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Authors

Curtis, Jeffrey
Bykerk, Vivian
Crow, Mary
et al.

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Identification of Gaps in Quality of Care and Good Practice Interventions in Rheumatoid Arthritis: Insights From a Literature Review and Qualitative Study of Nine Centers in North America

Jeffrey R. Curtis,¹  Vivian P. Bykerk,² Mary K. Crow,²  Maria I. Danila,¹  Boulos Haraoui,³ George A. Karpouzas,⁴  Eric D. Newman,⁵ Hillary Norton,⁶ Jeff Peterson,⁷ Carter Thorne,⁸ Grace C. Wright,⁹ and Lorna Bain¹⁰

Objective. Quality of care (QoC) delivery in rheumatoid arthritis (RA) continues to suffer from various challenges (eg, delay in diagnosis and referral) that can lead to poor patient outcomes. This study aimed to identify good practice interventions that address these challenges in RA care in North America.

Methods. The study was conducted in three steps: (1) literature review of existing publications and guidelines (April 2005 to April 2021) on QoC in RA; (2) in-person visits to >50 individual specialists and health care professionals across nine rheumatology centers in the United States and Canada to identify challenges in RA care and any corresponding good practice interventions; and (3) collation and organization of findings of the two previous methods by commonalities to identify key good practice interventions, followed by further review by RA experts to ensure key challenges and gaps in RA care were captured.

Results. Several challenges and eight good practice interventions were identified in RA care. The interventions were prioritized based on the perceived positive impact on the challenges in care and ease of implementation. High-priority interventions included the use of technology to improve care, streamlining specialist treatment, and facilitating comorbidity assessment and care. Other interventions included enabling patient access to optimal medication regimens and improving patient self-management strategies.

Conclusion. Learnings from the study can be implemented in other rheumatology centers throughout North America to improve RA care. Although the study was completed before the COVID-19 pandemic, the findings remain relevant.

INTRODUCTION

Rheumatoid arthritis (RA) is one of the most common autoimmune inflammatory diseases worldwide, affecting >1.3 million people in the United States.¹ Although life expectancy has increased over the last few decades,² an increased risk of concomitant comorbidities remains a common challenge.³

Cardiovascular disease, depression, anxiety, pulmonary conditions, osteoporosis, and diabetes have a higher prevalence in patients with RA than in the general population.⁴ RA can also have a significant impact on daily life.⁵ Progression of disease and increased disease activity lead to limitations in daily activities, resulting in increasing disability and loss of self-reliance.⁵

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¹Jeffrey R. Curtis, MD, MS, MPH, Maria I. Danila, MD, MSc, MSPH: University of Alabama at Birmingham, Birmingham, Alabama; ²Vivian P. Bykerk, BSc, MD, FRCPC, Mary K. Crow, MD: Hospital for Special Surgery, New York, New York; ³Boulos Haraoui, MD, FRCPC: Institut de Rhumatologie de Montréal, Montreal, Quebec, Canada; ⁴George A. Karpouzas, MD, FACP: Harbor–University of California, Los Angeles, Medical Center, Torrance, California; ⁵Eric D. Newman, MD: Geisinger, Danville, Pennsylvania (current affiliation: ELAN Consulting Company, Danville, Pennsylvania); ⁶Hillary Norton, MD: Santa Fe Rheumatology, Santa Fe, New Mexico; ⁷Jeff Peterson, MD: Western Washington Medical Group, Everett, Washington; ⁸Carter Thorne, MD, FRCPC: Centre of Arthritis Excellence and The Arthritis Program Research Group, Newmarket, Ontario, Canada; ⁹Grace C. Wright MD, PhD, FACP: Grace C. Wright, MD, PC, New York, New

York; ¹⁰Lorna Bain, OT Reg (Ont), ACPAC: Southlake Regional Health Centre, Newmarket, Ontario, Canada (current affiliation: Unity Health Toronto, Toronto, Ontario, Canada).

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[Correction added on August 16th, 2024, after first online publication: The author affiliation has been corrected.]

Address correspondence via email to Jeffrey R. Curtis, MD, MS, MPH, at jrcurtis@uabmc.edu.

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SIGNIFICANCE & INNOVATIONS

- The interventions were determined by comprehensively interviewing the care teams, from physicians and nurses to practice managers. A holistic view of the patient pathway, challenges, and good practice interventions was compiled as a result.
- All interventions were ranked based on the likely positive impact and ease of implementation. Overall, three high-priority interventions were identified: the use of technology to improve quality of care (QoC), streamlining specialist care and treatment, and facilitating comorbidity assessment and care.
- Several interventions identified in North America were similar to those observed in a previous study of rheumatoid arthritis (RA) in European centers, indicating comparable challenges and initiatives in both regions. Aspects of the interventions established in Europe could be replicated to improve QoC in North America.
- Interventions focused on using technology for improving QoC remain highly relevant in the current environment. The COVID-19 pandemic has accelerated the use of technology in care, allowing for patients with RA to receive care in part in the comfort of their own homes.
- In total, eight rheumatology-focused good practices in care delivery interventions with practical examples were identified across nine rheumatology centers; these good practices can be implemented by other centers to improve care delivery in RA.

