ORIGINAL RESEARCH

Care Coordination: How Is It Implemented and Is It Different If a Social Worker Is on the Team?

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Objective: **To understand how primary care clinics coordinate services for complex patients and whether clinics with an integrated social worker do it differently.**

Methods: **Cross-sectional survey of the 213 most experienced care coordinators for each of the 317 participating clinics. The survey asks about staffing, communications, care model (nursing vs integrated social worker), resources, support, services, how services are available and delivered, payment approach, and satisfaction. Clinics using the integrated model include the social worker as part of the care team, responsible for assessing and coordinating services for social needs, and communicating directly with both patients and clinicians.**

Results: **Out of 317 clinics from 42 diverse care systems, 139 had an integrated social worker and 178 did not. Care coordinators in the integrated social worker clinics had somewhat larger patient panels and worked with almost twice as many clinicians. These care coordinators were also less likely to be on site and more likely to communicate with patients and clinicians by telephone rather than in person. Care coordinators in the integrated social worker clinics were 10 to 30% more likely to assess patients' social needs, provide a broader range of services, and to be more engaged in the process of referral for community services.**

Conclusion: **Clinics with an integrated social worker seem to differ in the frequency and approach to care coordination as well as in how social needs are addressed from those that use a nursing model while providing most medical/nursing services at similar or higher rates. (J Am Board Fam Med 2024;37:857–867.)**

Keywords: **Care Coordination, Continuity of Patient Care, Cross-Sectional Studies, Patient Satisfaction, Patient Care Team, Primary Health Care, Social Needs, Social Workers, Surveys and Questionnaires**

The last decade has seen greatly increased awareness of the relationship between social needs (especially housing, food, transportation) and both medical care and patient health outcomes.[1–3] This interest led the National Academy of Medicine (NAM) in 2017 to establish an expert committee to produce a consensus report on Integrating Social Care into the Delivery of Health Care.[4] That report concluded that "taking social risk factors into account is critical to improving both primary prevention and the treatment of acute and chronic illness because social contexts influence the delivery and outcomes of health care." The committee noted that "there have been few robust outcome

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evaluations of this problem, which limited the committee's ability to make recommendations about specific evidence-based practices." However, they did recommend that care systems "include social care workers as being integral to a team-based approach."

Recent systematic reviews have confirmed that there is limited information about how this integration of social care is being done, much less how it should be done effectively. Albertson et al. noted that patient needs assessment, in-person patient contact, and standardized care coordination protocols were commonly used by programs that bridge health care and social services, but they found little information about the impact of any design features on outcomes.[5] They called for more documentation of critical elements of program implementation and their impacts. Even within community health centers, Pourat et al.'s systematic review concluded that there are many gaps in our knowledge of the role of social determinants of health on health and health care.[6] Further, Escobar et al.'s review concluded that health care and community-based organizations need to collaborate effectively if patients are to be connected with available resources.[7] However, they noted that the high risk of bias in nearly all existing studies prevented them from providing more specificity about the approach that should be used.

As part of a large observational study of care coordination among diverse primary care clinics in Minnesota and bordering state areas, we sought to learn whether clinics that chose to invest in the integrated social worker model recommended by the NAM committee differ in how care is coordinated for complex patients.[8,9] Such a description of care coordination is needed for studies that seek to test care models for their impact on outcomes. To minimize bias and collect specific information about care coordination practices at each clinic, we surveyed a care coordinator in every participating clinic about their care models to learn whether those clinics that integrated social workers were different in how they assessed needs and coordinated medical and social services for their high cost, high need patients. This systematically collected information about the current reality in 1 region should be valuable for care system designs, payor incentive systems, and research studies of outcomes.

