

Improving Access to Rheumatology Care in Colorado: An Evaluation of CUSOM Rheumatology Electronic Consultations

Project Background

Rheumatology is a non-proceduralist specialty with a current and worsening workforce shortage¹. This shortage is compounded by the uneven distribution of available specialists across geographic regions. Multiple regions in Colorado lack local rheumatology practices, resulting in patients travelling between 3-7 hours for diagnosis and management of rheumatologic conditions. This problem is heightened for patients insured by Health First Colorado (Medicaid). In 2017, many Colorado rheumatologists did not accept Medicaid, with only three rheumatologists outside the Denver Metropolitan Area routinely accepting new Medicaid patients.

To address the need for increased access to rheumatological care, the project team leveraged the Coordinating Optimal Referral Experiences (CORE) electronic consultations (eConsults) platform developed in collaboration with the Association of American Medical Colleges. The CORE platform exists within the Epic© system, allowing CU Medicine rheumatologists to accept eConsults from primary care providers from CU Medicine, UC Health Medical Group (UCHMG), and STRIDE Federally Qualified Health Center (FQHC). They expanded this model to accept eConsults through AristaMD from additional FQHCs across Colorado. This project aimed to increase access to rheumatological care in Colorado and decrease emergency healthcare utilization related to rheumatological disease.

Evaluation

Utilizing data from electronic healthcare records (EHR) and Colorado Medicaid claims data, as well as project team member interviews, this evaluation aimed to demonstrate the impact of rheumatology eConsults on patient access to care and Medicaid healthcare utilization.

Program Elements

Following a 2015 eConsult pilot with twelve providers from St. Joseph Hospital, the project team secured Supplemental Funding in April 2018 to bring the CORE eConsult platform to CU Medicine providers. Primary care providers utilize a standardized template when submitting CORE eConsults to a specialist. The templates include fields for specific questions, lab test results, and other relevant data. Each week, one of the four rheumatologists is responsible for responding to the rheumatology CORE eConsults. Responses are structured as a restatement of the question, actionable recommendations, and reasons for the recommendations. CORE eConsults can either be completed asynchronously through a response to the provider, converted to a traditional in-person referral for the patient to CU Medicine Rheumatology at the Anschutz Medical Campus (AMC), or declined if the rheumatologist doesn't believe the problem falls within the scope of rheumatology. In 2019, the eConsult system began a several year expansion that resulted in access to CU Medicine specialists for UCHMG primary care providers as well as FQHC providers at Salud, Peak Vista, High Plains, and Valley-Wide Health Systems. External primary care practices not using the UCHealth EPIC platform connect with the CU Medicine specialists through AristaMD, a third-party platform. While less patient-level data is shared through the AristaMD eConsult template than through the CORE eConsult platform template, the process is similar, as the rheumatologist can complete, convert, or decline the eConsult request in either system. Figure 1 shows the eConsult workflow from primary care provider to Rheumatology decision.

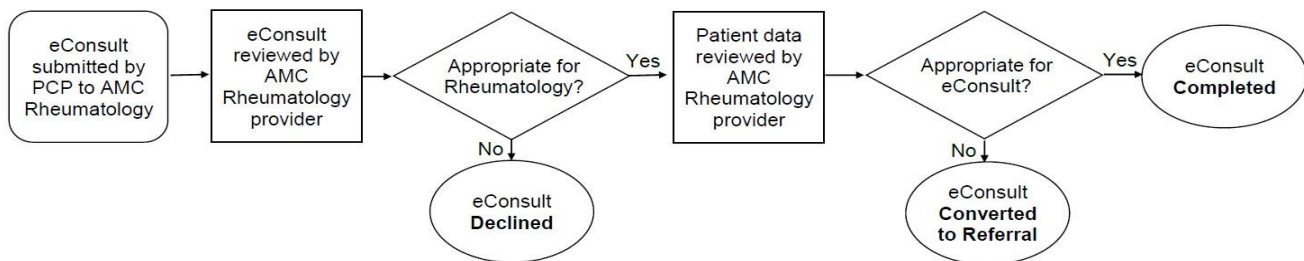


Figure 1: Rheumatology eConsult Workflow

¹Miloslavsky, E. M., & Bolster, M. B. (2020). Addressing the rheumatology workforce shortage: A multifaceted approach. *Seminars in Arthritis and Rheumatism*, 50(4), 791-796.