Guidelines recommend a targeted approach for the management of RA and associated comorbidities.⁶ However, factors such as a decline in the rheumatology workforce⁷ continue to pose challenges, leading to poor patient satisfaction.⁸ The objectives of this study were to (1) understand the current challenges in the management of patients living with RA and associated comorbidities, (2) drive improvements in quality of care (QoC) through identification and documentation of RA-specific interventions undertaken by rheumatology teams, and (3) discuss potential strategies to replicate and implement these interventions across health care systems.

MATERIALS AND METHODS

A mixed approach of conducting a literature review and semistructured interviews was used to identify challenges in RA management and corresponding good practice interventions to improve the QoC in RA. This study followed a three-step methodology (Figure 1): (1) conducting a literature review to gather key evidence about the RA care and the management landscape, (2) visiting RA centers to observe and document the challenges in care and examples of good practices in centers across North America, and (3) collating findings of the two previous methods

to identify key good practice interventions, followed by further review and discussion by an expert panel (rheumatologists and other health care professionals [HCPs; eg, comorbidity specialists and allied HCPs]) to prioritize findings.

A literature review (April 2005 to April 2021) was performed using an integrated approach to identify reported and evidence-based challenges and good practice examples in the management of RA and associated comorbidities. A PubMed search was conducted using a combination of key search terms, including, “rheumatoid arthritis,” “comorbidities,” “cardiovascular risk,” “diabetes,” “depression,” “interstitial lung disease,” “management,” “early identification,” “diagnosis,” “challenges in care,” “patient outcomes,” “guidelines,” “recommendation,” “quality of care,” “screening,” “diagnosis,” “delay referral,” “treat to target,” “disease burden,” “multi-disciplinary approach to care,” “self-management,” “personalized care,” etc (Supplementary Table 1). Additional articles were retrieved through citation-tracking of the original publications and based on the recommendations from the expert panel. This search formed the basis for fieldwork to build a comprehensive view of RA and identify the challenges in RA care. It also provided a preliminary look at the management landscape by offering tangible examples of how QoC in RA and associated comorbidities is managed.

Secondary research was performed using publicly available sources, including recent American College of Rheumatology (ACR) guidelines, conference programs, and published articles to identify the potential centers. The selection of centers was done under the guidance of the authors and aimed to include diverse and reputed health care systems, resources, and experiences (eg, well-established and new services). Centers were chosen based on the following set of criteria (Table 1): geography, centers were selected across a variety of states and provinces; center type, a wide variety of centers were selected to reflect the wider health care ecosystem across the United States and Canada; and focus, the center’s experience with RA was considered to ensure that the findings would be applicable to the wider clinical community.

In-person site visits were conducted at nine RA centers across the United States and Canada, representing diverse approaches to RA management across North America. Additionally, an extensive literature analysis was conducted to gain insights about the projects and the initiatives that the centers were running. The selected centers were found to have a track record of innovation (eg, involvement in clinical trials and novel programs) and improving patient care in RA. Overall, two of the nine centers were from New York. To get a broader picture of the multiple facets by which RA care is administered, selection of a community center in New York was essential, in addition to the academic tertiary centers (Figure 2).

Over 100 semistructured interviews (including open questions) were conducted using a discussion guide to gain an understanding of the management of RA and associated comorbidities.

