



The Challenges of Telemedicine in Rheumatology

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- **A report from the United Nations shows that with the current growth in population a tripling of the elderly population is expected by 2050.**
- **In addition, the prevalence of rheumatic and musculoskeletal diseases (RMDs) in developed countries has markedly increased by 60% between 1990 and 2010 and is expected to continue rising.**
- **Together with a workforce shortage [i.e. a lack of rheumatologists and other health care professionals (HCPs)], this may have a major negative impact on the quality of rheumatology healthcare delivery in the future.**

- **At the same time, documentation from the International Telecommunication Union (ITU)⁵ shows that today 93% of the world population has access to a mobile broadband network.**
- **Thus, the technological advancements of the next decade may lead to major shifts in the healthcare system in the form of telehealth solutions.**

- **Telehealth is defined by the World Health Organization (WHO)- as 'the use of telecommunications and virtual technology to deliver health care outside of traditional health-care facilities'.**

- A survey among 10 European Alliance of Associations for Rheumatology (EULAR) countries was recently carried out in order to investigate how the first wave of the COVID-19 pandemic influenced decisions of rheumatologists and other HCPs in rheumatology regarding the management of patients with inflammatory RMDs.
- - It was found that 82% of the respondents indicated cancellation or postponement of face-to-face (F2F) visits of new patients due to the pandemic, and 84% of these consultations were replaced by telehealth.
- Ninety-one percent of follow-up F2F visits were cancelled or postponed, and 96% of them were replaced by a telehealth consultation

- **Results from a recent EULAR guideline on remote care show that the vast majority of studies have been conducted within non-inflammatory RMDs, with osteoarthritis (OA) being the disease where most telehealth interventions have been developed.**
- **Within inflammatory RMDs, most interventions have been developed for patients with rheumatoid arthritis (RA).**

- Using telemedicine also poses some **practical difficulties** for rheumatology providers due to the **lack of a direct musculoskeletal exam** as well as inability to remotely monitor changes in the musculoskeletal exam over time.
- Some disease activity measures, especially those dependent on physical exam findings such as swollen joint counts, cannot be easily measured by patients remotely without a surrogate examiner

- Thus, the ACR endorses the use of telemedicine but recognizes shortcomings of virtual visits and recommends that **telemedicine be used in conjunction with periodic in-person visits.**

- **Telehealth in the diagnostic phase**
- **Disease monitoring *via* telehealth**
- **Rehabilitation, self-management and patient education interventions**

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Main Areas of Development for Telemedicine in Rheumatology

- Teleconsultation and Telecommunication

telephone

Video

SMS

e-mail



Mobile Applications

- In rheumatology, there are nearly 200,000 available apps on Apple or Android devices, however, only a few have been rigorously evaluated and approved with clinical benefits
- the latest EULAR (European League against Rheumatism) recommendations emphasize the supervision of application development in patient and caregiver involvement, transparency, and accessibility

Symple



- Recent upgrade allows users to take up to 10 photos per day, track unlimited customizable health symptoms and factors, and record journal entries
- Imports steps, sleep, dietary calories, and heart rate from Apple's Health App
- Exports data to a spreadsheet
- Listed as one of the best apps for psoriatic disease by the National Psoriasis Foundation

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Track + React



- Developed by the Arthritis Foundation
- Helps patients understand how their daily activities affect their arthritis pain
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- Monitors arthritis pain and stiffness, identifies trends over time
- Allows patients to share their data with providers

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- Creates visual snapshots of health data, including joint pain, morning stiffness, fatigue, daily functioning, medications, and lab results
- Helps patients communicate symptom trends with their healthcare providers
- A recent review rated MyRA among the top apps for patients with RA

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RA Helper



- Helps patients with RA track their disease activity and medications
- Visually tracks the following disease scores: DAS28, SDAI, CDAI
- Allows patients to set reminders about their doctor appointments
- Stores lab results
- Includes guidelines to help patients set goals for their disease activity score
- A recent review rated RA Helper among the top apps for patients with RA

