Pain, Function, and RAPID Scores

Vital Signs in Chronic Diseases, Analogous to Pulse and Temperature in Acute Diseases and Blood Pressure and Cholesterol in Long-Term Health

Theodore Pincus, M.D.

Abstract

Quantitative clinical assessment measures and indices have been developed for many rheumatic diseases. However, these measures and indices generally are used only in clinical trials and other clinical research, as they are too complex for collection and calculation at a usual clinical visit. The only quantitative measures available in most rheumatology patient care are laboratory tests, which often give false positive and false negative results and may not be available at the time of a patient visit. The most feasible method to collect quantitative data in routine care involves patient self-report questionnaires, completed while waiting to see the physician and reviewed by the clinician at the time of the visit. A multidimensional health assessment questionnaire (MDHAQ) provides a useful one-page questionnaire to assess the three self-report Data Set measures—physical function, pain, patient global estimate, as well as review of systems, recent medical history, fatigue, and demographic data. An index of the three Core Data Set measures, routine assessment of patient index data (RAPID3), can be used to guide "tight control" of inflammation, analogous to a disease activity score (DAS28). RAPID3 can be scored in fewer than 10 seconds and is informative in patients with all rheumatic diseases. It is suggested that the infrastructure of all rheumatology care settings include a patient questionnaire for each patient, with all diagnoses, at each visit to improve quantitative guidance of clinical decisions, documentation of status and improvements, and patient outcomes.

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Quantitative measurement has been advanced since a seminal conference in 1982[1,2] in many rheumatic diseases, including rheumatoid arthritis (RA),[3-9] osteoarthritis (OA),[10] fibromyalgia,[11] systemic lupus erythematosus (SLE),[12-17] ankylosing spondylitis (AS),[18-22] and vasculitis.[23-27] However, most rheumatology patient care remains conducted largely without quantitative measures other than laboratory tests, which may not be available at the time of a patient visit and often give false positive and false negative results.[26,28-30] Therefore, any possible benefits of advances in clinical rheumatology measurement are applied to only a small minority of patients with RA, OA, fibromyalgia, SLE, AS, vasculitis, or any rheumatic diseases, generally only in clinical trials and other clinical research studies.

Quantitative assessment of rheumatic diseases requires a pooled index[31] of several measures, as no single measure can serve as a "gold standard" in all individual patients. The most widely used indices in RA are the Core Data Set,[3-5] disease activity score (DAS),[6-8] and clinical disease activity index (CDAI).[9] All of these indices require a formal, quantitative swollen and tender joint count, which is not performed at most visits to most rheumatologists,[32] although a careful nonquantitative joint examination generally is included. Therefore, care of most patients with RA is guided largely by nonquantitative "gestalt" impressions rather than quantitative measures.

These considerations suggest that a quantitative index that does not require a formal joint count might provide a valuable advance for usual RA care. A multidimensional health assessment questionnaire (MDHAQ)[33,34] (Fig. 1) has been adapted from the health assessment questionnaire (HAQ)[35] for usual care. All three patient-reported outcome measures from the RA Core Data Set (physical function, pain, and patient global estimate; scored 0 to 10) appear on one side of one page, a with visual analogue scale (VAS) for pain, and global estimate as 21 numbered circles, rather than a 10