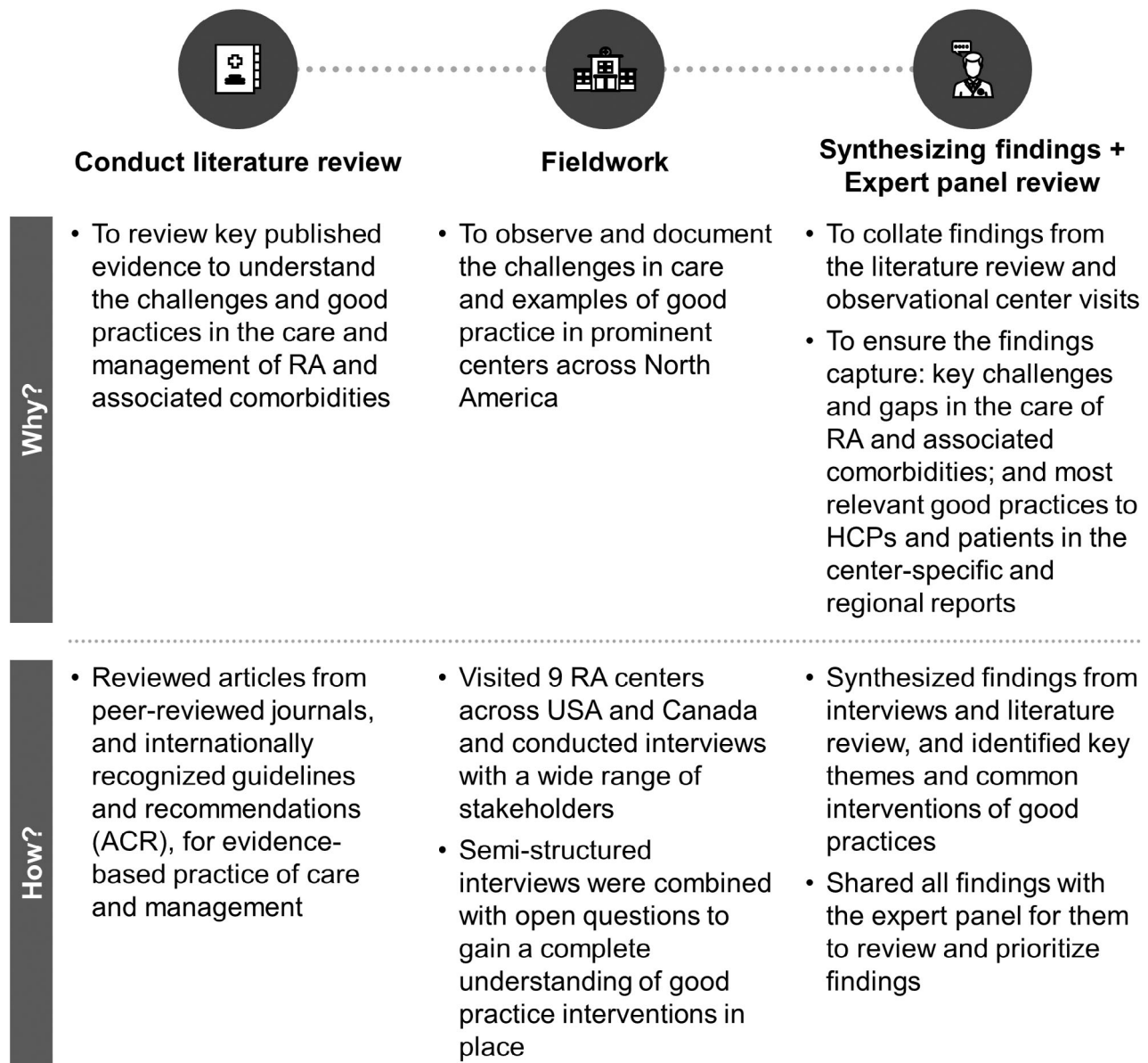


Figure 1. Study methodology. ACR, American College of Rheumatology; HCP, health care professional; RA, rheumatoid arthritis.

Development of the guide and identification of the themes were based on the findings from a similar European study⁹ and the insights from the literature review. The guide (Supplementary Table 2) was adapted to the specifics of RA and the North American health care system. It was designed to facilitate the structured collation of qualitative and quantitative insights, with questions created to capture the RA service setup and patient pathway design within each center. The four key stages of the patient pathway were awareness and presentation, referral and diagnosis, treatment and management, and follow-up. Overall, the questions covered a range of relevant themes, such as the use of data and technology, HCP education, patient education, etc.

A range of HCPs, such as rheumatologists, registered nurses, administrative staff, physiotherapists, psychologists,

cardiologists, pulmonologists, and primary care physicians (PCPs), were interviewed, with an average of two rheumatologists and two to five HCPs interviewed at most centers (Supplementary Table 3). Interviews were conducted face to face (and not voice recorded) by the Klynveld Peat Marwick Goerdeler (KPMG) team to facilitate synchronous communication and to enable the center and team to be seen in person. Each interview ranged from 30 to 90 minutes, depending on the HCP's degree of involvement in patient care.⁹ Information was collected on key challenges faced and interventions implemented by the centers (including associated considerations and benefits).

The interview findings were analyzed using the methodology from a similar European study.⁹ Interview responses were

Table 1. Characteristics of the selected centers

Criteria	Characteristics
Geography	Distributed across North America
Location	Urban or rural
Funding	Private or public
Team composition	Large or small teams (both multidisciplinary and composed of varying numbers of RA specialists)
Amount and type of partnerships within the community	Formal or informal agreement
Involvement in research universities	Academic or nonacademic health care providers
Clinical focus	RA specialists and generalist centers

RA, rheumatoid arthritis.

structurally analyzed for trends and insights. A thematic approach was undertaken to summarize the interview findings. Center-specific reports were developed to identify the key themes and common good practice interventions that may have been implemented across the nine centers. Relevant case studies from center reports were also listed. Follow-ups were conducted after the interviews to ensure that the center-specific reports were accurate and validated by the center leads.

Findings from the literature review and in-person site visits were discussed with an expert panel (lead rheumatologists from the participating centers). Each expert was given an opportunity to provide feedback on the findings to ensure their relevance and applicability to the wider rheumatology community. Further, case studies were used to illustrate various implementation strategies developed in the RA centers across North America.

