

Economic Analysis of Peer Support Programs

Peer support (PS) has been shown to play an influential role in health and health care delivery. As used here, “peer support” is not defined by who provides it, but rather by the functions and principles that comprise it (1). Although, for convenience, “peer supporters” are referenced in this paper, most PS is provided by people with other names, including community health workers, lay health advisors, and peer navigators among others. By providing individuals with information, helping individuals address complex emotional and behavioral issues, delivering instrumental support (e.g., navigation of health care systems, transportation to and from doctors’ appointments), and providing ongoing care, peer supporters have assisted individuals with diverse health needs and served in a variety of capacities and settings (2-4). While the feasibility, reach, sustainability, and effectiveness of peer support have all been demonstrated, more research on the cost effectiveness of PS is needed. This executive summary reports on:

- What we know about the economic value of peer support
- Making the business case for peer support: focusing on the most vulnerable and hardly reached
- The organization of other sections in this report

What we know about the economic value of peer support

Overall, 31 studies examined economic aspects of peer support programs and reported favorable results. These studies occurred in a number of settings, including the United States (n=20), other upper income settings (n=5), and low / middle income settings (n=6) and were organized around a number of health conditions, including but not limited to: diabetes, asthma, cancer, cardiovascular disease, postpartum depression, quality of life, and malnutrition. These studies largely demonstrated the robust and consistent economic value of peer support programs. Almost all studies were found to be below

commonly used benchmarks associated with cost effectiveness (i.e., less than \$50,000 per quality adjusted life (QALY) year gained) or cost effective for high priority sub-populations or health outcomes. In addition, two studies reported favorable return on investments for peer support programs.

Making the business case for peer support: focusing on the most vulnerable and hardly reached

A number of studies found peer support to be more cost effective for sub-groups that were more vulnerable and/or hardly reached. For instance, four US studies reported that results were even more cost effective (i.e., less costly and more effective) for individuals at high risk, such as individuals with high glycemic levels, individuals with impaired fasting glucose, and individuals without insurance. Moreover, peer support programs in low / middle income countries were substantially more cost effective than those in upper income countries. For instance, the three studies examined the cost utility of peer support programs in South Africa and Bangladesh found peer support programs to be extremely cost effective, with cost per DALY averted or QALY gained ranging from \$26 to 1862.

Organization of subsequent sections in this report:

In the sections that follow, more detailed information is provided on:

- Types of economic analysis
- Special considerations in economic analysis
- Synthesis of studies demonstrating the economic value of peer support
- Detailed tables demonstrated the economic value of peer support, organized by setting (Table 1: US studies; Table 2: Other upper income settings, Table 3: low / middle income settings)
- Appendix with additional information on methods used to identify studies

Types of Economic Analysis

Cost effectiveness analysis: Cost effectiveness analysis compares the cost of interventions to their effectiveness (5). Results are expressed as cost per health outcome (e.g., cost per case averted). Cost effectiveness analysis can help determine the best value of interventions by finding out which one produces the most health benefit for its cost.

Cost utility analysis: Cost utility analysis is used to compare interventions with different health outcomes (5). Results are usually expressed in cost per quality-adjusted life year (QALY) gained or disability-adjusted life year (DALY) averted and calculated as: $\$ \text{ Net Costs} / \$ \text{ Net Effects} = \$ / \text{QALY gained or DALY averted}$.

Return on investment: Return on investment (ROI) is used to show the direct financial return resulting from an investment, from the perspective of the investor (5). For example, if an intervention cost \$200 and resulted in a \$300 gain, then there would be an addition 50% return on the \$200 investment. To calculate the return on investment, one can use this formula:

$\$ \text{ Gained} - \$ \text{ Cost of Investment} / (\$ \text{ Cost of investment})$. This type of analysis typically takes into account only the perspective of the entity directly paying for the intervention and relies only on short-term returns.

Other economic analysis: Other economic analyses may be used to help estimate the costs or benefits of certain interventions or intervention strategies (5).

Special Considerations in Economic Analysis

Control group: A special statistic used in cost effectiveness analysis is the incremental cost-effectiveness ratio (ICER) which is defined as the difference in cost between two possible interventions (usually intervention and control), divided by the difference in their effect. Because the ICER is often used in cost effectiveness research, it is important to understand the control group in these studies.

Perspective: Perspective refers to the point of view one takes when conducting an economic analysis. Specifying a perspective is necessary because it determines which costs and outcomes are likely to be taken into consideration. It also helps how results should be interpreted. Some different perspectives are shown in the table below.

