

Implementation of Rheumatoid Arthritis Assessment Tool: A Quality Improvement Project

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### Dedication

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### Abstract

**Objective.** Rheumatoid arthritis is a common inflammatory arthritis resulting in joint destruction that leads to physical and functional disability. This condition is characterized by variable disease activity levels, defined as low, moderate, and high. The higher the disease activity the more at risk the patient is for joint joint destruction. The routine use of an approved composite index for disease activity is recommended to assess disease activity level at each office visit. The American College of Rheumatology approved six composite indices; the Patient Activity Scale (PAS), the Patient Activity Scale II (PAS-II), the Routine Assessment of Patient Index Data 3 measures (RAPID 3), the Clinical Disease Activity Index (CDAI), the Disease Activity Score with 28-joint count (ESR or CRP) (DAS28-ESR or DAS28-CRP), and the Simplified Disease Activity Index (SDAI). The RAPID 3 was chosen to implement because it is patient-focused, its ease of use, and it does not require formal joint counts or acute phase reactants values to determine disease activity. **Methods.** This quality improvement project resulted in the implementation of the RAPID 3 at a rural rheumatology clinic. The RAPID 3 composite index was used to assess disease activity levels in patients with rheumatoid arthritis over a seven-week period. At the end of implementation, the providers were given a questionnaire to evaluate their opinions regarding feasibility, clinical relevance, and satisfaction with using the RAPID 3. The questionnaire was followed by interviews. **Results.** The results showed that the staff and health care providers found the RAPID 3 to be feasible. It was easily integrated into the clinic workflow, it was easy to score and interpret given the time constraints of office visits. The health care providers found the RAPID 3 clinically relevant, meaning that it interpreted disease activity levels accurately. They also identified the importance of the RAPID

3 and that it should be used on a routine basis. The providers also identified satisfaction with improved communication with their patients, who were focused and ready for the office visit.

## **Section 1: Description of the opportunity for improvement**

### **Introduction**

Rheumatoid arthritis (RA) is the most common inflammatory arthritis affecting approximately one percent of the world's population. RA is an autoimmune polyarthritis causing joint destruction, joint pain, swelling, and prolonged morning stiffness that often times leads to functional disability. RA is the result of a dysregulated immune response in which healthy connective tissue is attacked by the patient's own immune system. Although RA primarily targets the joints, it can affect any area of the body, especially the lungs (Aletaha et al., 2010). Diagnosis can occur at any age with the incidence increasing in the older population; 8.7 per 100,000 aged 18-34 years compared with 54 per 100,000 for individuals 85 years or older with a prevalence of 41 per 100,000 people per year (Centers for Disease Control and Prevention, 2015).

Rheumatoid arthritis is a condition characterized by variable disease activity levels from acute exacerbations of high-disease activity to low-disease activity and remission states. In years past, the chances of achieving low-disease activity levels and even remission were difficult. However, over the last two decades, with the introduction of newer disease modifying antirheumatic medications (DMARDs) and biologics, the chance for better RA control is realistic (Gilek-Seibert, Prescott, Kazi, 2013; Pincus, Swearington, Bergman, & Yazici, 2008). To date, there are a numerous DMARDs and biologic agents available that work by suppressing the immune system resulting in decreased inflammation and joint destruction. Currently pharmacologic treatment is the gold standard in management of RA (Zwikker et al., 2014).

To appropriately manage an RA patient, the healthcare provider needs to assess the patients level of disease activity to determine if any changes need to be made to their treatment

plan. Assessment of disease activity is best measured using a composite indice for disease activity which is a validated, standardized measurement tool. Composite indices for disease activity are used to assess disease activity in order to optimize patient management and outcomes (Gilek-Seibert, Prescott, & Kazi, 2013). Composite indices provide quantitative data that can be measured at each office visit. Gilek-Seibert, Prescott, and Kazi (2013) note that quantitative data provides a more accurate measure of disease activity than nonquantitative data that includes a routine history and physical.

Despite the evidence supporting the use of composite indices for disease activity only 50-percent of practicing rheumatologist use these tools on a routine bases, if at all (Anderson et al., 2012). To date, there is no liturature available to determine if composite indices of disease activity are being used in primary care settings. Multiple reasons have been identified for not using a composite indice for disease activity such as the lack of knowledge and recommendation for use, appropriate implementation guidelines, the requirement for formal joint assessments and acute phase reactants to calculate the score. In addition, calculation and interpretation of the score can prove challenging. Formal joint counts are time consuming, taking upwards of 20 minutes to complete. Additionally, interpretation of joint tenderness and swelling varies between assessors, making reproducibility difficult, unless the same person assess the patients joints at each office visit. Currently, in most rheumatology and primary care practices disease activity is guided by a routine history and physical examination (Anderson et al., 2012; Gilek-Seibert, Prescott, Kazi, 2013; Pincus et al., 2008). Pincus (2008) indicated that healthcare providers frequently underestimate the level of patients level of disease activity, pain, and functional ability when using only nonquantitative measures.

**Functional ability.** One of the more prominent characteristics of RA is the patient's ability to remain physically functional while dealing with chronic pain and fatigue (Englbrecht, Kruckow, Araujo, Rech, & Schett, 2013). Functional ability includes activities of daily living, such as getting dressed, managing the buttons on shirts and pants, walking, and bathing themselves. The long term-term functional outcome for patients with RA is variable and is largely dependent on a variety of factors including how the patient responds to pharmacologic therapy, the degree of joint deformity, and the extent of damage when diagnosed (Zwicker et al., 2014).

**Diagnosis.** Diagnosing RA early is difficult because other arthritic conditions behave similarly (Aletaha et al., 2010). Zwicker et al (2014) note that early diagnosis and treatment reduces joint deformity that improves the patient's overall functional ability. To assist with the diagnosis of RA the American College of Rheumatology (ACR) in 1987 established standardized criteria. The ACR criteria was accepted internationally. It however lacked the ability to differentiate early disease activity. In 2010, the ACR and the European League Against Rheumatism (EULAR) revised the classification criteria, allowing for early identification of rheumatoid arthritis (Aletaha et al., 2010). The new criteria, based on a numerical point system (Table 1), indicates rheumatoid arthritis should be considered in patients who present with at least one joint with synovitis unexplained by other conditions, serology based on the results of a rheumatoid factor (RF) and anti-cyclic citrullinated peptide (CCP) antibodies, abnormal acute phase reactants, and the duration of symptoms. A total of six points or higher is diagnostic of RA.