QUANTITATIVE ANALYSIS

Methods Overview

The quantitative analysis compared patient and consult characteristics and outcomes between new traditional referrals and new eConsult (both CORE and AristaMD) orders placed to Rheumatology between 4/1/2018-6/30/2022, including the following: Medicaid insurance, patient characteristics (demographics, driving distance from clinic, Area Deprivation Index score, diagnosis category), referring provider characteristics (specialty type, number of orders placed), process quality measures (time to consult completion), and Medicaid healthcare utilization within 60 days of the consult order (hospital or emergency department). Insurance information and certain demographics were unavailable for AristaMD patients. Declined eConsults were excluded from analysis.

Results

As seen in Table 1, the number of traditional referrals vastly outnumbered the number of eConsults. When compared to traditional referrals, a larger proportion of the AristaMD eConsults reached underserved and vulnerable populations: non-Caucasian patients, Hispanic patients, individuals with limited English proficiency, and patients living farther away from AMC Rheumatology. However, this was not the case for CORE eConsults; CORE eConsult demographics were like those from traditional referrals. Medicaid patients and AristaMD eConsults came from areas with a higher level of socioeconomic disadvantage, as indicated by the Area Deprivation Index^{2,3}. Area deprivation scores range from 1-10, with higher scores indicating higher disadvantage.

Most eConsults, regardless of CORE or AristaMD platform or payor type, were completed as eConsults, suggesting that for most patients, it was appropriate for them to receive rheumatologic care from their primary care provider. This means that they were likely able to make important treatment decisions faster than if they had needed to travel to AMC Rheumatology for a specialist visit.

Table 1: Patient Characteristics for Traditional Referrals and eConsults placed 4/1/2018 - 6/30/2022

	Traditional Referrals N = 10,434				eConsults N = 639					
	Medicaid N = 2,704		Non-Medicaid N = 7,730		CORE Medicaid [^] N = 80		Non-Medicaid [^] N = 484		AristaMD All Insurers N = 75	
Standard Demographics										
White	1681	(62.2%)	5455	(70.6%)	45	(56.3%)	360	(74.4%)	25	(33.3%)
Non-Hispanic ethnicity	1811	(67.0%)	5901	(76.3%)	60	(75.0%)	421	(87.0%)	20	(26.7%)
English primary language	2329	(86.1%)	6780	(87.7%)	74	(92.5%)	459	(94.8%)	47	(62.7%)
Urban Colorado county type*	2188	(80.9%)	5322	(68.8%)	74	(92.5%)	421	(87.0%)	22	(29.3%)
In-State Driving Distance from Clinic (miles)*										
Median/IQR	28.4	(12.3, 75.9)	34.1	(16.1, 95.3)	10.7	(6.1, 16.9)	12.3	(6.8, 21.7)	42.0	(22.5, 72.0)
Area Deprivation Index*										
Median/IQR	6.55	(4.8, 7.9)	5.42	(3.5, 7.2)	6.47	(4.7, 7.5)	4.84	(3.2, 6.9)	6.6	(5.6, 8.3)
Diagnosis Category+										
Osteoarthritis and similar diagnoses	803	(29.7%)	2107	(27.3%)	31	(38.8%)	174	(36.0%)		
Positive antinuclear antibody	479	(17.7%)	1023	(13.2%)	28	(35.0%)	124	(25.6%)		
Systemic connective tissue disorders	334	(12.4%)	1059	(13.7%)	4	(5.0%)	28	(5.8%)		
Rheumatoid arthritis	377	(13.9%)	983	(12.7%)	2	(2.5%)	14	(2.9%)		
Myalgia, pain, swelling	325	(12.0%)	899	(11.6%)	16	(20.0%)	56	(11.6%)		
Other rheumatological diagnosis	824	(30.5%)	2540	(32.9%)	38	(47.5%)	198	(40.9%)		
eConsult Result										
Completed as eConsult					68	(85.0%)	373	(77.1%)	50	(66.7%)
Converted from eConsult to in-person					12	(15.0%)	111	(22.9%)	25	(33.3%)

*Some patients lived outside of Colorado or did not have address information available and are therefore not included in county type counts, estimates of driving distance to clinic, or Area Deprivation Index scores.

