Mental Health Care for Low-Income Minority Populations in General Health Safety Net Care Systems: A Need for Social Work Clinical Trial Research

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Abstract

We identify the rapidly changing health care system as the backdrop and impetus for significant advances in the delivery of behavioral, psychosocial and mental health care within the general health care sector. Accompanying this significant change is the demand that this care be evidence-based as well as cost-effective, cost neutral or of relatively modest cost; while complicating this change is growing diversity in consumer demographics and culturally based care preferences and needs and disparities in access to care. We also summarize selected evidence-based care models aimed at integrating mental health care within the general health sector and critical research design, treatment models and patient, provider and organizational factors affecting both research design and interventions. We then present a pooled analysis of three randomized clinical trials in which social workers provide depression care in collaboration with patient navigators, treating physicians and consulting psychiatrists to examine the effects of specific depression care interventions on improving depression symptoms among low-income minority populations with cancer or diabetes in community safety net care systems. Study results find significant reductions in depressive symptoms and quality of life between Intervention and Enhanced Usual Care groups, highlight patient care receipt of psychotherapy over antidepressant medications, and provide support for cultural adaptations consistent with patient care needs and preferences. We conclude that the current research evidence and policy considerations drive an urgent mandate for social work to significantly increase its clinical trial research and adapt its mental and health care education in line with real world practice.

KEY WORDS: collaborative depression care; Problem-Solving Therapy; comorbid illness; diabetes; cancer
INTRODUCTION

Overview

Today, the public policy and scientific research communities repeatedly highlight seemingly intractable health care issues, including lack of insurance for over 40 million Americans, lack of a usual source of care for many, geographic and population disparities in access to and receipt of care, rapidly accelerating cost, a high rate of medical errors and lack of adequate attention to quality of care, and inefficient, ineffective and potentially harmful fragmentation of care across health care systems. In-depth government and private foundation reports document a range of specific problems and explore solutions (CDC, 2005; Kaiser Commission on Medicaid and the Uninsured, 2004; Kaiser/Hewitt, 2004). The Institute of Medicine has focused national attention on serious flaws in the quality of US health care calling for major organizational improvements (IOM, 2001) and has recently identified research priorities in its report on Initial National Priorities for Comparative Effectiveness Research (IOM, 2008). The federal Agency for Healthcare Research and Quality (AHRQ) website lists its Effective Health Care program and Evidence-based Practice Centers program and in its Report to the President and Congress, the Federal Coordinating Council for Comparative Effectiveness Research (CER) calls for and defines CER as “the conduct and synthesis of research comparing the benefits and harms of different interventions and strategies to prevent, diagnose, treat and monitor health conditions in ‘real world’ settings” (2009).

The imperative of cost reduction filters all forces of change in health care (Unützer, Schoenbaum, Katon, Fan, Pincus, Hogan, & Taylor, 2009) and there will be increasing need for health care providers to become culturally competent and for health care researchers to study
complex contexts (i.e., multi-level systems) of health, illness and health care delivery to identify problems and solutions (Yali & Revenson, 2004). Recognition of the uneven quality of care across health systems, geographic regions, individual providers and patient demographic groups has spurred the development of quality improvement approaches among these evidence based medicine (EBM) has been widely elevated to something approximating a new paradigm, but awaiting consensus and convincing evidence (Timmermans & Mauck, 2005).

This era of rapid and dramatic change in health care delivery might be described as a very large, somewhat incoherent, national experiment with a laundry list of specific and sometimes competing aims, research questions and hypotheses, using an array of structured, pseudo-structured and unstructured research designs. From individual physician practices, hospitalists, home visit physicians and conveniently located care systems are emerging in local neighborhoods, shopping malls, workplaces and schools and the number of licensed non-physician health care providers is growing. The proliferation of EBM guidelines include those focused on individual physician decision-making, but increasingly apply to all members of clinical teams (Eddy, 2005). Increasingly grounded in biopsychosocial evidence and clinical effectiveness trials, quality of care improvements include prevention and health promotion and interdisciplinary disease or case management intervention models (Scheefer & Davis, 2004; Shojania & Grimshaw, 2005; Smith, Orleans & Jenkins, 2004; Suls & Rothman, 2005). Telecare, computer and internet technologies are aimed at improving information transfer, patient/provider and provider/provider communication and tracking care management and patient medical adherence (Garrison, Bernard, Rasmussen, 2002; Roy, 2004). Patients and family members are increasingly expected to assume more active and extensive self-management
and care-giving roles; however, family care-giving incurs human and financial cost that is yet to be factored into overall health care cost estimates.

Behavioral and psychosocial care interventions and services are increasingly integrated within general health care systems (Nicassio, Meyerowitz & Kerns, 2004) including models such as collaborative care for depression, anxiety, substance abuse and PTSD among all ages, including older adults and adolescents (Bartels, Coakley, Zubritsky, Ware, Miles, Arean, et al., 2004; Dietrich, Oxman, Williams, Kroenke, Schulberg, Bruce, et al., 2004; Engel, Oxman, Yamamoto, Barry, Stewart, Kroenke, et al., 2008; Gallo, Zubritsky, Maxwell, Nazar, Bogner, Quijano, et al., 2004; Luck, Hagigi, Parker, Yano, Rubenstein & Kirchner, 2009; Richardson, McCauley & Katon, 2009; Smith, Williams, Owen, Rubenstein & Chaney, 2008) and bi-directional integration of health and mental health organizational service systems (Block, Slomp, Patterson, Jacobs et a., 2008; Druss & Newcomer, 2007; Henke, McGuire, Zaslavsky, et al., (2008); Robinson & Strosahl, 2009). However, there is need for further explorations of the effects of psychotherapy and psychosocial interventions and their cost effectiveness (Kaplan & Grossl, 2002) and of disparities in depression care among racial and ethnic minority populations in the United States (Alegria, Chatterji, Wells, Cao, Chen, Takeuchi, et al., 2008; Ayalon, Areán, Linkins, et al, (2007).