<b>Table 1</b>	
Diagnostic point system for rheumatoid arthritis	
Stage	Points
Joint involvement	1-5 points awarded based on the appearance and number of joints
Serology	2-3 points awarded based on a low- or high-positive RF or anti-cyclic citrullinated peptides
Acute phase reactants	1 point awarded for abnormal estimated sedimentation rate (ESR) or c-reactive protein (CRP)
Duration of symptoms	1 point awarded for duration greater than six weeks

It is important to note that approximately 20-percent of patients are sero-negative, meaning they do not have positive serologies, making diagnosis difficult (O'Dell, Imboden, & Miller, 2013). A healthcare provider specializing in rheumatology will then use a combination of factors to diagnose this type of RA.

**Management.** Until the introduction of DMARD and biologic therapy, many patients with RA were not well-controlled. In many cases, these patients developed severe joint deformity and loss of their functional ability; including the ability to walk, dress, and feed themselves. However, is no longer the trend. Current management guidelines allows for the achievement of low-disease activity levels and remission with the newer pharmacologic agents (Anderson et al., 2012; Grigor et al., 2004; Sanderson, Morris, Calnan, Richards, & Hewlett, 2010; Singh et al., 2012; Smolen et al., 2010). Low disease activity levels are achievable with early diagnosis, early initiation of treatment, and continuous monitoring and reassessment using a composite indice of disease activity. Recent studies demonstrate that aggressive management

to a predefined level, of low-disease or remission, improves patient outcomes (Bergman, 2010; Radner, Smolen, & Aletaha, 2014; Singh et al., 2012; Sokka, Rannio, & Khan, 2012).

**Composite indices for disease activity level.** Anderson et al (2012) identify current management guidelines for RA using a composite index for disease activity. Clinical practice guidelines are statements with recommendations to assist providers in determining the best possible care (IOM, 2011). With the introduction of newer therapies, low disease activity and remission are realistic outcome for RA patients. Treating to lower disease activity levels has made it increasingly important to routinely assess disease activity levels. External factors such as the Center for Medicare and Medicaid Services' Physician Quality Reporting System (PQRS), the National Committee for Quality Assurance (NCQA), Physician Consortium for Performance Improvement (PCPI), and the American College of Rheumatology (ACR) recommend disease activity level measurements in outpatient practices because of pay for performance incentives (Gilek-Seibert, Prescott, & Kazi, 2013).

To date there are 63 composite indices for disease activity measurement tools available for use in RA. In 2012, the ACR assembled a working group to publish recommendations regarding disease activity in measurement for patients diagnosed with rheumatoid arthritis (Anderson et al., 2012). The working group (ACR RA Clinical Disease Activity Measures Working Group) reviewed and excluded composite indices for disease activity that only assessed radiographic changes, those not pertinent to joint damage and disability, or not endorsed by an expert panel of rheumatologists (Anderson, Zimmerman, Caplan, & Michaud, 2011; Anderson et al., 2012). Of the original 63 indices originally reviewed, only six were recommended to accurately determine disease activity levels in RA. Three of the measures use patient-reported information, referred to as patient-driven composite tools, including the Patient Activity Scale

(PAS), the Patient Activity Scale II (PAS-II), and the Routine Assessment of Patient Index Data 3 measures (RAPID 3). The remaining three indices are provider focused that include joint counts, including the Clinical Disease Activity Index (CDAI), Disease Activity Score with 28-joint count (ESR or CRP) (DAS28-ESR or DAS28-CRP), , and Simplified Disease Activity Index (SDAI) (Anderson et al., 2012; Fujiwara & Kita, 2013). These tools are published in the ACR guidelines for treating rheumatoid arthritis (Anderson et al., 2012). Table 2 describes the various composite indices and their corresponding disease activity level.

<b>Table 2</b>					
Disease activity cutoffs for ACR recommended composite indice measures					
Disease activity measure	Scale	Remission	Low/ minimum	Moderate	High/severe
Patient-driven composite indices:					
PAS	0-10	0.00-0.25	0.26-3.70	3.71-<8.0	8.00-10.00
PAS II	0-10	0.00-0.25	0.26-3.70	3.71-<8.0	8.00-10.00
RAPID 3	0-10	0-1.0	>1.0-2.0	>2.0-4.0	>4.00-10
Provider composite indices:					
CDAI	0-76	≤2.8	>2.8-10.0	>10.0-22	>22.0
DAS 28 (ESR, CRP)	0-9.4	<2.6	≥2.6-<3.2	≥3.2-≤5.1	>5.1
SDAI	0-86	≤3.3	>3.3-≤11.0	>11.0-≤26	>26

(Gilek-Seibert, Prescott, & Kazi, 2013).

**Patient-driven composite indices.** The patient-driven composite tools measure three of the ACR core data set components that includes a pain assessment, a measure of functional assessment (Health Assessment Questionnaire (HAQ) or Multidimensional Health Assessment Questionnaire (MDHAQ), and the patient's overall condition (Patient global visual analog scale (PtGVAS)). The PAS and PAS-II use the HAQ, and the RAPID-3 use the MDHAQ. The distinguishing feature of this category is a functional assessment. As a chronic inflammatory disease, rheumatoid arthritis can cause significant pain leading to impairment of physical

function and mobility, loss of productivity, and difficulties performing normal daily activities. Therefore, patient driven composite tools such as the RAPID-3 will emphasize the patient's functional ability to determine a level of disease activity.

The HAQ is a 20-item questionnaire that determines activities of daily living (ADL) in eight domains. This tool is designed to measure health status and health-related quality of life. For each of the eight domains, dressing, arising, eating, walking, hygiene, reach, grip, and activities, the patient reports the amount of difficulty they have in carrying out the activity (Janssens, Decuman, Keyser, & Belgian Rheumatoid Arthritis Disability Assessment Study Group, 2014; Salomon-Escoto, Gravallesse, & Kay, 2011). The MDHAQ is a modification of the HAQ, which includes eight activities of daily living, one from each HAQ category. The MDHAQ includes 10 activities, eight from the HAQ and two complex activities of daily living activities. These activities include physical function, pain, global status, psychological distress, fatigue, and an evaluation of morning stiffness (Pincus, Yazici, & Bergman, 2009). The MDHAQ is used in the RAPID 3 composite index.