Cost	Perspective			
	Societal	Insurance/payer	Employer	Patient / Clinic
Direct medical (e.g., clinical services, hospitalization, medications)	Yes	Yes	Yes	Yes
Direct non-medical (e.g., transportation or child care expenses incurred because of an illness)	Yes	No	No	Yes
Indirect (e.g., time lost from work)	Yes	No	Yes	Yes
Intangible (e.g., pain, suffering; represent a cost to patients and society in terms of quality of life)	Yes	No	No	Yes

Synthesis of Findings on the Economic Value of Peer Support Interventions

US studies (Table 1)

Study characteristics: Overall, 20 studies were conducted in the US. These studies were set in a variety of different locations (e.g., Arkansas, rural Vermont, Texas along the US-Mexico border) and focused on different health conditions, including but not limited to diabetes, asthma, cancer, and cardiovascular disease.

Cost effectiveness: Four studies examined cost effectiveness and of these studies, most were cost effective (6-9). For example, in one study of lay health educator support for diabetes prevention among older adults, the cost per pound lost was \$20 (7). In another study where nurse practitioners and community health workers provided support for adults with cardiovascular risk factors, the cost per a one unit reduction in systolic blood pressure was \$101 (e.g., 120 mmHg to 119 mmHg) (6).

ROI: The two studies that looked at ROI also found favorable results (ROIs of 1.90 and 2.28), which means for every dollar spent, the interventions saved approximately 2 dollars in health care costs (10, 11).

Cost utility analysis: Moreover, nine out of ten studies that conducted cost utility analysis (12-21) found peer support interventions to be under the \$50,000 per QALY benchmark often used as a benchmark for “cost effective” (22). Costs per QALY ranged from \$355 to \$143,000, depending on the perspective. In addition, several studies indicated that results were even more favorable for individuals at high risk (e.g., individuals with high glycemic levels, or individuals without insurance) (12, 14, 15).

Other economic analysis: Four studies examined other economic aspects of peer support interventions, including the cost and/or cost savings (23-26).

Other upper income studies (Table 2)

Study characteristics: Overall, five studies were conducted in other upper income settings, including the UK, Canada, the Netherlands, and Austria. These studies evaluated diverse outcomes, including postpartum depression, quality of life and hope among mental health patients, and diabetes.

Cost effectiveness: Three studies found peer support to be cost effective (costing as little as £43 per month of postnatal depression avoided or \$10,009 per case of postpartum depression averted) (27-29).

Cost utility analysis: The one study that conducted a cost utility analysis found that the intervention cost £67,184 per QALY gained. However, it was more cost effective for high risk individuals, in this case individuals with impaired fasting glucose, where it cost 20,620 per QALY gained (30).

Other economic analysis: One study examined other economic aspects of peer support interventions, including the yearly savings of a group based diabetes support program (31).

Low and middle income studies (Table 3)

Study characteristics: Overall, six studies were conducted in low / middle income settings, including South Africa, Bangladesh, Mozambique and focused on hypertension, diabetes, malnutrition, and cardiovascular disease.

Cost utility analysis: The three studies that focused on cost utility analysis were very cost effective (ranging from \$26 per DALY averted to \$1862 per QALY gained) (32-34).

Other economic analysis: Three additional studies examined other economic aspects of peer support interventions, including the costs and cost savings of different peer support intervention strategies (35-37).

