

Fall 12-8-2018

Implementation of the Nurse Care Manager in Integrated Care: A Systematic Report

Elizabeth Adams
egadams@usfca.edu

Follow this and additional works at: https://repository.usfca.edu/dnp_qualifying

 Part of the [Nursing Commons](#)

Recommended Citation

Adams, Elizabeth, "Implementation of the Nurse Care Manager in Integrated Care: A Systematic Report" (2018). *DNP Qualifying Manuscripts*. 10.
https://repository.usfca.edu/dnp_qualifying/10

This Manuscript is brought to you for free and open access by the School of Nursing and Health Professions at USF Scholarship: a digital repository @ Gleeson Library | Geschke Center. It has been accepted for inclusion in DNP Qualifying Manuscripts by an authorized administrator of USF Scholarship: a digital repository @ Gleeson Library | Geschke Center. For more information, please contact repository@usfca.edu.

Implementation of the Nurse Care Manager in Integrated Care: A Systematic Report

Elizabeth G. Adams

University of San Francisco

Abstract

Introduction: The collaborative care model (CCM) is an effective model for improving depression symptoms in patients in a primary care (PC) setting. An essential role in this model is the care manager (CM), and nurses have been effective in this role. However, there remains a question of how to best design, train, and implement this nurse CM role in PC.

Objectives: The purpose of this review is to provide readers with a critical description of what processes for training and implementation of a collaborative nurse CM role have been successful in the literature, specifically as it pertains to supporting patients with depression and chronic medical illnesses in an integrated PC setting.

Methods: A literature review of PubMed, CINAHL, PsychInfo, Scopus, and the Cochrane Collaborative was conducted in October 2018.

Discussion: Successful nurse CM interventions have included regular patient follow-up, symptom check-in, treatment monitoring, goal setting, and education. Psychological support techniques such as problem solving therapy, behavioral activation, and motivational interviewing have been useful in supporting patient care-plan engagement and goal achievement. Nurse CM training should support the successful implementation of the designed role.

Conclusion: Nurse CMs have an opportunity to significantly impact depressive outcomes of patients with depression and long-term health conditions. Further research is needed to explore the potential that this nursing role has, as well as how to best operationalize this role.

Implementation of the Nurse Care Manager in Integrated Care: A Systematic Report

Introduction/Background

Depression is a worldwide medical problem affecting 300 million individuals, and is the leading cause of disability (World Health Organization, 2018). The National Ambulatory Medical Care Survey revealed that in 2015, 59.8 million physician visits had depression as their primary diagnosis (Rui & Okeyode, 2015). These data are important, as consequences of depression can be severe. In 2014, 1.6% of deaths were attributed to intentional self-harm (suicide), making it the tenth leading cause of death (Kochanek, Murphy, & Tejada-Vera, 2016). Furthermore, depression is more common in people with chronic medical conditions than in the general population, and depression is a risk factor for heart disease, stroke, and diabetes mellitus (Clarke & Currie, 2009). Depression and diabetes mellitus can worsen both conditions' outcomes, likely through both biological and behavioral variables (Holt et al., 2014). Depression and a co-morbid chronic health condition are associated with poorer quality of life and the combination can lead to poorer health outcomes (Naylor et al., 2012).

The integration of mental health care into primary care has been shown to be effective in improving care for depression symptoms, as well as for people with chronic health conditions (Naylor et al., 2012). One of the models for integrating behavioral health into primary care is the collaborative care model (CCM). Developed in 1995, the CCM has been studied over the last two decades and has shown positive outcomes and symptom improvement (American Psychological Association & Academy of Psychosomatic Medicine, 2016; Katon et al., 1995). In the CCM, the care team often consists of the primary care (PC) provider, a care manager (CM), and a mental health specialist, such as a psychiatrist or a psychologist (Archer et al., 2012). Essential elements of the CCM include the interdisciplinary care team, population-based

care, measurement-guided care, and evidence-based care (Advancing Integrated Mental Health Solutions Center, n.d.; American Psychological Association & Academy of Psychosomatic Medicine, 2016). A Cochrane Collaborative review demonstrated that the CCM improved depression outcomes in the CCM intervention in zero to six months (standardized mean difference [SMD] = -0.34, 95% confidence interval [CI; -0.41, -0.27]; risk ratio [RR] = 1.32, 95% CI [1.22, 1.43]), seven to twelve months (SMD = -0.28, 95% CI [-0.41, -0.15]; RR = 1.31, 95% CI [1.17, 1.48]), and thirteen to twenty-four months (SMD = -0.35, 95% CI [-0.46, -0.24]; RR = 1.29, 95% CI [1.18, 1.41]; Archer et al., 2012). Additional improvements were also seen in medication compliance, mental health related quality of life, and treatment satisfaction among patients (Archer et al., 2012).