The patient-driven composite tools are beneficial because they are completed by the patient and, therefore, represents the patient's perceived degree of disease activity (Bergman, 2010; Fujiwara & Kita, 2013). These tools can be conveniently completed while the patient is waiting to be seen by the health care provider. An advantage of having the patient complete the tool while waiting for the healthcare provider is that it could help the patient focus on their concerns and their disease process, leading to a more focused office visit (Amaya-Amaya et al., 2012; Bergman, Reiss, Chung, Wong, & Turpcu, 2013; Pincus et al., 2011) and it involves that patient in their care, strengthening the relationship between the patient and the provider in

partnership. Involving the patient also allows for motivational interviewing to promote better management of rheumatoid arthritis (Östlund, Wadensten, Kristofferzon, & Häggström, 2015).

**Provider-driven composite indices.** Included in this category are the CDAI, SDAI, DAS28 (ESR or CRP) which are all very similar. These composite indices are primarily used in clinical trials (Amaya-Amaya et al., 2012; Castrejon, et al., 2013; Kim, Park, Bae, Son, & Choe, 2014). Provider-driven composite indices differ from patient-driven composite indices for a few reasons. Provider composite indices require a formal 28-joint count for tender and swollen joints. However, formal joint counts are time-consuming and difficult to reproduce. The recommendation is to have the same joint assessor complete the formal joint count for tenderness and swelling at each office visit for the results to be valid (Aletaha et al., 2005; Gilek-Seibert, Prescott, & Kazi, 2013; Pincus & Castrejon, 2015; Singh et al., 2012). This, however, can be difficult to do because of changing work schedules. Provider-driven composite indices also use acute phase reactants, ESR or CRP, to assist with determining the degree of disease activity. The DAS28 has a more complex calculation than the SDAI or CDAI, which typically requires a computer program or calculator to score the composite index. In addition, using acute phase reactants to determine the disease activity score could be misleading because many other inflammatory processes in the body influence ESR and CRP levels. They are not specific to the inflammation associated from rheumatoid arthritis. Barriers to use the provider-driven composite indices in clinical practice is the time required to complete them, the need for a formal joint count, and their reliability on acute phase reactants (Anderson et al., 2012; Pincus et al., 2009; Pincus, 2010; Singh et al., 2012).

## **The Problem**

The United States has an estimated 1.5 million adults diagnosed with rheumatoid arthritis (CDC, 2015). According to the Centers for Disease Control and Prevention (2015) people with RA compared to those without arthritis have more functional losses in every area of daily living, including work, leisure, and social engagement. Numerous studies indicate that early and aggressive medical treatment and achievement of low disease activity may reduce disability (Aletaha et al., 2005; ACR, 2014; Castrejon et al., 2013; Janssens et al., 2014). To achieve low disease activity, patients need to be managed using the treat-to-target principles that use routine disease activity monitoring using a composite index (ACR, 2014). According to Anderson (2012) the guidelines recommend a composite disease activity measurement tool be used to assess disease activity levels at each office visit. The standard monitoring is once monthly for six months with initial diagnosis and then every three months thereafter or more often as needed (Gilek-Seibert, Prescott, & Kazi, 2013).

As of 2016, the practice setting used in this project sees an estimated 3000 patients diagnosed with rheumatoid arthritis. This practice did not use a composite index for disease activity to assess patients with RA. Instead, these patients were assessed based on their subjective reports of pain and functional ability, and the provider's objective report of swollen/tender joints and acute phase reactant levels. Current guidelines indicate using a treat-to-target approach is essential for RA patients to achieve low-disease activity levels or remission which is the goal of therapy. To treat to a specified disease activity level, it is important for the health care provider to calculate and trend the patient's response to treatment using a composite index for disease activity. Ultimately leading to improved functional ability, decreased joint destruction, and deformity (Dual & Grisanti, 2009; Sokka et al., 2012; Yazici, 2007).

**Intended Improvement**

The intended improvement of this project is for healthcare providers and staff to utilize current guidelines for evaluating and monitoring disease activity levels in patients diagnosed with rheumatoid arthritis. Achieving low disease-activity levels is facilitated through the use of the RAPID 3 composite index. Consistent use of the RAPID 3 provides valuable information to the health care provider, allowing for aggressive management (Anderson et al., 2012; Schoels et al., 2010; Truglio-Londrigan, 2013). Implementation of the RAPID 3 will align this practice with the current 2015 ACR guidelines for management of rheumatoid arthritis patients.

Using the conceptual framework of Rosswurm and Larrabee (1999) for the implementation of the RAPID 3, it was found that this rheumatology practice did not use a composite index of disease activity for rheumatoid arthritis patients. Discussions with the health care providers and review of the current intake record demonstrated a lack of performance in ACR guidelines specific to assessment of disease activity: low, moderate, and high-disease activity level. The specific objective of this project is the consistent implementation of the RAPID 3 in the assessment of rheumatoid arthritis patients. The question this project intended to answer is whether health care providers found the RAPID 3 to be advantageous in streamlining care; specifically evaluating their opinion on its clinical feasibility, relevance, and satisfaction.

**Summary**

Current guidelines for the management of rheumatoid arthritis recommend the consistent assessment of disease activity levels using a quantifiable composite index for disease activity compared to traditional subjective and objective measures alone. Treating to a predefined disease activity level will guide the health care provider in the aggressive management of these patients allowing them to have improved functional ability and quality of life.

## **Section II: Comprehensive Review of the Literature**

### **Introduction**

A comprehensive literature search for evidence was conducted at Northern Arizona University's Cline Library using Medline, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Complete and Academic Search Complete, PubMed, and Cochrane Review. Search terms used included RAPID 3, routine assessment of patient index data, and rheumatoid arthritis. The search was limited to publications from 2005 to present, English only, but included evidence outside of nursing. Although the search yielded 35 articles however 19 were chosen for this review of evidence based on quality and rigor. The strength and quality was then appraised. The strength of evidence was rated using the hierarchy of evidence developed by Melnyk and Fineout-Overholt (2011). Melnyk and Fineout-Overholt (2011) described seven levels for strength of evidence. Level I is the strongest evidence which includes systematic reviews and random control trails whereas level VII is the weakest and includes expert or group opinions/comments (see Appendix A). This information is summarized in an evaluation table (see Appendix B).

