

Care Coordination for Veterans With COPD: A Positive Deviance Study

Ekaterina Anderson, PhD; Renda Soylemez Wiener, MD, MPH; Kirsten Resnick, MS; A. Rani Elwy, PhD; and Seppo T. Rinne, MD, PhD

Chronic obstructive pulmonary disease (COPD) affects 12.7 million individuals in the United States, including nearly 1.25 million US veterans (25% of the veteran population).¹⁻⁴ In 2010 alone, COPD was responsible for approximately 10.3 million physician appointments, 1.5 million emergency department visits, and 700,000 hospitalizations.⁵ In 2014, CMS began imposing financial penalties on hospitals with high risk-adjusted COPD readmission rates.⁶⁻⁹ Although Veterans Affairs (VA) does not penalize hospitals based on readmission rates, it tracks readmissions⁸ and incorporates these metrics into its yearly hospital star ratings,¹⁰ thus providing an excellent opportunity to examine differences in COPD care among hospitals according to readmission rates.

Hospital readmission rates for COPD vary widely,¹¹ yet few interventions have reliably reduced COPD readmissions.¹² COPD readmissions are associated with other hospital quality indicators,⁹ suggesting that common organizational or institutional factors may drive high-quality care.¹³ Care coordination is one organizational factor that could explain these associations. The few COPD interventions that have effectively improved readmissions relied on high-quality care coordination,¹⁴⁻¹⁶ and care coordination has improved care quality for other conditions.¹⁷⁻²⁰ Relational coordination theory conceptualizes differences in organizational approaches to coordination as contingent on 2 mutually reinforcing factors: relationships (with high quality defined by shared knowledge, shared goals, and mutual respect) and communication (with high quality defined as frequent, timely, accurate, and problem-solving).²¹⁻²³ Exploring differences in relationships and communication at sites with high versus low COPD readmissions could identify opportunities to improve coordination and ultimately enhance the quality of COPD care and chronic care more broadly.

The primary purpose of this paper is to explore organizational factors, including relational coordination, at VA sites with high versus low COPD readmissions. Our findings could help identify specific, modifiable organizational characteristics associated with lower COPD readmissions. These results could also guide initiatives that support care coordination for other chronic diseases to improve the overall quality of care. This work has been expanded

ABSTRACT

OBJECTIVES: Improving chronic obstructive pulmonary disease (COPD) care and reducing hospital readmissions is an urgent healthcare system priority. However, little is known about the organizational factors that underlie intersite variation in readmission rates. Evidence from other chronic diseases points to care coordination as one such factor.

STUDY DESIGN: To understand whether intersite differences in care coordination may be one of the organizational factors contributing to the variation in readmission rates, we examined provider perspectives on COPD care at Veterans Affairs (VA) sites.

METHODS: In this mixed-methods positive deviance study, we selected 3 VA sites in the lowest quartile and 3 in the highest quartile for 2016 risk-adjusted COPD readmission rates. During June to October 2017, we conducted semistructured interviews with primary and specialty care providers involved in COPD care at VA sites with low ($n = 14$) and high ($n = 11$) readmission rates.

RESULTS: Although providers at all sites referenced ongoing readmission reduction initiatives, only providers at low-readmission sites described practice environments characterized by high relational coordination (ie, high-quality work relationships and high-quality communication). They also reported fewer significant structural barriers to collaboration in areas like patient volume.

CONCLUSIONS: The most notable differences between high- and low-readmission sites were related to the quality of relational coordination and the presence of structural barriers to coordination, rather than specific readmission reduction initiatives. Implementing organizational reforms aimed at enhancing relational coordination and removing structural barriers would enhance care for COPD and may improve quality of care for other chronic conditions.

Am J Manag Care. 2020;26(2):63-68

TAKEAWAY POINTS

We discovered that although Veterans Affairs sites with both high and low readmission rates for chronic obstructive pulmonary disease (COPD) had readmission reduction initiatives in place, it was providers at sites with low readmission rates for COPD who described practice environments characterized by a greater degree of relational coordination and reported fewer structural barriers than their counterparts at sites with high readmission rates. Because the features of practice environments that enable relational coordination are not unique to COPD, improving relational coordination may also improve quality of care for other chronic diseases.

- ▶ Stakeholders may consider launching initiatives to foster relationships and support high-quality communication between clinicians involved in COPD care.
- ▶ These initiatives may also be extended to non-COPD contexts, as improved relational coordination is likely to improve care for other chronic conditions.
- ▶ Efforts to improve relational coordination ought to also target structural barriers to collaboration, such as excessive workload and understaffing.

capture diverse professional perspectives. The interviews explored provider definitions of and experiences with COPD care coordination, as well as local organizational practices related to COPD care (eAppendix [available at [ajmc.com](#)]). Thematic saturation was reached (ie, no new concepts emerged with new interviews)³⁰ after 25 interviews (14 low-readmission sites and 11 high-readmission sites). The professionally transcribed and verified interviews were analyzed with the qualitative software package NVivo version 11 (QSR International; Melbourne, Australia).

