participant.</li> </ul> | <p>Study measured outcomes over 2 years, at 1 and 2 year intervals.</p> |
|--|--|---|--|---|

|  |   |   |   |                          |
|--|---|---|---|--------------------------|
| <p><b>Medical Care, 1999 Vol 37(1), pp 5-14 (Lorig, Sobel, et al.)</b></p> | <p>1140 participants (664 intervention; 476 control) 952 completed 6-month follow-up study</p> <p>Age 40 and up</p> | <ul style="list-style-type: none"> <li>• Improvements in: <ul style="list-style-type: none"> <li>- exercise</li> <li>- cognitive symptoms</li> <li>- communication with physician</li> <li>- self-reported health</li> <li>- health distress</li> <li>- fatigue</li> <li>- disability</li> <li>- social/role activity limitations</li> </ul> </li> <li>• No difference in pain, shortness of breath, or psychological well being</li> </ul> | <ul style="list-style-type: none"> <li>• Fewer hospitalizations (decreased by 0.07)</li> <li>• Fewer days of hospitalization. Spent .8 fewer nights in the hospital.</li> <li>• No significant differences in physician visits. (very slight decrease)</li> </ul> | <p>6 month follow-up</p> |
|--|---|---|---|--------------------------|