As a part of the CCM, the CM often has regular contact with the patient, and helps coordinate care between the patient and other members of the care team (Archer et al., 2012). Although these themes are clear, the background and training of the CM, and how the CM executes the CCM CM principles vary across different studies and practices. Richards et al. (2013) designed a CM intervention that utilized mental health workers. Training consisted of a five-day training course, the content of which was not discussed (Richards et al., 2013). The *Patient Health Questionnaire-Nine Item (PHQ-9)* mean depression score was 1.33 points lower in the intervention group compared to the usual care group at four months (95% CI [0.35, 2.31], $p = 0.009$), with a standard effect size of 0.28 (95% CI [1.22, 2.29]; Richards et al., 2013). Björkelund et al. (2013) used a nurse in the CM role, and that the intervention group's *Montgomery-Asberg Depression Score-Self* depression scores were significantly lower than those of the control group at both three (-2.17, 95% CI [0.56, 3.79], $p = 0.009$) and six (-2.27, 95% CI [0.59, 3.95], $p = 0.008$) months). Training for their nurse CMs included one three-day training

before the intervention, and two one-day training during the intervention, though specifics of the training were not reviewed (Björkelund et al., 2018). Thota et al. (2012) reviewed 37 randomized control trials for collaborative care through 2004. Studies employed CMs with professional backgrounds as nurses, master's level mental health workers, and social workers (Thota et al., 2012). The effect estimates were largest for registered nurses (Thota et al., 2012). Furthermore, given their background in the medical field, registered nurses are well suited to support patients with complex medical care needs and depression. Nurse CMs can help patients build confidence in themselves for managing long term conditions and improve patient quality of life (Askerud & Conder, 2017).

Objectives

Although evidence demonstrates that the CCM is effective with nurses in the integrated care CM role, there is a need to review how this intervention is operationalized when caring for patients with depression and a long-term or chronic medical condition in an integrated PC setting. The purpose of this review is to provide readers with a critical review of the evidence for what elements of a collaborative nurse CM role have been successful in supporting patients with depression and chronic medical illnesses in an integrated PC setting.

Methods

The PICO(T) question that guided the review of the evidence was, “In a collaborative PC setting, what designs for a nurse-led CM intervention have been successful in improving depressive symptoms in adults with depression and a chronic health condition over three to twelve months?” In October 2018, the Cumulative Index of Nursing and Allied Health Literature (CINAHL), PubMed, Psych Info, Scopus, and the Cochrane Library were searched using the following key search terms: *collaborative care*, *care manage**, *nurs**, *depress**, *care*,

*manage**, *primary care*. The search of CINAHL yielded 190 results, PubMed yielded 164 results, Psych Info yielded 104 results, Scopus yielded 81 results, and the Cochrane Library yielded 6 results. Articles were considered if they were published within the last ten years, were published in English, were based in a PC setting, evaluated depressive symptoms with a validated tool, included patients with a diagnosis of a chronic medical condition in addition to one of depression, and involved a nurse-led CM intervention. Articles that outlined a study prospectus were not included, though their final reports were searched for. Studies also had to clearly define what their nurse CM intervention included, and were excluded if they did not. Five articles were selected for appraisal based on relevance to the PICO(T) question and meeting all inclusion criteria (see Figure 1.) The Johns Hopkins *Research Evidence Appraisal Tool* was used to evaluate the selected articles (Dang & Dearholt, 2018). Three of the articles in this review were Level I, Grade A, one was Level I, Grade B, and one was Level II, Grade A (see Table 1, Table 2, and Table 3).

Discussion

Evidence Reviewed

The studies reviewed explored different designs of the care manager role (see Figure 2). Ekers et al. (2013) conducted a systematic review and meta-analysis of randomized controlled trials that tested nurse CM interventions in adults at least 16 years of age who had depression, as well as a long-term health issue. The effects of nurse CM interventions across 14 randomized-controlled trials and 4440 participants were analyzed. Studies were included in the review if they provided care with at least two or more of the following components of collaborative care: proactive follow-up of patients; assessment of care plan adherence; monitoring of symptoms with evidence-based tools; care plan or medication adjustment as indicated; psychological

support being available; and regular communication between the primary care providers and mental health staff. Ekers et al. (2013) found the mean effect size on depression symptoms to be moderate, $d = 0.43$ (95% CI [0.34, 0.52], $p < 0.001$, NNT 4.23). However, not all of the studies reviewed were in a PC setting, and many of these studies are now over ten years old. Not all of the studies in this review were relevant to answering the question of how a nurse CM intervention should be operationalized, and what training elements were required.