Using principles of conventional content analysis, 2 investigators (K.R. and S.T.R.) inde-

pendently read all of the transcripts line by line and inductively constructed initial codes.³¹ They then compared their notes, reviewing the code structure for logic and comprehensiveness. Throughout the coding process, they met regularly and discussed select sections of the transcripts to agree on code definition and application, revise the codebook, and discuss emergent themes with the larger research team. The team then produced summaries of organizational practices of all sites, drawing on positive deviance methodology²⁶ to determine practices that distinguished high-performing sites. To ensure objectivity and minimize confirmation bias, the investigators acknowledged negative attributes of high-performing sites and positive attributes of low-performing ones. The team then reanalyzed the dominant themes using relational coordination theory, a theoretical framework that, unlike traditional approaches to organizational coordination and performance that focus on formal coordination mechanisms (scheduling, routines, standardization) or individual metrics (individual performance, skills, or motivation), foregrounds relational dynamics.^{23,32} The study was approved by the Edith Nourse Rogers Memorial Veterans Hospital Institutional Review Board.

from the abstracts presented at the American Thoracic Society International Conference in May 2018²⁴ and the VA HSR&D/QUERI National Conference in October 2019.²⁵

METHODS

We conducted a mixed-methods study of healthcare provider perspectives on care coordination for veterans with COPD. We used the positive deviance approach (ie, the study of the underlying causes of exceptionally high organizational performance)^{26,27} and an explanatory sequential design, wherein quantitative data inform qualitative data collection and analysis.²⁸ We reviewed VA Hospital Compare website data on 2016 risk-adjusted COPD readmission rates for VA medical centers (VAMCs), which are typically composed of inpatient and outpatient clinical settings located on the same campus, nationwide.²⁹ Relying on purposive sampling and taking care to ensure diversity in geography and size, we selected 3 VAMCs in the lowest and highest readmission quartiles, respectively (Table 1).

We recruited providers at the selected sites between June and October 2017 through emails and phone calls, using snowball sampling for further recruitment. We interviewed inpatient and outpatient providers caring for veterans with COPD in their regular clinical practice (n = 25, including 13 internal medicine providers, 10 pulmonologists, and 2 mental health care providers) (Table 1) over the phone. Mental health care providers were included to

RESULTS

Low- and high-readmission sites alike had initiatives to improve COPD care and reduce readmissions (Table 2). However, the nature and scope of these initiatives varied among sites. Further,

TABLE 1. Site and Respondent Information

Readmission Group	Site	Region	n	Respondents by Practice Setting, n			Respondents by Specialty, n			Mean Years of VA Service
				Inpatient Only	Outpatient Only	Inpatient and Outpatient	General Medicine	Pulmonary Medicine	Mental Health	
Low	A	West	6	4	0	2	4	2	0	8
	B	West	5	1	1	3	3	2	0	12
	C	Midwest	3	1	1	1	2	1	0	8
High	D	Midwest	5	1	3	1	3	1	1	9
	E	South	3	1	1	1	2	0	1	12
	F	South	3	1	2	0	3	0	0	5

VA indicates Veterans Affairs.

whereas respondents from low-readmission sites reported collaborative working relationships (characterized by shared knowledge, shared goals, and mutual respect), stronger communication, and fewer significant structural barriers to collaboration, their counterparts at high-readmission sites described challenges in these domains, suggesting noteworthy intersite differences in practice environments.

COPD Care Improvement Initiatives and Programs

Participants from low- and high-readmission sites alike described the following types of initiatives and programs: (1) inpatient and outpatient education programs, including smoking cessation counseling; (2) postdischarge follow-ups, sometimes by designated coordinators or case managers; (3) pulmonary rehabilitation programs; and (4) postdischarge outpatient clinics. However, the programs at sites with low readmissions can be characterized as more extensive and more deliberately designed. For example, COPD coordinators not only were tasked with appointment scheduling and occasional follow-ups like their high-readmission counterparts, but also took and triaged patient calls. Similarly, at another low-readmission site, all patients at risk for readmission were referred to a multidisciplinary postdischarge clinic, whereas at high-readmission sites no such systematic approach was used.

More fundamentally, although sites with high readmissions had some innovative initiatives in place (eg, standardized COPD order set, early palliative care consults, interdisciplinary huddles), provider accounts from these facilities do not convey a sense of deliberate, coordinated attempts to address readmissions. As one interviewee observed, “Our readmission rates with COPD are up for some reason, and I don’t think anybody really knows why they’re up.” By contrast, providers at low-readmission sites reported that their sites formed working groups tasked with summarizing best practices and reviewing readmissions case by case to “try to understand why that happened.”

Relationships

Shared knowledge. In relational coordination theory, “shared knowledge” refers to knowledge about colleagues’ nature of work and scope of responsibilities.³² At low-readmission sites, providers described a division of labor in which “there’s opportunity for sharing on both [pulmonary and primary care] sides.” As one

provider explained, pulmonologists oversee the technical side of COPD symptom management, whereas primary care providers (PCPs) “have a much more longitudinal relationship with the patient” and a deeper knowledge of the patient’s social context. In contrast, at high-readmission sites, the division of labor between PCPs and specialists was more ad hoc and tenuous. According to a pulmonologist, “It often falls to the primary care physician to try to keep one cohesive plan together.”