Methods

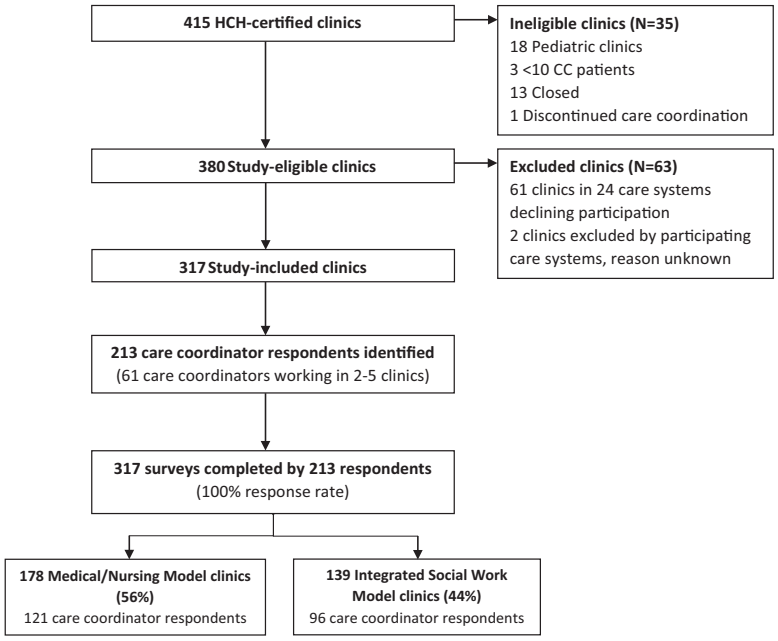
Context and Study Sample

In 2008, the Minnesota legislature established a voluntary opportunity for primary care clinics in Minnesota to be certified as Health Care Homes. This certification was implemented by the Minnesota Department of Health (MDH) and requires an application and site visit evaluation to determine whether a clinic meets 5 standards of care. One standard requires a defined process for identifying patients for care coordination and providing those services, although it allows considerable latitude in how they set it up. Other standards address access, registry and tracking, care plans, and performance reporting/quality improvement. In 2020, 415 of the approximately 700 primary care clinics serving Minnesotans had obtained certification. After eliminating the 35 ineligible clinics that served only children, had <10 care coordination patients, or were recently closed or discontinued care coordination activities, we successfully recruited 317 clinics (83% of eligible clinics) to participate in our study of care coordination (see Figure 1). These clinics were part of 42 separate care systems and represented every type of organization and region of the state. Complete details of the recruitment process are available.[10]

Survey

The purpose of the care coordinator survey was to measure both key features of the approach to care coordination in place at each participating clinic and contextual features that supported care coordination. We specifically wanted to learn whether each clinic's care model involved a social worker who was integrated into the care team as recommended by the National Academy of Medicine expert panel. We defined an integrated social worker model as one where a social worker was part of the care team, was responsible for assessing and coordinating social services for care coordination, and routinely interacted with both patients and their primary care clinicians. In order for a clinic to be included as having an integrated social worker/Medical Social Model, the responding care coordinator had to answer Yes to each of the above criteria. If even 1 answer was No, the clinic was assigned to the Medical/Nursing Model. Since there is no established definition for social worker involvement in care coordination, this definition was developed

Figure 1. Care coordinator survey participant flow diagram. ***Abbreviation:*** **HCH, Health Care Home.**



with experts in care coordination and experienced coordinators. Clinics then were identified as using either an integrated social worker model or a medical/nursing model.

The survey itself was constructed using the Care Coordination Measurement Framework developed by AHRQ in 2010 and subsequently used to organize key domains for care coordination.[11] The Framework separated "Coordination Activities" directly related to providing coordination services from those "Broad Approaches" that were aimed at improving or facilitating coordination. Since there was no existing survey that addressed either this care model or other aspects of how care coordination services were provided at the level of specificity we hoped to achieve, questions were developed from care coordinator interviews using best practices.[12,13] The survey was then reviewed for face validity and ease of completion by both content experts and individuals with care coordination experience and piloted with 13 care coordinators in nonparticipating clinics. However, we did not have time to test other psychometric properties of the survey, especially reliability/reproducibility. The final version contained 63 questions and was fielded in April and May of 2022 using REDCap, after COVID-19 pandemic disruptions were mostly behind us.[14]