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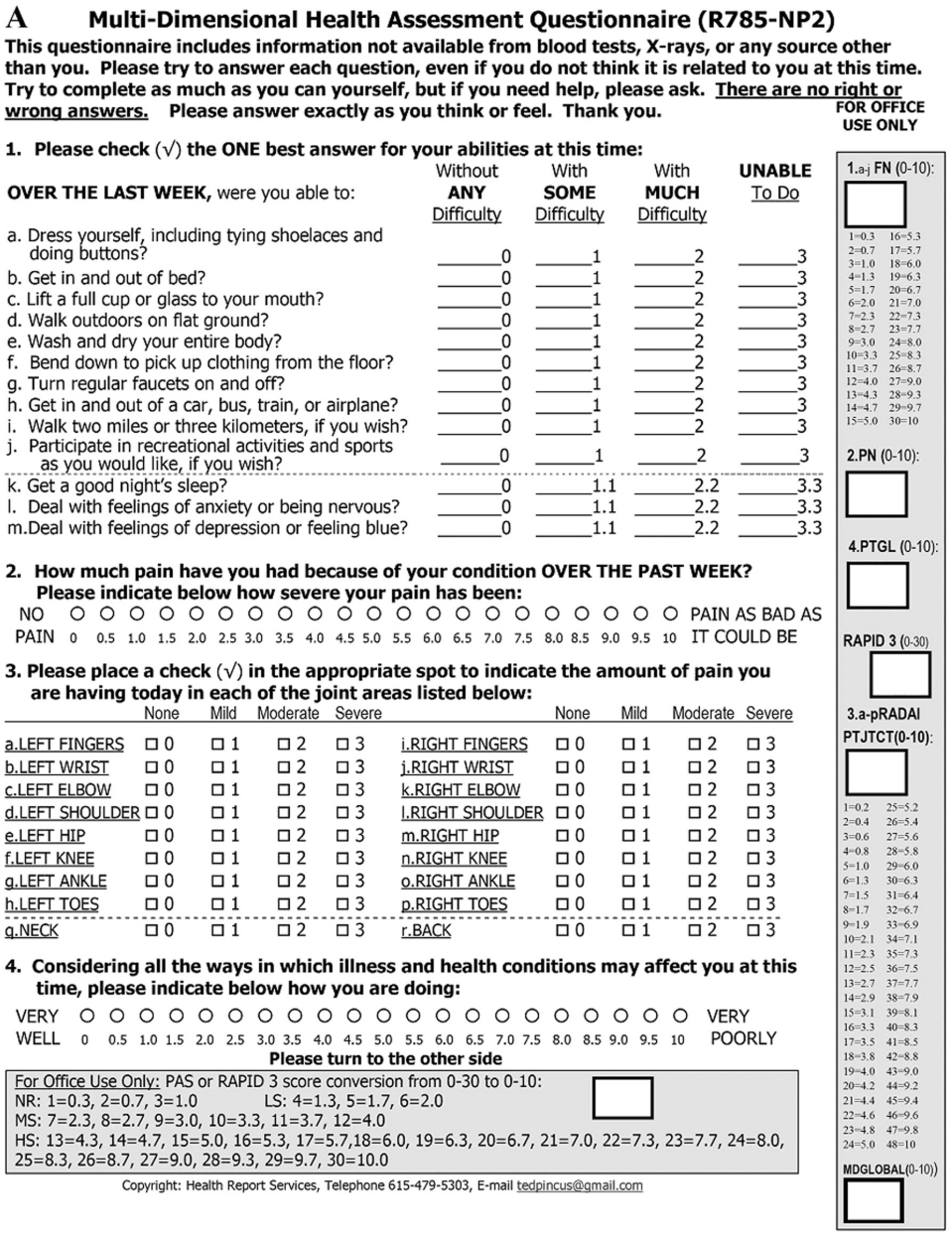

A Multi-Dimensional Health Assessment Questionnaire (R785-NP2)

This questionnaire includes information not available from blood tests, X-rays, or any source other than you. Please try to answer each question, even if you do not think it is related to you at this time. Try to complete as much as you can yourself, but if you need help, please ask. There are no right or wrong answers. Please answer exactly as you think or feel. Thank you.

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1. Please check (√) the ONE best answer for your abilities at this time:

OVER THE LAST WEEK, were you able to:	Without **ANY** Difficulty	With **SOME** Difficulty	With **MUCH** Difficulty	**UNABLE** To Do
a. Dress yourself, including tying shoelaces and doing buttons?	0	1	2	3
b. Get in and out of bed?	0	1	2	3
c. Lift a full cup or glass to your mouth?	0	1	2	3
d. Walk outdoors on flat ground?	0	1	2	3
e. Wash and dry your entire body?	0	1	2	3
f. Bend down to pick up clothing from the floor?	0	1	2	3
g. Turn regular faucets on and off?	0	1	2	3
h. Get in and out of a car, bus, train, or airplane?	0	1	2	3
i. Walk two miles or three kilometers, if you wish?	0	1	2	3
j. Participate in recreational activities and sports as you would like, if you wish?	0	1	2	3
k. Get a good night's sleep?	0	1.1	2.2	3.3
l. Deal with feelings of anxiety or being nervous?	0	1.1	2.2	3.3
m. Deal with feelings of depression or feeling blue?	0	1.1	2.2	3.3