### **Review of Literature**

Composite indices for disease activity assessment. Numerous RA disease activity composite indices are currently available for use. Data pertaining to the feasibility, validity, and clinical relevance of these tools have been published across numerous journals over the last several decades. To facilitate the availability of this information, in 2011 the ACR summoned a group of clinical experts in rheumatology, referred as the ACR RA Clinical Disease Activity Measures Working Group to conduct a systematic literature review to identify and recommend composite disease activity indices for use in everyday clinical practice (Anderson et al., 2011;



Anderson et al, 2012). According to Anderson et al (2012) a total of 63 composite indices of disease activity were identified by the working group. Each index was further scrutinized by an expert advisory panel consisting of rheumatologist with publishing expertise on disease activity composite indices, and psychometric testing for reliability, validity, and responsiveness. Based on the recommendations from the advisory group and psychometric analysis, six measurement tools were selected for recommendation. The six tools include CDAI, DAS28 (ESR or CRP), PAS, PAS-II, RAPID-3, and SDAI. Each of these tools are sensitive to changes in disease activity, differentiate between low, moderate, high, and remission disease states, and are acceptable for use in clinical practice.

RAPID-3 recommendation for use in clinical practice. The RAPID-3 is based on three of the ACRs core data set measures which are pain intensity using a numeric 0-10 scale, with zero meaning no pain to 10 meaning the worst pain, a functional impairment assessment measured by the MDHAQ, and a perceived patient global estimate of status that rates the patient's overall health on a 0-10 scale (Pincus & Castrejon, 2015). A RAPID-3 score is calculated by the health care provider based on the patient's functional assessment. It is one of the few composite indices that does not require acute phase reactant scores or a formal 28-joint count to determine the level of disease activity. Instead it uses the results from the MDHAQ which is a subjective report of the patient's physical function, allowing for an assessment of physical disability (Bergman & Pincus, 2008; Blanchais, Berthelot, Fontenoy, Goff, & Maugars, 2010; Bossert et al., 2012; Castrejon et al., 2013; Khan et al., 2009; Kim et al., 2014; Pincus et al., 2008; Pincus, Chung, Seguardo, Amara, & Koch, 2006; Pincus et al., 2011). Reliability and validity of the RAPID 3 has been established (Anderson et al., 2011).

Multidimensional Health Assessment Questionnaire and RAPID-3. The multidimensional health assessment questionnaire (MDHAQ) was developed from the health assessment questionnaire (HAQ) that was designed to assess a patient's quality of life. The HAQ was first introduced in 1980 was the first measurement tool for recording physical function, pain, and global estimate in patients with rheumatoid arthritis (Pincus & Castrejon, 2015). Over time the HAQ changed to meet the evolving demands of daily clinical practice. These changes resulted in the development of the MDHAQ in 1999, which is a patient self-report questionnaire that addresses various physical activities, sleep quality, anxiety, depression, pain, a self-report joint count, morning stiffness, exercise patterns, fatigue, and recent medical history information (Nagasawa, Kameda, Sekiguchi, Amano, & Takeuchi, 2010; Pincus & Castrejon, 2015).

### **Summary**

Much of the literature showed that using the RAPID 3 can accurately assess disease activity levels. Incorporation of the validated RAPID 3 disease activity measure into the workflow in clinical practice will facilitate adherence to the ACR guidelines and demonstrate that the providers are implementing quality care and the essential tools to treat to target.

## **Section III: Intervention Design and Implementation Plan**

### **Population**

The study participants included two family nurse practitioners, each with a master's degree in nursing, one Doctor of Osteopathy (DO) specializing in rheumatology, and three front/back office staff. One nurse practitioners had one year of experience in rheumatology and the other had three years of experience, the rheumatologist had eight years' experience. The office staff have worked in this office for 2 years each. The population of patients included

approximately 5500 patients with autoimmune disease with approximately 3000 having rheumatoid arthritis, over 75-percent of them being women.

### **Setting**

The setting is a rural clinic specializing in rheumatology, located in central Yavapai County, Arizona. The practice owner is also one of the providers. The practice employs two family nurse practitioners, three front/back office personnel, and one part-time office manager who is offsite. The three front/back office personnel have specific jobs but are capable of fulfilling all the job duties in the office. This setting was chosen by convenience and its large population of patients diagnosed with rheumatoid arthritis. On average this office manages and treats a total of 125-150 patients with RA weekly.

### **Conceptual Framework**

With permission from the practice owner, this project began through guidance using the Rosswurm and Larrabee Model for Change to Evidence-Based Practice (1999). This model guided the implementation of this evidence-based quality improvement project. The Rosswurm and Larrabee model is derived from theoretical and research literature that is embedded in evidence-based practice, research utilization, and change theory. It incorporates six steps that link a problem with interventions and outcomes. The six steps (see Appendix D) as identified by Rosswurm and Larrabee are:

- Step 1: Assess a need for change by comparing internal and external data to identify a practice issue.
- Step 2: Link a problem with interventions and outcomes by defining the problem, identifying interventions, linking them with proposed outcomes.

- Step 3: Synthesize the best evidence by conducting a literature review to support the practice change.
- Step 4: Design practice change by identifying resources and plan the implementation process.
- Step 5: Implement and evaluate a change in practice.
- Step 6: Integrate and maintain change in practice by monitoring outcomes.

**Assessing the need for change.** The project began after review of the 2012 ACR guidelines revealed a discrepancy concerning a gap in current guidelines for management compared with this practice's policy and procedure. It was found that this practice did not use a composite index, nor were the providers familiar with the current guideline recommendation.

According to Anderson et al (2012) the guidelines recommend that healthcare providers use a composite index for disease activity, such as the RAPID 3, at every office visit to determine the patient's level of disease activity. Anderson et al (2011) discussed that a composite index uses a single continuous quantitative score that is advantageous over the interpretation of a single objective component such as evaluation of tender and swollen joints only. The advantage of a composite index is it incorporates multiple data points into a single score. The RAPID 3 quantifies the patient's functional ability using the MDHAQ, a pain assessment, and the patient's global assessment which incorporate disease outcomes established by the ACR.

Using the RAPID 3 offers potential long-term benefits to the practice setting and the patient by aligning practice policy with current guidelines and decreased loss in function among those with RA (Gilek-Seibert, Prescott, & Kazi, 2013). Additionally, composite indices are recommended by many insurance companies to justify escalation in therapy (Anderson et al., 2011; Schoels et al., 2010).