The study liaison in each participating care system was asked by a MDH staff member to identify the care coordinator who was most knowledgeable about care coordination at each of that care system's participating clinics and to alert the person of the coming survey invitation and ask that they complete the survey. In cases where 1 care coordinator was the best respondent for several clinics, that person was asked to complete separate surveys for each location. The invitation and link to the survey was sent by a research survey center. If no response was obtained after several reminder e-mails, the MDH staff member recontacted the liaison and asked for an alternate respondent, using the same criteria. Since participation required this information, we sought survey responses from every participating clinic.

Analysis

First, survey items used to define each participating clinic's care model (medical/nursing vs integrated social worker) were summarized. Next, survey items related to care coordination activities and approaches at each separate clinic represented in the survey were stratified by clinic care model and summarized. Continuous measures were described with means and standard deviations (SD) and compared using *t* test or one-way ANOVA. Survey items with categorical responses were compared across strata using Fisher's Exact Tests. All quantitative analyses were performed in R 4.1.3.[15]

In a sensitivity analysis, we assessed if the observed differences in survey responses between care models were confounded by rurality and organizational size through standardization.[16,17] Standardization allowed us to assess how survey responses would have differed across care models if they had the same distribution of rurality and organizational size.

The study was reviewed, approved, and monitored by the local institutional review board.

Results

A survey was completed for all 317 clinics (100%) that were part of the 42 separate care systems participating in the overall study (see Figure 1). Of these care systems, 16 were small (1 to 2 clinics), 15 were medium (3 to 9 clinics), and 11 were large (>9 clinics).[10] Overall, 67% of the clinics were in urban areas (Rural Urban Commuting Area codes 1 to 3) and 33% were in rural areas or small towns (RUCA codes 4 to 10).[18] This is very similar to the 37% of primary care clinics located in rural areas according to the Minnesota Department of Health.[19] Importantly, 139 (44%) of the clinics used the medical/social or integrated social worker model and 178 (56%) used the medical nursing model.

Surveys were completed by 213 individual care coordinators (described in Table 1) who reported separately on all 317 clinics. Sixty-one (29%) of them worked in and reported on 2 to 5 clinics, fourteen (7%) of them had social work degrees (reporting on 27 clinics), while nearly all the rest were registered nurses (RNs), 46% with a bachelor's or master's degree in nursing. Only 16% of these care coordinators had been certified in care coordination, and the overall group had a mean of 4.8 years (SD = 4.4) of experience in that role, mostly at their current clinic(s). Although there were some differences in staffing between the 2 care models, those differences were mostly small except that care coordinators in integrated social worker clinics were less likely to have advanced nursing degrees and more likely to work on-site.

Care Model

Table 2 reports on how social workers were used in these clinics and how the 2 care models differ in staffing, with 139 (44%) clinics classified as using the integrated social worker model and 178 (56%) the medical/nursing model. Only 21 clinics reporting a social worker on the care team did not satisfy the criteria for the integrated social worker model. In these clinics, a social worker may be accessible as a resource, but they did not deliver services directly or communicate directly with patients and clinicians.

Table 1. Descriptive Characteristics of the 213 Responding Care Coordinators – N (%) Unless Stated Otherwise