Katon et al. (2010) and Morgan et al. (2013) were included in Ekers et al. (2013)'s meta-analysis, and were also found in this review's search strategy. These studies are both Level I, Grade A evidence, and describe their interventions in detail (See Table 1 and Table 2). Katon et al. (2010) conducted a single-blind randomized-controlled trial in fourteen integrated PC settings, involving 214 adults with diabetes and/or coronary heart disease, as well as depression. Their nurse-led intervention in an integrated care setting demonstrated a significant improvement in the physical markers of hemoglobin A1C, low-density lipoprotein cholesterol, systolic blood pressure, and depression, as measured by the *Symptom Checklist Depression Scale -20*, at 12 months ($p < 0.001$, Katon et al., 2010). The fact that PCPs cared for both the intervention group and the control group is a limitation, as the increased awareness of mental health issues may have influenced care to the control group (Katon et al., 2010). Lin et al. (2012) did further analysis on Katon et al. (2010)'s data, and found that at twelve months after the intervention, those in the intervention group had significantly higher rates of self-monitoring of blood pressure and blood glucose as compared to the control group (RR=3.20, $p < 0.001$, RR=1.28, $p = .006$, respectively). They also found that the intervention group had significantly more new medication starts than those in the control group (Lin et al., 2012).

Morgan et al. (2013) conducted a two-arm open random cluster trial with a waitlist control of six months, followed for twelve months in Australian PC clinics, in 400 adults with depression and diabetes mellitus type two, or coronary heart disease. They saw improvements in both groups' *PHQ-9* scores at six months, but significantly greater improvements in the intervention group compared to control group ($F(1,209)=6.40$, $p=0.012$, Morgan et al., 2013). In those with moderate-to-severe depression, these improvements were clinically significant. They suspect that the control group had improvements in depression symptoms because clinicians were more aware of the comorbidity of depression with diabetes and heart disease, as evidenced by the significant increase in mental health referrals in the control group during the study period ($p < 0.001$; Morgan et al., 2013). Furthermore, there were significant improvement in numbers of referrals to and engagement in exercise plans and mental health work in the intervention groups at both six and twelve months. Significant improvements in *Short Form Health Survey-36* version two, which assesses mental and physical health, were observed at both six ($p=0.034$, $p=0.023$, respectively) and twelve months in the intervention groups (Morgan et al., 2013). Limitations of this study include the fact that they did not comprehensively discuss their other elements of their CCM, and the control group may have been more aware of mental health issues by participating in the study (Morgan et al., 2013).

Johnson et al. (2014) conducted a pragmatic, controlled implementation trial in PC settings in Alberta, Canada, in 157 patients with depression and type two diabetes. They found greater improvements in *PHQ* scores in the intervention group compared to control group (difference of 2.0, 95% CI [0.4, 3.7], $p = 0.015$; Johnson et al., 2014). There were also clinically significant improvements in the depression symptoms in the intervention group compared to active-control ($p = 0.03$) and significantly less improvement in *PHQ* scores in the non-screened

controls, compared to intervention group ($p < 0.001$, Johnson et al., 2014). Strengths of this study include their thorough description of their intervention, but one must consider the unique aspects of the Canadian healthcare system when considering its applicability to the United States.

Frequency and Modality of Contact with Patients

Differences existed in the frequency, length, and modality of patient and nurse CM contact across the studies. However, Ekers et al. (2013) found in their meta-analysis that while nurse CM visits ranged from four to twelve across studies, outcomes were similar. In Johnson et al (2014), nurse CM appointments occurred one to two times per month, by phone or in-person. Morgan et al. (2013) had nurse CM 45 minute, in-person visits every three months, while Katon et al. (2010) had in-person nurse CM visits every two to three weeks. Once the patient achieved remission, telephone appointments were done every four weeks (Katon et al., 2010). All studies discussed the importance of regular nurse CM follow-up.

Components of CM Intervention

All of the studies reviewed provided some kind of psychological support intervention. Ekers et al. (2013) did not discuss all of the specific psychological support interventions that the included studies used, though they did specifically reference behavioral activation and problem solving therapy, which are therapies based in cognitive behavior therapy. Behavioral activation is a brief psychological support intervention based in which the depressed individual is supported in engaging in activities that once brought them joy (University of Michigan, n.d.). By doing so, depressive symptoms improve, and the cycle of avoiding pleasurable activities and feeling more depressed is broken. Problem solving therapy is a brief therapy model in which the client's depressive symptoms are improved through guiding them through the process of solving problems (National Network of PST Clinicians, Trainers, and Researchers, n.d.). The

individual's problem solving skills and confidence improve in this seven-step therapy model.

Johnson et al. (2014), Morgan et al. (2013) and Katon et al. (2010) all had behavioral activation, problem solving, goal setting, and patient self-management skills in their nurse CM programs.