[^]Payor type was not available for all CORE eConsults; 37 patients with unknown payor status are excluded from this table

+Referrals could have more than one rheumatology diagnosis. Diagnoses not available for AristaMD eConsults. Additionally, seven categories represent under 10% referrals each and are excluded from this table: Spondylopathies, AS, other spinal disorders; Derm (Urticaria, SJS, EM, purpura, cutaneous scleroderma) skin disorders; Gout, CPPC, and other crystal arthropathies; Psoriatic & other reactive arthritis; Raynauds, vascular disorders; Malaise, Fatigue, Weakness; Chronic Pain.

² Kind AJH, Buckingham W. Making Neighborhood Disadvantage Metrics Accessible: The Neighborhood Atlas. *New England Journal of Medicine*, 2018. 378: 2456-2458..

³ University of Wisconsin School of Medicine and Public Health. 2020 Area Deprivation Index v3.2. Downloaded from <https://www.neighborhoodatlas.medicine.wisc.edu> April 4, 2023.

Table 2 characterizes the providers that placed orders for traditional referrals and CORE eConsults. Most providers placing CORE eConsult orders were primary care providers (Internal Medicine, Family Medicine, Geriatrics; 10% non-primary care) whereas at least 34% of traditional referrals came from non-primary care specialties. When compared to traditional referrals, a higher proportion of providers using the CORE eConsult system used the system repeatedly for non-Medicaid patients, though this was not true for CORE eConsults placed on behalf of Medicaid patients.

Table 2: Referring Provider Characteristics

	Providers Placing Traditional Referrals Orders on Behalf of Patients N = 4,968				Providers Placing CORE eConsult Orders on Behalf of Patients N = 223			
	Medicaid N = 1,510		Non-Medicaid N = 3,458		Medicaid N = 58		Non-Medicaid* N = 165	
Provider Specialty Placing Order								
Family medicine	408	(27.0%)	964	(27.9%)	31	(53.4%)	80	(48.5%)
Medicine specialty	175	(11.6%)	531	(15.4%)	0	(0.0%)	4	(2.4%)
Internal medicine/Geriatrics	130	(8.6%)	458	(13.2%)	21	(36.2%)	69	(41.8%)
Other specialty	311	(20.6%)	702	(20.3%)	6	(10.3%)	10	(6.1%)
Unknown	486	(32.2%)	803	(23.2%)	0	(0.0%)	0	(0.0%)
Number of Orders Placed by Individual Providers During the Observation Period								
One order	1083	(71.7%)	2204	(63.7%)	45	(77.6%)	62	(37.6%)
Two or three orders	318	(21.1%)	899	(26.0%)	11	(19.0%)	54	(32.7%)
Four or more orders	109	(7.2%)	355	(10.3%)	2	(3.4%)	49	(29.7%)

*Two provider specialties missing from the data and not reflected in this table

Times to completion are shown in Figure 2 for traditional referrals and CORE eConsults. Completion for an eConsult was defined as the date the rheumatologist sent their recommendations to the referring provider, while completion for a traditional referral or converted eConsult was defined as completion of a clinic visit between the patient and an AMC rheumatologist. As expected, orders that were completed through an eConsult were completed much faster than orders that necessitated an in-person visit with AMC Rheumatology (i.e., traditional referrals or converted eConsults). Most eConsults were completed within three days, with all completed within a month of the order being placed, therefore those patients (via their PCP) received rheumatological advice faster than patients with traditional referrals or converted eConsults. Converted eConsults resulted in a higher percentage of completed care with AMC Rheumatology (36%) than traditional referrals (20%). Converted eConsults also resulted in faster access to AMC Rheumatology care with 26% of referrals completed within 90 days compared to 12% of traditional referrals. This suggests that eConsults may decrease time to traditional rheumatology care, even when they are converted to a regular patient referral, though the inability to track visits outside of AMC is a limitation of this evaluation.

