

## Collaborative primary care for depression

Benefit-cost estimates updated June 2016. Literature review updated May 2014.

Current estimates replace old estimates. Numbers will change over time as a result of model inputs and monetization methods.

The WSIPP benefit-cost analysis examines, on an apples-to-apples basis, the monetary value of programs or policies to determine whether the benefits from the program exceed its costs. WSIPP's research approach to identifying evidence-based programs and policies has three main steps. First, we determine "what works" (and what does not work) to improve outcomes using a statistical technique called meta-analysis. Second, we calculate whether the benefits of a program exceed its costs. Third, we estimate the risk of investing in a program by testing the sensitivity of our results. For more detail on our methods, see our [Technical Documentation](#).

Program Description: A care manager collaborates with the primary care provider, mental health specialists, and other providers to develop treatment plans for each patient. The care manager manages these treatment plans and follows up with patients to ensure treatment adherence. Care managers predominantly focus their efforts on improving depression symptoms.

### Benefit-Cost Summary Statistics Per Participant

#### Benefits to:

Taxpayers	\$2,388	Benefit to cost ratio	\$8.99
Participants	\$4,133	Benefits minus costs	\$6,491
Others	\$743	Chance the program will produce	
Indirect	\$39	benefits greater than the costs	100 %
<u>Total benefits</u>	<u>\$7,304</u>		
<u>Net program cost</u>	<u>(\$812)</u>		
Benefits minus cost	\$6,491		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2015). The chance the benefits exceed the costs are derived from a Monte Carlo risk analysis. The details on this, as well as the economic discount rates and other relevant parameters are described in our [Technical Documentation](#).

### Detailed Monetary Benefit Estimates Per Participant

#### Benefits from changes to:<sup>1</sup>

#### Benefits to:

	Participants	Taxpayers	Others <sup>2</sup>	Indirect <sup>3</sup>	Total
Labor market earnings associated with major depression	\$3,937	\$1,788	\$0	\$145	\$5,870
Health care associated with major depression	\$195	\$600	\$743	\$301	\$1,840
Adjustment for deadweight cost of program	\$1	\$1	\$0	(\$408)	(\$406)
<b>Totals</b>	<b>\$4,133</b>	<b>\$2,388</b>	<b>\$743</b>	<b>\$39</b>	<b>\$7,304</b>

<sup>1</sup>In addition to the outcomes measured in the meta-analysis table, WSIPP measures benefits and costs estimated from other outcomes associated with those reported in the evaluation literature. For example, empirical research demonstrates that high school graduation leads to reduced crime. These associated measures provide a more complete picture of the detailed costs and benefits of the program.

<sup>2</sup>"Others" includes benefits to people other than taxpayers and participants. Depending on the program, it could include reductions in crime victimization, the economic benefits from a more educated workforce, and the benefits from employer-paid health insurance.

<sup>3</sup>"Indirect benefits" includes estimates of the net changes in the value of a statistical life and net changes in the deadweight costs of taxation.

