Appendix: A Web-Delivered Care Management Program and Patient Self-Management Program for Recurrent Depression: A Randomized Trial

Additional Information about the Intervention, eCare for Moods

Detailed Description of eCare for Moods Intervention

eCare for Moods is a flexible online program that can incorporate multiple types of interventions allowing participants to choose the ones most appropriate for them. It can also add new interventions as more effective ones are developed. eCare goes beyond the specific psychological intervention and education components found in other Internet-based programs to encompass care management for patients and clinical decision and panel management support for clinicians. One of the goals of the eCare program was to bridge the gap between online self-management and clinical care. We attempted to give patients tools to do the most they could for themselves but at the same time provide a way for a psychiatric nurse care manager to be alerted automatically when a clinical intervention might be needed.

eCare participation began with one hour of in-clinic training by a psychiatric clinical nurse specialist. After participants learned the mechanics of the website, they were taught to observe their own experiences with depression closely and to think proactively about what they could do for themselves to overcome it. They learned to track their progress, to communicate with their eCare manager, to access education modules, to participate in asynchronous discussion groups, and to use their personal database, appointment calendar, task list, and targeted advice features. During training, participants were assessed for suicide risk and created emergency plans for when they felt suicidal. Participants were encouraged to review their progress weekly and to communicate regularly with their eCare manager. Other features were to be used as needed.

In a typical session, eCare participants might complete monitoring questionnaires, use their personal database to review progress and medication adherence, read an education module, and perhaps exchange secure messages with their eCare manager.

Participants were encouraged to bring a “care partner” to the training. The care partner was a family member or friend willing to help them overcome their depression. Care partners had a separate website giving them evidence-based guidance for helping depressed people improve their mood and engage in pleasurable and productive activities.

Education Modules

Eight education modules, based primarily on established CBT interventions such as behavioral activation[32-35] emphasized: 1) the effects of thoughts and actions on mood; 2) how being with others affects mood; 3) how engaging in pleasurable and productive activities can improve mood; 4) how to be more productive; and 5) how to live a

healthier life. Modules were written at a sixth-grade reading level and took about 20 minutes to complete.

Many modules had interactive worksheets (e.g., engaging in pleasurable activities, predicting pleasure, and engaging in social activities) and links to websites vetted for medical accuracy and no commercial bias. These included the websites of the Depression Bipolar Support Alliance and the National Alliance on Mental Illness.

Personalized Self-Monitoring

During training, participants created personal depression profiles on the website that included their DSM-IV symptoms and other feelings and behaviors they exhibited when depressed. They also noted which served as early warning signs. Participants used this profile interactively to monitor their depression over time and help them recognize when to change behavior or seek help. Their entries alerted their eCare manager if their depression was worsening and intervention was needed.

Participants could update their profile whenever they recognized new symptoms or early warning signs. They also could track health-related disability, medication adherence, side effects, and alcohol and drug use. The website displayed graphs of their monitoring data over time.

Clinical Decision and Panel Management Support

The eCare software applied decision-support logic to participants' responses to monitoring questionnaires. When the responses indicated that a participant might need attention, the system generated an alert to his or her eCare manager, who logged onto eCare at least twice daily during clinic hours. The eCare managers' screens displayed all alerts generated by their participants ordered by urgency of need: Emergent alerts appeared at the top of the screen followed by urgent alerts followed by notifications.

Depending on the alert, the eCare manager sent a secure message within the website, telephoned the participant, or alerted a crisis team. As appropriate, they consulted with the treating psychiatrist or therapist regarding participants' progress, medication side effects, and treatment changes. eCare managers had access to each participant's treatment plan and followed clinic policies and guidelines to keep eCare fully integrated with usual care.

Participants were informed that eCare was monitored by the eCare managers only during clinic hours and was not designed for emergencies. Participants needing emergency assistance, immediate attention, or help after clinic hours were instructed to call Kaiser Permanente directly or 911.