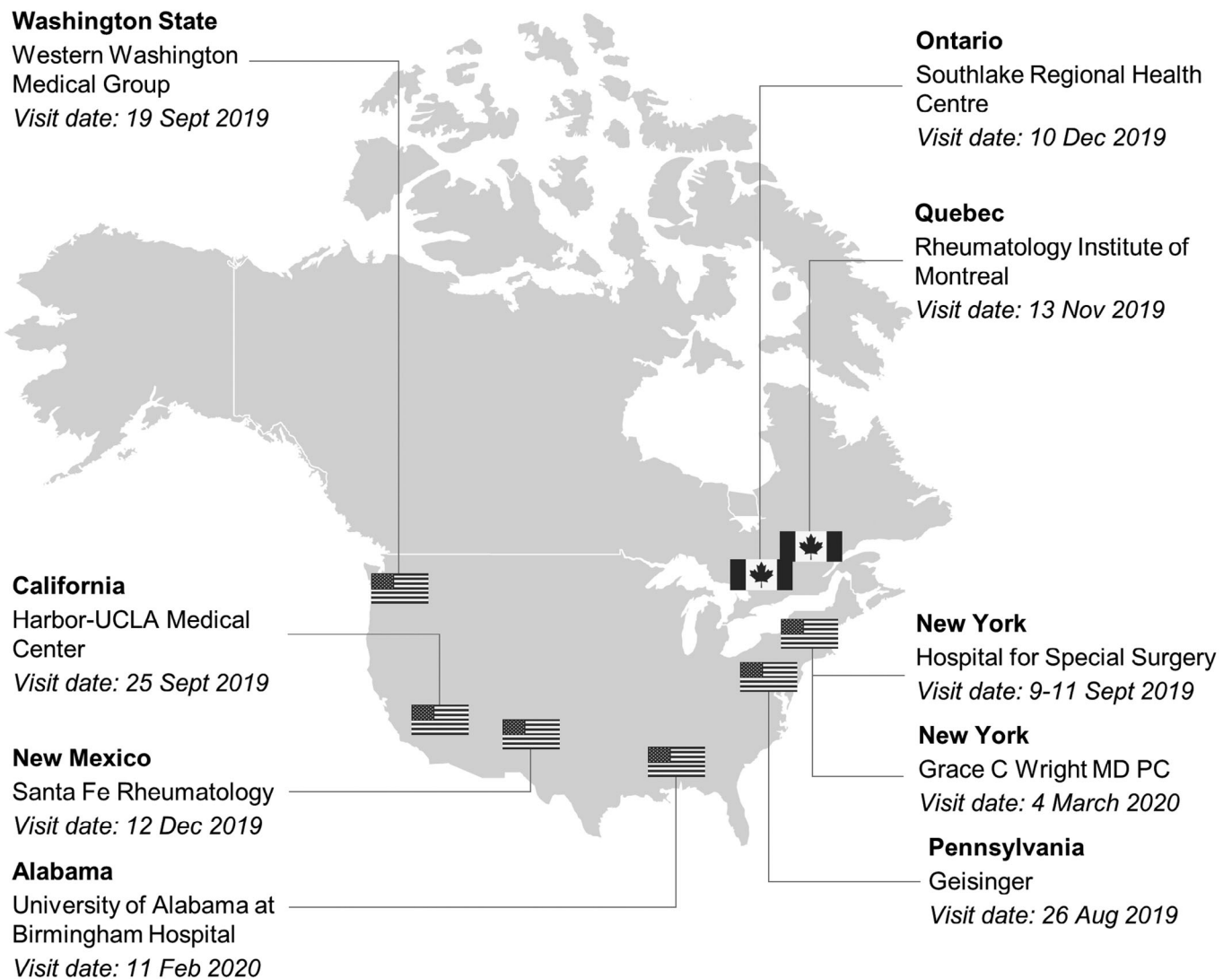


Figure 2. Centers participating in the in-person visit and interview. UCLA, University of California, Los Angeles.

Interventions were prioritized by the expert panel based on the likely positive impact on the challenges in care and the ease of their implementation. The impact and ease of implementation, respectively, were based on the estimated number of patients likely to benefit from the intervention and the degree of effort and resources (eg, time and team members) required to implement the initiative. Additionally, the time at which positive results could be observed (long term versus immediate), and scalability (amount of effort required to scale an intervention into practice, considering both feasibility and generalizability of implementation) were also considered. Interventions with a low degree of impact or requiring extensive resources were assigned a score of 1. Conversely, interventions that were deemed to benefit a high number of patients or required minimal resources were assigned a score of 5.

This study, including the literature review, center visits, interviews, data collection, identification of themes, and overall management, analysis, and interpretation of data, was conducted by KPMG LLP (a UK-based consulting firm). Ethical approval was not required because data were not collected from patients.

RESULTS

Overall, 114 academic and clinical publications were reviewed (Supplementary Table 4), including high-quality gray literature; major international recommendations and guidelines, such as those published by the ACR; local recommendations and guidelines; and numerous publications by government and private institutions detailing health care good practices and future

plans. These publications addressed the relevant themes, and no major conflicts were reported across them. Several challenges were identified in the management of RA and associated comorbidities across the patient pathway evidenced through the literature review^{10–15} (Table 2).

Through in-person visits (August 26, 2019, to March 4, 2020), eight good practice interventions were identified spanning across the patient pathway (Figure 3). By combining the impact and ease of implementation assessments, three interventions were identified as high priority (Table 3). The eight interventions that alleviated key challenges across the patient pathway (ranked 5 to 1, by order of high to low priority) are described in the following sections.

Using technology and data. Using technology and data can help facilitate patient access to coordinated care and increase patient therapy adherence through targeted online resources. Individuals with suspected RA should be seen rapidly for effective prevention and management of disease progression and joint damage.¹³ Diagnostic delays and transfer of health care data (patient medical history) from primary to secondary care continue to impact RA care delivery.¹⁴

Development and use of digital health resources were observed to improve QoC. Geisinger, a center in Pennsylvania, uses two software applications: (1) Patient-Centric Electronic Redesign (PACER), which gathers information from four disparate sources (patient, nurse, rheumatologist, and electronic health records) and reassembles it into actionable views,¹⁷ and (2) Ask-a-