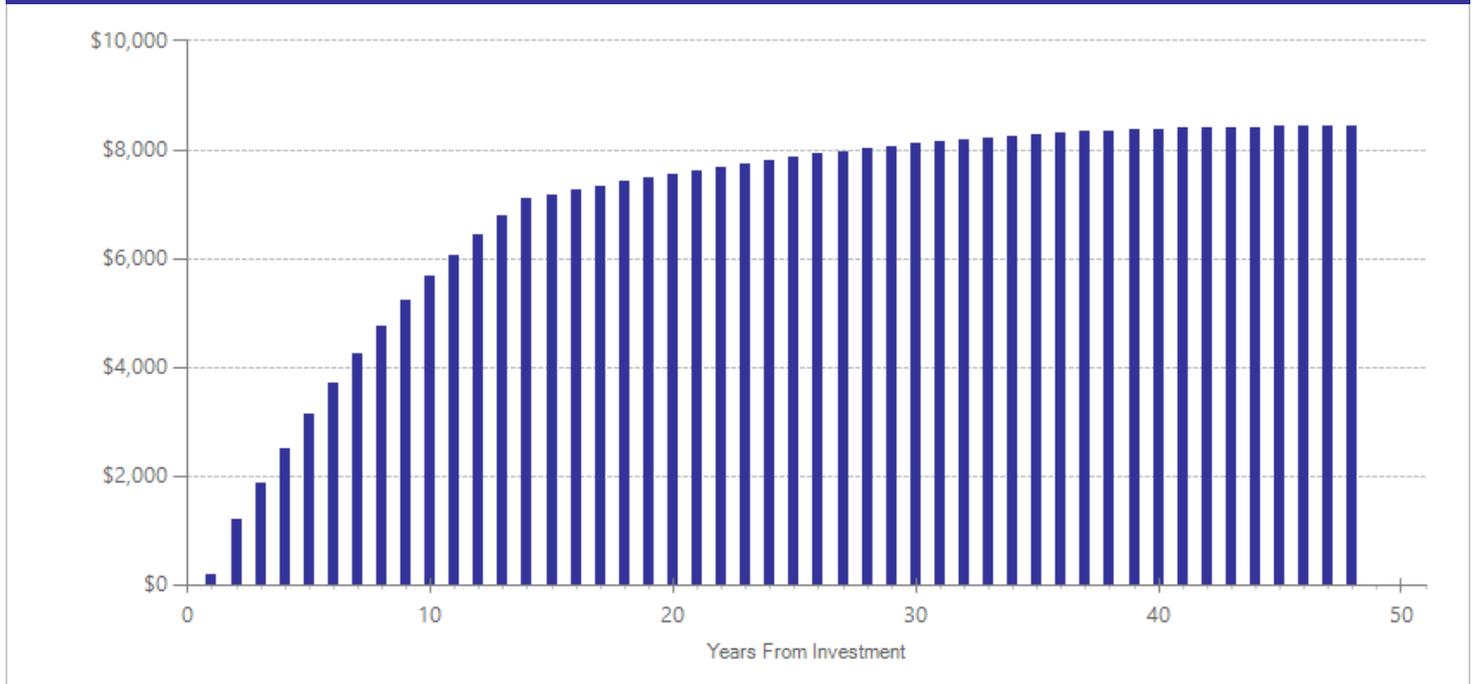
## Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	\$787	2012	Present value of net program costs (in 2015 dollars)	(\$812)
Comparison costs	\$0	2012	Cost range (+ or -)	15 %

Per-participant costs include telephone contacts, in-person contacts, supervision & information support, screening, educational materials, and time spent with a primary care provider. Costs were obtained from Ell et al. (2010). Collaborative care management of major depression among low-income, predominantly Hispanic subjects with diabetes: A randomized controlled trial. *Diabetes Care*, 33(4), 706-713. Our cost estimate is based on the average number of telephone and in-person contacts from studies. There is a wide variation of cost, since the time the care manager spent with each patient varied.

The figures shown are estimates of the costs to implement programs in Washington. The comparison group costs reflect either no treatment or treatment as usual, depending on how effect sizes were calculated in the meta-analysis. The cost range reported above reflects potential variation or uncertainty in the cost estimate; more detail can be found in our [Technical Documentation](#).

## Detailed Annual Cost Estimates Per Participant



The graph above illustrates the estimated cumulative net benefits per-participant for the first fifty years beyond the initial investment in the program. We present these cash flows in non-discounted dollars to simplify the “break-even” point from a budgeting perspective. If the dollars are negative (bars below \$0 line), the cumulative benefits do not outweigh the cost of the program up to that point in time. The program breaks even when the dollars reach \$0. At this point, the total benefits to participants, taxpayers, and others, are equal to the cost of the program. If the dollars are above \$0, the benefits of the program exceed the initial investment.

## Meta-Analysis of Program Effects

Outcomes measured	No. of effect sizes	Treatment N	Adjusted effect sizes and standard errors used in the benefit-cost analysis						Unadjusted effect size (random effects model)	
			First time ES is estimated			Second time ES is estimated			ES	p-value
			ES	SE	Age	ES	SE	Age		
Major depressive disorder	48	7151	-0.266	0.035	52	-0.130	0.038	54	-0.279	0.001
Health care costs	8	2551	0.079	0.039	56	0.039	0.043	58	0.079	0.044
Suicidal ideation	2	981	-0.297	0.091	71	-0.146	0.099	73	-0.305	0.001

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our [Technical Documentation](#).