2. How much pain have you had because of your condition OVER THE PAST WEEK? Please indicate below how severe your pain has been:

NO PAIN 0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5 10 PAIN AS BAD AS IT COULD BE

3. Please place a check (√) in the appropriate spot to indicate the amount of pain you are having today in each of the joint areas listed below:

	None	Mild	Moderate	Severe		None	Mild	Moderate	Severe
a.LEFT FINGERS	0	1	2	3	i.RIGHT FINGERS	0	1	2	3
b.LEFT WRIST	0	1	2	3	j.RIGHT WRIST	0	1	2	3
c.LEFT ELBOW	0	1	2	3	k.RIGHT ELBOW	0	1	2	3
d.LEFT SHOULDER	0	1	2	3	l.RIGHT SHOULDER	0	1	2	3
e.LEFT HIP	0	1	2	3	m.RIGHT HIP	0	1	2	3
f.LEFT KNEE	0	1	2	3	n.RIGHT KNEE	0	1	2	3
g.LEFT ANKLE	0	1	2	3	o.RIGHT ANKLE	0	1	2	3
h.LEFT TOES	0	1	2	3	p.RIGHT TOES	0	1	2	3
q.NECK	0	1	2	3	r.BACK	0	1	2	3

4. Considering all the ways in which illness and health conditions may affect you at this time, please indicate below how you are doing:

VERY WELL 0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5 10 VERY POORLY

Please turn to the other side

For Office Use Only: PAS or RAPID 3 score conversion from 0-30 to 0-10:
NR: 1=0.3, 2=0.7, 3=1.0 LS: 4=1.3, 5=1.7, 6=2.0
MS: 7=2.3, 8=2.7, 9=3.0, 10=3.3, 11=3.7, 12=4.0
HS: 13=4.3, 14=4.7, 15=5.0, 16=5.3, 17=5.7,18=6.0, 19=6.3, 20=6.7, 21=7.0, 22=7.3, 23=7.7, 24=8.0, 25=8.3, 26=8.7, 27=9.0, 28=9.3, 29=9.7, 30=10.0

1.a-j FN (0-10):
1=0.3 16=5.3
2=0.7 17=5.7
3=1.0 18=6.0
4=1.3 19=6.3
5=1.7 20=6.7
6=2.0 21=7.0
7=2.3 22=7.3
8=2.7 23=7.7
9=3.0 24=8.0
10=3.3 25=8.3
11=3.7 26=8.7
12=4.0 27=9.0
13=4.3 28=9.3
14=4.7 29=9.7
15=5.0 30=10

2.PN (0-10):

4.PTGL (0-10):

RAPID 3 (0-30)

3.a-pRADAI

PTJTCT(0-10):
1=0.2 25=5.2
2=0.4 26=5.4
3=0.6 27=5.6
4=0.8 28=5.8
5=1.0 29=6.0
6=1.3 30=6.3
7=1.5 31=6.4
8=1.7 32=6.7
9=1.9 33=6.9
10=2.1 34=7.1
11=2.3 35=7.3
12=2.5 36=7.5
13=2.7 37=7.7
14=2.9 38=7.9
15=3.1 39=8.1
16=3.3 40=8.3
17=3.5 41=8.5
18=3.8 42=8.8
19=4.0 43=9.0
20=4.2 44=9.2
21=4.4 45=9.4
22=4.6 46=9.6
23=4.8 47=9.8
24=5.0 48=10

MDGLOBAL(0-10))