Table 2. Challenges identified in the patient pathways and evidence

Stage of patient journey	Challenge(s) with care	Evidence of challenge
1. Awareness and presentation	Delays in patients seeking medical advice for undiagnosed rheumatology conditions	On average, patients wait for three months between the onset of their symptoms and their first consultation with a rheumatologist ^{10,11}
2. Referral	Delayed referrals from PCPs to a rheumatologist	Patients are delayed by two months on average between their first consultation and referral to a rheumatologist ^{10,11}
3. Diagnosis	Delay in diagnosis	On average, patients face a delay of three months between their first consultation with a rheumatologist and diagnosis of their condition ^{10,11}
4. Treatment and management (pharmacological and nonpharmacological)	Delayed treatment initiation	Following diagnosis, on average, patients wait for two months before they start treatment for RA. From the early onset of symptoms, this process takes only a little less than a year ^{10,11}
	Poor patient adherence to therapy	Patient adherence to treatment varies widely between 30% and 80% ¹²
	Lack of coordinated treatment ¹⁶ Limited access to specialists for nonpharmaceutical treatment (eg, occupational therapist)	In a study from a rural and Northern Canadian province, only 53% and 26% of patients with RA had reported being seen by a physiotherapist or an occupational therapist, respectively ¹⁴
5. Follow-up	Lack of monitoring and suboptimal patient outcomes	A British Columbian study of RA reported that only 48% and 34% of patients with RA had seen a rheumatologist over the past five and two years, respectively ¹⁵ Only 26% of patients were reported as satisfied with their RA treatment in a US study ⁶

PCP, primary care physician; RA, rheumatoid arthritis.

Awareness and prevention	Referral	Diagnosis	Treatment and management	Follow-up
Symptom identification	PCP to rheumatologist	In specialist care	Treatment initiation and continuation	Monitoring of chronic disease and flare up

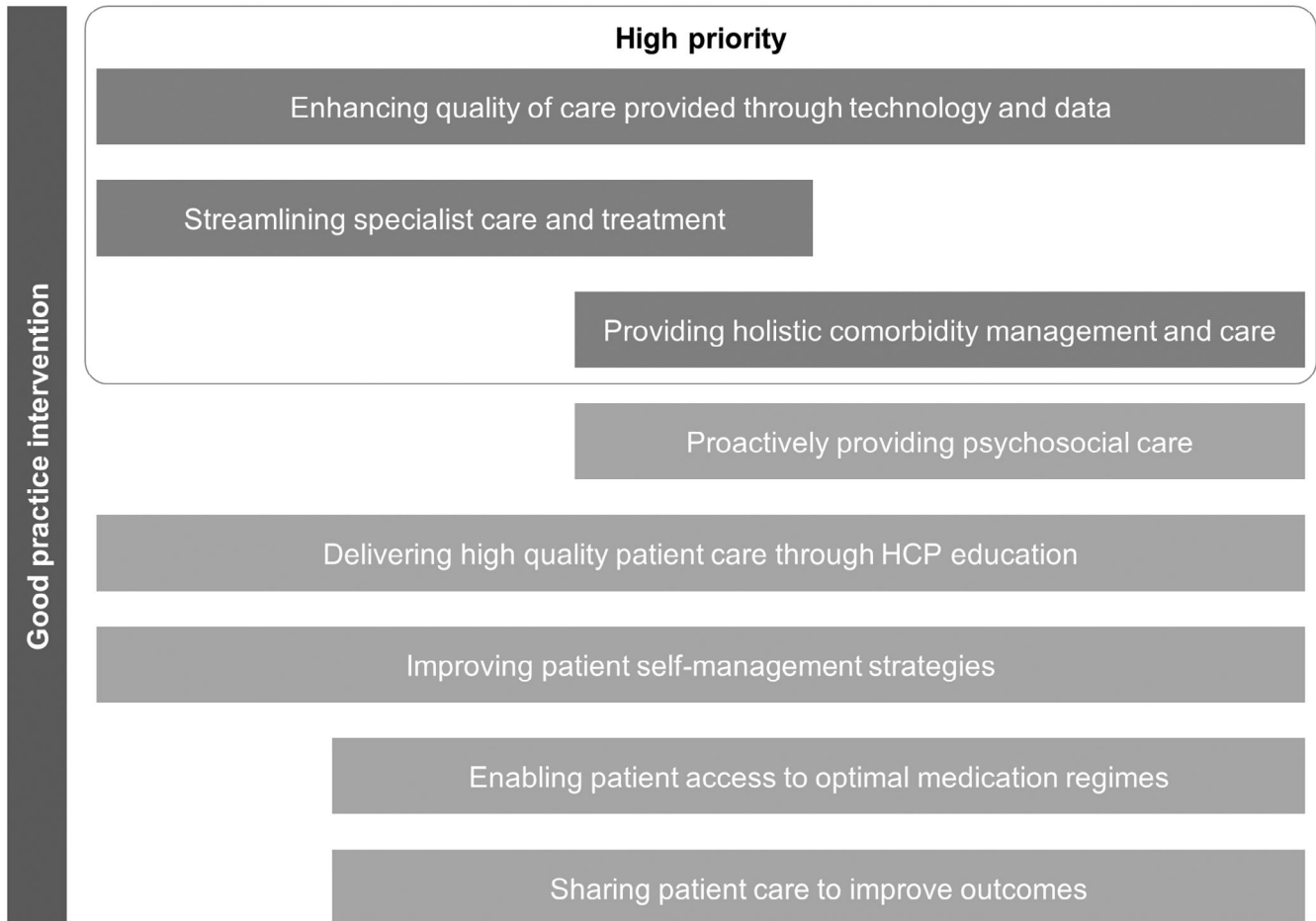


Figure 3. Eight good practice interventions that support a number of points across the patient pathway. HCP, health care professional; PCP, primary care physician.