	Overall	Only Work in Medical/Nursing Clinics	Only Work in Integrated Social Worker Clinics	Work in Both Clinic Models	*P*
N	213	117	88	8	
Degree*					<0.001
RN	88 (41.3)	51 (43.6)	35 (39.8)	2 (25.0)	
MSN or RN + BSN	75 (35.2)	48 (41.0)	25 (28.4)	2 (25.0)	
MSW or BSW	14 (6.6)	0 (0.0)	11 (12.5)	3 (37.5)	
LPN or CMA	20 (9.4)	9 (7.7)	10 (11.4)	1 (12.5)	
Other or None	16 (7.5)	9 (7.7)	7 (8.0)	0 (0.0)	
Certified in care coordination, yes	33 (15.8)	13 (11.4)	19 (21.8)	1 (12.5)	0.128
Years practicing as a care coordinator mean (SD)	4.8 (4.4)	4.2 (3.9)	5.7 (5.0)	5.2 (2.1)	0.053
Practicing in multiple clinics, yes	61 (28.6)	27 (23.1)	26 (29.5)	8 (100.0)	<0.001
Years worked as care coordinator in study clinic/s mean (SD)	3.5 (3.4)	3.1 (3.3)	3.9 (3.5)	4.5 (2.8)	0.13
Hours/week as care coordinator in study clinic/s (SD)	31.6 (21.2)	27.2 (19.4)	37.4 (23.0)	32.2 (7.9)	0.003
Work onsite at study clinic/s, usually or always mean (SD)	32 (15.4)	5 (4.4)	22 (25.6)	5 (62.5)	<0.001

Abbreviations: RN, registered nurse; MSN, master's in nursing; BSN, bachelor of science in nursing; MSW, master's in social work; BSW, bachelor of science in social work; LPN, licensed practical nurse; CMA, certified medical assistant; SD, standard deviation.
*Respondents could report multiple degrees ("Check all that apply").

Table 2. Care Coordination Model Used by Clinics – N (%)

	Total	Medical/Nursing Model	Integrated Social Worker Model
	n = 317	n = 178	n = 139
1. A social worker is on the care coordination team	160 (50.5)	21 (11.8)	139 (100)
2. The social worker is responsible for assessing and coordinating social services for care coordination patients	140 (44.2)	1 (0.6)	139 (100)
3. The social worker interacts regularly with care coordination patients	143 (45.1)	4 (2.2)	139 (100)
4. The social worker interacts regularly with the clinicians of those patients	144 (45.4)	5 (2.8)	139 (100)
Fits all 4 requirements	139 (43.8)	0 (0)	139 (100)

Twelve of these 21 respondents (57%) said it was somewhat difficult to engage a social worker while among the 139 integrated social worker clinics, 85% of care coordinators said it was easy.

Care Coordination Activities

Table 3 summarizes the care coordinators' description of the activities that clinics were using to provide care coordination. They reported that, on average, full-time care coordinators spend 21.7 hours (SD = 14.8) per week on care coordination across a panel size of 48.5 patients from 12.4 clinicians. This is about 30 minutes per week per care coordination patient. Sixty percent of respondents felt this was about the right panel size, although most of the rest in integrated social worker clinics thought it was too many. Respondents reported that communication with patients was primarily by phone with some in-person visits, but in 2022, virtually none were conducted by video. Contact was usually initiated by the care coordinator, who also often engaged the family or care givers. In contrast, coordinator communication with clinicians about their mutual patients was mostly through the medical record but often in person and was mainly after they had talked with the patient. They reported providing a wide range of services for both medical and social needs. Over 80% reported assessing social needs and referring to community resources and almost as many found culturally appropriate resources and assessed/referred for financial or insurance needs. When referral for services was needed, they reported nearly always giving the patient a name and phone number, but they often contacted the resource as well, either on their own or with the patient. Finally, they reported usually conducting a formal assessment of complexity, both for medical and for social needs.

Comparing Care Models

Table 3 also compares the answers to these questions by care model. The integrated social worker model clinics as defined above had similar patient panels (53 vs 45 patients per care coordinator, $P = .38$) but more clinicians per coordinator (16 vs 9, $P < .001$). They were also less likely to always have a care coordinator on-site (44% vs 63%) and more likely to communicate with both patients (95% vs 84%, $P = .002$) and clinicians (30% vs 15%,<0.001) by phone. While both care models provided a broad range of services to most of their coordination patients, respondents in integrated social worker model clinics were 20 to 30% more likely to report involvement in social needs. They also were more likely to report facilitating services by medical specialists and transitions in care and being actively involved in the referral process.