Shared goals. According to relational coordination theory, effective coordination requires commitment to an overall process goal

TABLE 2. Select COPD Programs and Initiatives by Site, as Described by Interviewees

Readmission Group	Site	COPD Programs and Initiatives
Low	A	<ul style="list-style-type: none"> • Designated COPD nurse (in charge of triaging patient calls; post-discharge follow-ups to assist with appointment scheduling, referrals, and need assessment; and follow-ups with frequent exacerbators) • Monitoring pulmonary rehabilitation referrals • Telehealth pulmonology rehabilitation (weekly 30-minute calls to discuss progress, barriers, and solutions; used as an alternative or supplement to outpatient rehabilitation) • COPD discharge bundles (pulmonary rehabilitation referral, vaccinations, inhaler education, postdischarge action plan) • Involving primary care team members in COPD care management • Robust use of electronic consultations (e-consults) between providers • Subspecialty urgent care clinic • Multidisciplinary lung cancer and lung disease programs
	B	<ul style="list-style-type: none"> • Involving outpatient pulmonary team during hospitalization • Daily inpatient discharge rounds to assess patients’ postdischarge needs • COPD patient education • COPD coordinator to schedule appointments and arrange home-based care • COPD telehealth (patients calling VAMC-based providers from CBOCs) • Inpatient and outpatient smoking cessation programs • Pulmonary rehabilitation referrals
	C	<ul style="list-style-type: none"> • Inpatient self-management education • Inpatient and outpatient smoking cessation counseling • Multidisciplinary COPD postdischarge clinic • Non-condition-specific readmission reduction clinic
High	D	<ul style="list-style-type: none"> • Case management (postdischarge follow-up and in-person/telehealth appointment to discuss medication, symptom management, and action plan) • Predischarge patient education • Standardized COPD order set embedded in EHR (to facilitate medication prescriptions)
	E	<ul style="list-style-type: none"> • Early palliative care consult • Hospital interdisciplinary huddles to discuss patient needs • Early-stage quality improvement project to create a readmission-reduction interdisciplinary team
	F	<ul style="list-style-type: none"> • Postdischarge nurse follow-up • Inpatient and outpatient smoking cessation programs • Telehealth services (for monitoring COPD symptoms) • Pulmonary rehabilitation • Interdisciplinary huddles on readmission reduction for chronic conditions

CBOC indicates community-based outpatient clinic; COPD, chronic obstructive pulmonary disease; EHR, electronic health record; VAMC, Veterans Affairs medical center.

(in this case, high-quality COPD care), rather than to lower-level “functional” goals (managing a particular symptom or conducting a specific test).³² Respondents from low-readmission sites reported a shared commitment to comprehensive, high-quality patient care. One participant explained that after admitting a patient, the team works “with nursing, speech, [physical therapy], [occupational therapy, and] social work to make sure we provide appropriate care in the hospital, and then we work on that transition of care back to their primary care provider.” In contrast, at high-readmission sites, providers were more focused on functional goals, sometimes losing sight of the bigger picture. One PCP observed, “[Specialists only] take ownership of the problem” without “really looking at the entire patient or really taking ownership of the patient’s care.”

Mutual respect. Relational coordination theory views mutual respect, understood as appreciation for the competence of others engaged in the same work process, as essential to effective relationships.²³ Respondents from low-readmission sites described a greater sense of camaraderie, as well as more confidence in their working relationships, than providers at high-readmission sites. One inpatient physician from a low-readmission site observed: “I feel more confident that most of the time if I call them they’re going to be happy that I called them, even [if] they’re not supposed to be the inpatient consultant at the moment. And most of the time they are going to be willing to offer assistance.” Another participant, asked about exceptional local champions of readmission prevention, said: “I think everybody is exceptional.” This sense of confidence is not found in high-readmission sites, where some participants described PCP-specialist relationships that are at best absent and at worst antagonistic: “Primary care always lives in fear that one of their consults is going to be batted down because we didn’t do this test or we didn’t do that test before we made the referral.”

Communication

According to relational coordination theory, high-quality relationships reinforce and are reinforced by frequent, timely, accurate, and problem-solving communication.²² Providers at low-readmission sites used all modes of communication more effectively and used direct communication, including face-to-face contact, more frequently and more readily than their counterparts at high-readmission sites.

Respondents at all sites communicated through the electronic health record (EHR) and added other providers as cosigners on notes. However, at high-readmission sites, the quality of chart communication was viewed as poor (“copy and paste and read my note”), and cosigning, primarily used for discharge summaries, was more generic and unfocused. One pulmonologist shared that his colleagues often end up “just adding someone as a cosigned to a giant note.” By contrast, at low-readmission sites, cosigning tended to be directed at specific providers: “[A] large part of collaboration is doing good-quality charting...and tagging for co-signature [the] PCP and other interested parties.” The content of the notes was also more specific. For example, a hospital pulmonologist reported writing discharge notes that “directly address primary care, with

emphasis on things that we feel [are] important to prevent exacerbations, or to address other comorbidities that might affect COPD.” In this example, communication was more accurately tailored to the intended recipient, which was likely informed by greater knowledge of that recipient’s role in the care process.