Patient Follow-up by eCare Managers

Each eCare manager followed a panel of participants. Follow-up was mainly based on eCare alerts, participants' responses to monitoring questionnaires, and messages received. eCare managers were encouraged to reach out to participants who were

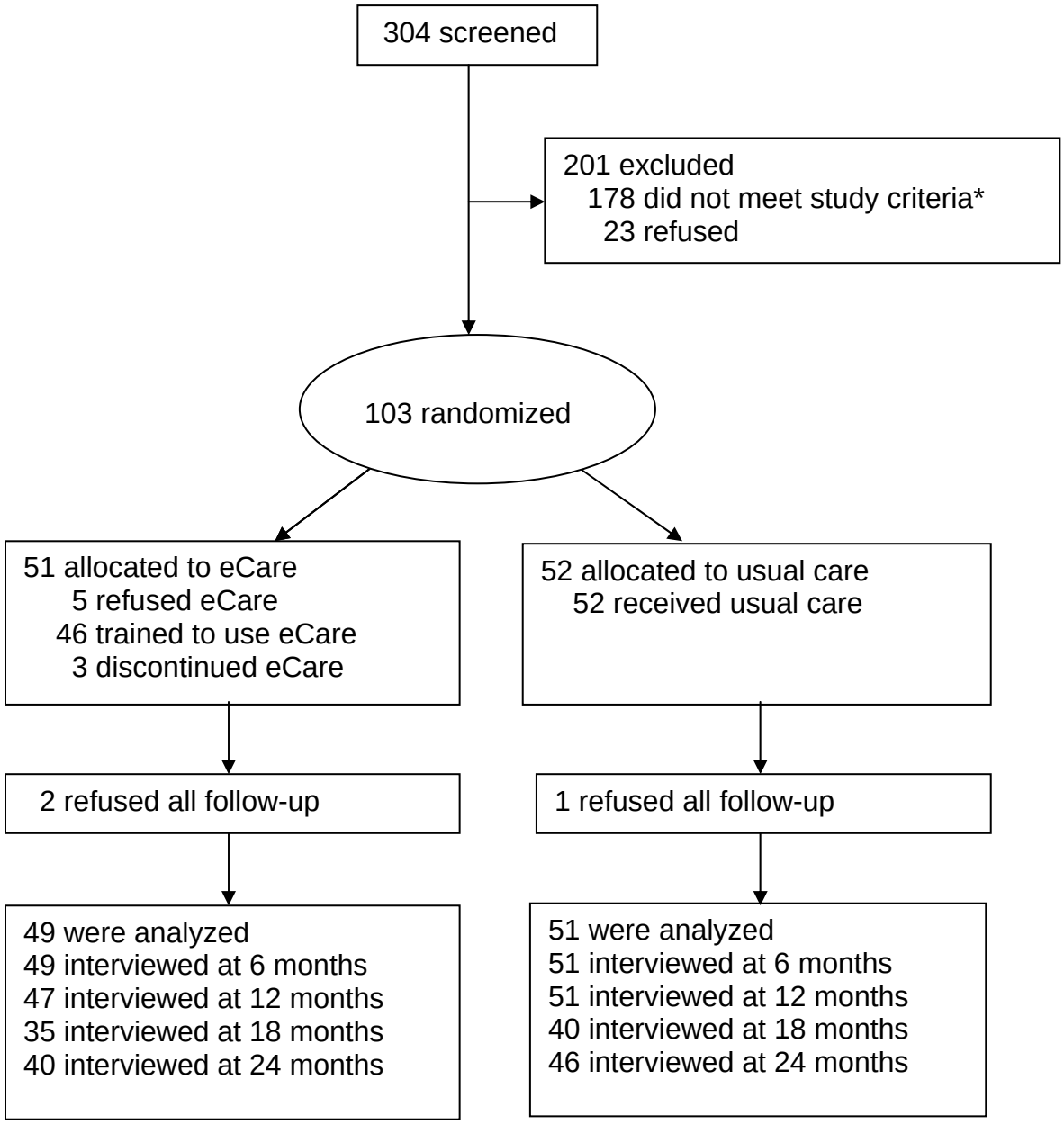
absent from the website for two weeks or more. The eCare managers taught participants new coping skills and how to prevent relapses.

