

# Addressing rural and remote access disparities for patients with inflammatory arthritis through telehealth/videoconferencing and innovative inter-professional care models

Regina Taylor-Gjevre,<sup>1</sup> Bindu Nair,<sup>1</sup> Brenna Bath,<sup>2</sup> Samuel Stewart,<sup>3</sup> Regan Arendse,<sup>1</sup> Latha Naik,<sup>1</sup> Catherine Trask,<sup>4</sup> Erika Penz,<sup>3</sup> Meenu Sharma,<sup>1</sup> Katie Crockett<sup>1</sup>

<sup>1</sup>. Division of Rheumatology, <sup>2</sup>. School of Physical Therapy, <sup>3</sup>. Department of Medicine, <sup>4</sup>. Canadian Centre for Health and Safety in Agriculture, University of Saskatchewan, Saskatoon, Canada,

## ABSTRACT

**Objective:** The purpose of this 2-year research project, funded by the Canadian Initiative for Outcomes in Rheumatology Care (CIORA), is to evaluate the efficacy of providing long-term follow-up care to patients with Rheumatoid Arthritis (RA) living in rural and remote areas using videoconferencing technologies.

**Background:** RA patients require regular follow-up to ensure their disease is well controlled, resulting in substantial travelling for people who live in rural/remote regions. Using telehealth technology to perform their follow-up appointments would allow people to stay in or nearer their home communities and continue to receive care. We have designed an innovative inter-professional care approach using videoconferencing technology to combine rural-based physical therapist evaluators with urban-based rheumatologist support.

In this study we will evaluate (a) whether a physiotherapist performing a patient assessment with the support of a rheumatologist via video conferencing can provide equivalent follow-up care; and (b) whether people monitored utilizing this telehealth approach will have comparable disease control and satisfaction compared to people attending traditional rheumatology clinics.

**Methods:** This project will be conducted in two phases. In Phase 1 RA patients will be recruited to participate in a series of examinations. The patients will be evaluated 5 times during a single day: twice by Rheumatologists, twice by Physiotherapists, and once by a Physiotherapist supported by a Rheumatologist via video-conference. Resulting evaluations will be compared between and within specialties to ensure that the Physiotherapists can provide adequate assessments when supported by a Rheumatologist.

In the second phase of the study remote RA patients (those that live >100km from Saskatoon) will be randomized to the intervention or control group. Both groups will have 3 follow-up appointments at 3, 6 and 9 months after recruitment: the intervention group will be followed-up by a physiotherapist supported by a Rheumatologist via videoconference, while the control group will continue to travel to Saskatoon for follow-up care. The patients will be monitored for disease severity, quality of life metrics and overall satisfaction, and financial burdens will be measured through patient diaries.

**Discussion:** Follow-up care for rural and remote patients with chronic diseases such as RA places a significant burden on the healthcare system. Through this project we hope to demonstrate the remote follow-ups performed by allied health professionals supported by disease experts via videoconference can provide equivalent care while reducing the stress and cost burden on the patient population.

## BACKGROUND

Rheumatoid arthritis (RA) patients require regular rheumatology follow-up to ensure their disease is well-controlled. This may lead to substantial travelling for RA patients who live in rural/remote regions. Nearly 36 % of RA patients consider location of their place of residence negatively impact ability to access health care<sup>1</sup>.

The proportion of rural population of Saskatchewan is 33% as compared to proportion of rural population of Canada i.e. 19%. Agriculture is the root of Saskatchewan's economy.