Providers at low-readmission sites described communicating by phone frequently and readily, striving, “whenever possible, to have an actual live conversation with somebody [to coordinate patient care] as opposed to communicating back and forth in the chart.” By contrast, providers from high-readmission sites reported minimal direct communication. A nurse practitioner shared that although there was a way to contact the pulmonary clinic directly, this option was rarely, if ever, used in practice: “If I have somebody who’s acute, it’s either I’m gonna send them to the local hospital or I’m gonna manage the patient.” Some participants explicitly expressed frustration with this lack of communication. An outpatient-based PCP wistfully noted that getting “a warm handoff on an inpatient veteran’s medical issue” was “exceedingly rare.”

Providers at both high- and low-readmission sites described face-to-face contact with other providers as highly desirable (“in an ideal world, we’d be able to put a name to a face”), citing distance and lack of colocation as a challenge. For instance, one provider observed, “[Our facility] is a big place and...there are a lot of people you don’t know, other than through what they look like on [the EHR].” Conversely, colocation and/or a smaller facility size seemed to facilitate face-to-face contact. A PCP commented, “[T]here are [specialists] nearby. I mean they’re 75 feet away. So they can be grabbed and [asked] ‘Hey, can you adjust this?’”

Structural Barriers to Care Coordination

Although respondents at all sites expressed concerns that other providers were too busy to collaborate, respondents at low-readmission sites described fewer significant structural barriers. Specifically, providers from low-readmission facilities viewed availability of outpatient care, low patient volumes, and colocation between pulmonologists and other specialists as facilitating a collaborative environment with high-quality patient care. For instance, a provider from a low-readmission site observed: “I think we tend to have relatively lower censuses here at our institution, so...we tend to have the ability to spend a little bit more time with patients.” By contrast, providers from high-readmission sites expressed concerns about excessive workload and limited availability of outpatient care: “Where it falls through in continuity is the outpatient side because of just lack of resources, lack of clinic space, lack of people, lack of schedulers.” As the same participant candidly summarized, “You know, we have the right goals in place; we just...lack resources to do it.”

DISCUSSION

The results of this study demonstrate notable differences between high- and low-readmission sites: Although low-readmission sites had somewhat more focused, robust, and self-reflexive readmission

reduction initiatives in place, the most pronounced difference was not among the specific programs in place, but was instead the nature of the practice environment, and specifically the degree to which interprovider relationships and organizational structures supported care coordination. Whereas providers at low-readmission facilities described organizational environments that foster collegial working relationships and efficient communication, their counterparts at high-readmission sites reported issues in these domains and referenced significant structural barriers to care coordination. In other words, the practice environment at low-readmission sites, to the extent that it was adequately described by provider accounts, had a higher degree of relational coordination than the practice environment at high-readmission sites.

Our study has several crucial implications. First, it suggests that care coordination is key to improving COPD care. This is consistent with the existing literature: Although no specific clinical interventions or organizational practices that reliably and consistently reduce COPD readmissions have been identified,^{12,13} evidence is increasingly pointing to comprehensive, collaborative care as key to improving COPD outcomes.^{16,33-36} We suggest that one way to foster collaboration in COPD care is to promote relational coordination among providers. Stakeholders seeking to reduce COPD readmissions could extend their focus of attention from purely clinical and logistical aspects of COPD care delivery to initiatives that foster relationships and support high-quality communication between healthcare providers (eg, pulmonologists and PCPs, outpatient and inpatient providers).

Second, we suggest that, because the underlying mechanisms of relational coordination in COPD care are hardly specific to COPD, promoting relational coordination may improve quality indicators for other chronic conditions. Indeed, research has shown that care coordination improves outcomes for such chronic conditions as diabetes, heart failure, hypertension, posttraumatic stress disorder, and depression.¹⁷⁻²⁰ Relational coordination, more specifically, has been associated with high-quality care in diverse healthcare contexts, including postoperative care for surgical patients,³⁷ primary care for diabetes,³⁸ nursing homes,³⁹ and hospital care for older patients.⁴⁰ On a practical level, this means that broad organizational reforms centered on relational coordination could improve quality of care for multiple conditions. Given that a growing body of literature suggests that organizational culture may affect not only the quality of care⁴¹⁻⁴³ but also provider well-being,⁴⁴⁻⁴⁶ these reforms might also enhance employee morale.