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MyPsoriasis/Psoriatic Arthritis Manager



- Helps track psoriasis and psoriatic arthritis–specific symptoms and adverse effects
- Provides charts of test results and medication adherence
- Provides patient education materials
- Allows users to record detailed information in a digital health journal and share data with providers

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Lupus Minder



- Developed by rheumatologists at the Hospital for Special Surgery at NYU
- Helps lupus patients track symptoms and adverse effects with notes and photos, and share trends with providers
- Helps patients manage medications between visits
- Provides information about lupus research, initiatives, and support programs

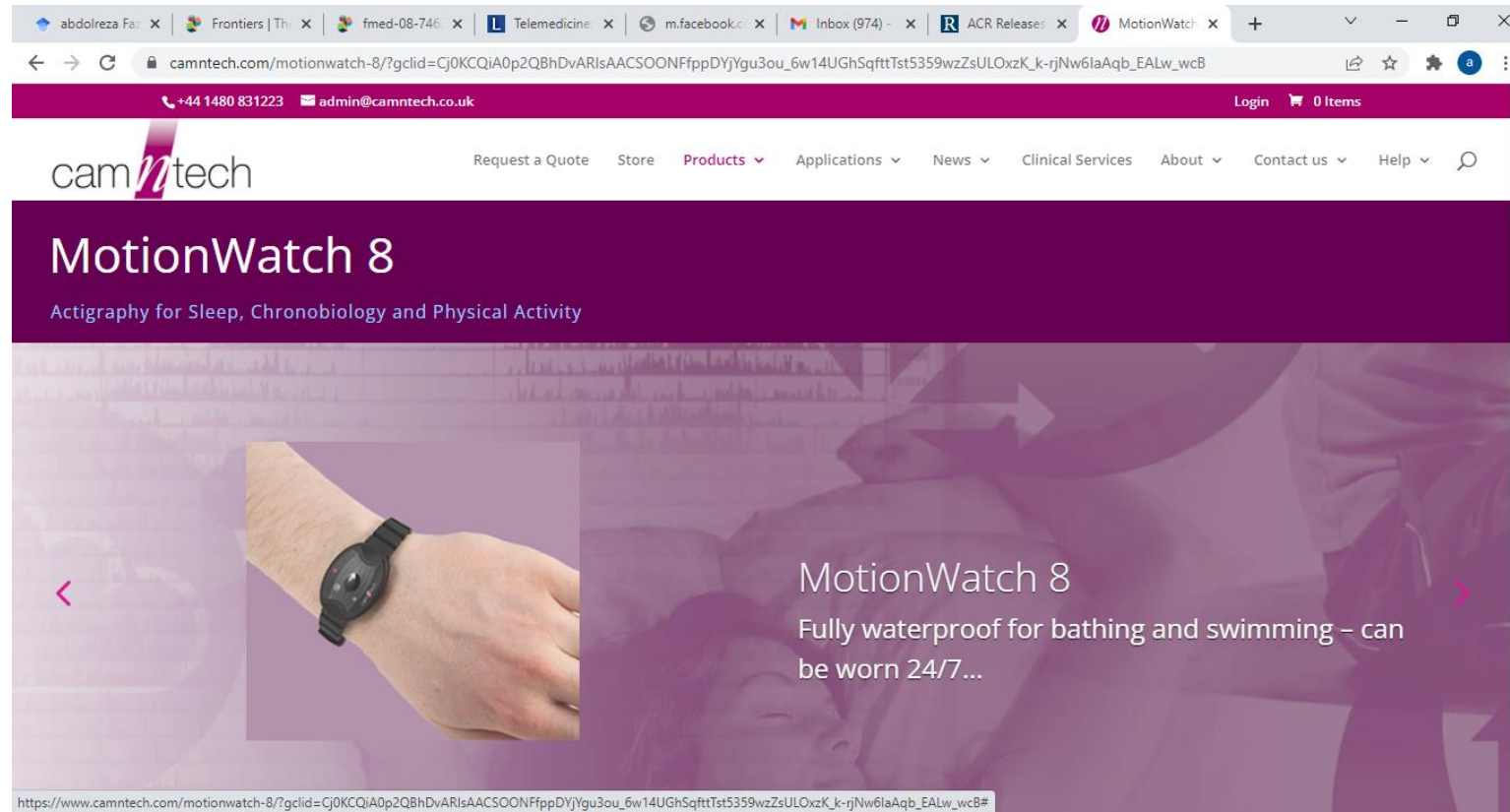
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Wearable Device