Johnson et al. (2014) and Morgan et al. (2013) also found motivational interviewing to be useful in their interventions. Motivational interviewing is a counseling approach and a way of being with clients that elicits desire for behavior change through non-judgmentally exploring and resolving ambivalence in the client (University of Massachusetts Amherst, n.d.).

Psychoeducation is a psychological support intervention that involves educating the client about their psychological illness, treatment options, and prognosis (Zhao, Sampson, Xia, & Jayaram, 2015). Psychoeducation and education regarding self-management were also common components across the four studies.

In these visits, medication follow-up was conducted, and medication was adjusted based on nurse protocol or consultation with the prescribing clinician (Ekers et al., 2013; Johnson et al., 2014; Katon et al., 2010; Morgan et al., 2013). Depressive symptom check-in was in all of the studies' nurse CM designs, and often the *PHQ-9* was used to monitor depressive symptoms.

Utilization of a patient-centered care plan was evident across the studies reviewed. Goal setting and following up with patients about progress towards goals was also discussed, and the nurse CM would help the patient identify and overcome barriers to achieving their goals (Johnson et al., 2014; Katon et al., 2010; Morgan et al., 2013). Katon et al. (2010) and Johnson et al. (2014) had the nurse CM develop a relapse prevention plan with patients after they achieved remission of their depression. Morgan et al. (2014) included referral follow-up, lifestyle risk factor review, and monitoring of physical measures in their nurse CM check-ins, while Katon et al. (2010) included diet and exercise components of their care plans. While all

studies had the nurse CM check-in and collaborate with other team members regularly, only Johnson et al. (2014) actually shared the care plan itself amongst team-members and with the patient.

Training of CM

Though Ekers et al. (2013) found variation in length of training to be up to seven days, Johnson et al. (2014), Morgan et al. (2013), and Katon et al. (2010) all held two-day training sessions for their nurse CMs. The content of the trainings in the studies reviewed by Ekers et al. (2013) included instruction in behavioral support interventions, administration of the psychological assessment tools, education about depression and pertinent medical symptoms in their instruction design. The training in Katon et al. (2010) was led by a psychologist, a psychiatrist, PC providers, an endocrinologist and nephrologist, who specifically spoke about diabetes. The other studies did not discuss who specifically led the training.

Implications for Practice

It is important that the nurse CM intervention be appropriate to the practice setting. The studies reviewed utilized different expectations for frequency, duration, and mode of patient contact. Since there was no significant difference in outcomes between telephone or face-to-face patient contact, it would be wise for the practice to design an intervention that is most appropriate to their patient population (Ekers et al., 2013). It may be practical for the nurse CM to have both in-person and telephone contact with patients, as this design is supported by the literature and may be more accessible for patients. Regardless of the modality of communication, the nurse CM should have regular, pro-active contact with the patient. The content of these visits should be thoughtfully constructed.

Practices should design their nurse CM visits to include regular follow-up evaluation of depression symptoms, medication adherence, and need for treatment adjustment. Some practices may be ready to have the nurse CM adjust medications based on protocols, while others may want to continue clinician-driven adjustments. Regardless, interdisciplinary collaboration is important in this model. The nurse's interdisciplinary care plan itself may be utilized to help support this collaboration amongst care providers, as well as with the patient (Johnson et al., 2014).

Helping the patient set goals, and supporting them in identifying and overcoming barriers to achieving these goals, were also common elements in these intervention designs (Ekers et al., 2013; Johnson et al., 2014; Katon et al., 2010; Morgan et al., 2013). Behavioral activation may be included in these goals to help support depression improvement. Education, motivational interviewing, and problem solving skills can help the patient in achieving their goals.

Training of the nurse CM should be relevant to the elements included in the intervention. Having colleagues from different disciplines in the practice lead the training may be helpful both in educating the nurse CM but also in fostering interdisciplinary relationships, which may lead to better interdisciplinary management of these patients. Training does not have to be extensive, as the studies reviewed only had two-day trainings, but having continual access to and support from other team members is helpful in this model.

Conclusion

Although there is strong evidence supporting the CCM, and the CM is an essential component of this model, differences exist in CM role implementation. Nurses have been successful as the CM, and having the nursing background may be especially important in supporting patients with complex medical conditions. Furthermore, nurses are trained to see the

patient as a whole person, integrating the behavioral, medical, and psychosocial in the patient-centered care plan development. Despite the volume of existing evidence about the CCM, evidence on how to implement a nurse CM intervention in a PC setting with adults with depression and a chronic medical condition remains limited. A review of the existing evidence suggests the importance of regular patient follow-up, goal setting, problem solving, behavioral activation, treatment plan engagement, symptom identification and medication adherence in the nurse CM intervention. While there is no standard training requirement for this role, training plans should be designed such that the nurse CM feels equipped to adequately fulfill the care plan elements. Regular contact with other care team members may support the success of this role. Further research is needed regarding the best way to operationalize the nurse CM role in an integrated care setting, and should explore the potential that exists in this role.