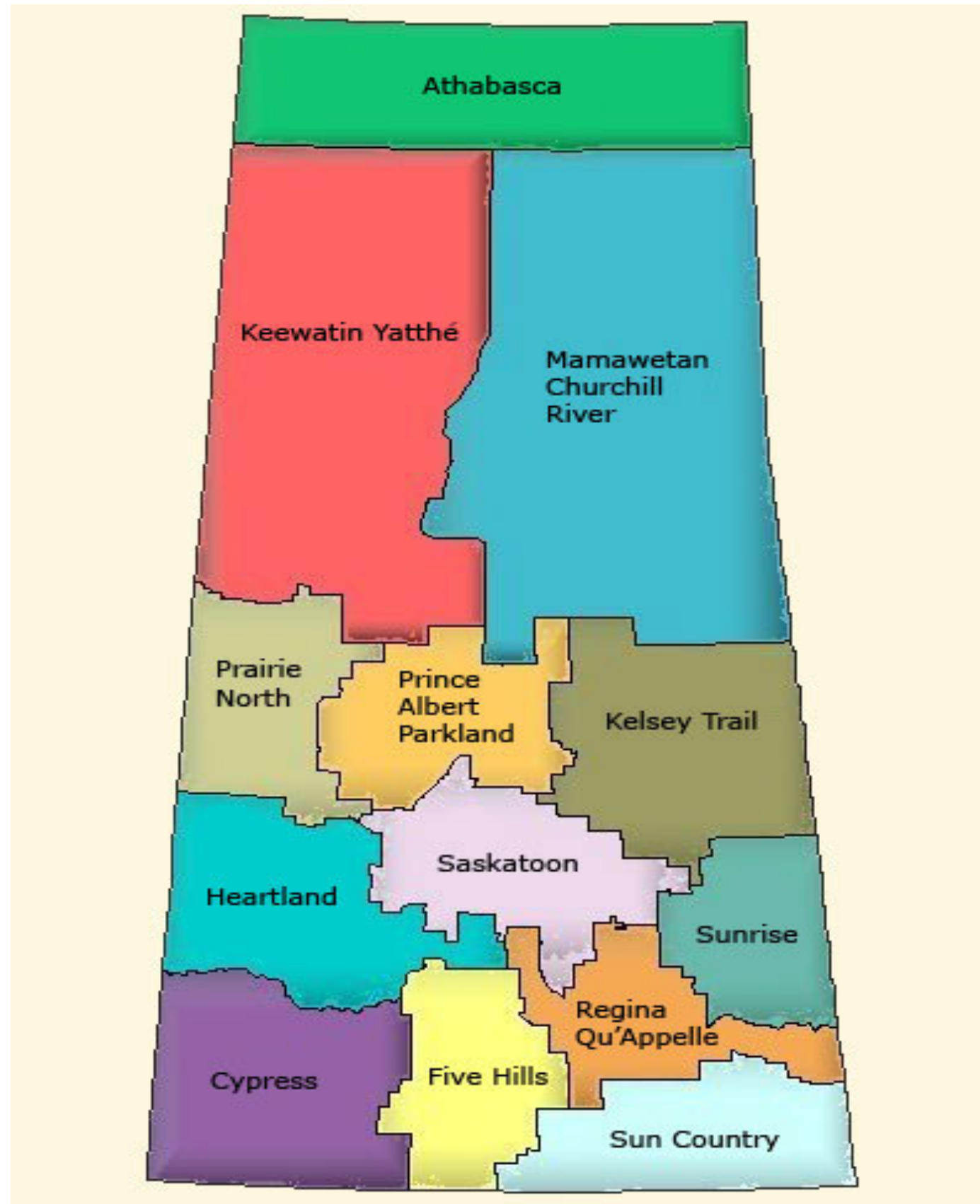
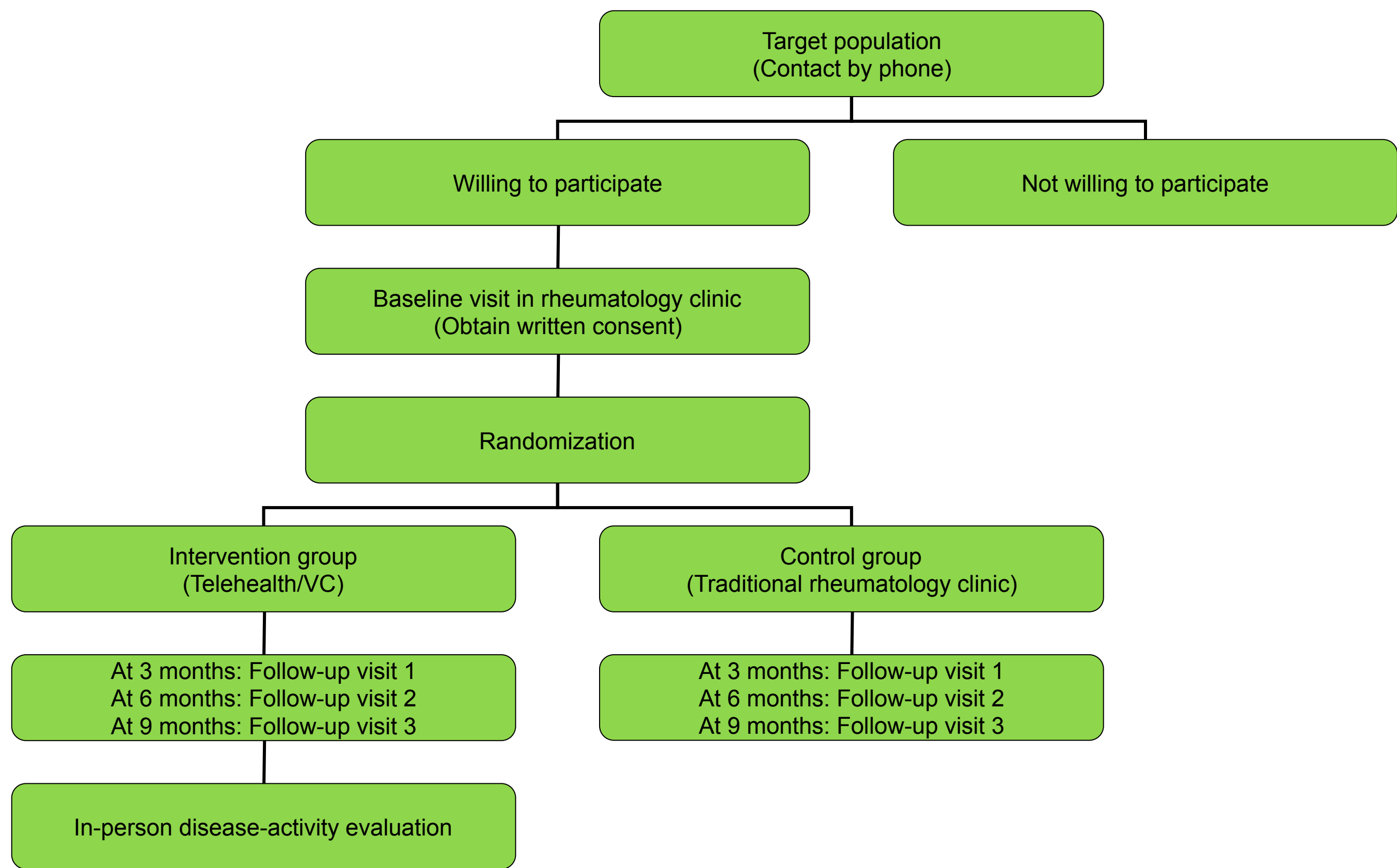
<sup>1</sup> Schuler R, Taylor-Gjevre RM. Perceived and actual barriers to health care in Northern Saskatchewan for rheumatoid arthritis patients. Poster presentation at CRA annual scientific meeting February 2014, abstract to be published in J. Rheumatol 2014.