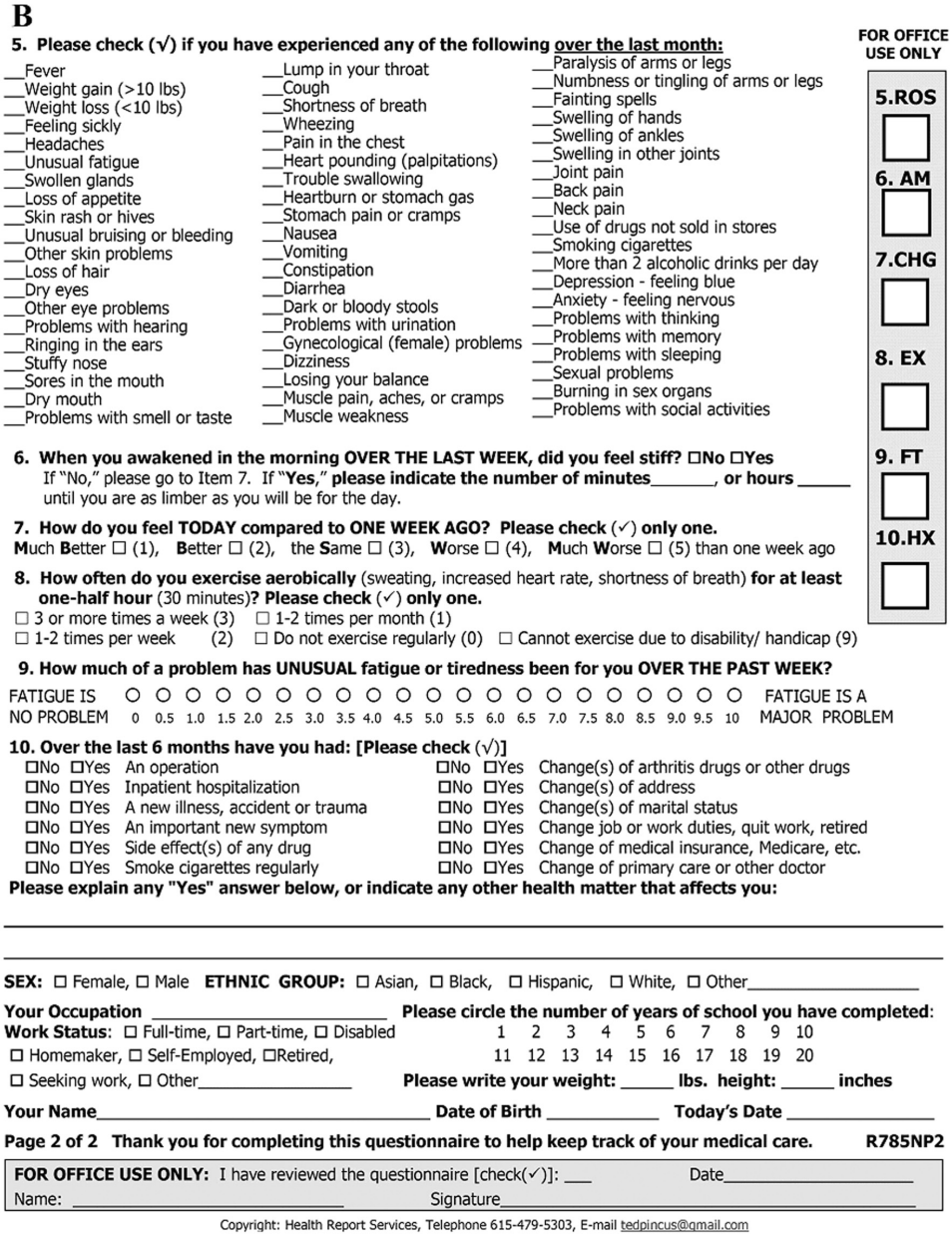
Figure 1 Multidimensional health assessment questionnaire (MDHAQ). The front page (A) includes 10 activities for function, two visual analog scales (VASs) for pain and patient global estimate of status, and a self-report joint count from the rheumatoid arthritis disease activity index (RADAI). Scoring templates for these measures are available on the right-hand edge of the page. An index of the three patient-reported measures, routine assessment of patient index data (RAPID3), can be calculated from an MDHAQ in fewer than 10 seconds.

cm horizontal line,[36] and scoring templates for function and RAPID3 (routine assessment of patient index data) scores.