Against this backdrop, the future of social work in health care will either advance and evolve or significantly reduce its research practice profile in this new scientific and integrated health practice landscape (Claiborne, & Vandenburgh, (2001). Dwight-Johnson, Ell & Jiuán-Lee, (2005); Ell & Vourlekis, 2005; Ell, Vourlekis, Lee, & Xie, 2007; Ell, Quon, Quinn, Dwight-
Johnson, Wells, Lee, & Xie, (2007); Ell, Xie, Quon, Quinn, Dwight-Johnson, & Lee, (2008); Ell, Katon, Cabassa, Xie, Lee, Kapetanovic, & Guterman (2009); Ell, Vourlekis, Xie, Nedjat-Haiem, Lee, Muderspach, Russell, & Palinkas (2009); Ell, Aranda, Xie, & Lee, (in press); Hine, Howell, & Yonkers, 2008; Howard, McMillen, & Pollio, (2003); Keefe, Geron, & Enguidanos 2009; Rinfrette, 2009; Proctor, 2004; Reid, Davis, & Colvin, J. (2004); Sowers, Rowe, & Clay, 2009; Volland, Berkman, Phillips, M., & Stein. (2003). Change among all health and mental health providers is now shaped by: recognition that the mind, the environment and the body are inextricably interactive in patterns of health and illness; changing population demographics; scientific advances in medicine and genetics; advances in behavioral and social science; technological innovation and applications (telephonic and internet practice); and health care delivery market forces. See Figure 1. Failure to take specific action in the form of advancing our clinical, translational and comparative research (Brekke, Ell, & Palinkas, 2007) and developing new curriculum models (Sowers, et al, 2009) will leave the research based transformation of the delivery of behavioral and psychosocial health care (and of health and mental health system social work practice) to other health and behavioral professions and administrative decision-makers (Blount & Miller, 2009; Bluestein & Cubic, 2009; Committee on Psychosocial Aspects of Child and Family Health and Task Force on Mental Health, 2009; Knowles, 2009; Morgan, Dunbar, Coates, & Leahy, 2009).

To illustrate the research and practice opportunities for social work, in this paper, we pool data from three randomized clinical trials designed to test the effectiveness of social work practice that is fully integrated within the general health care sector, is responsive to the cultural needs and preferences of patients, providers and organizations (see Figure 2.), and that targets
treatment for major depressive disorder among low-income minority patients with cancer or diabetes receiving care in public safety net care systems.

POOLED TRIAL METHODS and RESULTS

Study Recruitment and Intervention Model Patient, Provider and Care System

Adaptations.

In view of known barriers to participation in clinical trials and to depression treatment retention in low-income minority populations, adaptations were designed to: facilitate recruitment and minimize attrition; maximize acceptance of and adherence to depression treatment; and address patient, provider and organizational system needs and preferences (See Table 1) (Ell, et al., 2007b; Ell, et al., 2009a; Ell, et al., 2009b). Adaptations included: 1) attention to cultural competence, eg., Spanish-speaking staff and intervention materials in Spanish adapted for literacy and idiomatic content, attention to family roles; 2) telephone daytime, evening and weekend outcome data collection; 3) optional evening/weekend telephone monitoring/relapse prevention and psychotherapy visits to coincide with oncology or diabetes appointments; and 4) Patient Navigation assistance with barriers to cancer, diabetes and depression treatment, including referral to community resources or services (Ell, Vourlekis, Lee, & Xie, 2007). All staff received self-administered training in cultural competency. Study participants were reimbursed for time in completing outcome interviews and in safety net clinics for transportation and very rarely for co-pays for AM if indicated.

In ADAPt-C and MDDP, bilingual graduate social workers provided Problem-Solving Therapy (PST) (Nezu, Nezu, Felgoise, McClure, & Houts, (2003); Nezu, Nezu, Friedman,
Faddis, & Houts. (1998), telephone symptom monitoring/relapse prevention (Katon, Rutter, Ludman, Von Korff, Lin, Simon, Bush, Walker, & Unützer, (2001), supervision of Patient Navigator (PN) (Ell, et al., 2007b) who assisted with health care system navigation and collaboration with treating physicians or consulting psychiatrist prescribing AM based on a stepped care algorithm. IMPAACT PN s provided cancer treatment education, health care systems navigation, and community resource referrals in which intensity of service was based on structured assessments and a structured clinical decision algorithm and intervention flow chart that guided provision of three levels of intervention in which Level 3 included referral to the MSW for brief depression counseling/therapy and community referral, if indicated.