**Linking the problem with interventions and outcomes.** As the program director being proactive through discussion with the other providers was important. Discussions focused on assessment and prioritization of risk factors that would interfere with successful implementation of the RAPID 3. All the providers were enthusiastic about implementing the tool, although one of the nurse practitioners was concerned about the increased work load but understand the potential advantages for patients. Further discussion with the practice owner indicated that the project would be supported during the implementation phase. The practice owner felt the risk of failure was low. Having this foresight from the providers, increased awareness regarding communication with the providers and staff became a priority. It became important that the process for implementation needed to be carefully planned out. It was realized that in-servicing and educating the staff and providers on composite indices would have a positive impact on the success of this project.

**Synthesize best evidence.** A comprehensive review of literature revealed six composite indices were recommended by the ACR. Each of the composite indices had similar disease activity levels which have been correlated. Because no single composite index will fully quantify the global burden of RA disease, a tool was chosen that would meet the needs of the practice while providing an accurate assessment. The RAPID 3 was chosen to implement in this practice because of its accuracy and simplicity for use. Concerns from the providers regarding a tool that would feasibility work within the time constraints of the office visit prompted the selection of this tool. The RAPID 3 is quick to complete by patients and score by healthcare providers. It is estimated that the patients can complete the tool in one to two minutes while waiting for their appointment and fifteen to thirty seconds to score by the healthcare provider. The RAPID 3 score can be calculated without acute phase reactants or formal joint counts for

swelling and tenderness. It can be used at short or long intervals of time. Strengths of this tool is embedded in the parameters it assesses which are important to the patient, they are pain intensity using a 0 to 10 numerical scale, functional impairment as reflected by the MDHAQ, and perceived disease activity as rated by the visual analog scale (Berthelot, Batard, le Goff, Maugars, 2012).

**Design change in practice.** Three weeks prior to implementation a 30-minute in-service for the practice staff using a PowerPoint presentation (see Appendix H) on the six recommended composite indices, including advantages and disadvantages of each with a focus on the RAPID 3. A demonstration on how to score the tool by hand or using the free online calculator was also included. One week prior to implementation a shorter in-service to clarify questions was conducted mostly for the staff but to encourage and remind the health care providers about the project objectives. The continuous reinforcement and repeated in-services helped the staff and health care providers focus on the implementation process and objectives. The front/back staff were instructed to add a copy of the RAPID 3 into the intake paperwork. Once the patient is placed in a room, the rooming staff gave the intake paperwork to the healthcare provider to review, calculate, and interpret the score. The healthcare providers agreed to document the RAPID 3 score in the plan section of the patient's electronic medical record for easy visibility at the next visit. The completed RAPID 3 forms were placed in a bin and were pick up weekly by the program director. To avoid confusion and streamline the process at check-in, the RAPID 3 tool will be given to all patients at check-in since the front office staff cannot readily see the patients diagnosis. Only patients with RA will be scored and interpreted.

The role of this project director was to lead the development of the practice change and provide support to the staff and healthcare providers. The aim is to allow the providers to use the

RAPID 3 on rheumatoid arthritis patients and determine if it is clinical feasibility and relevant, and if they are satisfied with its use within clinical practice.

**Implementation and evaluating the change in practice.** This project was implemented over seven weeks. No major issues were identified during implementation. As support, I encouraged the staff and healthcare providers throughout implementation.

After seven weeks, each health care provider was given a ten-question questionnaire (see Appendix E) using a 5-point Likert scale to evaluate their opinion of its feasibility and clinical relevance, and whether they were satisfied with using the RAPID 3. The questionnaire was given on the last day of implementation. The questionnaire was provided in an envelope that could be sealed to provide anonymous responses if desired. One week after implementation ended, each of the health care providers were interviewed using structured open-ended questions (see Appendix F).

Seven weeks was chosen for implementation because it allowed for repeat evaluation of a small number of patients (13) from a total of 597 RAPID 3 forms collected. It also allowed for this project to be implemented in a rural rheumatology practice prior to a premeditated organizational restructuring involving the merger of this practice with a multi-site organization that involved integration of their policies, procedures, and electronic medical record.

After an extensive search of literature, a questionnaire for data collection could not be identified that met the exact objective for this project. A comprehensive post-implementation questionnaire was found that evaluated the use of a pain assessment tool, Critical-Care Pain Observation Tool (CPOT), in the intensive care unit. The questionnaire developed by Gélinas et al. (2014) is a self-administered evaluation questionnaire that included four sections; feasibility, clinical relevance, satisfaction and socio-demographic information. The questionnaire was

adjusted to reflect evaluation of the RAPID 3 from rheumatoid arthritis patients instead of its original design of assessment of a pain assessment tool. Although pain occurs with rheumatoid arthritis and is a phenomenon scored by the RAPID 3 it was not the focus of this project or the questionnaire. Multiple attempts were made to contact the original author, however, all attempts were unsuccessful.

The original questionnaire consisted of four sections, that was adapted into ten questions that included closed-ended questions on a Likert scale response from 1 to 5 about the feasibility, clinical relevance and satisfaction with the RAPID 3 use. Questions addressing feasibility included time to score the RAPID 3, the scoring method, and its structure. How useful the RAPID 3 is for the practice and how it influenced the health care provider's assessment of the patient's disease activity level determined the clinical relevance. The remaining questions related to the health care provider's satisfaction with the implementation strategies used for the RAPID 3. Socio-demographic information regarding the health care providers age, gender, and experience working with rheumatoid arthritis patients was also queried.

**Integration and maintain change in practice.** Discussion regarding continued use of the RAPID 3 after implementation is being discussed with the practice owner. A few days after completion of this project, the practice was merged with a larger, multisite practice. During transition, implementation of the RAPID 3 will cease for a few months. It is the hope that once the new organization is fully integrated at this practice site that continued discussion regarding use of the RAPID 3 can continue.