is now possible to quantify the amount of functional movement and even to identify the type of movement performed, via artificial intelligence (AI) tools

Gossec et al. used a physical activity tracker to evaluate the association between flare-ups in RA and the impact on physical activity level. **This tracker could allow early detection of disease flare-ups by observing changes in the number of steps**

- **Researcher recently developed a dynamometer, linked to a smartphone, that allowed the patient with RA to self-assess the grip strength of the dominant hand.**
- **They observed an inverse correlation between the disease activity score (DAS28) and the handgrip strength exerted by the dominant hand (14).**
- **This device is an objective measure of RA activity and appears to be useful for monitoring patients at a distance**

MVN Awinda starter

Standard performance



Range	~20m
Update rate	60hz
Battery life	6h
Comms	Radio protocol (Awinda)
Receiver	Awinda dongle
Hardware	17 wireless sensors T-shirt + straps
Charging	USB cable

MVN Awinda

Intermediate performance



Range	~50m
Update rate	60hz
Battery life	6h
Comms	Radio protocol (Awinda)
Receiver	Awinda station
Hardware	17(+1) wireless sensors T-shirt + straps
Charging	Charging station

MVN Link

High performance

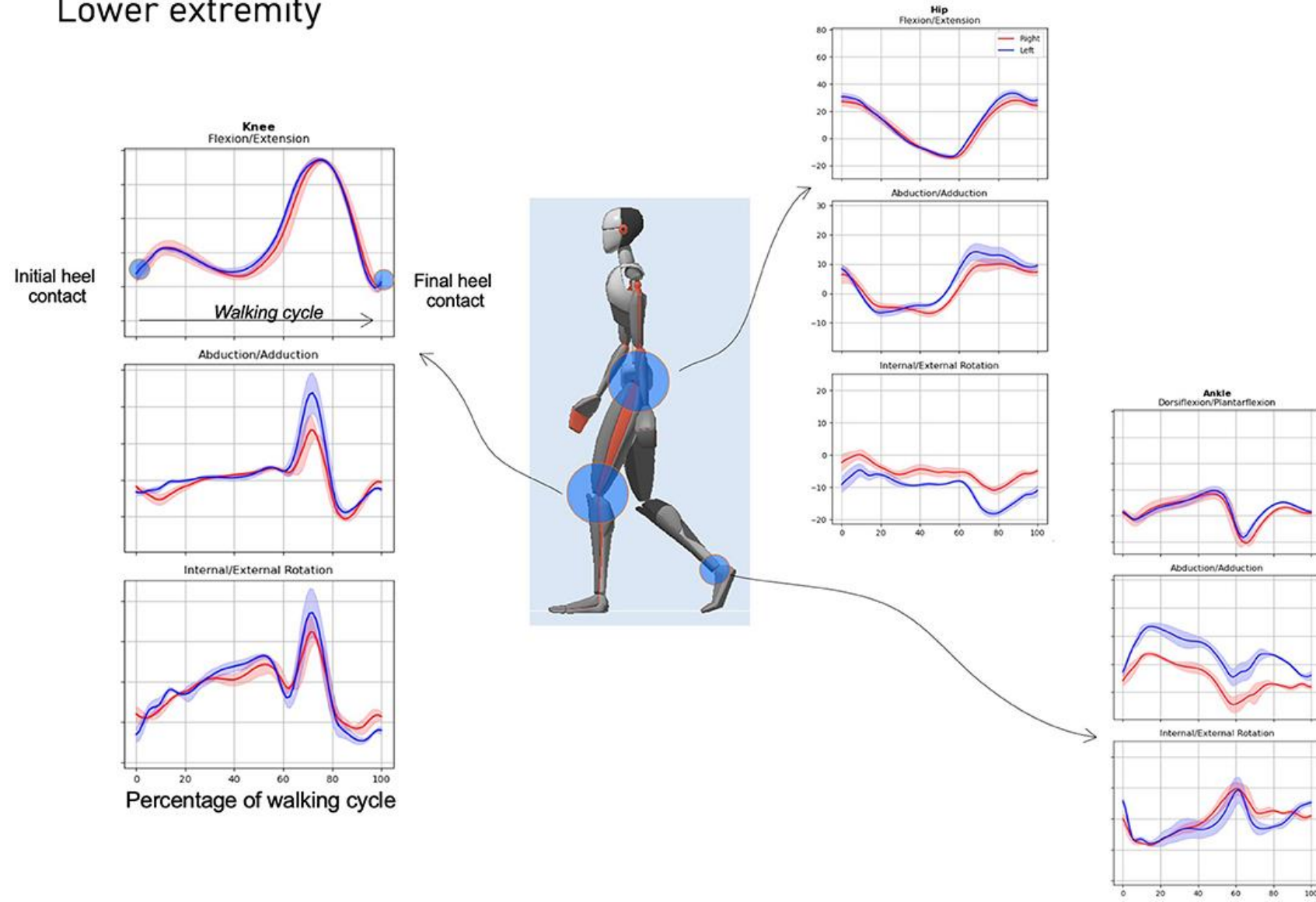


Range	~150m
Update rate	240hz
Battery life	8 - 10h
Comms	Wi-Fi
GNSS	X
r(OBR)	X
Receiver	Wi-Fi router
Hardware	17 wireless sensors Full body lycra suit
Charging	USB cable