**Study Sites, Sample Recruitment and Major Depression Diagnosis**

Trials were approved by the University of Southern California Health Sciences Institutional Review Board. The Alleviating Depression Among Patients with Cancer (ADAPt-C) (Ell, et al., 2007; Ell, et al., 2008) (N=472), Multifaceted Depression and Diabetes Program (MDDP) (Ell, et al.,2009b) (N=387), and the Improving Patient Access and Adherence to Cancer Treatment (IMPAACT) (Ell, et al., 2007a; Ell, et al., 2008; Ell, et al., 2009b) (N=487) trials recruited patients from oncology or primary care safety net clinics. (See Figure 3 Subject Selection Diagram). Each trial used the Patient Health Questionnaire depression scale (PHQ-9) (Spitzer, Kroenke & Williams, 1999) at baseline and outcome assessments. Criteria for major depressive disorder were based on a score of ≥ 2 for one of the two cardinal depression symptoms plus a PHQ-9 score of ≥10. IMPAACT patients who met the same PHQ-9 criteria are included in the pooled analysis. In the cancer trials, two questions from the Structured Clinical Interview for DSM-IV (SCID) (First, Spitzer, Gibbon, et al., 1996) were used to assess the presence of
dysthymia. The ADAPt-C and MDDP trials excluded patients with acute suicidality, a score of \( \geq 8 \) on the AUDIT alcohol assessment (Vinson, Galliher, Reidinger, et al., 2004), recent use of lithium or antipsychotic medication, and in the cancer trial having advanced cancer that limited remaining life expectancy to less than 6 months. Screening cancer patients for study eligibility was done \( \geq 90 \) days following diagnosis to rule out adjustment disorder. All trial participants were randomly assigned to intervention (INT) or enhanced usual care (EUC) by selecting from 10 sealed envelopes naming a study group generated via computer generated algorithm. Independent blinded outcome assessments were telephone administered by trained bilingual research interviewers.

**Enhanced Usual Care**

EUC patients received standard health system care plus in ADAPt-C and MDDP were given patient/family focused educational pamphlets on depression (in Spanish if preferred) and in IMPAACT a cancer related educational pamphlet; all three trials provided EUC patients with a listing of health care system, community, financial, social services, transportation, and child care resources. Within each trial, the treating oncologist or primary care physician was informed of patients’ study participation and depression status; in IMPAACT, when indicated, the PN entered a note in the patient’s medical chart informing the patient’s physician that the patient has questions about her cancer treatment. Treating physicians were free to prescribe EUC patients antidepressant medications (AM) or refer patients for mental health treatment, and patients were free to seek care in the community. In ADAPt-C and MDDP, oncologists and primary care physicians and nursing staff received two didactic sessions from the consulting psychiatrist and PI on AM treatment and the stepped care treatment algorithm application.
**Depression Care Interventions**

Collaborative care models were implemented in the ADAPt-C and MDDP trials in which patients were offered a choice of first-line treatment: PST (Areán & Unützer, 2003; Ell, et al., 2007b; 2008; 2009b), antidepressant medication (AM), or combined treatment when clinically indicated (based on a stepped care algorithm); plus monthly telephone maintenance monitoring and relapse prevention follow-up (including behavioral activation and social functioning support) over 12 months. (PST homework materials were linguistically and culturally adapted for the cancer and diabetes trials.) The DCS clinicians met weekly or bi-weekly via a telephone group or in-person for consultation with the study PI and study psychiatrist. In the cancer trial, the study psychiatrist met with patients and prescribed AM whereas in the diabetes trial, the primary care physician prescribed AM guided by the algorithm. The initial DCS visit(s) included: therapeutic engagement; a semi-structured psychiatric/psychosocial assessment; patient depression, PST and AM education; consideration of initial treatment choice; provision of respective care system and community resource navigation assistance and/or referral to the PN; and included family members at patient request. Subsequent visits provided PST and/or AM monitoring and after completion of acute treatment, monthly follow-up maintenance telephone calls. Didactic training was provided all DCS staff in PST, depression monitoring and AM use. In each trial, the DCS communicated with the treating oncologist, primary care physician (or study psychiatrist in the oncology trial) about patient’s depression status, co-morbid illness medications, medical and psychosocial status, and assessed need to prescribe or adjust AM dosage, consideration of an anti-anxiety agent or sedative-hypnotic.
**Data Collection**

The PHQ-9 was used as both a screen in the depression trials and a baseline and outcome measure in all three trials because it provides a dichotomous diagnosis of major depression as well as a continuous severity score (Kroenke, Spitzer & Williams, 2001; Löwe, Gräfe, Zipfel, et al., 2005), measures a common concept of depression across racial and ethnic groups (Huang, Chung, Kroenke, et al., 2006) and is believed to be practically feasible and sustainable in real world oncology and primary care. In recent years, the PHQ-9 has emerged as a reliable depression screening tool with a demonstrated ability to identify clinically important depression, to make accurate diagnoses of major depression, to monitor severity of depression over time, and to monitor significant improvement in response to therapy (Cameron, Crawford, Lawton, et al., 2008; Wittkampf, Naeije, Schene, et al., 2007). In both ADAPt-C and IMPAACT trials, health-related quality of life was assessed using the Functional Assessment of Cancer Therapy Scale (FACT-G), a 27-item questionnaire with Spanish translation (Cella, Hernandez, Bonomi et al, 1998; Cella, Tulsky, Gray et al, 1993), and subscale scores for physical, functional, social, and emotional well-being, as well as satisfaction with the treatment relationship. In both MDDP and ADAPt-C trials, health-related quality of life was assessed using the SF-12 (Ware & Sherbourne, 1992), Physical and Mental Component Summary norm-based scores. In all three trials, anxiety was assessed using a 6-item anxiety module from the Brief Symptom Inventory (BSI) (Derogatis & Melisaratos, 1983).