### **Ethical issues**

According to Gostin (1991) ethical principles for the protection of human subjects one must adhere to when carrying out clinical research are respect for persons, beneficence, and



justice. As nurses become involved in evidence-based practice (EBP) projects it can be difficult to determine if the project requires institutional review board (IRB) approval (Cacchione, 2011). Differentiating between EBP projects and research can be complex. The difference between research and EBP projects begins with an understanding of their distinct definitions (Hockenberry, 2014). If an EBP project is deemed to be research, it then becomes important to protect human subjects and obtain IRB approval before any research begins. The fundamental difference between these concepts is research seeks to create new knowledge and EBP projects focus on translating knowledge from research into clinical practice to improve the quality of a population.

Melnik and Fineout-Overholt (2011) explain that the definition of evidence-based practice is the delivery of the highest quality healthcare while ensuring optimal patient outcomes. It is a systematic, evidence-driven activity that improves patient outcomes by decreasing a gap in knowledge. The purpose of this EBP project is to implement and evaluate a practice recommendation that would improve the knowledge of healthcare providers with management of RA patients.

## **Section IV: Project Outcomes and Results**

### **Introduction**

Implementation of the RAPID 3 began in December 2015. The patient population included all rheumatoid arthritis patients treated with DMARD or biologic therapy. The RAPID 3 was implemented on consecutive RA patients seen at the rheumatology clinic for seven weeks between December 2015 and January 2016. The goal was to determine health care provider feasibility, clinical relevance, and satisfaction with implementation of the RAPID 3 composite index of disease activity. This is based on their experience reviewing and scoring the RAPID 3

with rheumatoid arthritis patients. In addition, thirteen patients were seen twice which allowed the health care provider to evaluate and determine the patient's next step in the treatment plan.

## **Results**

During week one of the project, it was announced the practice setting used for this project was to merge with a larger organization, resulting in integration of new policies and an electronic medical record. The pending changes were a deciding factor in the project ending at seven weeks, just before the merger. At the beginning of each week during implementation this project director found it valuable to reiterate the purpose of the project and to address any immediate or pending concerns. The only concerns addressed by the health care providers and staff were regarding whether the RAPID 3 fit into the office flow once the merge occurred and learning a new electronic medical record. These concerns stemmed from uncertainty of the merge and how the merge would impact the workflow within the office. RAPID 3 forms were collected at the end of each week; weeks one to three resulted in 246 forms, and weeks four to seven results in 351 forms. A total of 597 RAPID 3 forms were collected at the end of week seven.

After the seven weeks all the health care providers completed the questionnaire. Paper questionnaires were offered to the three providers who completed them at the end of project implementation. Paper questionnaires were preferred over electronic delivery to allow for anonymity and for convenience given the small number of health care providers.

**Participants.** The health care providers were aged between 29 and 44 years of age with a mean age of 41 years, and the staff aged 41, 59, and 64 with a mean age of 54. One provider had a doctor of osteopathy degree and the other two have master degrees in nursing. Only one of the staff has a bachelor's degree in liberal studies. Experience in treating patients with rheumatoid arthritis ranged from 4 to 10 years with a mean of 4 years. Only one of the providers

acknowledged that they previously knew about the RAPID 3. None of the providers or staff used a composite index for disease activity in practice or academia.

**RAPID 3 feasibility, clinical relevance, and satisfaction.** Feasibility for the use of the RAPID 3 is defined as its practicality and ease of use, and the extent to which it can be successfully utilized in clinical practice given the time constraints seen in clinic practice (Gelinas et al., 2014). In general, the feasibility of the RAPID 3 was positively supported by the health care providers and staff of this practice setting (see Table 3). Majority of the providers found the RAPID 3 easy to understand, score, and implement effortlessly within the time constraints of the office visit (see Appendix G). Contributing to the feasibility of use, an online calculator for the RAPID 3 was downloaded at no additional cost to the office computers and used to calculate the disease activity score quickly.

Clinical relevance is defined as how helpful the RAPID 3 is in determining disease activity levels and did it influence their clinical decision making based on the disease activity level (Gelinas et al., 2014). Of the 597 RAPID 3 forms completed by patients over the seven weeks, thirteen were from patients reevaluated. The health care providers found the RAPID 3 to be influential to their practice and felt it was a useful tool in a rheumatology practice to impact the treatment plan (see Table 3). In addition, the providers verbalized while using the RAPID 3 they were in compliance with the ACR guidelines for management of RA patients (see Appendix G).

Satisfaction is defined as the provider's opinion on improved communication with the patient, quick interpretation of results, and their comfortable with use of the RAPID 3. Majority of the health care providers felt the tool positively supported their practice and served a purpose in this office. Most of the providers agreed that it added a positive component of communication

between the health care provider and patient (see Table 3). Improved communication allows the patient to become partners with the provider, enhancing their focus on the office visit and take responsibility for their patient's autoimmune condition (see Appendix G).

The RAPID 3 tool provided a quantifiable, objective score of disease-activity. All the health care providers indicated that the RAPID 3 is beneficial and influential in determining disease activity. They indicated that using the tool for six months, allowing for more subsequent visits would be more beneficial in determining the RAPID 3's impact on patient outcomes. The providers did express concern over only using the tool for seven weeks and the limited ability to reevaluate patients. Additionally, one provider remained neutral on its influence of the treatment plan and evaluation of disease activity. Again, the project ended after seven weeks due to the organizational merger. All the healthcare providers stated they would like to use the RAPID 3 for a six-month period, allowing for subsequent patient visits.

<b>Table 3</b>		
Findings		
<u><b>Feasibility</b></u>	<u><b>Clinical relevance</b></u>	<u><b>Satisfaction</b></u>
Able to complete within office time constraints	Influence the practice	Improved communication between provider and patient
Easy to score and understand	Influence the patients treatment plan	RAPID 3 results can be interpreted quickly
Quick to complete	Office now follows current ACR guidelines for management of RA patients	Providers are comfortable with using the RAPID 3

## **Section V: Discussion, Conclusions, and Recommendations**

### **Discussion**

This project had a clear and relevant purpose to determine if the RAPID 3 meet the needs of the health care providers to assess disease activity in patients diagnosed with rheumatoid

arthritis. Including the RAPID 3 with the intake paperwork allowed the health care provider to assess disease activity levels at each office visit using a valid, reliable tool. The brief seven-week implementation period allowed for a brief evaluation of disease activity levels but did not allow enough time to fully evaluate the impact of the RAPID 3 on subsequent visits. This could be a future project.