Walking analysis

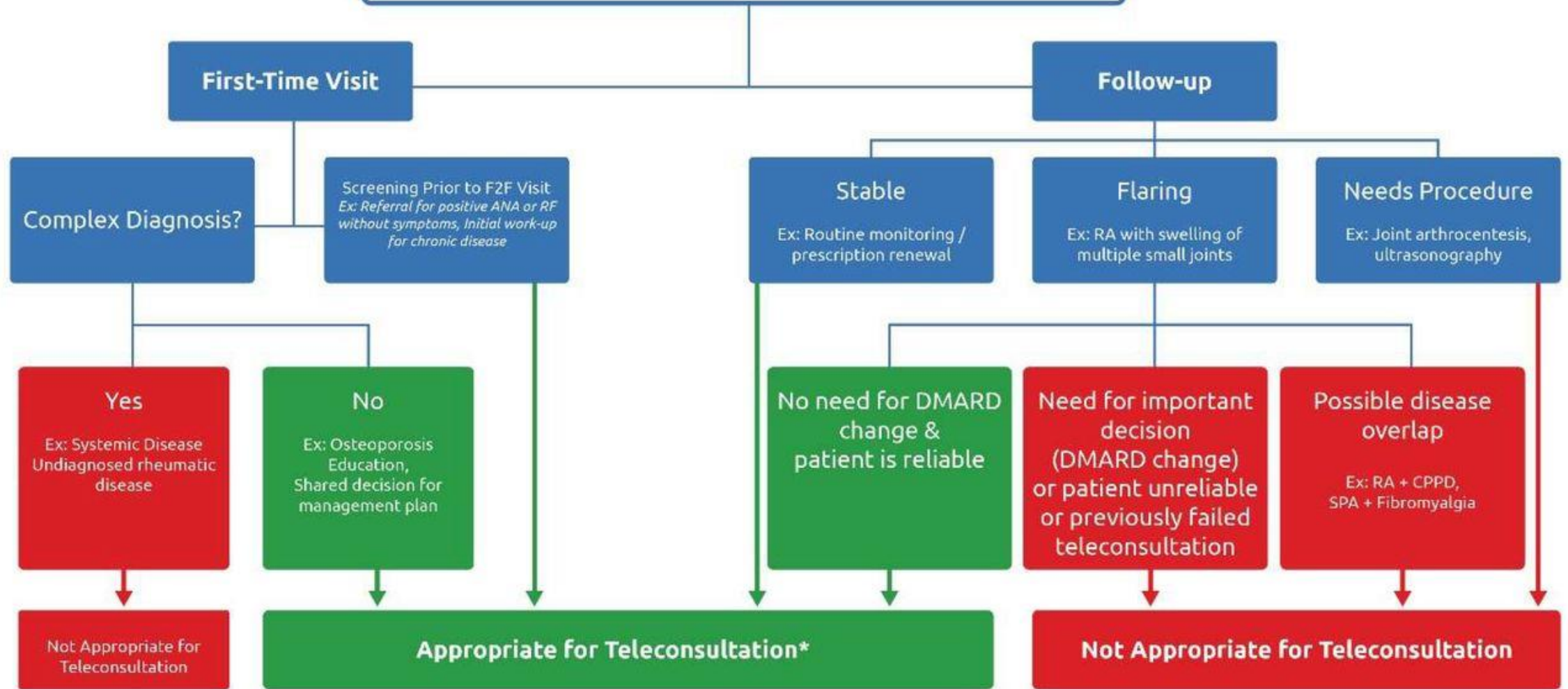
Lower extremity



- The American College of Rheumatology (ACR) supports the role of telemedicine as a tool with the potential to increase access and improve care for patients with rheumatic diseases, **but it should NOT replace essential face-to-face assessments** conducted at medically appropriate intervals

- **The provider-patient relationship should include both in-person and telemedicine services in accordance with the American Medical Association (AMA) Code of Medical Ethics, specifically Ethical Practice in Telemedicine**

Triage System for a Teleconsultation in Rheumatology



- **Patients should have a choice of provider for telemedicine services, as is required for all medical services**



- The limitations of the relevant technologies should be recognized, and appropriate steps taken to mitigate these limitations.
- The provision of telemedicine services must be properly **documented**

- The ACR recommends that telemedicine platforms provide an efficient mechanism to obtain **informed consent** for delivery of telemedicine services, including information for patients or their surrogates about the distinctive features of telemedicine, the credentials of the health care professionals involved, and the limitations of the technologies

- The ACR supports appropriate protocols to **protect the security and integrity of patient information**, while balancing the need for access to telehealth services.