However, this sort of organizational reform must address structural barriers. Care coordination at the sites that we studied was not a matter of individual commitment or motivation. Indeed, providers everywhere embraced a collaborative practice environment in which PCPs and specialists agree on appropriate division of labor, colleagues treat one another with respect, and multiple channels of communication support care coordination. Yet the routines and practices of providers at low-readmission sites promoted collaboration more effectively. By contrast, providers at high-readmission sites reported such structural impediments as excessive

workload, understaffing, inconvenient spatial layout of the facility discouraging communication, and lower availability of accessible outpatient services in the area. Therefore, any attempts to reform organizational culture by exclusively targeting individual providers' motivation or behavior are bound to fail unless they also address the underlying system-level issues. However, even well-designed structures are not likely to be used effectively in the absence of a culture of relational coordination,⁴⁷ suggesting the importance of building a relational culture along with supporting structures.

Limitations

Our study has limitations. The inclusion of only VA sites limits the results' generalizability: VA is an integrated healthcare system with features that support communication across care settings, such as outpatient-inpatient provider colocation. Care coordination may be even more challenging where these structures are absent.⁴⁸ At the same time, certain features of the VA, such as a traditional bureaucratic structure of accountability, may be less supportive of care coordination than other health systems. Additionally, although we used readmission rates as an indicator of the quality of care, this metric has been criticized as being driven by nonmodifiable demographic factors and prone to gaming by hospitals.^{6,49} Future positive deviance research should focus on other outcomes of COPD care quality, especially patient-centered outcomes such as patient-rated quality of care and patient-rated quality of life. Finally, we relied exclusively on interviews with providers for information about the sites' readmissions programs and care-coordination practices and did not incorporate observations as a method of data collection,⁵⁰ nor did we seek out a broader input from the nursing staff.

CONCLUSIONS

Although VA sites with both low and high readmission rates for COPD have ongoing readmission reduction initiatives, providers from the former described work environments that have a greater degree of relational coordination. Unlike their counterparts at high-readmission sites, providers at low-readmission sites displayed shared knowledge regarding the interprovider division of responsibilities, prioritized the overall goal of exceptional patient care over lower-level functional goals, and utilized indirect and direct channels of communication frequently and effectively. Providers from low-readmission sites also reported fewer structural barriers to collaboration in domains such as workload, staffing, and outpatient service availability. To reduce COPD readmissions and improve COPD care, decision makers ought to embrace comprehensive reforms that promote organizational culture change and target structural barriers that hamper care coordination for COPD and other chronic conditions. Although ostensibly overly ambitious, these changes to organizational culture would be well worth the investment of effort and resources, as they are likely to improve not only the readmission indicators for COPD but also patient outcomes for other chronic conditions, while potentially enhancing provider well-being. ■

Author Affiliations: Center for Healthcare Organization and Implementation Research, Veterans Affairs (EA, RSW, KR, ARE, STR), Bedford, MA; The Pulmonary Center, Boston University School of Medicine (RSW, STR), Boston, MA; Boston University (KR), Boston, MA; Department of Psychiatry and Human Behavior, Alpert Medical School, Brown University (ARE), Providence, RI.

Source of Funding: This work was supported by the Career Development Award (CDA) from the US Department of Veterans Affairs' Veterans Integrated Service Network 1 and by the Parker B. Francis Fellowship, both awarded to Dr Rinne. The contents do not represent the views of the US Department of Veterans Affairs or the United States Government.

Author Disclosures: Dr Rinne has received a Veterans Affairs Health Services Research and Development Service CDA to study coordination and has attended the American Thoracic Society Conference. The remaining authors report no relationship or financial interest with any entity that would pose a conflict of interest with the subject matter of this article.

Authorship Information: Concept and design (EA, RSW, ARE, STR); acquisition of data (KR, STR); analysis and interpretation of data (EA, RSW, KR, ARE, STR); drafting of the manuscript (EA, KR, ARE, STR); critical revision of the manuscript for important intellectual content (EA, RSW, KR, ARE, STR); provision of patients or study materials (STR); obtaining funding (STR); administrative, technical, or logistic support (EA, KR); and supervision (RSW, ARE, STR).

Address Correspondence to: Ekaterina Anderson, PhD, Center for Healthcare Organization and Implementation Research, Edith Nourse Rogers Memorial VA Hospital, 200 Springs Rd, Bldg 70, Bedford, MA 01730. Email: ekaterina.anderson@va.gov.