## Citations Used in the Meta-Analysis

- Adler, D.A., Bungay, K. M., Wilson, I. B., Pei, Y., Supran, S., Peckham, E., . . . Rogers, W. H. (2004). The impact of a pharmacist intervention on 6-month outcomes in depressed primary care patients. *General Hospital Psychiatry, 26*(3), 199-209.
- Aragones, E., Lluís, P. J., Caballero, A., Lopez-Cortacans, G., Casaus, P., Maria, H. J., . . . Folch, S. (2012). Effectiveness of a multi-component programme for managing depression in primary care: A cluster randomized trial. The INDI project. *Journal of Affective Disorders, 142*(1-3), 297-305.
- Berghofer, A., Hartwich, A., Bauer, M., Unutzer, J., Willich, S. N., & Pfennig, A. (2012). Efficacy of a systematic depression management program in high utilizers of primary care: A randomized trial. *BMC Health Services Research, 12*(298).
- Blanchard, M. R., Waterreus, A., & Mann, A. H. (1995). The effect of primary care nurse intervention upon older people screened as depressed. *International Journal of Geriatric Psychiatry, 10*(4), 289-298.
- Bruce, M. L., Ten, H. T. R., Reynolds, C. F., Katz, I. I., Schulberg, H. C., Mulsant, B. H., . . . , & Alexopoulos, G. S. (2004). Reducing suicidal ideation and depressive symptoms in depressed older primary care patients: A randomized controlled trial. *JAMA, 291*(9), 1081-1091.
- Buszewicz, Marta, Griffin, Mark, Beecham, Jennifer, Bonin, Eva-Maria, & Hutson, Madeline. (2011). ProCEED: *Report of a study of proactive care by practice nurses for people with depression and anxiety*.
- Capoccia, K. L., Boudreau, D. M., Blough, D. K., Ellsworth, A. J., Clark, D. R., Stevens, N. G., . . . Sullivan, S. D. (2004). Randomized trial of pharmacist interventions to improve depression care and outcomes in primary care. *American Journal of Health-System Pharmacy, 61*(4), 364-372.
- Chew-Graham, C. A., Lovell, K., Roberts, C., Baldwin, R., Morley, M., Burns, A., . . . Burroughs, H. (2007). A randomised controlled trial to test the feasibility of a collaborative care model for the management of depression in older people. *The British Journal of General Practice : The Journal of the Royal College of General Practitioners, 57*(538), 364-370.
- Datto, C. J., Thompson, R., Horowitz, D., Disbot, M., & Oslin, D. W. (2003). The pilot study of a telephone disease management program for depression. *General Hospital Psychiatry, 25*, 3.
- Dietrich, A. J., Oxman, T. E., Williams, J. J. W., Schulberg, H. C., Bruce, M. L., Lee, P. W., Barry, S., . . . Nutting, P. A. (2004). Re-engineering systems for the treatment of depression in primary care: Cluster randomised controlled trial. *British Medical Journal, 329*, 7466, 602.
- Dobscha, S. K., Corson, K., Hickam, D. H., Perrin, N. A., Kraemer, D. F., & Gerrity, M. S. (2006) Depression decision support in primary care: A cluster randomized trial. *Annals of Internal Medicine, 145*(7), 477-487.
- Finley, P. R., Rens, H. R., Pont, J. T., Gess, S. L., Louie, C., Bull, S. A., . . . Bero, L. A. (2003). Impact of a collaborative care model on depression in a primary care setting: A randomized controlled trial. *Pharmacotherapy, 23*(9), 1175-1185.
- Fortney, J., Pyne, J., Edlund, M., Williams, D., Robinson, D., Mittal, D., & Henderson, K. (2007). A randomized trial of telemedicine-based collaborative care for depression. *Journal of General Internal Medicine, 22*(8), 1086-1093.
- Gensichen, J., von Korff, M., Peitz, M., Muth, C., Beyer, M., Guethlin, C., . . . Gerlach, F. M. (2009). Case management for depression by health care assistants in small primary care practices: a cluster randomized trial. *Annals of Internal Medicine, 151*(6), 369-378.
- Hedrick, S. C., Chaney, E. F., Felker, B., Liu, C.-F., Hasenberg, N., Heagerty, P., . . . Katon, W. (2003). Effectiveness of collaborative care depression treatment in veterans' affairs primary care. *Journal of General Internal Medicine, 18*(1), 9-16.
- Huijbregts, K. M., de Jong, F. J., van Marwijk, H. W. J., Beekman, A. T., Adey, H. J., Hakkaart-van Roijen, . . . Van der Feltz-Cornelis, C. M. (2013). A target-driven collaborative care model for Major Depressive Disorder is effective in primary care in the Netherlands. A randomized clinical trial from the depression initiative. *Journal of Affective Disorders, 146*(3), 328-37.
- Katon, W., Von Korff, M. & Lin, E. (1995). Collaborative management to achieve treatment guidelines: Impact on depression in primary care. *Journal of the American Medical Association, 273*(13), 1026-1031.
- Katon, W., Robinson, P., Von, K. M., Lin, E., Bush, T., Ludman, E., . . . Walker, E. (1996). A multi-faceted intervention to improve treatment of depression in primary care. *Archives of General Psychiatry, 53*(10), 924-932.
- Katon, W., Von, K. M., Lin, E., Simon, G., Walker, E., Unutzer, J., Bush, T., . . . Ludman, E. (1999). Stepped collaborative care for primary care patients with persistent symptoms of depression: a randomized trial. *Archives of General Psychiatry, 56*(12), 1109-15.
- Katzelnick, D. J., Simon, G. E., Pearson, S. D., Manning, W. G., Helstad, C. P., Henk, H. J., . . . Kobak, K. A. (2000). Randomized trial of a depression management program in high utilizers of medical care. *Archives of Family Medicine, 9*(4), 345-351.
- Klinkman, M. S., Bauroth, S., Fedewa, S., Kerber, K., Kuebler, J., Adman, T., & Sen, A. (2010). Long-term clinical outcomes of care management for chronically depressed primary care patients: A report from the depression in primary care project. *Annals of Family Medicine, 8*(5), 387-396.