Elizabeth Adams has no conflicts of interest.

References

- Advancing Integrated Mental Health Solutions Center. (n.d.). Principles of collaborative care. Retrieved from <https://aims.uw.edu/collaborative-care/principles-collaborative-care>
- Agency for Healthcare Research and Quality. (2017). Behavioral and mental health. Retrieved from <https://www.ahrq.gov/professionals/prevention-chronic-care/improve/mental/index.html>
- American Psychological Association, & Academy of Psychosomatic Medicine. (2016). *Dissemination of integrated care within adult primary care settings: The collaborative care model*. Retrieved from <https://www.integration.samhsa.gov/integrated-care-models/APA-APM-Dissemination-Integrated-Care-Report.pdf>
- Archer, J., Bower, P., Gilbody, S., Lovell, K., Richards, D., Gask, L., ... Coventry, P. (2012). Collaborative care for depression and anxiety problems. *The Cochrane Database of Systematic Reviews*, *10*, CD006525. <https://doi.org/10.1002/14651858.CD006525.pub2>
- Askerud, A., & Conder, J. (2017). Patients' experiences of nurse case management in primary care: a meta-synthesis. *Australian Journal of Primary Health*, *23*(5), 420–428. <https://doi.org/10.1071/PY17040>
- Björkelund, C., Svenningsson, I., Hange, D., Udo, C., Petersson, E.-L., Ariai, N., ... Westman, J. (2018). Clinical effectiveness of care managers in collaborative care for patients with depression in Swedish primary health care: a pragmatic cluster randomized controlled trial. *BMC Family Practice*, *19*. <https://doi.org/10.1186/s12875-018-0711-z>
- Clarke, D. M., & Currie, K. C. (2009). Depression, anxiety and their relationship with chronic diseases: a review of the epidemiology, risk and treatment evidence. *The Medical Journal of Australia*, *190*(7 Suppl), S54-60.

Dang, D., & Dearholt, S. L. (2018). *Johns Hopkins Nursing Evidence-Based Practice: Model and Guidelines*. Indianapolis, IN: Sigma Theta Tau International.

Ekers, D., Murphy, R., Archer, J., Ebenezer, C., Kemp, D., & Gilbody, S. (2013). Nurse-delivered collaborative care for depression and long-term physical conditions: A systematic review and meta-analysis. *Journal of Affective Disorders, 149*(1–3), 14–22. <https://doi.org/10.1016/j.jad.2013.02.032>

Holt, R. I. G., de Groot, M., Lucki, I., Hunter, C. M., Sartorius, N., & Golden, S. H. (2014). NIDDK international conference report on diabetes and depression: current understanding and future directions. *Diabetes Care, 37*(8), 2067–2077. <https://doi.org/10.2337/dc13-2134>

Johnson, J. A., Sayah, F. A., Wozniak, L., Rees, S., Soprovich, A., Qiu, W., ... Majumdar, S. R. (2014). Collaborative Care Versus Screening and Follow-up for Patients With Diabetes and Depressive Symptoms: Results of a Primary Care–Based Comparative Effectiveness Trial. *Diabetes Care, 37*(12), 3220–3226. <https://doi.org/10.2337/dc14-1308>

Katon, W. J., Lin, E. H. B., Von Korff, M., Ciechanowski, P., Ludman, E. J., Young, B., ... McCulloch, D. (2010). Collaborative care for patients with depression and chronic illnesses. *New England Journal of Medicine, 363*(27), 2611–2620. <https://doi.org/10.1056/NEJMoa1003955>

Katon, W., Korff, M. V., Lin, E., Walker, E., Simon, G. E., Bush, T., ... Russo, J. (1995). Collaborative Management to Achieve Treatment Guidelines: Impact on Depression in Primary Care. *JAMA, 273*(13), 1026–1031. <https://doi.org/10.1001/jama.1995.03520370068039>