Care Coordination – Broad Approaches

In Table 4, these care coordinators reported on the broad approaches that support care coordination, including organizational support. Most reported having dedicated space to meet with patients and assistance in contacting them while nearly all had access to electronic prompts and registries. Majorities also reported having pharmacists, behavioral therapists, and various medical/surgical specialists at their clinic, and a third also had access to community health workers. Although 70% reported being very familiar with the clinical resources in their organization and 50% were very

Table 3. Care Coordination (CC) Activities Used by Clinic Care Model (All # below Double Line Are in %)

Characteristic	Total	Medical/Nursing Model	Integrated Social Worker Model	*P*
N	317	178	139	
Hours/week devoted to CC per care coordinator – Mean (SD)	21.7 (14.8)	18.8 (14.7)	25.3 (14.1)	<0.001
Number of clinicians/FTE care coordinator – Mean (SD)	12.4 (14.1)	9.3 (9.2)	16.3 (17.9)	<0.001
Patient panel size/care coordinator – Mean (SD)	48.5 (72.8)	45.3 (85.7)	52.5 (52.7)	0.38
Patient panel seems:				<0.001
- about right	61	61	61	
- too many	19	12	26	
- too few	20	26	12	
At least one care coordinator always on-site	55	63	44	<0.001
Communication with CC patients (always/mostly):				
In-person meeting	24	23	25	0.4
Telephone	89	84	95	0.008
EMR	14	6	24	<0.001
Video visits	1	1	0	0.2
Who initiates communications:				0.007
Care coordinator	81	84	78	
Patient	2	3	1	
Equal	17	14	21	
Regularly/often engage with the family and/or caregivers	47	42	53	0.053
Communication between CC & clinician:				
Before talking with patients (reg/often)	48	54	40	0.017
After talking with patients (reg/often)	63	63	63	>0.9
In person meeting (always/mostly)	39	46	29	0.007
In person ad hoc (always/mostly	31	31	31	0.62
Telephone (always/mostly)	22	15	30	<0.001
EMR (always/mostly)	70	69	70	0.4
Video	0	0	1	0.41
Services provided:				
Disease management	91	89	93	0.25
Facilitating services by PC clinicians	87	82	94	0.001
Patient education and counseling	87	85	91	0.13
Mental health assessment/referral	84	80	90	0.02
Referral for other community resources	82	77	89	0.005
Social needs assessment/referral	81	71	93	<0.001
Finding culturally appropriate resources	74	64	86	<0.001
Facilitating services by medical specialists	74	65	86	<0.001
Financial needs assessment/referral	73	60	89	<0.001
Care transition services	73	62	86	<0.001
Assisting to access health insurance	69	58	84	<0.001
Employment assistance/referral	41	29	56	<0.001
Spiritual needs assessment/referral	37	30	56	0.007
Do coordinators (most of the time):				
Refer to services outside your care system	29	24	36	0.002
Refer to services in your care system	49	45	53	0.2
Directly provide services	28	28	28	>0.9

Continued

Table 3. Continued

Characteristic	Total	Medical/Nursing Model	Integrated Social Worker Model	*P*
How do you help connect patients?				
Give patient a name/phone number	97	96	98	0.36
Contact the resource with referral	81	75	90	<0.001
Call resource with the patient	78	70	90	<0.001
Very involved in facilitating care transitions	22	15	30	<0.001
Complexity of medical needs is assessed for all or most patients	68	67	68	0.9
Complexity of social needs is assessed for all or most patients	67	62	73	0.04

Abbreviations: CC, care coordination; SD, standard deviation; EMR, electronic medical record; PC, primary care.

familiar with community resources, less than 50% of each group reported having a personal relationship with the people at those resources. Forty-seven percent said that specialty medical services were readily available for their patients while 40% had that access for community services, and 65% found it relatively easy to coordinate services with hospitals or nursing homes. While only 20% reported that payment or coverage for care coordination services was required by their organizations, 27% said that patient financial constraints limited their access to needed medical or social services most of the time and another 68% say it was a limitation some of the time. About 60% of respondents strongly agreed they felt valued by the clinicians in their clinics and by clinic leaders. Eighty-five percent reported that their organization used a wide variety of measures to evaluate the effectiveness of care coordination services. Overall, 80% felt very or somewhat satisfied with the time and resources they had to provide care coordination services.