- Landis, S. E., Gaynes, B. N., Morrissey, J. P., Vinson, N., Ellis, A. R., & Domino, M. E. (2007). Generalist care managers for the treatment of depressed medicaid patients in North Carolina: A pilot study. *BMC Family Practice*, *8*(1), 7-11.
- Liu, C. F., Hedrick, S. C., Chaney, E. F., Heagerty, P., Felker, B., Hasenberg, N., . . . Katon, W. (2003). Cost-effectiveness of collaborative care for depression in a primary care veteran population. *Psychiatric Services*, *54*(5), 698-704.
- Mann, A., Blizard, R., Murray, J., Smith, J., Botega, N., MacDonald, E., & Wilkinson, G. (1998). An evaluation of practice nurses working with general practitioners to treat people with depression. *The British Journal Of General Practice: The Journal Of The Royal College Of General Practitioners*, *48*(426), 875-879.
- McCusker, J., Sewitch, M., Cole, M., Yaffe, M., Cappeliez, P., Dawes, M., . . . Latimer, E. (2008). Project Direct: Pilot study of a collaborative intervention for depressed seniors. *Canadian Journal of Community Mental Health*, *27*(2), 201-218.
- McMahon, L., Foran, K. M., Forrest, S. D., Taylor, M. L., Ingram, G., Rajwal, M., . . . McAllister-Williams, R. H. (2007). Graduate mental health worker case management of depression in UK primary care: A pilot study. *British Journal of General Practice*, *57*(544), 880-885.
- Patel, V., Weiss, H. A., Chowdhary, N., Naik, S., Pednekar, S., Chatterjee, S., . . . Kirkwood, B. R. (2010). Effectiveness of an intervention led by lay health counsellors for depressive and anxiety disorders in primary care in Goa, India (MANAS): A cluster randomised controlled trial. *Lancet*, *376*(9758), 2086-2095.
- Richards, D. A., Lovell, K., Gilbody, S., Gask, L., Torgerson, D., Barkham, M., . . . Richardson, R. (2008). Collaborative care for depression in UK primary care: A randomized controlled trial. *Psychological Medicine*, *38*(2), 279-287.
- Richards, D. A., Hill, J. J., Gask, L., Lovell, K., Chew-Graham, C., Bower, P., . . . Barkham, M. (2013). Clinical effectiveness of collaborative care for depression in UK primary care (CADET): Cluster randomised controlled trial. *British Medical Journal (Clinical Research Ed.)*, 347.
- Rost, K., Nutting, P., Smith, J., Werner, J., & Duan, N. (2001). Improving Depression Outcomes in Community Primary Care Practice. A Randomized Trial of the QuEST Intervention. *Journal of General Internal Medicine*, *16*(3), 143-149.
- Shippee, N. D., Shah, N. D., Angstman, K. B., DeJesus, R. S., Wilkinson, J. M., Bruce, S. M., & Williams, M. D. (2013). Impact of collaborative care for depression on clinical, functional, and work outcomes: A practice-based evaluation. *The Journal of Ambulatory Care Management*, *36*(1), 13-23
- Simon, G. E., VonKorff, M., Rutter, C., & Wagner, E. (2000). Randomised trial of monitoring, feedback, and management of care by telephone to improve treatment of depression in primary care. *British Medical Journal*, *320*(7234), 550-554.