- Kochanek, K. ., Murphy, S. ., & Tejada-Vera, B. (2016). *Deaths: Final data for 2014*. (National Vital Statistics Report No. 2016–1120). Hyattsville, MD: National Center for Health Statistics. Retrieved from https://www.cdc.gov/nchs/data/nvsr/nvsr65/nvsr65_04.pdf
- Lin, E. H. B., Von Korff, M., Ciechanowski, P., Peterson, D., Ludman, E. J., Rutter, C. M., ... Katon, W. J. (2012). Treatment adjustment and medication adherence for complex patients with diabetes, heart disease, and depression: a randomized controlled trial. *Annals of Family Medicine*, *10*(1), 6–14. <https://doi.org/10.1370/afm.1343>
- Melnyk, B. M., & Fineout-Overholt, E. (2015). *Evidence-Based Practice in Nursing & Healthcare: A Guide to Best Practice* (Third). Wolters Kluwer.
- Morgan, M. A. J., Coates, M. J., Dunbar, J. A., Reddy, P., Schlicht, K., & Fuller, J. (2013). The TrueBlue model of collaborative care using practice nurses as case managers for depression alongside diabetes or heart disease: a randomised trial. *BMJ Open*, *3*(1). <https://doi.org/10.1136/bmjopen-2012-002171>
- National Network of PST Clinicians, Trainers, and Researchers. (n.d.). What is PST? Retrieved from <https://pstnetwork.ucsf.edu/what-pst>
- Naylor, C., Parsonage, M., Mcdaid, D., Knapp, M., Fossey, M., & A, G. (2012). *Long-Term Conditions and Mental Health: The Cost of Co-Morbidities*.
- 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. *BMJ*, *347*, f4913. <https://doi.org/10.1136/bmj.f4913>

- Rui, P., & Okeyode, T. (2015). *National ambulatory medical care survey: 2015 state and national summary tables*. Retrieved from https://www.cdc.gov/nchs/data/ahcd/namcs_summary/2015_namcs_web_tables.pdf
- Thota, A. B., Sipe, T. A., Byard, G. J., Zometa, C. S., Hahn, R. A., McKnight-Eily, L. R., ... Williams, S. P. (2012). Collaborative Care to Improve the Management of Depressive Disorders. *American Journal of Preventive Medicine*, 42(5), 525–538. <https://doi.org/10.1016/j.amepre.2012.01.019>
- University of Massachusetts Amherst. (n.d.). A definition of motivational interviewing. Retrieved from https://www.umass.edu/studentlife/sites/default/files/documents/pdf/Motivational_Interviewing_Definition_Principles_Approach.pdf
- University of Michigan. (n.d.). Behavioral activation for depression. Retrieved from <https://medicine.umich.edu/sites/default/files/content/downloads/Behavioral-Activation-for-Depression.pdf>
- World Health Organization. (2018, March 22). Depression [Fact Sheet]. Retrieved from <http://www.who.int/mediacentre/factsheets/fs369/en/>
- Zhao, S., Sampson, S., Xia, J., & Jayaram, M. B. (2015). Psychoeducation (brief) for people with serious mental illness. *The Cochrane Database of Systematic Reviews*, (4), CD010823. <https://doi.org/10.1002/14651858.CD010823.pub2>