Table 1. US Studies

Type of economic analysis	Author, year, and reference	Intervention and setting	Control group description	Economic indicator(s)	Perspective
Cost effectiveness analysis	Allen et al. 2014 (6)	<ul style="list-style-type: none"> Nurse practitioner and CHW support for adults with cardiovascular risk factors Set in federally qualified health care centers in metropolitan centers 	Enhanced usual care	<ul style="list-style-type: none"> \$101 per one unit reduction in systolic blood pressure (e.g., 120 mmHg to 119 mmHg) \$209 per one unit reduction in diastolic blood pressure (e.g., from 80 mmHg to 79 mmHg) \$1255 for one unit reduction in A1c (e.g., from 8% to 7%) 	Health services
	Krukowski et al. 2013 (7)	<ul style="list-style-type: none"> Lay health educator support for diabetes prevention among older adults Set in senior centers in Arkansas 	Memory improvement	<ul style="list-style-type: none"> \$20 per pound lost (e.g., 150 lb to 149 lb) 	Not specified
	Lairson et al. 2014 (8)	<ul style="list-style-type: none"> Phone calls from nurse navigators about colonoscopy screenings Set in primary care clinics in Delaware 	Mailings about screenings	<ul style="list-style-type: none"> \$1958 per colonoscopy screening 	Provider
	Schuster et al. 2015 (9)	<ul style="list-style-type: none"> Group and one-on-one support to promote breast and cervical cancer screenings among Korean American women. Set in Baltimore / Washington D.C. 	Limited information about screenings	<ul style="list-style-type: none"> \$236 per screening 	Health care system
Return on investment	Campbell et al. 2015 (10)	<ul style="list-style-type: none"> Home visits delivered by community health workers for children with asthma. Set in Seattle 	Limited information and resources about asthma	<ul style="list-style-type: none"> Return on investment was 1.90 	Payer
	Whitley et al. 2006 (11)	<ul style="list-style-type: none"> Outreach by community health workers for uninsured and underinsured individuals with broad health needs. Set in a primary health care system in Denver 	(none)	<ul style="list-style-type: none"> Return on investment was 2.28 	Not specified
Cost utility analysis	Brown et al. 2012 (12)	<ul style="list-style-type: none"> One-on-one and group support delivered by community health workers for low-income Hispanic adults with diabetes Set along the Mexico border in Texas 	Hypothetical control group	<ul style="list-style-type: none"> \$33,319 per QALY gained across all participants \$10,995 per QALY gained for adults with high glycemic levels (>9%) 	Societal
	Brownson et al. 2009 (13)	<ul style="list-style-type: none"> Self-management support delivered by promotores for individuals with diabetes Set in real-world community primary care settings 	Usual care	<ul style="list-style-type: none"> \$39,563 per QALY gained (from a health system's perspective) 	Health system
	Eddy et al. 2005 (14)	<ul style="list-style-type: none"> Support for diabetes prevention delivered by health coaches Set across the US among adults at high risk for developing diabetes 	Hypothetical control group not receiving any prevention	<ul style="list-style-type: none"> \$143,00 per QALY gained (payer perspective) \$62,600 per QALY gained (societal perspective) \$24,500 per QALY gained for adults with diabetes (rather than adults at risk for developing diabetes) 	Payer and societal

Type of economic analysis	Author, year, and reference	Intervention and setting	Control group description	Economic indicator(s)	Perspective
	Gilmer et al. 2007 (15)	<ul style="list-style-type: none"> Case management and group support delivered by promotores for low-income adults with diabetes Set in San Diego 	Usual care	<ul style="list-style-type: none"> \$10,141 for individuals without insurance \$69,587 per QALY gained for individuals with commercial insurance 	Third party payer
	Herman et al. 2005 (16)	<ul style="list-style-type: none"> Support for diabetes prevention delivered by health coaches Set across the US among adults at high risk for developing diabetes 	Placebo medication	<ul style="list-style-type: none"> \$1100 per QALY gained (payer's perspective) \$8800 per QALY gained (societal perspective) 	Payer and societal
	Ladabaum et al. 2015 (17)	<ul style="list-style-type: none"> Ongoing patient navigation to promote colonoscopy screenings Set in New York City 	Hypothetical control group not receiving any navigation	<ul style="list-style-type: none"> \$9,800 per QALY gained 	Payer
	Prezio et al 2014 (18)	<ul style="list-style-type: none"> Education and self-management support delivered by community health workers for uninsured Mexican American adults with diabetes. Set in an urban community clinic in Texas 	Waitlisted control group	<ul style="list-style-type: none"> \$355 per QALY gained 	Health system
	Ryabov et al. 2014 (19)	<ul style="list-style-type: none"> Self-management support delivered by community health workers for Mexican American adults with diabetes Set along the US-Mexico border 	Hypothetical control group with similar demographic characteristics	<ul style="list-style-type: none"> \$13,810 per QALY gained 	Health system
	Shih et al. 2016 (20)	<ul style="list-style-type: none"> Patient navigation for Medicare beneficiaries diagnosed with lung cancer Set in four sites across the US 	Usual care	<ul style="list-style-type: none"> \$19,312 per QALY gained 	Not specified
	Wilson et al. 2015 (21)	<ul style="list-style-type: none"> Patient navigation for colorectal screening among Hispanic men Set in San Antonio, Texas 	Hypothetical control group with similar demographic characteristics	<ul style="list-style-type: none"> \$3,765 per QALY gained 	Not specified
Other economic analysis	Fedder et al. 2003 (23)	<ul style="list-style-type: none"> Home visits and telephone support for Medicaid patients with diabetes Delivered in Baltimore 	(none)	<ul style="list-style-type: none"> One year after the intervention, health care costs declined by \$2,245 for the average patient 	Not applicable
	Jonk et al. 2015 (24)	<ul style="list-style-type: none"> Telephone health coaching for high-risk insurance plan enrollees Set in the US 	No intervention	<ul style="list-style-type: none"> The intervention reduced outpatient costs on average by \$286 per month The intervention reduced total costs on average by \$412 per month 	Not applicable
	Margellos-Anast et al. 2012 (25)	<ul style="list-style-type: none"> Home visits for African American children with asthma Set in disadvantaged Chicago neighborhoods 	(none)	<ul style="list-style-type: none"> For each dollar spent, the intervention saved \$5.58 in health care costs 	Not applicable
	Mirambeau et al. 2013 (26)	<ul style="list-style-type: none"> Community health worker program for individuals with various health needs Set in a small, rural hospital in Vermont 	(none)	<ul style="list-style-type: none"> The total estimated program cost was \$420,348 	Not applicable