**Analyses**

Demographic and baseline clinical characteristics were described for each trial as well as for all trials combined. Intent-to-treat analysis approach was employed to evaluate intervention
effects at the end of 12-month follow-up for each trial separately as well as for all trials combined with adjustment of respective trial type. A 50% reduction of PHQ-9 score from baseline to the end of 12-month follow-up was considered a clinically meaningful improvement in depressive symptoms, and was used in logistic regression models for intervention effect evaluation. In addition, general linear models were employed with data combined from all three trials to examine the intervention effects on quality of life outcomes (FACT-G physical, family/social, emotional and functional well-being as well as SF-12 physical and mental components) and anxiety status as continuous variables. Certain sets of covariates are adjusted in both logistic regression and general linear models for analysis with data from each trial separately as well as analysis with pooled data from all three trials. Study retention rates at 12 months are 54.7% in ADAPt-C (59.5% in INT vs. 49.6% in EUC), 72.6% in MDDP (73.6% in INT vs. 71.6% in EUC), and 70.6% in IMPAACT (75.7% in INT and 68.5% in EUC), respectively. The analysis sample for each trial is 258 in ADAPt-C, 281 in MDDP and 89 in IMPAACT. The proportions of mortality and loss-to-follow-up are not significantly different between INT and EUC groups in each trial. In ADAPt-C trial, baseline depression and most quality of life outcomes were not significantly different between patients who remained in the trial versus those lost to the trial except that attrition patients had poorer baseline physical well-being (15.66 vs 17.56, p=0.001) and functional well-being (10.73 vs. 11.75, p=0.03). Moreover, relatively more non-Hispanic (16.8% vs. 8.1%, p=0.004), male (20.1% vs. 11.6%, p=0.01), age 50 and over (55.1% vs. 44.6%, p=0.02), and receiving acute cancer treatment (57.5% vs. 47.3%, p=0.03) were in the attrition group. In MDDP trial, baseline depression, quality of life and clinical outcomes and most demographic characteristics were similar between attrition and retention groups. In IMPAACT trial, significant differences between patients who stayed in the
trial and those who were lost in the trails were observed in the distributions of birth place (16.3% vs. 8.9% of patients born in the US, p=0.019), length of time in the US (80.6% vs. 68.7% of patients having lived 10 years or longer in the US, p=0.003), and cancer site (42% vs. 65.6% of patients diagnosed with gynecologic cancer, p<0.001). All analyses are conducted using SAS software, version 9.1.

**Pooled Analysis of Trial Samples with 12-Month Outcomes**

Patients with major depressive disorder and or dysthymia were pooled from three randomized controlled trials baseline and 12-month outcomes (Subject Selection Figure 3). Demographic characteristics, baseline depression, receipt of antidepressants, and comorbid medical illness are presented in Table 2. Patients are predominantly Latina.

*Insert_Table2_here*

**Depression Outcomes**

Intervention effects on a 50% reduction of PHQ-9 scores at 12 months are presented in Table 3. Significant intervention effects were observed in ADAPt-C and MDDP trials as reflected by significantly greater odds of achieving a 50% reduction of PHQ-9 score at 12-month follow-up in INT than in EUC (ADAPT-C: OR=1.98 with 95% CI of 1.16-3.38, p=0.01; MDDP: OR=2.55 with 95% CI of 1.50-4.34, p<.001). With the data combined with all three trials, overall intervention effect remained significant (OR=1.64 with 95% CI of 1.19-2.26, p=0.002). The intervention effect in IMPAACT trial was not significant.

We further broke down the INT group and compared odds of depression improvement between each type of treatment (i.e. PST alone, PST+AM, and AM alone) received by patients to
the EUC group. Patients receiving PST alone in both ADAPt-C and MDDP trials consistently experienced significantly greater odds of depression improvement than patients in EUC group (ADAPt-C: OR=2.18 with 95% CI of 1.14-4.18, p=0.02; MDDP: OR=2.94 with 95% CI of 1.33-6.49, p=0.01). The significant effect of receiving PST alone vs. EUC was remained in the analysis with data combined from all three trials (OR=2.19 with 95% CI of 1.41-3.40, p<0.001). In MDDP trial, patients receiving PST plus Antidepressant medication experienced significantly greater improvement on 50% PHQ-9 score reduction than EUC patients (OR=2.31 with 95% CI of 1.25-4.26, p=0.01).

In addition, analysis on health-related quality of life with data combined from all three trials suggested significantly greater improvement in INT patients than EUC counterparts on FACT-G emotional well-being (mean score difference (MSD)=1.23 with 95% CI of 0.22-2.23, p=0.02) and family/social well-being (MSD=2.32 with 95% CI of 1.00-3.64, p=0.001), SF-12 mental component (MSD=3.28 with 95% CI of 1.31-5.25, p=0.001) and anxiety (MSD=-0.71 with 95% CI of -1.36—0.07, p=0.03). Finally, we further broke down intervention group and compared health-related quality of life and anxiety status between patients receiving each specific type of treatment (i.e. PST alone, PST+AM, AM alone) to patients in the EUC group. Compared to EUC patients, patients receiving PST alone experienced significantly greater improvement in social/family well-being (MSD=2.66 with 95% CI of 1.03-4.29, p=0.001), emotional well-being (MSD=1.92 with 95% CI of 0.71-3.13, p=0.002), SF_12 mental components (MSD=5.14 with 95% CI of 2.56-7.72, p=0.0001) and anxiety levels (MSD=-1.24 with 95% CI of -2.09—0.39, p=0.004).
Treatment Type and Outcomes

Most intervention patients chose PST (84-91% in depression treatment trials where patient choice of first-line treatment was available; and 61% received brief counseling plus referral, if indicated in IMPAACT); 48% of depression care trials and 21% of IMPAACT patients also received AM from treating physician or mental health clinic. While only 1.4% ADAPt-C and 2.8% MDDP patients received only AM, 17.9% IMPAACT patients received only AM. For ADAPt-C and MDDP trials, PST was provided via telephone if patients encountered in-person barriers or preferred telephone provision. Among patients who received PST, 33.9% ADAPt-C and 12.4% MDDP patients occasionally received telephone PST; and depression improvement (50% reduction of PHQ-9 at 12 months) did not vary between all PST delivered in person versus partial telephone sessions (62.5% v 63.4%, p=0.92 in ADAPt-C and 60.2% v 56.3%, p=0.76 in MDDP).