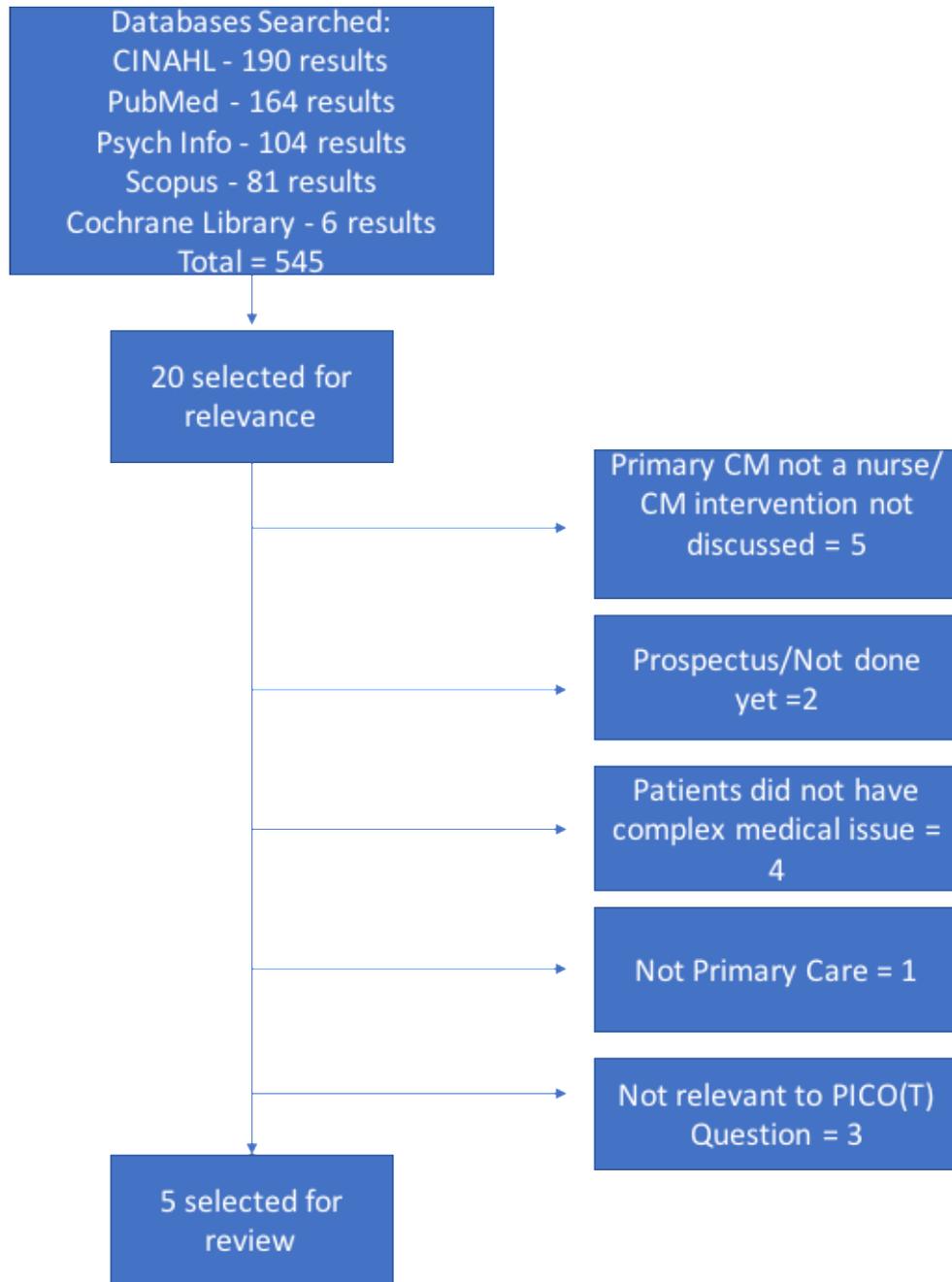


Figure 1. Search results. The search was conducted in October 2018, using search terms *collaborative care, care manage*, nurs*, depress*, care, manage*, primary care.*

CM Intervention elements/characteristics	Ekers et al., 2013	Johnson et al., 2014	Katon et al., 2010	Morgan et al., 2013
Nurse-led	x	x	x	x
Follow-up Phone Visits	x	x	x	
In-Person Follow-up Visits	x	x	x	x
Behavioral intervention	x	x	x	x
Behavioral activation	x	x	x	x
Motivational interviewing	?	x	x	
Problem Solving	x	x	x	x
Goal setting	?	x	x	x
Self Management skills	?	x	x	x
Patient centered care plan	x	x	x	x
Treatment plan adherence check-in	?	x	x	x
Symptom check-in	x	x	x	x
Medication check-in	x	x	x	x
CM - Care team contact	x	x	x	x
Shared care plan				x

Figure 2. Elements of the nurse care manager intervention. The “?” indicates that it was not explicitly addressed. Table structure adapted from Melnyk, B.M. & Fineout-Overholt, E., 2015.

Citation	Study Design	Sample/Setting	Care Manager Design	CM Training	Contact with	Team Interac	Outcomes	Findings	Appraisal We
Ekers et al., 2013	Systematic review with meta-analysis	RCTs, Databases searched Dec 2011-May 2012; All pts with primary dx of depression and one or more long-term physical health problem; Included 14 studies, 4440 participants; All treated in outpatient settings (not all integrated, and not all primary care)	All studies had to have at least two or more of the following elements in their intervention: - Proactive follow-up of participants - Assess adherence to psychological and pharmacological treatments - Monitor pt progress using validated measure, take action when tx unsuccessful - Provision of psychological support - Regular communication and supervision with MH specialist and/or PCP Psychological support interventions included problem solving therapy, psychoeducation, behavioral activation, and cognitive behavioral therapy.	Length varied. None exceeded 7 days. Only five studies discussed their training in detail. Common components of training included training on monitoring depression, delivering psychological support, and training regarding the physical health issues they would support.	Differences between number of clinical contacts – no significantly different outcomes. Ranged from four to 12 across studies. Meta-regression slope 0.0004 (95% CI[-0.028 – 0.029, Q_{total} 20.53, $p = 0.08$, $Q_{session}$ number 0.0008, $p = 0.98$.	Not discussed	Change in depression symptom level (self-rated or clinician-rated) Depression severity, most studies used PHQ-9	Nurse-led CC intervention helped improve depression symptoms. Mean effect size at follow-up was $d = 0.43$, 95% CI 0.34-0.52, $p < 0.001$, NNT 4.23. However, moderate between-study heterogeneity I ² 36.68%. No statistically significant difference in outcomes between telephone only and face-to-face intervention, nor with length of contact with RN, nor with frequency of interactions.	Level I, A
Johnson et al. 2014	Pragmatic, controlled implementation trial	Primary care, adults with DM2 and Depression; Alberta, Canada	Shared care plan with patient and PCP; problem solving skills for self-management; monitored treatment adherence and outcomes; symptom check in; progress towards goals // After PHQ<10, relapse prevention plan, and then focused on DM control	2 day training session, annual "booster" session, monthly teleconferencnes with CMs and specialists; Training in problem-solving therapy, behavioral activation, motivational interviewing	1-2 times per month; by phone or in person	Consulted with PCPs, specialists, pyschiatrists re progress; regular case conferencing	PHQ, Health-related QOL measures included SF-12, 5-level EQ-5D, and PAID-5, PACIC, physical health meausres	Greater improvements in PHQ scores compared to control (difference of 2.0 (95% CI [0.4, 3.7], $p = 0.015$); "Clinically important recovery" significantly more in intervention compared to active-control ($p = 0.03$, 61% to 44%); Significantly less improvement in PHQ in non-screened controls, compared to intervention $p < .001$	Level II, A