Training and Supervision of eCare Managers

A clinical nurse specialist from the research team trained the nurse eCare managers in three six-hour days of group training over eight weeks. They started monitoring participants after the first training session. The trainer and a clinical psychologist supervised the eCare managers during one-hour, monthly conference calls throughout the study.

Figure 1

Flow chart of patients screened, randomized, followed, and analyzed



* Ineligible mostly because of no or limited computer skills

Mean usage of specialty mental health and general health services over 24 months before and 24 months after enrollment, by treatment group (eCare N=51, usual care N=52)

Usage Categories	eCare			Usual Care				
	Before	After	Change	Before	After	Change	t	P
Specialty mental health visits to MD	5.49	4.78	-.71	6.81	4.9	-1.91	1.34	.1821
Specialty mental health visits to non-MD clinician	11.51	9.22	-2.29	16.38	13.85	-2.53	-.05	.9588
Mental health hospital admissions	.00	.08	.08	.02	.04	.02	-1.39	.1689
Mental health hospital days	.00	.31	.31	.08	.29	.21	-.32	.7533
Mental health prescription fills	15.49	13.39	-2.10	19.94	15.37	-4.58	-1.13	.2616
Antidepressant prescription fills	12.06	9.59	-2.47	14.06	10.65	-3.40	-.61	.5430
Other visits to MD	11.51	12.43	.92	13.56	11.98	-1.58	-1.39	.1668
Other visits to MD with depression dx[a]	.45	.51	.06	.73	.50	-.23	-1.25	.2141
Other visits to non-MD clinician	9.67	15.47	5.80	13.52	13.25	-.27	-1.18	.2398
Other visits to non-MD clinician w/depression dx[a]	.24	.14	-.10	.33	.13	-.19	-.45	.6671
Other hospital admissions	.35	.69	.33	.48	.56	.08	-.79	.4296
Other hospital days	1.12	1.53	.41	.98	1.08	.10	-.31	.7590
Non-psychiatric prescription fills	29.75	31.69	1.94	40.77	45.10	4.33	.37	.7157

[a]Note: Current depression diagnosis noted by clinician but not an indication that patient received treatment for it

Mean costs (2009 us dollars) of health services over 24 months before enrollment and 24 months after enrollment, by treatment group (eCare N=51, usual care N=52)

	eCare			Usual Care				
	Before	After	Change	Before	After	Change	t	P
Specialty mental health outpatient care	$3,073	$3,061	-$12	$3,670	$3,453	-$217	-.17	.8645
Specialty mental health inpatient care	$0	$420	$420	$92	$389	$297	-.30	.7657
Mental health medications	$1,935	$1,703	-$232	$3,336	$2,390	-$946	-1.72	.0880
eCare intervention		$345	$345					
Total specialty care costs	$5,008	$5,529	$521	$7,098	$6,232	-$865	-.89	.3763
Other outpatient care[a]	$4,042	$7,088	$3,046	$5,878	$7,194	$1,316	-.69	.4929
Other inpatient or nursing home care	$2,786	$4,777	$1,991	$2,612	$3,905	$1,293	-.23	.8205
Non-psychiatric medications	$1,776	$2,458	$682	$2,746	$3,415	$669	-.01	.9893
Total other care costs	$8,604	$14,324	$5,720	$11,236	$14,514	$3,278	-.42	.6762
Total health care costs	$13,612	$19,853	$6,241	$18,334	$20,746	$2,412	-.63	.5287

[a]Includes clinic, emergency room, and home health.