- Simon, G. E., Ludman, E. J., Tutty, S., Operskalski, B., & Von, K. M. (2004). Telephone psychotherapy and telephone care management for primary care patients starting antidepressant treatment: a randomized controlled trial. *Journal of the American Medical Association*, *292*(8), 935-42.
- Smit, A., Kluiters, H., Conradi, H. J., van der Meer, K., Tiemens, B. G., Jenner, J. A., . . . Ormel, J. (2006). Short-term effects of enhanced treatment for depression in primary care: Results from a randomized controlled trial. *Psychological Medicine*, *36*(1), 15-26.
- Swindle, R. W., Rao, J. K., Helmy, A., Plue, L., Zhou, X. H., Eckert, G. J., & Weinberger, M. (2003). Integrating clinical nurse specialists into the treatment of primary care patients with depression. *International Journal of Psychiatry in Medicine*, *33*(1), 17-37.
- Uebelacker, L. A., Marootian, B. A., Tighe, P., Haggarty, R., Primack, J. M., & Miller, I. W. (2011). Telephone depression care management for Latino Medicaid health plan members: A pilot randomized controlled trial. *The Journal of Nervous and Mental Disease*, *199*(9), 678-683.
- Unutzer, J., Tang, L., Oishi, S., Katon, W., Williams, J. W., Hunkeler, E., . . . Langston, C. (2006). Reducing suicidal ideation in depressed older primary care patients. *Journal of the American Geriatrics Society*, *54*(10), 1550-1556.
- Unutzer, J., Katon, W., Callahan, C. M., Williams, J. W., Hunkeler, E., Harpole, L., Hoffing, M., . . . Lin, E. H. B. (2002). Collaborative Care Management of Late-Life Depression in the Primary Care Setting: A Randomized Controlled Trial. *Journal- American Medical Association*, *288*, 2836-2845.
- Vera, M., Perez-Pedrogo, C., Huertas, S. E., Reyes-Rabanillo, M. L., Juarbe, D., Huertas, A., . . . Chaplin, W. (2010). Collaborative care for depressed patients with chronic medical conditions: A randomized trial in Puerto Rico. *Psychiatric Services*, *61*(2), 144-150.
- Wells, K. B., Sherbourne, C., Schoenbaum, M., Duan, N., Meredith, L., Unutzer, J., . . . Rubenstein, L. V. (2000). Impact of disseminating quality improvement programs for depression in managed primary care: a randomized controlled trial. *JAMA : The Journal of the American Medical Association*, *283*(2), 212-220.
- Yeung, A., Shyu, I., Fisher, L., Wu, S., Yang, H., & Fava, M. (2010). Culturally sensitive collaborative treatment for depressed Chinese Americans in primary care. *American Journal of Public Health*, *100*(12), 2397-2402.

For further information, contact:  
(360) 664-9800, [institute@wsipp.wa.gov](mailto:institute@wsipp.wa.gov)

Printed on 12-20-2016



## Washington State Institute for Public Policy

The Washington State Legislature created the Washington State Institute for Public Policy in 1983. A Board of Directors—representing the legislature, the governor, and public universities—governs WSIPP and guides the development of all activities. WSIPP's mission is to carry out practical research, at legislative direction, on issues of importance to Washington State.