Table 1. Evidence Table Part One of Three

Katon et al., 2010	Single-blind randomized control trial	Primary care, adults with depression and DM and/or CHD, Washington state	Goal setting; check-in re progress towards clinical and self-care goals; problem solving; treatment protocols to adjust meds; medication adherence; motivational interviewing and coaching; education; behavioral activation; regular, pro-active follow up with patient; care plan also addressed diet and exercise	2 day training on depression management, behavioral strategies, glycemic, blood-pressure, and lipid control. PCP, nephrology specialist, endocrinologist, psychologist, psychiatrist developed the training	In-person visits every 2-3 weeks; once in maintenance , telephone check-in every 4 weeks	PCP, psychiatrist, psychologist	SCL-20 depression, physical health measures, medication adjustments, satisfaction, Patient Global Rating of Improvement for Depression	At 12 mos, intervention group at significantly greater overall improvement in HbA1C, LDL, SBP, SCL-20 (p<0.001). Intervention group also had greater satisfaction with care for diabetes, heart disease, or both (p<0.001)	Level I, A
Lin et al, 2012	Used Katon et al. (2010)'s study and data; further analyzed patient self-monitoring, medication adherence, and medication adjustments	See Katon et al., 2010	See Katon et al., 2010	See Katon et al., 2010	See Katon et al., 2010	See Katon et al., 2010	Self-monitoring and medication adherence = pharmacy data for 12 mos before and 12 mos after intervention; Pharmacotherapy adjustments = increase in the number of medications prescribed, change in dosage, or switching meds 12 mos of the intervention	High medication compliance in both groups at baseline. This did not increase significantly in the study group compared to control group during the intervention. At 12 mos after intervention, ave rate of blood pressure self monitoring in treatment group was 3x higher than that in control group (3.6 vs 1.1 days per week; RR=3.20; P <.001); the average blood glucose monitoring rate was 4.9 days per week, and 3.8 days per week, respectively (RR = 1.28; P = .006). Significantly more med initiations for those who weren't on meds at baseline in intervention v control	Level I, B

Table 2. Evidence Table Part Two of Three

Morgan et al., 2013	Two-arm open random cluster trial with waitlist control of 6 mos, followed for 12 mos	Primary care, adults with depression and DM2 and/or CHD, Australia	Shared care plan with patient and PCP; educational resources for self management; monitored treatment adherence and outcomes; referral follow up; symptom check in (PHQ-9); psychotherapy or pharmacotherapy if not improving; goal setting and progress towards goals, problem solving; lifestyle risk factor review; monitored physical measures; succinct care-plan for patients and care team members	2 day workshop - training on PHQ-9 and on the quality of life measures for the SF-36; patient goal setting, behavioral techniques (activation, problem solving); training on clinical guidelines	Once every 3 mos, in person for 45 min	Shared care plan and consulted with PCPs	PHQ-9, SF-35, referrals to mental health and exercise, physical health measures	Improvements in both groups' PHQ-9 scores at 6 mos, but significantly greater improvements in intervention group compared to control group ($F(1,209)=6.40$, $p=0.012$). Clinically significant improvements in those with moderate-to-severe depression in intervention group at 6 mos. Significant improvement in numbers of patients exercising, referred to and attending exercise, and referred to and attending mental health work at 6 and sustained at 12 mos in intervention group. The significant improvement in SF36v2 (mental health and physical health) was observed at 6 mos and 12 mos in intervention group.	Level I, A
---------------------	---	--	---	--	--	--	---	---	------------

Table 3. Evidence Table Part Three of Three