DISCUSSION

In this pooled clinical trial analysis, social work models of depression care within the general health sector are found to be effective in significantly reducing depression symptoms and for a significant number of patients, depression improvement continued for up to 12 months. A structured collaborative care model appears to be more effective than brief counseling and referral to mental health care clinics. Noteworthy, these findings applied to low-income, minority patients being cared for in safety net care systems who were coping with major illness (cancer or diabetes (of whom, many had additional co-morbid illnesses) and whose major depressive
disorder rates and economic stress were notably high (Ell, 2005; 2008). In addition, quality of life outcomes were significantly better in intervention patients.

Patients indicated a strong preference for psychotherapy or psychosocial counseling over antidepressants alone across clinical trials; this preference was expressed to the treating social workers, and was also found in our qualitative study among patients in the diabetes trial as was patient preference for receiving depression care in the general health care system (Cabassa, Hansen, Palinkas & Ell, 2008). The relatively long term positive effects are consistent with the coping skills training inherent to PST in the depression trials and the maintenance and relapse-prevention monthly telephone follow-up. A telephone therapy option to meet patient requests when needed in all trials is likely to have contributed to treatment participation and may reduce overall treatment cost (Simon, Ludman & Rutter, 2009).

The reported clinical trials are the first large scale trials focused on predominantly Hispanic safety net populations and the first trials in which social workers are the primary interventionists. Trial and treatment adaptations outlined in Table 1 reflect both the needs and preferences of these populations and include patient navigation services to address fragmented resource and medical care systems. At the same time results underscore social work training and educational needs to advance the integration of social work practice as the integration of mental health and general health care becomes prominent (and bi-directional i.e., bringing the severely and persistently mentally into the general health care system (Block et al. 2008; Druss & Newcomer, 2007)).
In the reported trials, graduate social workers required significant training in: PST; systematic application of evidence-based practice guidelines, clinical decision-making protocols and algorithm driven stepped care; depressive and cancer and diabetes medication and other treatment management; communication methods and skills to accommodate medical provider preferences and diverse health care organizational systems needs; and cultural competency as it applies to health and illness perceptions, treatment preferences and perceptions and family health roles. In contrast, the clinical social workers were already skilled in supervising and/or in providing patient navigation assistance (e.g., patient support and assistance with managing communication across different care providers and care systems and access to community resources). The varying trials also required different social work collaboration models. For example, cancer trial oncologists preferred that the consulting psychiatrist prescribe antidepressant medication and the social worker frequently participated in these psychiatric patient visits, whereas primary care physicians were comfortable communicating directly with the social worker (who met weekly with the study psychiatrist and study PI) about prescribing anti-depressant medications and very rarely consulted the psychiatrist via pager.

Study limitations include: the relatively high attrition rates in all three trials, reflecting cancer deaths and loss to follow-up among low-income Hispanic patients. The latter is attributable to a highly geographically mobile population which was not fully surmountable despite extensive efforts to maintain patient contact.

CONCLUSION
Collaborative multidisciplinary depression care for low-income patients with co-morbid illness is effective within general health care system safety net care systems and is more effective than brief counseling and referral to mental health care. With respect to cost and cost-effectiveness questions critical to sustainability, we are in the process of analyzing cost and cost-effectiveness data for the diabetes trial. One study clinic represented in this pooled analysis is continuing the care model post-trial and the Los Angeles County Department of Health Services Disease Management Program has begun to expand this to other clinics based on very positive provider and clinic administrator qualitative interviews, supporting the potential sustainability of evidence-based practice models in one of the nation’s largest and diverse public sector care systems. Critical considerations for the social work profession are suggested: 1) to significantly increase large scale clinical trials of social work practice, including conducting comparative effectiveness and cost-utility analyses of interventions and services; and 2) to re-design its curriculum to reflect the rapidly growing integration of mental health and the primary and specialty general health sectors and explore new educational models such as those recently begun in the USC School of Social Work: a program that aims to bring nurses into the MSW program and a just launched military educational and research program consistent with already operational integration of health and mental health care in both the Veterans Administration and active soldier military hospitals. The driving forces described in the introduction will be inevitably and inextricably linked to the professions challenges, risks and opportunities.

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Fig 1: A Changing Health Care Landscape and Trends in Psychosocial Care

Forces (at times countervailing) of Change
- Advances in medical and genetic science
- Advances in behavioral and social science
- Changing consumer demographics, expectations, preferences, life-span and care needs
- Cost a primary concern
- Market forces - shifting and debated financing - e.g., employers to employees, away from and toward government, basic and limited vs inclusive care
- Changing health care organizational systems
- Monitoring quality of care and access to and disparities in care across population groups

Key Trends in Health Care Delivery
- From individual physician practice to new organizational systems
- Ambulatory care, conveniently located care systems (malls, workplace, schools)
- Growth of non-physician health care providers, e.g., nurse practitioners, pharmacists
- From single providers to health care teams of providers, e.g., parallel, consultative, collaborative, coordinated, multidisciplinary, interdisciplinary and integrative care models
- Increasing patient/family centered care and emphasis on self-care management/caregiving
- Dissemination of evidence-based care guidelines and outcome monitoring
- Provider quality monitoring, reporting and accountability
- Applications of information technology (IT) – e.g., tele-care, patient-provider communication, medical adherence tracking

Trends in Delivery of Behavioral and Psychosocial Care
- Integrating mental health within general health care and developing collaborative care teams
- Shift from psychosocial services as adjunctive toward integration of behavioral and social science concepts and practices within practices of all health disciplines
- Growth of behavioral and psychosocial care specialists, e.g., oncology social worker, depression nurse or social worker clinical specialist, nurse physician assistant, nurse practitioner
- Focus on patient-centered care, patient self-management of care and services, family care-giving
- Growth of complimentary and alternative medicine practices and providers
- Countervailing increases and decreases in financing of behavioral and psychosocial care
- Implementation of evidence based practice models and outcome monitoring
- Integrated care, e.g., mental health, substance abuse in primary and specialty care
Figure 2: Evidence-based Barriers to Receipt and Delivery of Depression Care