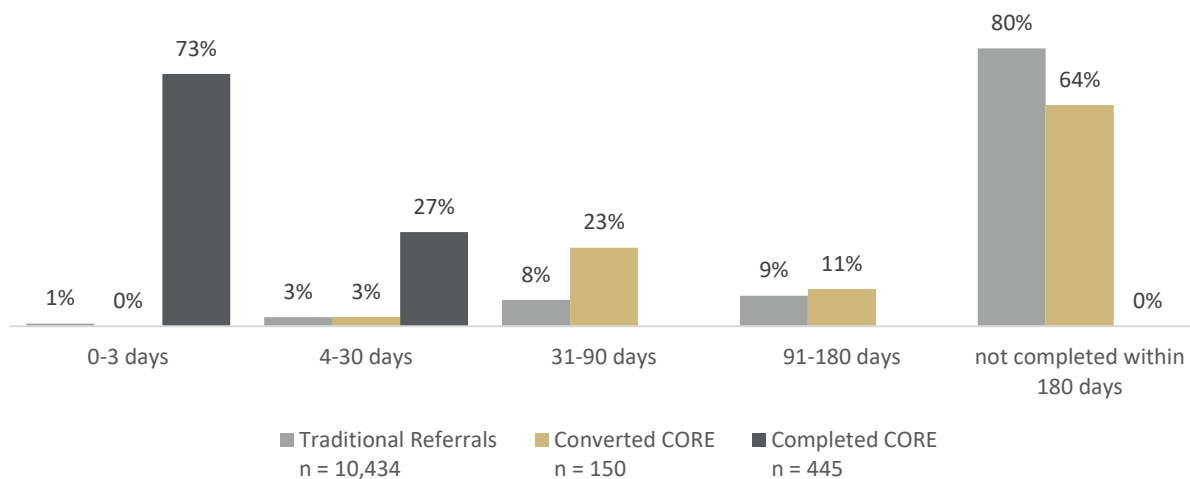


Figure 2: Number of Days to Completion for Traditional Referrals and CORE eConsults

Figures 3 and 4 demonstrate the reach of traditional referrals and eConsults (CORE and ArtistaMD) across Colorado. Both traditional referrals and eConsults predominantly reached patients in or near Denver, but traditional referrals reached all 64 counties in Colorado, while eConsults reached 25. The eConsult program might increase reach with a promotional campaign to rural areas of the state, encouraging rural providers to start on a contract with AristaMD.

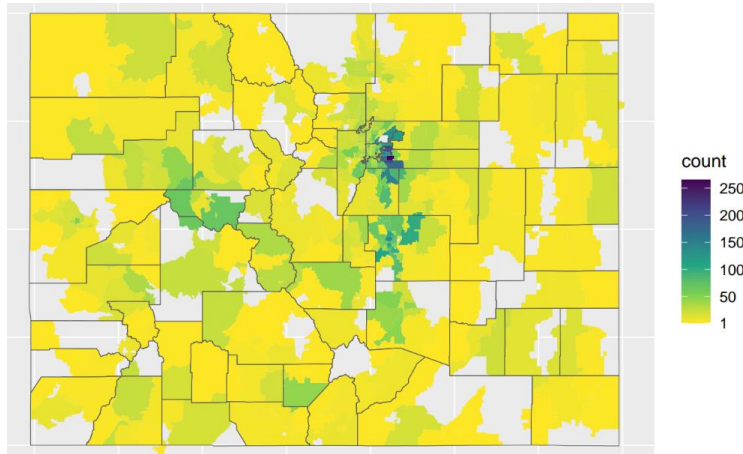


Figure 3: Traditional Referrals – Colorado Reach by Zip Code (N = 10,434)

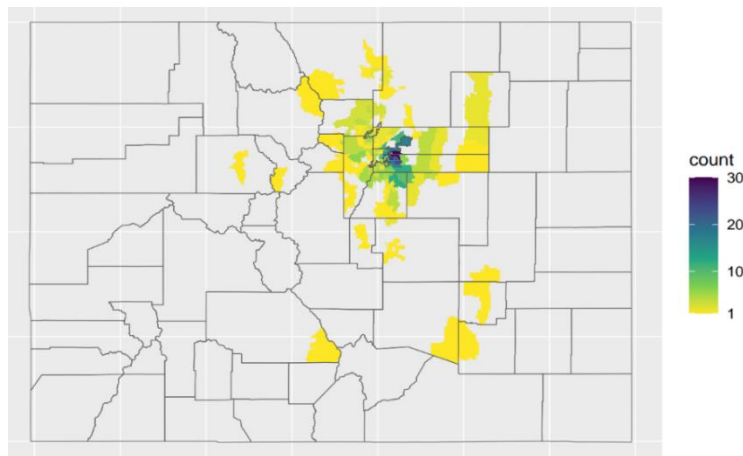


Figure 4: All eConsults (CORE and AristaMD) – Colorado Reach by Zip Code (N = 676)

Table 3 shows the number of Medicaid patients visiting the emergency department (ED) or having a hospital admission within 60 days of a traditional referral or CORE eConsult. Of those with a traditional referral, 17% visited the emergency department for a rheumatological issue, compared to 10% of those with a CORE eConsult. Further, 3% of Medicaid patients with a traditional referral had repeat visits to the emergency department compared to less than 1% with CORE eConsults. Though the numbers of emergency department events were small for CORE eConsults, limiting our ability to make comparisons, these data could suggest that long wait times and far distances to travel for a visit with a rheumatology specialist may cause patients waiting on their traditional referral to seek care from emergency services. Clinicians may also be more likely to refer more complex patients for a traditional referral upon judging that their care cannot be handled appropriately via an eConsult.