## RANDOMIZED CONTROLLED RHEUMATOID ARTHRITIS CARE DELIVERY MODEL TRIAL

**Primary objective:** To determine whether disease specific activity measures are equivalent for patients evaluated longitudinally by telehealth/VC compared to those seen in traditional rheumatology clinics over a nine-month period. **Secondary objectives:** To evaluate quality-of-life and health-status measures as well as patient/healthcare provider levels of satisfaction for each care model. To determine incremental costs (direct and indirect) associated with distance telehealth/VC compared with traditional rheumatology clinics.

**Participants:** Patients living outside the urban centers, age over 18 years, ability to provide informed consent, place of residence 100 kilometers or more outside of Saskatoon, and rheumatologist established diagnosis of RA will constitute target population.

Examiners will include the three rheumatologist investigators, and physical therapists attending clinics in Prince Albert, North Battleford, Rosetown, Wynyard and Arborfield in rural Saskatchewan.



**Randomization:** A randomized block design will be utilized to randomly allocate participating patients to two arms, either to be followed by telehealth/VC in or near their home community or to continue travelling to Saskatoon rheumatology clinic.

**Intervention:** One study arm will be followed in traditional rheumatology clinic. The second study arm will be followed by telehealth/VC. Patients in the telehealth/VC arm will be examined by a rural-based physical therapist who will report exam findings during telehealth review with the urban-based rheumatologist. Follow-up visits will be every three months in both arms. Patients will be followed in their respective study arms for nine months, and then will be evaluated in-person in rheumatology clinic for final face-to-face disease activity evaluation. A one-on-one session with the rheumatology nurse educator will take place at the three-month visit, in-person for those attending traditional rheumatology clinic, and via telehealth/VC for those in that study arm.

**Data collection:** All patients will complete standardized history and symptom forms that will include medication dosage/utilization. At each visit, patients will be requested to complete validated questionnaire instruments including modified health assessment questionnaire (mHAQ), the RA disease activity index (RADAI), and the quality-of-life measure EQ5-D. Additionally, patient and healthcare provider telehealth/VC satisfaction survey assessments will be completed. Using patient cost diaries patients will record direct healthcare resource utilization; direct non-healthcare costs; and indirect costs. Patients will record in their diary on a weekly basis over the course of the trial period.

**Physical examination:** At each visit, patients will undergo physical examination and laboratory assessment of C-reactive protein (CRP) levels. Physical examination (swollen and tender joint count), examiner's global score (100mm VAS) and laboratory parameters (CRP) will be used to calculate DAS-28 CRP for each visit including the final nine-month visit. Examiners will also be required to provide categorical assessment related to disease activity (1.inactive/stable, 2.mildly active, 3.very active).

**Statistical Methods:** The primary outcome measure for this study is the DAS-28 CRP at the final visit after nine months study participation. Using power of 80% for our sample size estimation, we would require a minimum of 80 patients/arm, or a total of 160 patients. Mixed data analysis methodology will be employed to evaluate continuous, categorical, and qualitative data collected. DAS28 scores at the beginning and end of the study will be compared using simple t-tests within and between study arms, multiple linear regression will be used to control for patient demographics. Repeated measures analysis will be used to study DAS28 scores and quality-of-life metrics. An inductive thematic analysis will be applied to qualitatively analyze or describe participant comments from satisfaction surveys.

## SIGNIFICANCE

•We hope this study will determine whether an inter-professional approach to rheumatology care delivered through telehealth/VC can be effective/non-inferior to traditional rheumatology clinics. We anticipate this innovative health care delivery, if non-inferior, will improve geographically based inequities for access to rheumatologic care and be associated with improved patient satisfaction.

•We expect health care cost comparison will demonstrate reduction in costs related to accessing rheumatology care. This project will drive and support applications for other national funding directed towards development/evaluation of similar inter-professional care models.

•Our findings will be used to inform health administration planning in decisions to establish further resources for rheumatology patient care. Inter-professional participation in this study encourages cross-disciplinary involvement of musculoskeletal specialists in RA care.

## ACKNOWLEDGMENT

This study was funded by a grant from the Canadian Initiative for Outcomes in Rheumatology Care (CIORA), a granting organization committed to improve the care of Canadians living with all rheumatic diseases.



## CONTACT

For further questions, please contact:

Regina M. Taylor-Gjevre MD, MSc, FRCP(C) Professor of Medicine  
Head, Division of Rheumatology  
Department of Medicine  
Royal University Hospital  
University of Saskatchewan  
Saskatoon, SK, Canada  
S7N 0W8  
Tele: 306-844-1145 (office)  
Email: r.gjevre@usask.ca