Social Structural Factors
- Cost, Financing mechanisms
- Community characteristics & resources – need, care system geographic distribution
- Community based service system partnerships with health care systems

Organizational System
- Delivery system design, leadership style, culture
- Organizational incentives
- Decision support - practice guidelines & protocols, patient tracking strategies
- Communication processes
- Staffing resources, cross-discipline integration and care models

Clinical Process
- Treatment characteristics, provider
- Quality of care improvement mechanisms
- Care management, follow-up
- Decision-making process
- Patient-provider communication
- Organization of care across systems and across transitions in care

Outcomes
- Receipt of depression care
- Patient health behavior – utilization, medical adherence
- Depressive symptoms and functional status
- Mortality rates
- Well-being, subjective outcomes
- Satisfaction with care

Providers
- Professional training, culture
- Knowledge, skill
- Attitudes, communication skills
- Treatment/care & service preferences
- Linguistic/cultural competence
- Satisfaction with organizational incentives

Patient Characteristics
- Gender, SES, race/ethnicity
- Comorbid physical illness
- Cognitive, physical, social functioning
- Knowledge, attitudes/beliefs
- Problem solving skills
- Decision-making, communication style
- Perceptions – health, illness, depression
- Care preferences

Family/Social Networks
- Illness Perceptions
- Support and stressors
- Health decision-making and care-giving styles

Sociocultural Factors
- Norms, preferences, beliefs
- Environmental resources & stressors
- Community norms
Figure 3. Sample Selection

ADAPt-C Trial  
n=472

- 242 Intervention
  - 12-Month Assessment
    - 144 (59.5%) Analyzed
      - 96 Excluded - 33 (13.5%) declined
      - 31 (12.8%) deceased
      - 34 (14.1%) unlocated
    - 114 (48.6%) Analyzed
      - 51 Excluded - 51 (21.7%) declined
      - 37 (16.1%) deceased
      - 47 (20.4%) unlocated

- 230 EUC
  - 12-Month Assessment
    - 142 (73.8%) Analyzed
      - 91 Excluded - 30 (15.5%) declined
      - 21 (10.9%) deceased
      - 24 (12.4%) unlocated

Diabetes Trial  
n=387

- 193 Intervention
  - 12-Month Assessment
    - 139 (71.6%) Analyzed
      - 55 Excluded - 30 (16.6%) declined
      - 21 (10.9%) deceased
      - 54 (28.6%) unlocated

- 194 EUC
  - 12-Month Assessment
    - 20 (75.7%) Analyzed
      - 13 Excluded - 4 (16.0%) declined
      - 1 (2.7%) deceased
      - 9 (18.2%) unlocated

IMPAACT Trial  
n=467

- 37 Intervention
  - Excluded - No major depressive disorder, nor dysthymia, n=306
  - Excluded - Intervention Risk Level 1
  - and 2 patients who did not need MSW referral, n=55

- 80 EUC
  - 12-Month Assessment
    - 61 (69.5%) Analyzed
      - 20 (75.7%) Analyzed
      - 9 (10.1%) unlocated

Pooled Sample, N=628
(258 ADAPt-C†, 281 Diabetes, 89 IMPAACTS)

† 28% of ADAPt-C patients were cancer stage 3, 4 or recurrent; 72% stage 0, 1, 2 or unstaged. Cancer sites — 43% female genital, 22% breast, 6% digestive system — colorectum, 5% other digestive system including liver, sigmoid, stomach, esophagus, gallbladder, anus and pancreas, and 21% other sites including lymphatic system, blood & bone marrow, lung, male genital, urinary, skin, oral cavity/pharynx, brain and thyroid.

§ 15% of IMPAACT patients were cancer stage 3 or unstaged, 85% stage 0, 1, 2 or unstaged. Cancer sites — 66% breast, 15% cervical, 10% uterine, 6% ovarian cancer.