Table 3: Medicaid Emergency Healthcare Utilization for Rheumatological Reason

	Medicaid Traditional Referrals N = 2,704	Medicaid CORE eConsults N = 80
Number of Medicaid Referrals with Emergency Visit within 60 Days of Order		
Emergency department	455 (16.8%)	8 (10.0%)
Hospital admission	151 (5.6%)	4 (5.0%)
Number of Referrals with More than One Emergency Visit within 60 Days of Order		
More than one emergency department visit	93 (3.4%)	1 (<1%)
More than one hospital admission	33 (1.2%)	1 (<1%)

FEEDBACK FROM RHEUMATOLOGY ECONSULT TEAM MEMBERS

Project Successes

Overall, all project team members shared that they felt eConsult is a successful method for improving access to specialty care. The four Rheumatology providers that respond to CORE and AristaMD eConsults all shared that the quantity and division of responsibilities across team members worked well.

“I think patients certainly benefit by not having an unnecessary specialty visit, when it's something that we can provide a [primary care doctor] with guidance on in an eConsult and then they're able to take it from there.”

Further, all the providers shared that they believed eConsults work well for rheumatology specifically, both for patients and primary care providers. For primary care providers, the rheumatologists shared that they thought eConsults were an effective way to build confidence in caring for rheumatological issues, with one provider saying eConsults are well-suited to help providers out with “some of those issues where they're not sure what to do”. Another provider shared that they believed eConsults were a good way to build relationships between primary care providers and specialty care providers. The provider shared “I don't know if they would recognize me if they saw me, but they recognize my name now...I think it opens up the door for them to say, ‘Oh, I know a rheumatologist. This person helped me out in the past.’...I think it's good just because it strengthens those relationships.”

The biggest perceived benefit is for patients. Providers shared they believed it saved their patients time, money, and energy by receiving care through their primary care provider when appropriate. Many rheumatology patients have historically travelled long distances to reach campus. By providing a care option without an in-person visit, patients could be saved from the headache of travel. Providers also shared that compared to traditional referrals, visits for patients with converted eConsults are more efficient because some of the clinical work has been done ahead of time, allowing them to focus on the specialty issues in-person. For Medicaid members in particular, providers shared the benefit of providing access to specialty care providers in a specialty area that doesn't commonly accept Medicaid.

Another commonly discussed benefit was perceived improvement in time to care. Rheumatologists shared that they had seen wait time decrease since offering eConsults, with one provider sharing “it frees up our ability to get people in the clinic faster.” Additionally, providers felt that by providing eConsults, patients were able to get appropriate care faster even without a rheumatology clinic visit. For example, if a patient was needing a particular medication, rather than having to go on the waitlist to see AMC Rheumatology and then receive the accurate prescription, a patient whose primary care provider requested an eConsult could get them on that medication that same week.

Project Challenges

While all the providers stated they felt eConsults were working well, some did identify barriers and had suggestions for improvement. One common suggestion was getting more primary care providers to use eConsults. Providers shared that they felt primary care providers weren't familiar enough with the system, and it hindered usage. They also shared that they believed this could be remedied by either making sure that primary care providers are aware of the service, understand the benefits of eConsults, and have the knowledge base for how to effectively submit an eConsults request. Continued education and messaging around eConsults were shared as ideas for how to remedy these issues. One provider shared that they knew that the shift from traditional referrals to eConsults is a big change from tradition, which will take time and change management.

Another suggestion for improvement was to better integrate eConsults and the Rheumatology Extension for Community Health Outcomes (ECHO) series. The Rheumatology ECHO series, an education series for primary care providers, is another venture by the team to improve primary care provider confidence in managing patients' rheumatological concerns but is often siloed from the eConsult program. One provider shared they felt that eConsults weren't informing ECHO topics enough, saying “[we know] what the most common questions are that are being asked in eConsults...we should be providing education on [the most common questions during the ECHO discussions].”

“I would say with eConsults probably our biggest challenge is having more primary care providers use them...I think they're still underutilized.”