REFERENCES

- Morbidity and mortality: 2012 chart book on cardiovascular, lung, and blood diseases. National Heart, Lung, and Blood Institute website. [nhlbi.nih.gov/files/docs/research/2012_ChartBook_508.pdf](https://www.nhlbi.nih.gov/files/docs/research/2012_ChartBook_508.pdf). Published February 2012. Accessed January 3, 2019.
- Murray CJ, Vos T, Lozano R, et al. Disability-adjusted life years (DALYs) for 291 diseases and injuries in 21 regions, 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010 [erratum in *Lancet*. 2013;381(9867):628]. *Lancet*. 2012;380(9859):2197-2223. doi: 10.1016/S0140-6736(12)61689-4.
- Kaboli PJ, Go JT, Hockenberry J, et al. Associations between reduced hospital length of stay and 30-day readmission rate and mortality: 14-year experience in 129 Veterans Affairs hospitals. *Ann Intern Med*. 2012;157(12):837-845. doi: 10.7326/0003-4819-157-12-201212180-00003.
- Wang L, Porter B, Maynard C, et al. Predicting risk of hospitalization or death among patients receiving primary care in the Veterans Health Administration. *Med Care*. 2013;51(4):368-373. doi: 10.1097/MLR.0b013e31827da95a.
- Ford ES, Croft JB, Mannino DM, Wheaton AG, Zhang X, Giles WH. COPD surveillance—United States, 1999-2011. *Chest*. 2013;144(1):284-305. doi: 10.1378/chest.13-0809.
- Feenster LC, Au DH. Penalizing hospitals for chronic obstructive pulmonary disease readmissions. *Am J Respir Crit Care Med*. 2014;189(6):634-639. doi: 10.1164/rccm.201308-1541PP.
- Elixhauser A, Au DH, Podulka J. *Readmissions for Chronic Obstructive Pulmonary Disease, 2008*. Rockville, MD: Agency for Healthcare Research and Quality; 2011.
- Joynt KE, Figueroa JE, Oray J, Jha AK. Opinions on the Hospital Readmission Reduction Program: results of a national survey of hospital leaders. *Am J Manag Care*. 2016;22(8):e287-e294.
- Rinne ST, Castaneda J, Lindenauer PK, Cleary PD, Paz HL, Gomez JL. Chronic obstructive pulmonary disease readmissions and other measures of hospital quality. *Am J Respir Crit Care Med*. 2017;196(1):47-55. doi: 10.1164/rccm.201609-19440C.
- Strategic Analytics for Improvement and Learning (SAIL) Value Model Measure definitions. US Department of Veterans Affairs website. https://www.va.gov/QUALITYOF CARE/measure-up/SAIL_definitions.asp. Accessed January 22, 2019.
- Jacobs DM, Noyes K, Zhao J, et al. Early hospital readmissions after an acute exacerbation of chronic obstructive pulmonary disease in the nationwide readmissions database. *Ann Am Thorac Soc*. 2018;15(7):837-845. doi: 10.1513/AnnatsATS.201712-9130C.
- Prieto-Centurion V, Markos MA, Ramey NI, et al. Interventions to reduce rehospitalizations after chronic obstructive pulmonary disease exacerbations: a systematic review. *Ann Am Thorac Soc*. 2014;11(3):417-424. doi: 10.1513/AnnatsATS.201308-2540C.
- Rinne ST, Hebert PL, Wong ES, et al. Organizational practices affecting chronic obstructive pulmonary disease readmissions. *Am J Respir Crit Care Med*. 2017;195(9):1269-1272. doi: 10.1164/rccm.201609-1783LE.
- Kruis AL, Smidt N, Assendelft WJ, et al. Integrated disease management interventions for patients with chronic obstructive pulmonary disease. *Cochrane Database Syst Rev*. 2013;10:CD009437. doi: 10.1002/14651858.CD009437.pub2.
- McCarthy B, Casey D, Devane D, Murphy K, Murphy E, Lacasse Y. Pulmonary rehabilitation for chronic obstructive pulmonary disease. *Cochrane Database Syst Rev*. 2015;(2):CD003793. doi: 10.1002/14651858.CD003793.pub3.
- Dajczman E, Robitaille C, Ernst P, et al. Integrated interdisciplinary care for patients with chronic obstructive pulmonary disease reduces emergency department visits, admissions and costs: a quality assurance study. *Can Respir J*. 2013;20(5):351-356. doi: 10.1155/2013/187059.
- Darkins A, Ryan P, Kobb R, et al. Care coordination/home telehealth: the systematic implementation of health informatics, home telehealth, and disease management to support the care of veteran patients with chronic conditions. *Telemed J E Health*. 2008;14(10):1118-1126. doi: 10.1089/tmj.2008.0021.
- Katon WJ, Lin EH, Von Korff M, et al. Collaborative care for patients with depression and chronic illnesses. *N Engl J Med*. 2010;363(27):2611-2620. doi: 10.1056/NEJMoA1003955.
- Kobb R, Hoffman N, Lodge R, Kline S. Enhancing elder chronic care through technology and care coordination: report from a pilot. *Telemed J E Health*. 2003;9(2):189-195. doi: 10.1089/153056203766437525.
- Schofield RS, Kline SE, Schmalzuss CM, et al. Early outcomes of a care coordination-enhanced telephone care program for elderly veterans with chronic heart failure. *Telemed J E Health*. 2005;11(1):20-27. doi: 10.1089/tmj.2005.11.20.
- Gittel JH. Supervisory span, relational coordination, and flight departure performance: a reassessment of postbureaucracy theory. *Organ Sci*. 2001;12(4):468-483. doi: 10.1287/orsc.12.4.468.10636.
- Gittel JH. Relationships between service providers and their impact on customers. *J Serv Res*. 2002;4(4):299-310. doi: 10.1177/1094670502004004007.
- Gittel JH. *Relational Coordination: Guidelines for Theory, Measurement and Analysis*. Waltham, MA: The Heller School for Social Policy and Management; 2011. <http://citeseerx.ist.psu.edu/viewdoc/download;jsessionid=C58E5F187A64C67F32A1D7785BF9DEB7?doi=10.1.1.468.6354&rep=rep1&type=pdf>. Accessed February 10, 2019.
- Rinne S, Resnick K, Elwy R, et al. Importance of multidisciplinary collaboration to reduce COPD readmissions in VA: a positive deviance study. Abstract presented at: American Thoracic Society 2018 International Conference; May 18-23, 2018; San Diego, CA. Abstract A102.