As the project director I learned it was important to stay actively involved in the process and provide frequent feedback with the staff and health care providers that it was important to be actively involved in the process and provide frequent feedback. One example recommended by the front office was to include the RAPID 3 with the intake paperwork since they are unaware of the patient's diagnosis. The health care provider then has the responsibility to discard the RAPID 3 forms for patients with diagnoses other than rheumatoid arthritis.

**Implications for advanced practice nursing.** One implication of this project for advanced practice nurses is an advanced practice nurse can provide evidence based practice management and assessment to patients with rheumatoid arthritis. Although this project occurred over seven weeks and was specific to rheumatoid arthritis patients, similar assessment tools could be implemented with other autoimmune conditions such as systemic lupus erythematosus, psoriatic arthritis, and ankylosing spondylitis. In the future, the electronic medical record could also be personalized to include a graph of the RAPID 3 score to trend over time. Another implication for future projects would be implementation of the RAPID 3 in rural primary care environments that treat patients diagnosed with rheumatoid arthritis.

**Barriers to implementation.** Although this project was successfully implemented and accepted by the healthcare providers for the duration of the project. There was no financial support for printer paper to copy the RAPID 3. Although, the lack of financial support proved to

not be significant and copies of the RAPID 3 were provided by this project director.

Sustainability for the RAPID 3 would require financial support of some kind. This could be discussed with the organization once the staff and providers are ready to resume implementation. The goal for sustainability is to have paper copies of the RAPID 3 to use for each patient diagnosed with rheumatoid arthritis.

Another barrier identified is the merger of this current practice within a larger organization. After the seven weeks ended the consecutive use of the RAPID 3 tapered off because of the implementation of a new electronic health record. Discussion with the providers revealed that they saw benefit in using the RAPID 3 to assess disease activity, it was not only cost effective for the patient but could be trended over time. Further discussions for continued implementation of the RAPID 3 will occur after a few months, giving the staff and providers an opportunity to assimilate to the new organizations electronic medical record, and policies and procedures.

### **Future Implications**

Implications for the future include implementing the RAPID 3 after organizational restructuring occurs from the merger. Implementing the tool for six months would provide adequate follow-up of RAPID 3 scores and its influence on management. A focus on primary care in this population is also a future implication. Since some rheumatoid arthritis patients are treated in primary care practices, educating other health care providers further optimizes the treat-to-target strategies.

### **Conclusions**

In conclusion, these results suggest that the RAPID 3 can be routinely implemented into an office workflow for assessment of disease activity in rheumatoid arthritis patients. While

implementation for a longer period of time is recommended. The results suggest that the providers felt the RAPID 3 is feasible for routine use, clinically relevant, and improved their satisfaction with the office visit.

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## Appendices

### Appendix A: Hierarchy of Evidence

Rating System for the Hierarchy of Evidence for Evidence-based Practice/Level of Evidence	
Level	Description
Level I	Evidence from a systematic review or meta-analysis of all relevant randomized control trials (RCTs)
Level II	Evidence obtained from well-designed RCTs
Level III	Evidence obtained from well-designed controlled trials without randomization
Level IV	Evidence from well-designed case-control and cohort studies
Level V	Evidence from systematic reviews of descriptive and qualitative studies
Level VI	Evidence from single descriptive or qualitative studies
Level VII	Evidence from the opinion of authorities and/or reports of expert committees

Melnik and Fineout-Overholt (2011, p12)