Table 2. Other Upper Income Studies

Type of economic analysis	Author, year, and reference	Intervention and setting	Control group description	Economic indicator(s)	Perspective
Cost utility analysis	Dukhovny et al. 2013 (27)	<ul style="list-style-type: none"> Peer support for prevention of postpartum depression among high risk women Set in 7 health regions in Ontario, Canada 	Usual care	<ul style="list-style-type: none"> \$10,009 per case of postpartum depression averted. 	Societal
	Simpson et al. 2014 (28)	<ul style="list-style-type: none"> Peer support to improve hope and quality of life for individuals discharged from the hospital Set in four mental health wards in the UK 	Community health services	<ul style="list-style-type: none"> £12,55 per improvement change in Becks Hopelessness scale 	Not specified
	Petrou et al. 2006 (29)	<ul style="list-style-type: none"> Counseling to reduce postpartum depression among high risk women Set in the UK 	Usual care	<ul style="list-style-type: none"> £43 per month of postnatal depression avoided 	Public sector (health and social care)
	Irvine et al. 2011(30)	<ul style="list-style-type: none"> Group based support for individuals with diabetes Set in the UK 	Usual care	<ul style="list-style-type: none"> £67,184 per QALY gained £20,620 per QALY gained for individuals with impaired fasting glucose 	UK NHS and personal social services
Other economic analysis	Johannson et al. 2016 (31)	<ul style="list-style-type: none"> Group based support for individuals with diabetes Set in Austria 	Usual care	<ul style="list-style-type: none"> Estimated yearly savings would be €1660.60 per patient 	Not applicable

Table 3. Low and Middle Income Studies

Type of economic analysis	Author, year, and reference	Intervention and setting	Control group description	Economic indicator(s)	Perspective
Cost utility analysis	Gaziano et al. 2014 (32)	<ul style="list-style-type: none"> Home visits by community health workers to increase hypertension adherence Set in South Africa 	Usual care	\$320 per DALY averted	Not specified
	Mash et al. 2015 (33)	<ul style="list-style-type: none"> Group education delivered by health promoters for adults with diabetes Set in South Africa 	Usual care	\$1862 per QALY gained	Societal
	Puett et al. (34)	<ul style="list-style-type: none"> Management of severe acute malnutrition by community health workers Set in Bangladesh 	Usual care	\$26 per DALY averted	Societal
Other economic analysis	Bowser et al. 2015 (35)	<ul style="list-style-type: none"> National community health worker program for individuals with diverse health needs Set in Mozambique 	(none)	Adding salaries for CHWs increased cost effectiveness of their services	Not applicable
	DePue et al. 2014 (36)	<ul style="list-style-type: none"> Nurse / community health workers support for adults with diabetes Set in America Samoa 	Usual care	The estimated cost of the intervention was \$656 per person	Not applicable
	Gaziano et al. 2015 (37)	<ul style="list-style-type: none"> Screening of cardiovascular disease by community health workers Set in South Africa, Mexico, and Guatemala 	Usual care	Having community health workers use mobile screening tools increased the cost effectiveness of their services (compared to using paper screening tools)	Not applicable

Appendix

Methods

I used the search terms defined below to look for articles examining any type of economic analysis and peer support in the past 5 years. I then reviewed the abstracts of selected articles and decided whether they should be included or not. For included articles, I synthesized key findings in text and table format. Finally, I reviewed the Peers for Progress white paper “Economic Analysis in Peer Support” and included additional articles. I started the search on June 26, 2017.

Search terms

(((((peer-support [tiab] OR promotora* [tiab] OR doula [tiab] OR coach* [tiab] OR community-health-worker* [tiab] OR lay-health-worker* lay-health-adviser* [tiab] OR natural-helper* [tiab] OR peer-educator* [tiab] OR community-health-aide* [tiab] OR health-worker* [tiab] OR health-advocate* [tiab] OR community-health-promoter* [tiab] OR community-health-representative* [tiab] OR outreach-worker* [tiab] OR dumas* [tiab] OR embajadores* [tiab] OR consejeras* [tiab] OR peer-provider* [tiab] OR mutual-support* [tiab] OR Community health advisor* [tiab] OR navigat* [tiab] OR lay health advisor* [tiab]))) AND (cost effectiveness[Title/Abstract] OR economic analysis[Title/Abstract] OR business case[Title/Abstract] OR return on investment[Title/Abstract]))

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