* declined include patients who declined further study participation, were no longer living in US or receiving care at study site
<table>
<thead>
<tr>
<th>Recruitment, Outcome Data Collection and Efforts to Reduce Attrition</th>
<th>IMPAACT Trial</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Recruitment from community-based public oncology and primary care clinics</td>
<td>• Case Manager provided initial assessment and health care education and counseling and rated patient mental health status and need on basis of structured assessment scales for depression and anxiety and referred to MSW if indicated</td>
</tr>
<tr>
<td>• Use of Spanish-speaking recruiters and blinded study outcome interviewers</td>
<td>• MSW provided brief counseling, referral to mental health care system if indicated ,and notified treating MD of patient’s depression status</td>
</tr>
<tr>
<td>• Telephone data collection with flexible scheduling of outcome interviews, including evening and weekend hours</td>
<td><strong>Collaborative Care Trials</strong></td>
</tr>
<tr>
<td>• Study and intervention materials adapted for literacy, idiomatic and cultural content</td>
<td>• Bilingual graduate social work therapists as Depression Clinical Specialist (DCS)</td>
</tr>
<tr>
<td>• Multiple attempts to reach patient by study recruiters and blinded outcome interviewers</td>
<td>• Clinical DCS and PN training in cultural competency via a self-administered cultural competence training manual</td>
</tr>
<tr>
<td>• Patient reimbursement for completing outcome interviews</td>
<td>• Engagement of clinic medical and nursing staff in decision-making about individual clinic needs and preferences</td>
</tr>
<tr>
<td>• Transportation expenses covered when indicated or referral to community resource.</td>
<td>• Medical staff (e.g., primary care physicians, nursing staff and specialty nurses) received depression treatment training by study psychiatrist and research staff</td>
</tr>
<tr>
<td>• Computerized encrypted patient tracking system available to DCS, PN and psychiatrist or data forms (IMPAACT)</td>
<td>• Treating physicians or consulting psychiatric prescribed anti-depressant medications</td>
</tr>
<tr>
<td><strong>MSW, Case Manager, Patient Navigator, Medical Provider and Care System</strong></td>
<td>• Communication methods with intervention staff determined by treating physicians</td>
</tr>
<tr>
<td>• Case Manager provided initial assessment and health care education and counseling and rated patient mental health status and need on basis of structured assessment scales for depression and anxiety and referred to MSW if indicated</td>
<td>• Weekly or bi-monthly telephone consultation with study psychiatrist, DCS and PI</td>
</tr>
<tr>
<td>• MSW provided brief counseling, referral to mental health care system if indicated ,and notified treating MD of patient’s depression status</td>
<td>• Standardized depression measures (e.g., PHQ-9) to monitor/guide treatment decisions</td>
</tr>
<tr>
<td><strong>Patient Level</strong></td>
<td>• Use of a clinical decision-making algorithm based on practice guidelines to guide PST and medication prescription</td>
</tr>
<tr>
<td>• Honored patients’ treatment preference for first line depression treatment if not contraindicated and family participation</td>
<td>• Supplemental Patient Navigation by DCS and/or PN to address known barriers to co-morbid illness and depression treatments and to facilitate receipt of supportive services</td>
</tr>
<tr>
<td>• Pre-therapy psycho-education sessions to dispel treatment misconceptions, reduce stigma, and enhance therapeutic alliance</td>
<td>• Intense in person and/or telephone follow-up through remission and maintenance up to 6 months post-acute treatment</td>
</tr>
<tr>
<td>• PST problem solving skills training to enhance depression and co-morbidity self-management and address social stress</td>
<td>• Provision of culturally adapted PST for literacy, idiomatic and cultural content</td>
</tr>
<tr>
<td>• Individualized relapse prevention plan</td>
<td>• Optional open-ended PST maintenance support group in English and Spanish.</td>
</tr>
</tbody>
</table>
Table 2. Pooled Baseline Data

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Combined, N=62</th>
<th>ADAPt-C Trial, N=258</th>
<th>Diabetes Trial, N=281</th>
<th>IMPAACT Trial, N=89</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, mean±SD</td>
<td>50.36±11.10</td>
<td>47.04±12.6</td>
<td>53.91±8.55</td>
<td>48.76±9.97</td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td>9</td>
<td>53.91±8.55</td>
<td>48.76±9.97</td>
</tr>
<tr>
<td>Latino</td>
<td>551 (87.7)</td>
<td>228 (88.4)</td>
<td>234 (83.3)</td>
<td>89 (100.0)</td>
</tr>
<tr>
<td>Foreign born</td>
<td>576 (91.7)</td>
<td>236 (91.5)</td>
<td>274 (97.5)</td>
<td>66 (74.2)</td>
</tr>
<tr>
<td>Living in the US ≥10 years</td>
<td>568 (90.4)</td>
<td>237 (91.9)</td>
<td>259 (92.2)</td>
<td>72 (80.9)</td>
</tr>
<tr>
<td>Hispanic speaking only</td>
<td>513 (82.1)</td>
<td>189 (73.3)</td>
<td>257 (91.5)</td>
<td>67 (77.9)</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>276 (43.9)</td>
<td>99 (38.4)</td>
<td>142 (50.5)</td>
<td>35 (39.3)</td>
</tr>
<tr>
<td>Divorced/Separated</td>
<td>151 (24.0)</td>
<td>65 (25.2)</td>
<td>63 (22.4)</td>
<td>23 (25.8)</td>
</tr>
<tr>
<td>Widowed</td>
<td>65 (10.4)</td>
<td>17 (6.6)</td>
<td>41 (14.6)</td>
<td>7 (7.9)</td>
</tr>
<tr>
<td>Single</td>
<td>136 (21.7)</td>
<td>77 (29.8)</td>
<td>35 (12.5)</td>
<td>24 (27.0)</td>
</tr>
<tr>
<td><strong>Depression Status</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major Depressive Disorder &amp; Dysthymia</td>
<td>36 (5.7)</td>
<td>10 (3.9)</td>
<td>0 (0.0)</td>
<td>26 (29.2)</td>
</tr>
<tr>
<td>Major Depressive Disorder</td>
<td>268 (42.7)</td>
<td>118 (45.7)</td>
<td>123 (43.8)</td>
<td>27 (30.3)</td>
</tr>
<tr>
<td>Dysthymia</td>
<td>324 (51.6)</td>
<td>130 (50.4)</td>
<td>158 (56.2)</td>
<td>36 (40.4)</td>
</tr>
<tr>
<td>PHQ-9 Score, mean±SD</td>
<td>13.60±3.60</td>
<td>13.12±3.42</td>
<td>14.59±2.88</td>
<td>11.88±4.97</td>
</tr>
<tr>
<td><strong>Moderate to Severe Depression (PHQ-9≥15)</strong></td>
<td>241 (38.4)</td>
<td>73 (28.3)</td>
<td>141 (50.2)</td>
<td>27 (30.3)</td>
</tr>
<tr>
<td><strong>History of Depression</strong></td>
<td>388 (61.8)</td>
<td>154 (59.7)</td>
<td>169 (60.1)</td>
<td>65 (73.0)</td>
</tr>
<tr>
<td><strong>Receipt of Antidepressants</strong></td>
<td>72 (11.5)</td>
<td>18 (7.0)</td>
<td>41 (14.6)</td>
<td>13 (14.8)</td>
</tr>
<tr>
<td><strong>Comorbid Medical Illness</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td>347 (55.3)</td>
<td>49 (19.0)</td>
<td>281 (100.0)</td>
<td>17 (19.1)</td>
</tr>
<tr>
<td>Cancer</td>
<td>358 (57.0)</td>
<td>258 (100.0)</td>
<td>11 (3.9)</td>
<td>89 (100.0)</td>
</tr>
<tr>
<td>Hypertension</td>
<td>301 (47.9)</td>
<td>76 (29.5)</td>
<td>199 (70.8)</td>
<td>26 (29.2)</td>
</tr>
<tr>
<td>Arthritis</td>
<td>177 (28.2)</td>
<td>53 (20.5)</td>
<td>99 (35.2)</td>
<td>25 (28.1)</td>
</tr>
<tr>
<td>Heart Disease</td>
<td>34 (5.4)</td>
<td>14 (5.4)</td>
<td>15 (5.3)</td>
<td>5 (5.6)</td>
</tr>
<tr>
<td>Kidney Disease</td>
<td>53 (8.4)</td>
<td>23 (8.9)</td>
<td>26 (9.3)</td>
<td>4 (4.5)</td>
</tr>
<tr>
<td><strong>Quality of Life (higher = better), mean±SD</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FACT-G</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Well-Being</td>
<td>17.72±5.83</td>
<td>17.56±5.59</td>
<td>n/a</td>
<td>18.19±6.47</td>
</tr>
<tr>
<td>Social/Family Well-Being</td>
<td>14.48±6.23</td>
<td>13.97±6.09</td>
<td>n/a</td>
<td>15.97±6.41</td>
</tr>
<tr>
<td>Emotional Well-Being</td>
<td>12.63±4.46</td>
<td>12.86±4.25</td>
<td>n/a</td>
<td>11.94±4.96</td>
</tr>
<tr>
<td>Functional Well-Being</td>
<td>11.65±5.20</td>
<td>11.75±5.04</td>
<td>n/a</td>
<td>11.39±5.66</td>
</tr>
<tr>
<td>PCS-12 Physical Scale</td>
<td>36.74±8.72</td>
<td>37.82±8.47</td>
<td>35.76±8.85</td>
<td>n/a</td>
</tr>
<tr>
<td>MCS-12 Mental Scale</td>
<td>32.62±9.08</td>
<td>32.35±9.25</td>
<td>32.86±8.93</td>
<td>n/a</td>
</tr>
<tr>
<td>Anxiety BSI Score</td>
<td>6.51±4.74</td>
<td>6.77±4.65</td>
<td>5.65±4.43</td>
<td>8.44±5.28</td>
</tr>
</tbody>
</table>