### Appendix D: Rosswurm & Larrabee evidence-based practice model

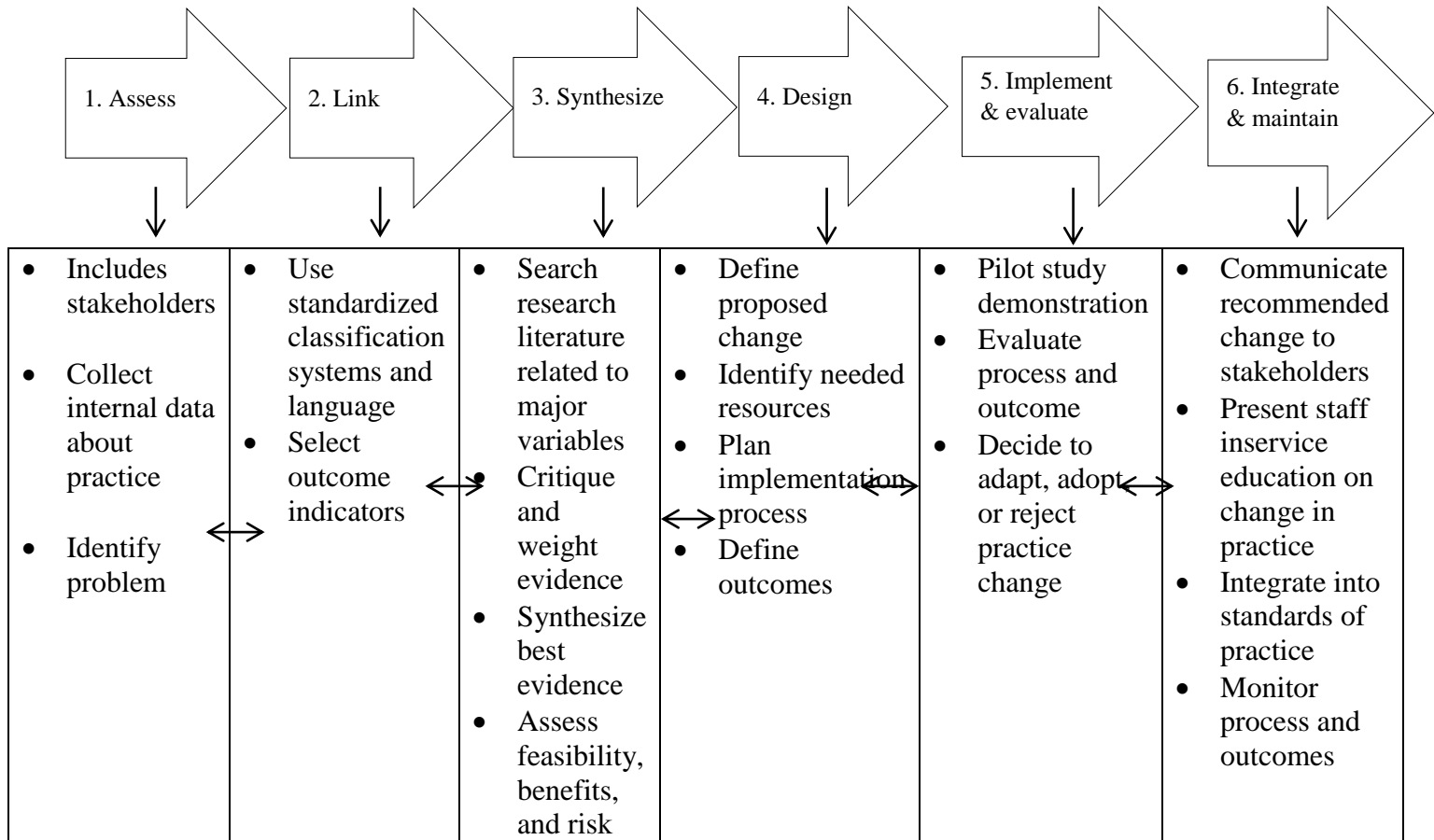


Figure 1. A model for evidence-based practice. (Rosswurm & Larrabee, 1999).

### Appendix E: Post-Implementation Questionnaire

Questionnaire about the feasibility, clinical relevance and satisfaction with the RAPID 3 use in determining disease activity in patients with rheumatoid arthritis.

Please rate the following statements:

1-Strongly Disagree    2-Disagree    3-Neither disagree or agree    4-Agree    5-Strongly Agree

Is the RAPID 3 easy to understand?	1	2	3	4	5
Is the RAPID 3 quick to use?	1	2	3	4	5
Is the RAPID 3 easy to score?	1	2	3	4	5
I had enough time to score and review the RAPID 3 with my current appointment times?	1	2	3	4	5
Has the RAPID 3 influenced your practice in assessing patients with rheumatoid arthritis?	1	2	3	4	5
Has the RAPID 3 allowed you to adequately evaluate disease activity in patients with rheumatoid arthritis?	1	2	3	4	5
Has the RAPID 3 influenced the treatment plan for patients with rheumatoid arthritis?	1	2	3	4	5
Is the RAPID 3 helpful to rheumatology practice?	1	2	3	4	5
How satisfied are you with the use of the RAPID 3 in your current practice?	1	2	3	4	5
Would you recommend the use of the RAPID 3 to other healthcare providers who treat patients with rheumatoid arthritis?	1	2	3	4	5

#### Demographics of participants

1. What is your age?

\_\_\_\_\_ 25 to 34

\_\_\_\_\_ 35 to 44

\_\_\_\_\_ 45 to 54

\_\_\_\_\_ 55 to 64

\_\_\_\_\_ 65 to 74

\_\_\_\_75 or older

2. What is your gender?

\_\_\_\_Female

\_\_\_\_Male

3. What is your professional title?

\_\_\_\_MD

\_\_\_\_DO

\_\_\_\_NP

\_\_\_\_PA

4. How many years have you practiced medicine?

\_\_\_\_0-1

\_\_\_\_1-5

\_\_\_\_6-10

\_\_\_\_11-15

\_\_\_\_15-20

\_\_\_\_20+

5. Do you currently use a tool to determine disease activity in patients with rheumatoid arthritis?

\_\_\_\_Yes; Which one? \_\_\_\_\_

\_\_\_\_No

### **Appendix F: Healthcare Provider Interview Questions**

1. What did you like about the RAPID 3?
2. What did you not like about the RAPID 3?
3. Do you feel it will facilitate management of patients with RA?
4. Will you continue to use the RAPID 3 in your management of patients with RA?

**Appendix G: Health care provider responses to the questionnaire**

Question	Frequency		
	(3) Neither disagree or agree	(4) Agree	(5) Strongly agree
Is the RAPID 3 easy to understand?	0	1	2
Is the RAPID 3 quick to use?	0	2	1
Is the RAPID 3 easy to score?	0	1	2
I had enough time to score and review the RAPID 3 with my current appointment times.	0	3	0
Has the RAPID 3 influenced your practice in assessing patients with rheumatoid arthritis?	0	2	1
Has the RAPID 3 allowed you to adequately evaluate disease activity in patients with rheumatoid arthritis?	1	2	0
Has the RAPID 3 influenced the treatment plan for patients with rheumatoid arthritis?	1	1	1
Is the RAPID 3 helpful to rheumatology practice?	0	0	3
How satisfied are you with the use of the RAPID 3 in your current practice?	0	1	2
Would you recommend the use of the RAPID 3 to other healthcare providers who treat patients with rheumatoid arthritis?	0	0	3

## Appendix H: Clinic Presentation

# RHEUMATOID ARTHRITIS DISEASE ACTIVITY MEASURES

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## PROJECT GOAL

- Improve the functional outcome of patients with rheumatoid arthritis through routine disease activity testing.
- Decrease disability and pain

### CURRENT GUIDELINES

- 2012 ACR guidelines support the use of routine disease activity measures.
- Six recommended measures
- Produce a single continuous index of disease activity, trend over time.

### SIX COMPOSITE MEASURES

- Patient-driven composite measures
  - PAS
  - PAS-II
  - RAPID3
- Patient and provider composite measures
  - CDAI
- Patient, provider, and laboratory composite measures
  - DAS28 (ESR or CRP)
  - SDAI

### PATIENT-DRIVEN COMPOSITE MEASURES

- Each has 3 core components
  - Pain assessment
  - PtGA
  - Functional assessment
- Advantages
  - Easy to use
  - Do not require formal joint counts (tender or swollen)
  - Patient can complete in waiting room

### PATIENT AND PROVIDER COMPOSITE MEASURE

- Use 3 components of provider assessment
  - PrGA
  - 28 joint count (tender and swollen)
- Require formal joint count
- Does not require acute phase reactant



### PATIENT, PROVIDER, AND LABORATORY COMPOSITE MEASURES

- Require provider tender and swollen joint counts
- PtGA
- Require acute-phase reactants
- More complex calculation

### RAPID3

- Refer to handout for scoring
- Calculator available for download
- Score, analyze for changes in treatment plan
- Disease activity levels correlate with other recommended measures

## PROJECT IMPLEMENTATION

- 7 week intervention
- Include RAPID3 form with intake paperwork
- Hand completed form to healthcare provider after rooming
- Score and document in plan
- Collect forms at end of each week
- Healthcare provider survey at end of 7 weeks to assess clinical feasibility, relevance, and satisfaction with the RAPID3