Doc, which facilitates communication and care between primary care providers and specialists, leading to earlier referrals for complex cases.¹⁵ Ask-a-Doc now accounts for 10% of patient referrals.¹⁶

Streamlining specialist care and treatment.

Streamlining specialist care and treatment can help minimize delayed treatment initiation. Inflammation is a major factor driving the progression of structural damage in RA.¹⁸ It is important to achieve suppression of inflammation to maximize disease control.¹⁹ However, there is usually an average waiting time of two months between RA diagnosis and treatment initiation.^{10,11}

Centers have focused on improving efficiency to ensure rapid assessment of patients and access to specialists. The Hospital for Special Surgery in New York has established the Early Arthritis Initiative, which aims to facilitate quick diagnosis and access to treatment through outreach and community education. This is achieved through organizing public announcements of widespread RA screening and developing public educational programs. The Early Arthritis Initiative consists of members from the rheumatology, social work, and nursing departments. An internal questionnaire at the center reported that 90% of patients were able to make more informed decisions about their RA after attending the group sessions. A review of patient adherence

Table 3. Prioritized interventions based on the relative anticipated positive impact and ease of implementation

	Anticipated positive impact ^a	Likely ease of implementation ^a
Prioritized interventions		
Using technology and data to enhance quality of care: a coordinated approach to monitoring and evaluating RA care quality	5	2
Streamlining specialist care and treatment: initiatives to reduce delays across the patient pathway	4	3
Facilitating comorbidity assessment and care: promoting assessment and support toward treatment of RA-associated comorbidities	4	2
Other interventions		
Enabling patient access to optimal medication regimens: initiatives to reduce funding barriers and increase access to care	3	3
Proactively providing psychosocial care: providing an environment to support psychosocial management of patients with RA	3	3
Sharing patient care to improve outcomes: managing patients through efficient collaboration	3	2
Improving patient self-management strategies: providing support network to patients to improve their ability to self-manage treatment	2	4
Delivering high-quality patient care through HCP education: initiatives/opportunities to offer HCP education	2	1

HCP, health care professional; RA, rheumatoid arthritis.

^aRating scale from 1 (lowest positive impact or greatest difficulty to implement) to 5 (highest positive impact or easiest to implement).

was conducted by a team of rheumatologists. It concluded that by including patients with early RA diagnosis into protocolized care, there was expedited initiation of treatment with disease-modifying antirheumatic drugs (DMARDs). Additionally, there is a need to educate primary providers to optimize early DMARD administration.¹¹

Facilitating comorbidity assessment and care.

Facilitating comorbidity assessment and care can promote patient access to coordinated treatment. RA is associated with an increased prevalence of comorbidities, which can have a detrimental impact on a patient's physical and mental health, leading to a lower quality of life (QoL).²⁰

Establishing a local referral network of specialists to support the management of RA and associated comorbidities can lead to early referrals and improved management of comorbidities. The Santa Fe Rheumatology Center in New Mexico has set up multiple collaborative relationships with external HCPs, including psychologists, pulmonologists, physiotherapists, and dermatologists. The center participates in a wellness study in conjunction with a university and refers patients who are eligible to participate. The providers also work closely with local pulmonologists, gastroenterologists, and dermatologists to manage patients and circumvent long waiting times for other specialties. Testing and medications are coordinated to get patients evaluated and treated promptly. This is seen prominently in the efficient referrals process set up between the center and the community specialists. These are informal collaborative relationships developed over time in which rheumatologists and nurse practitioners have played a crucial role.

Enabling patient access to optimal medication regimens.

Enabling patient access to optimal medication regimens can improve suboptimal patient outcomes. Providing patients with access to optimal medication can be challenging because of financial barriers and variable insurance coverage between pharmacy benefit managers and insurers. As of 2019, there were >29 million uninsured people in the United States, and a majority cited affordability challenges as a key reason for their lack of coverage.²¹

Several initiatives have been undertaken by centers to overcome this challenge, such as supporting patients with limited or no access to insurance and facilitating patient assistance programs in collaboration with not-for-profit organizations or patient advocacy groups. For example, at the Hospital for Special Surgery in New York, the physiotherapist helps patients requiring additional physiotherapy with their insurance claims. The physiotherapist may call the insurers to seek approval for extra sessions to be paid by their insurer by explaining the patient's care plan.

A private clinic (run by Grace C. Wright, MD) in New York also established an efficient patient processing mechanism for authorization that involves all team members. Each team member is responsible for a specific insurance category, including testing and imaging, medication, biologics, and infusions. Once a patient requiring treatment presents at the clinic, the relevant team member is responsible for assisting the patient through the authorization process with their insurer. For example, intravenous therapies and imaging studies are managed by one specific staff member, whereas self-administered therapies are managed by another. An additional staff member is responsible for notifying patients and ensuring all authorizations are in place for treatments to be administered. By specializing each team member in a

specific area, the team manages the authorization process smoothly. This approach has enabled the center to routinely complete all authorization, referral, and imaging processes within 48 hours of a patient's visit. The team believes that patients requiring urgent care can expect their assessments to be completed and treatments initiated within one to two weeks.