Data are presented as No. (%) unless otherwise indicated.
Abbreviation: FACT-G, Functional Assessment of Cancer Therapy Scale - General; PCS-12, Physical Component Summary of the 12-item Short Form Health Survey; MCS-12, Mental Component Summary of the 12-item Short Form Health Survey; SD, standard deviation; n/a, not assessed.
Table 3. Depression Outcomes among Intervention Group and Treatment Types Compared to Enhanced Usual Care Group

<table>
<thead>
<tr>
<th></th>
<th>Completed the 12-Month Interview, N</th>
<th>50% Drop of the PHQ-9 Score Since Baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td><em><em>ADAPt-C Trial</em>, n=258</em>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• EUC</td>
<td>114</td>
<td>57</td>
</tr>
<tr>
<td>• INT</td>
<td>144</td>
<td>91</td>
</tr>
<tr>
<td>- PST alone</td>
<td>73</td>
<td>49</td>
</tr>
<tr>
<td>- PST+AM</td>
<td>48</td>
<td>27</td>
</tr>
<tr>
<td>- AM alone</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>- none</td>
<td>21</td>
<td>14</td>
</tr>
<tr>
<td><strong>Diabetes Trial</strong>, n=281</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• EUC</td>
<td>139</td>
<td>66</td>
</tr>
<tr>
<td>• INT</td>
<td>142</td>
<td>86</td>
</tr>
<tr>
<td>- PST alone</td>
<td>41</td>
<td>28</td>
</tr>
<tr>
<td>- PST+AM</td>
<td>88</td>
<td>49</td>
</tr>
<tr>
<td>- AM alone</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>- none</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td><strong>IMPAACT Trial, n=89</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• EUC</td>
<td>61</td>
<td>25</td>
</tr>
<tr>
<td>• INT</td>
<td>28</td>
<td>13</td>
</tr>
<tr>
<td>- Counseling and Referral if indicated</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>- Counseling and Referral if indicated, plus AM</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>- AM alone</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>- none</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td><strong>All Trials Combined</strong>*, n=628**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• EUC</td>
<td>314</td>
<td>148</td>
</tr>
<tr>
<td>• INT</td>
<td>314</td>
<td>190</td>
</tr>
<tr>
<td>- PST/ Counseling</td>
<td>125</td>
<td>84</td>
</tr>
<tr>
<td>- PST/ Counseling, plus AM</td>
<td>142</td>
<td>77</td>
</tr>
<tr>
<td>- AM alone</td>
<td>11</td>
<td>6</td>
</tr>
<tr>
<td>- none</td>
<td>36</td>
<td>23</td>
</tr>
</tbody>
</table>

Abbreviation: EUC, enhanced usual care; INT, intervention; PST, problem-solving therapy; AM, antidepressant medication.

* Logistic regression adjusted for gender, ethnicity, years in US (<10 or ≥10), dysthymia, baseline depression severity, baseline anxiety, and cancer stage, type, treatment status.

** Logistic regression adjusted for study site, dysthymia, baseline depression severity, birth place (US or others), language and years in US (<10 or ≥10).

*** Logistic regression adjusted for type of trial.