- The ACR believes that any **fees charged** by hospitals for telemedicine support should be based on a **transparent and fair formula** (such as percentage of revenue).

- The ACR **opposes geographical restrictions** on telemedicine practice and supports the ongoing ability of patients to access telemedicine services from their home after the PHE has ended.
- The ACR **opposes payer policies** that mandate the use of **specified telemedicine platforms** or **use telemedicine** as a means of constructing restrictive networks or diverting patients to their “preferred” providers

Toolkit for implementation of telehealth in the rheumatology clinic

Before the visit

Train your staff to assist you in all the steps in preparation for the visit

Have an efficient triage system

Collect relevant data before the visit

Prepare the patient and send the weblink and instructions beforehand

Do a pre-visit technical checklist

Do a pre-visit environment checklist

Review the patient's previous records

During the visit

- Make sure that both your environment and the patient's one ensures visual and auditory privacy
- Make sure to make the patient feel that he/she has all your attention
- Use your camera efficiently
- Instruct the patient to use the camera efficiently
- At the end of the visit, determine the next steps

After the visit

Share the post-visit summary and action plan

Send any prescription by e-mail or any other means agreed upon during the teleconsultation

Share any educational material (such as instructions for self-injection or home-based exercises)

Adapt to the patient feedback for the next visit

*Thank
you*