Comparing Care Coordination Services

Only a few of the surveyed supports for care coordination services varied by care model – most were similar. Integrated social worker clinics were more likely to have community health workers and pharmacists and to report that it was much easier to get social worker help. Finally, while integrated social worker model coordinators seemed to be equally satisfied with the time and resources available to them, they were somewhat less likely to report feeling valued by clinicians.

Our sensitivity analysis to learn whether differences in care system size and location were confounding the differences between care models showed that when survey responses from medical/nursing model clinics were standardized for the differences in location and organizational size (see Methods description) there was little impact on care model differences.

Discussion

These results provide the most detailed picture in the literature of how care coordination is conducted in primary care clinics. Among clinics in Minnesota, having a social worker integrated in the care team does make a difference in the approach to care coordination as well as in how social needs are addressed. However, both integrated social worker and medical/nursing models provide patients with a broad array of services and resources and few limit their help to providing information about available resources; they usually facilitate access to them. Although clinics in small care systems as well as those in rural areas are much more likely to use the medical/nursing model, perhaps because of having fewer resources, they are only somewhat less likely to identify and address the social needs of their care coordination patients. Future research testing the impact of these different approaches on outcomes will be an important next step in learning whether they are important.

Recommendations for Integrating Social Care into Medical Care

The 2019 report from the National Academies Committee on Integrating Social Needs identified 5 overarching recommendations that they deemed necessary to achieve integration of social

Table 4. Broad Approaches That Support Care Coordination Activities by Care Model

Characteristic	Total	Medical/Nurse Model	Integrated Social Worker Model	*P*
N	317	178	139	
Clinic supports for CC:				
Dedicated space to see patients	73	77	68	0.07
EMR prompts for follow-up	96	96	95	0.38
Searchable list of CC patients	96	96	95	0.8
Assistants help contact patients	78	78	78	>0.9
Other resources at your clinic:				
Community Health Workers	30	18	46	<0.001
Pharmacists	67	59	78	<0.001
Behavioral health services	59	56	63	0.2
Other medical specialists	56	55	58	0.6
Other surgical specialists	35	35	35	>0.9
How familiar (very) are you with:				
Clinical resources in your org.	70	69	71	0.3
People in those clinical resources	34	33	35	0.9
Community resources	49	44	55	0.008
People in those community resources	19	17	23	0.2
What measures are used by your care system to evaluate effectiveness of CC?				
Types of patients seen	36	34	38	0.5
Types of services provided	38	36	40	0.6
Utilization rates of hospital or emergency use	58	50	69	<0.001
Volume of CC patients seen	62	54	73	<0.001
Change in hospital/emergency visits	53	44	64	<0.001
Changes in chronic condition control	51	46	58	0.5
CC patient satisfaction	32	34	31	0.6
None of the above	14	15	13	0.6
Specialty medical services are readily available for CC patients most of the time	47	52	41	0.13
Community services are readily available for CC patients most of the time	40	43	37	0.14
Ease of coordinating services with hospitals or nursing homes				0.8
Very difficult	4	4	4	
Somewhat difficult	32	31	34	
Somewhat easy	55	54	55	
Very easy	10	11	8	
Payment or coverage for CC services is required to provide care most of the time				>0.9
Most of the time	19	19	20	
Sometimes	10	11	10	
Rarely/Never	70	70	70	
Patient financial constraints limit their access to needed social and medical services				0.4
Most of the time	27	26	28	
Some of the time	68	68	69	
Rarely/Never	5	6	3	
Most clinicians value the CC role				0.037
Strongly agree	60	64	56	
Somewhat agree	32	27	39	