- Anderson E, Wiener RS, Resnick K, et al. Care coordination for veterans with chronic obstructive pulmonary disease: a mixed methods study of high vs. low readmission sites. Abstract presented at: VA HSR&D/QUERI National Conference; October 29-31, 2019; Washington, DC. Abstract 1127.
- Rose AJ, McCullough MB. A practical guide to using the positive deviance method in health services research. *Health Serv Res*. 2017;52(3):1207-1222. doi: 10.1111/1475-6773.12524.
- Bradley EH, Curry LA, Ramanathan S, Rowe L, Nembhard IM, Krumholz HM. Research in action: using positive deviance to improve quality of health care. *Implement Sci*. 2009;4:25. doi: 10.1186/1748-5908-4-25.
- Fetters MD, Curry LA, Creswell JW. Achieving integration in mixed methods designs—principles and practices. *Health Serv Res*. 2013;48(6, pt 2):2134-2156. doi: 10.1111/1475-6773.12117.
- Hospital Compare Data. US Department of Veterans Affairs website. www.accessgocare.va.gov/Healthcare/HospitalCompareData. Accessed January 22, 2019.
- Morse JM. The significance of saturation. *Qual Health Res*. 1995;5(2):147-149. doi: 10.1177/104973239500500201.
- Hsieh HF, Shannon SE. Three approaches to qualitative content analysis. *Qual Health Res*. 2005;15(9):1277-1288. doi: 10.1177/1049732305276687.
- Gittel JH. Relational coordination: coordinating work through relationships of shared goals, shared knowledge and mutual respect. In: Kyriakidou O, Ozbilgin MF, eds. *Relational Perspectives in Organizational Studies: A Research Companion*. Cheltenham, UK: Edward Elgar Publishing; 2006:74-94.
- de Sousa Pinto JM, Martin-Nogueras AM, Morano MT, Macêdo TE, Arenillas JJ, Troosters T. Chronic obstructive pulmonary disease patients' experience with pulmonary rehabilitation: a systematic review of qualitative research. *Chron Respir Dis*. 2013;10(3):141-157. doi: 10.1177/1479972313493796.
- Fromer L, Barnes T, Garvey C, Ortiz G, Saver DF, Yawn B. Innovations to achieve excellence in COPD diagnosis and treatment in primary care. *Postgrad Med*. 2010;122(5):150-164. doi: 10.3810/pgm.2010.09.2212.
- Srijbos JH, Postma DS, van Altena R, Gimeno F, Koeter GH. A comparison between an outpatient hospital-based pulmonary rehabilitation program and a home-care pulmonary rehabilitation program in patients with COPD: a follow-up of 18 months. *Chest*. 1996;109(2):366-372. doi: 10.1378/chest.109.2.366.
- Kruis AL, Smidt N, Assendelft WJ, et al. Cochrane corner: is integrated disease management for patients with COPD effective? *Thorax*. 2014;69(11):1053-1055. doi: 10.1136/thoraxjnl-2013-204974.
- Gittel JH, Fairfield KM, Bierbaum B, et al. Impact of relational coordination on quality of care, postoperative pain and functioning, and length of stay: a nine-hospital study of surgical patients. *Med Care*. 2000;38(8):807-819. doi: 10.1097/00005650-200008000-00005.
- Noël PH, Lanham HJ, Palmer RF, Leykum LK, Parchman ML. The importance of relational coordination and reciprocal learning for chronic illness care within primary care teams. *Health Care Manag Rev*. 2013;38(1):20-28. doi: 10.1097/HMR.0b013e3182497262.
- Gittel JH, Weinberg D, Pfefferle S, Bishop C. Impact of relational coordination on job satisfaction and quality outcomes: a study of nursing homes. *Hum Resour Manage J*. 2008;18(2):154-170. doi: 10.1111/j.1748-8583.2007.00063.x.
- Hartgerink JM, Cramm JM, Bakker TJ, van Eijsden RA, Mackenbach JP, Nieboer AP. The importance of relational coordination for integrated care delivery to older patients in the hospital. *J Nurs Manag*. 2014;22(2):248-256. doi: 10.1111/j.1365-2834.2012.01481.x.
- Hoff T, Jameson L, Hannan E, Flink E. A review of the literature examining linkages between organizational factors, medical errors, and patient safety. *Med Care Res Rev*. 2004;61(1):3-37. doi: 10.1177/107558703257171.
- Mannion R, Davies HT, Marshall MN. Cultural characteristics of "high" and "low" performing hospitals. *J Health Organ Manag*. 2005;19(6):431-439. doi: 10.1108/14777260510629689.
- Scott T, Mannion R, Davies H, Marshall M. The quantitative measurement of organizational culture in health care: a review of the available instruments. *Health Serv Res*. 2003;38(3):923-945. doi: 10.1111/1475-6773.00154.
- Williams ES, Manwell LB, Konrad TR, Linzer M. The relationship of organizational culture, stress, satisfaction, and burnout with physician-reported error and suboptimal patient care: results from the MEMO study. *Health Care Manag Rev*. 2007;32(3):203-212. doi: 10.1097/01.HMR.00000281626.28363.59.
- Gittel JH, Logan C, Cronenwett J, et al. Impact of relational coordination on staff and patient outcomes in outpatient surgical clinics. *Health Care Manag Rev*. 2020;45(1):12-20. doi: 10.1097/HMR.0000000000000192.
- Havens DS, Gittel JH, Vasey J. Impact of relational coordination on nurse job satisfaction, work engagement and burnout: achieving the Quadruple Aim. *J Nurs Adm*. 2018;48(3):132-140. doi: 10.1097/NNA.0000000000000587.
- Gittel JH. *Transforming Relationships for High Performance: The Power of Relational Coordination*. Palo Alto, CA: Stanford University Press; 2016.
- Rinne ST, Resnick K, Wiener RS, Simon SR, Elwy AR. VA provider perspectives on coordinating COPD care across health systems. *J Gen Intern Med*. 2019;34(suppl 1):37-42. doi: 10.1007/s11606-019-04971-2.
- Joynt KE, Jha AK. Thirty-day readmissions—truth and consequences. *N Engl J Med*. 2012;366(15):1366-1369. doi: 10.1056/NEJMp1201598.
- Patton MQ. Enhancing the quality and credibility of qualitative analysis. *Health Serv Res*. 1999;34(5, pt 2):1189-1208.