Proactively providing psychosocial care. Proactively providing psychosocial care may help increase access to specialists for nonmedical management. RA is often associated with an adverse impact on a patient's QoL, leading to mental health issues, including depression,²² which can negatively impact patient adherence to medication, delay disease control, and contribute to depressive symptoms.²³

Centers have implemented multiple initiatives to provide psychosocial care to patients with RA. For example, Santa Fe Rheumatology promotes patient wellness of mind and physical fitness by facilitating patient access to psychosocial care, such as a psychologist from a nearby university. The Hospital for Special Surgery also provides access to mental health professionals (psychologists and psychiatrists) to help patients with RA with emotional support and guidance. The center believes this helps patients better manage their disease.

Improving patient self-management strategies. Improving patient self-management strategies may facilitate improved patient adherence to therapy. Patients frequently ask about the causative factors and triggers associated with RA, wondering what their role is in the initiation or perpetuation of the disease. Early on, there is an expectation of being able to stop medication, often within the year. Raising these issues and providing tailored information and advice can clarify a patient's understanding of the disease and expectations from treatment, and the course of a patient's disease may differ.²⁴

For this, centers are providing dedicated educational consultations for patients with early RA and collaborating with patient education groups to provide patients an opportunity to learn from each other. Southlake Regional Health Centre in Ontario, Canada, has developed an embedded education module based on the construct of therapeutic education²⁵ for patients and their families to better understand and manage their condition. Overall, four programs are available depending on patient needs, covering inflammatory arthritis, osteoarthritis, osteoporosis, and fibromyalgia syndrome. Each of these is run through a different medium and over a different timescale, with identified leads from among the complement of interprofessional health providers, including pharmacists, physiotherapists, occupational therapists, kinesiologists, social workers, and dieticians, and additional support from rheumatologists. Programs vary in timing from one-month virtual programs to six-week classroom programs. Sessions are focused on topics such as disease education, stress management, and exercises to improve physical functions.^{25,26}

Interprofessional health providers are actively involved in "shared activities" assessment, follow-up, and triage and their discipline-specific activities.²⁷ Improved, Informed self-management of the condition is expected to improve the patient's QoL.²⁸ The center also reports that adherence to therapy is high, and those patients are able to better self-manage their condition.²⁹

The centers have also been investigating methods for patient engagement to better communicate self-management strategies that can lead to improved patient adherence. For example, the Harbor–University of California, Los Angeles Medical Center in California provides patients with access to ~35 different translators via video or phone. Through conducting appointments in the language that the patient best understands, the clinic has had a 90% compliance rate to appointments.

Delivering HCP education. Delivering HCP education may help improve both delayed referrals from PCPs to a rheumatologist and delayed treatment initiation. Early diagnosis and provision of treatment for RA can result in positive outcomes, such as reducing joint erosion and the chances of disability.¹³ HCP-targeted education can help ensure that patients are diagnosed promptly and managed effectively.

Small-scale group educational sessions for HCPs (workshops conducted by centers) can enhance their knowledge. For example, a rheumatologist from the Western Washington Medical Group in Washington conducts lectures and sessions for rheumatologists, PCPs, medical students, and patients with RA. The specialist is also involved in the Washington Rheumatology Alliance and shares best practices with peers in the state.³⁰ The rheumatologist has observed an improvement in physician–patient relationships with enhanced overall quality of RA care.

Sharing patient care to improve outcomes. Sharing patient care to improve outcomes can help enhance patient monitoring and suboptimal patient outcomes. Rheumatologists may have limited time with patients with RA for activities such as education and self-management, which poses a barrier to achieving optimal treatment outcomes.³¹ Sharing patient care among varied allied health professionals (AHPs) can overcome this challenge. For example, it has been demonstrated that the proactive role of a nurse practitioner can lead to enhanced outcomes in patients with RA.³²

Centers have been collaborating with AHPs to cooperatively manage RA and associated comorbidities with rheumatologists. After conducting a large-scale randomized controlled trial of a "virtual arthritis clinic" led by pharmacists to improve the care of patients with gout,^{33,34} the University of Alabama at Birmingham (UAB) patterned some of its efficiencies based on this model and now routinely involves pharmacists in care management. The pharmacist connects with patients to provide care between face-to-face visits to the rheumatology clinic. They systematically verify that the patient has received newly prescribed biologics

and targeted therapies to avoid people “falling through the cracks” and not receiving newly prescribed medications. They also detect problems with newly initiated treatments.³⁵

In addition to routinely collecting patient-reported outcomes (PROs) in the clinic using a National Institutes of Health-supported tablet-based system before each rheumatology clinic visit, the pharmacist uses PROs collected at the start of therapy and three to six months later to fulfill requirements from some specialty pharmacies that mandate providing this information at both the start of therapy and three to six months later to document the need to continue costly treatments. Patients are also encouraged to join the national patient registry (ArthritisPower.org),³⁶ and PRO data entered by patients into the Arthritis Power application between visits are available within the tablet application used in the clinic. Given the substantial reticence of patients to come in person to the clinic to receive biologic therapies (denosumab or romosozumab) for osteoporosis during the COVID-19 pandemic, the pharmacist-driven care model was effective in creating important care delivery efficiencies. UAB Rheumatology created a drive-through osteoporosis injection service to administer these biologics so that patients would not miss a dose.³⁷ Overseen by the rheumatology pharmacist and nurse, patients drove into the clinic’s parking garage, showed identification through the window, and received injection without needing to exit the vehicle.