Continued

Table 4. Continued

Characteristic	Total	Medical/Nurse Model	Integrated Social Worker Model	*P*
Somewhat disagree	4	6	1	
Strongly disagree	4	4	4	
Clinic leaders value the CC role				0.051
Strongly agree	56	63	47	
Somewhat agree	32	27	37	
Somewhat disagree	9	7	12	
Strongly disagree	4	3	4	
Overall satisfaction with the time/resources to provide CC services				0.2
Very satisfied	25	24	27	
Somewhat satisfied	57	54	61	
Somewhat dissatisfied	16	20	11	
Very dissatisfied	2	2	1	

Abbreviations: CC, care coordination; EMR, electronic medical record. All numbers except N and P are in %.

care into health care.[4] Their main recommendation was to design health care delivery so as to integrate social care into health care by addressing these 5 As[20]:

1. Awareness by identifying social needs
2. Adjustment by altering clinical care
3. Assistance by connecting patients with relevant resources
4. Alignment by understanding and using community resources
5. Advocacy by partnering with social care organizations

Although we did not directly ask about these 5A recommendations, we did ask related questions that indicate there were some differences between the 2 care models. Clinics with an integrated social worker were 22 percentage points more likely to report identifying and referring for social needs, 11 percentage points more likely to assess the complexity of social needs for all or most patients, and 12 percentage points more likely to refer to resources outside their care system. However, most supports and resources for care coordination did not differ by care model.

Another recommendation from the Committee was to support research and evaluation on the effectiveness and implementation of social care practices. The integrated social worker versus medical/nursing model described above and the specific strategies documented here provide a basis for such studies as well as care system implementation of what will be found to be most effective.

Related Literature on Integrating Health and Social Care

As emphasized by recent systematic reviews, there is a real need for better information about how to most effectively provide care coordination.[5,7,21–24] Currently, there is little specific information about how care coordination links health care and social services, how social needs assessment and actions are best conducted, and what the impacts are.[5,7,25] The review by Escobar et.al. also noted that all but 1 of the 35 studies they found on this topic were at high risk for bias in the few relevant findings they have produced.[7]

In an alternative opinion, Glied and D'Aunno have questioned whether it is either wise or feasible for health systems and hospitals to become involved in providing social services.[26] They do not question the importance of addressing social needs, but believe that this should be done by the government and social agencies that specialize in this work. They suggest that what they call "mission creep" for health care may have largely negative consequences. Until we have better studies of the outcomes associated with various approaches to social needs, this will remain unknown.

Study Limitations and Opportunities

The generalizability of this description of care coordination is limited by only including clinics that have been certified as health care homes and provide care in a single state, but it is strengthened by a 100% response rate from the 81% of clinics in

the state that were eligible for inclusion. It also represents the perspective of a single reporter for each clinic and our best estimate of which characteristics to include in the survey. There may well be additional important characteristics, but our planned assessment of the relationship between changes in outcomes for the characteristics included in the current survey will help to identify which are most effective. There is a need for a qualitative investigation of these clinics to further explore their motivations behind including or forgoing the addition of an integrated social worker.

Conclusion

Clinics with an integrated social worker seem to be different in many ways from those that do not, while providing most medical/nursing coordination services at similar or higher rates. However, these differences are in degree rather than categorical; therefore, analyses need to recognize the confounding effect of social worker involvement in any comparisons of other care models. It is also important to recognize that resource constraints often limit the extent to which social needs can be addressed and whether clinics are able to include a social worker on the team. Future studies are needed to explore the relationships between care coordination roles and services in other regions of the country and to evaluate the impact of different coordination models on important patient outcomes.

To see this article online, please go to: http://jabfm.org/content/37/5/857.full.

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