Visit ajmc.com/link/4479 to download PDF and eAppendix

eAppendix

Provider Interview Guide

Study: Collaborative Care for Veterans with Chronic Obstructive Pulmonary Disease

Principal Investigator: Seppo Rinne, MD PhD

1. What is your position in the VA?
2. How long have you worked at the VA?
3. In what context do you see COPD patients?
4. What does collaborative care mean to you in the context of managing patients with complex chronic disease?
 - a. How do you collaborate with other providers to manage complex patients with complex multimorbidity, such as patients with COPD?

Probe: Can you give examples of when collaboration worked/didn't work?
5. In your experience, how is discharge information on Veterans with COPD typically communicated between *inpatient* and *outpatient* healthcare providers?

Probe: Can you provide an example of the typical content of discharge communication?
What technologies are used to communicate discharge information?
How are critical issues (such as important tests results) communicated?
How do non-VA hospitals communicate discharge information with VA providers?
Can you think of examples from your work that illustrate these communications?
6. How does your facility work to prevent COPD readmissions?

Probe: Are there interventions/programs that focus on COPD patients after hospital discharge?
How do providers work with patients and their social support to keep them out of the hospital?

 - Are there specific individuals/champions that are 'exceptional' at working prevent COPD readmissions
 - Are there creative ways that you have identified to prevent COPD readmissions?
 - Examples
7. How is information on Veterans with COPD typically communicated between *primary care* and *specialty* providers?

Probe: Can you think of the typical content of the communication, for example?
What technologies are used to communicate?
How are urgent patient issues (such as worsening condition) communicated?
How do you communicate with non-VA providers?
8. Are there any standardized systems or protocols in place to promote collaborative care for Veterans with COPD (such as interdisciplinary meetings)?

Probe: In your opinion, what does your facility do well?

Are their local champions?

How have you developed your own ways of participating in collaborative care

For example, any QI projects or other novel ideas?

Does your facility have multidisciplinary mechanisms to promote smoking cessation or medication adherence?

9. How do your relationships with other providers influence the content and quality of communication?

Probe: Are there formal or informal opportunities to interact with providers in different specialties.

Can you give examples of how relationships have helped or hindered communication?

How are conflicts related to patient care resolved?

10. In your experience, how is collaborative care associated with work satisfaction?

Probe: Does collaborating with others influence satisfaction with your work?

Does your level of work satisfaction (presence/absence of burnout) influence collaborations with others?

11. What barriers (if any) exist for patients to access pulmonary care?

Probe: For patients who are not seen within 30 days of consultation, what contributes to delays in accessing pulmonary care?

Are there structures or practices that impede access to pulmonary care?

12. What existing systems (if any) help facilitate rapid access to pulmonary care?

Probe: How do clinical practices of primary care or pulmonary providers contribute to more rapid access to care?

How do scheduling practices facilitate more rapid access to care?

13. What organizational changes could help improve collaborative care?

Probe: How would you improve access to pulmonary care or the efficiency of the consultation process?