The Geisinger Rheumatology Department in Pennsylvania introduced two pharmacists to assist with the management of care. The pharmacists are responsible for additional patient education on medications and DMARD prescribing such that these are value concordant and appropriate. There are set comanagement protocols followed between the pharmacists and rheumatologists; the rheumatologists will see the patient at the end of the protocol interval. Monthly comanagement touch points are also part of the management protocols when the rheumatology pharmacist reviews clinical parameters, laboratory parameters, and adherence.

The Rheumatology Institute of Montreal in Quebec, Canada, developed a tool for identifying comorbidities (cardiovascular diseases, infections, and osteoporosis) and piloted a project across Quebec involving rheumatologists and AHPs (including pharmacists who have expertise and are empowered by provincial law in monitoring hypertension, blood glucose levels, and lipid control). The center has developed a document mentioning the approach to screening and treating each comorbidity. The nurse practitioner and the pharmacist in the centers are responsible for disseminating recommendations to their communities. Improved access to multidisciplinary specialist RA care has increased the rate of vaccinations and reduced the administration of glucocorticoids, which contributes to worsening of comorbidities. The initiative is expected to continue increasing the potential for improved treatment outcomes. Collaborations between rheumatology clinics and specific pharmacy groups in the vicinity have been

put in place. This has led to better comorbidity control and patient adherence to therapies.

DISCUSSION

Although challenges in RA care and associated comorbidities are widely recognized, the results of the interviews attest to the findings of the literature review. This study reports several challenges experienced by the centers across the patient pathway. To enhance patient care, it is recommended that centers establish and focus on the interventions that are most applicable to their patient pathway, population, and challenges.

Additionally, centers facing challenges as in the European study should explore the European case studies to see how these could help improve patient outcomes.⁹ This will also help demonstrate how the findings can be implemented across different care settings. For example, the Institute of Rheumatology in Prague, Czech Republic, offers a parallel approach to “*using technology and data*” to enhance QoC. The rheumatology team has collaborated with a patient association, Revma Liga (Czech League Against Rheumatism), to enable access to an online portal offering educational material for virtual engagement of patients. Improved patient engagement in RA care has been observed with increasing proactivity toward self-management.³⁸

Cliniques Universitaires Saint-Luc in Brussels, Belgium, offers another example of “*streamlining specialist care and treatment*”. The center has established a direct telephone line between PCPs and rheumatologists to provide rapid access to early care. The team secretary is trained to ask questions about patients’ history, symptoms, etc and can triage them for early RA care. Patients with severe symptoms are prioritized and seen in a timely manner (~48 hours).³⁹

The Leeds Teaching Hospitals in Leeds, United Kingdom, has a dedicated joint comorbidity care service that reflects the “*facilitate comorbidity assessment and care*” intervention. This initiative involves dermatology, gastroenterology, immunology, neurology, respiratory, renal, and obstetrics specialists. These combined or stand-alone clinics may cover wider aspects of RA management, including lifestyle factors. The specialists conduct regular reviews alongside a rheumatologist for rheumatology outpatients with comorbidities. Before COVID-19, this occurred in person and was supported by in-person multidisciplinary meetings between specialists at a site close to the hospital. Access to comorbidity care can result in early management of RA-associated comorbidities.

It is believed that good practice interventions can enhance the quality of patient care. Some of these interventions have increased relevance considering the impact of COVID-19, for example, a focus on the use of digital health resources to improve the efficiency of patient management and to increase collaboration between specialists to provide holistic care. Centers are implementing online software tools to capture patient data and to conduct

virtual patient appointments. In addition to the Ask-a-Doc tool, another example is the provision of remote rheumatologist consultations in Southlake Regional Health Centre. This has been made possible through an interactive two-way video conferencing tool.

The inclusion of only nine centers limits representation of different care models in North America. Except for New York, only one center was included for each state or province visited. However, through this study, examples of good practices in RA have been developed and may serve as models if implemented in other centers. Based on the information collected from the interviewees, it was discovered that these centers provide clinical care that aims to improve patient care and outcomes in RA; however, this would require future validation. Further, the study was conducted before COVID-19, which subsequently impacted the health care system. This may have influenced the relative impact of the identified challenges and may require additional innovations to provide high-quality RA care. The findings still remain relevant, and certain interventions have become more important given the impact of COVID-19. For example, the use of technology and data, where telemedicine is currently being implemented across centers to ease access to care. The costs of these interventions must also be considered because this may limit their implementation. This includes costs to employ social workers to lead patient support groups or having sufficient staff to efficiently obtain insurance authorization for various procedures. The final limitation is the lack of patient interviews, which hinders inclusion of the direct patient perspective on intervention benefits. However, patient insights were obtained from a range of HCPs throughout the site visits to mitigate this.

Further work is needed to explore the effect of implementing these interventions and whether they will improve quality practices in centers with QoC gaps in RA. Other centers may be able to apply these interventions by investing in enablers to improve RA care, such as conducting educational initiatives, building a technology platform, and improving collaboration with specialists in the community.

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All authors were involved in drafting the article or reviewing it critically for important intellectual content, and all authors approved the final version to be published. Dr Mary K. Crow provided guidance on center

selection and all the authors were engaged to review center report findings. Dr Curtis had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

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