RAPID3,[37,38] an index of the three patient-reported outcome measures in the RA Core Data Set, physical function, pain, and patient global estimate, can be calculated from an MDHAQ in fewer than 10 seconds, without a ruler, calculator, computer, or web site.[39] RAPID3 measures and scores may serve as "vital signs" in patients with chronic rheumatic diseases and possibly all chronic diseases, analogous to pulse and temperature in acute diseases and blood pressure and cholesterol in long-term health. This essay presents a rationale and strategy to collect RAPID3 at every visit of every patient with any rheumatic problem, to assess, monitor, establish a prognosis, document changes in status and outcomes, and improve the quality of rheumatology care.

Rationale for RAPID3 at all Visits of all Patients with any Rheumatic Disease

The rationale for distributing, collecting, and scoring RAPID3 (Table 1) includes the following:



B

5. Please check (√) if you have experienced any of the following over the last month:

__Fever
__Weight gain (>10 lbs)
__Weight loss (<10 lbs)
__Feeling sickly
__Headaches
__Unusual fatigue
__Swollen glands
__Loss of appetite
__Skin rash or hives
__Unusual bruising or bleeding
__Other skin problems
__Loss of hair
__Dry eyes
__Other eye problems
__Problems with hearing
__Ringing in the ears
__Stuffy nose
__Sores in the mouth
__Dry mouth
__Problems with smell or taste
__Lump in your throat
__Cough
__Shortness of breath
__Wheezing
__Pain in the chest
__Heart pounding (palpitations)
__Trouble swallowing
__Heartburn or stomach gas
__Stomach pain or cramps
__Nausea
__Vomiting
__Constipation
__Diarrhea
__Dark or bloody stools
__Problems with urination
__Gynecological (female) problems
__Dizziness
__Losing your balance
__Muscle pain, aches, or cramps
__Muscle weakness
__Paralysis of arms or legs
__Numbness or tingling of arms or legs
__Fainting spells
__Swelling of hands
__Swelling of ankles
__Swelling in other joints
__Joint pain
__Back pain
__Neck pain
__Use of drugs not sold in stores
__Smoking cigarettes
__More than 2 alcoholic drinks per day
__Depression - feeling blue
__Anxiety - feeling nervous
__Problems with thinking
__Problems with memory
__Problems with sleeping
__Sexual problems
__Burning in sex organs
__Problems with social activities

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5.ROS ☐
6. AM ☐
7.CHG ☐
8. EX ☐
9. FT ☐
10.HX ☐

6. When you awakened in the morning OVER THE LAST WEEK, did you feel stiff? ☐No ☐Yes
If "No," please go to Item 7. If "**Yes**," **please indicate the number of minutes_____, or hours _____** until you are as limber as you will be for the day.

7. How do you feel TODAY compared to ONE WEEK AGO? Please check (✓) only one.
Much **B**etter ☐ (1), **B**etter ☐ (2), the **S**ame ☐ (3), **W**orse ☐ (4), **M**uch **W**orse ☐ (5) than one week ago

8. How often do you exercise aerobically (sweating, increased heart rate, shortness of breath) **for at least one-half hour** (30 minutes)**? Please check (✓) only one.**
☐ 3 or more times a week (3) ☐ 1-2 times per month (1)
☐ 1-2 times per week (2) ☐ Do not exercise regularly (0) ☐ Cannot exercise due to disability/ handicap (9)

9. How much of a problem has UNUSUAL fatigue or tiredness been for you OVER THE PAST WEEK?

FATIGUE IS NO PROBLEM ○ FATIGUE IS A MAJOR PROBLEM
0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5 10

10. Over the last 6 months have you had: [Please check (√)]

☐No ☐Yes An operation
☐No ☐Yes Inpatient hospitalization
☐No ☐Yes A new illness, accident or trauma
☐No ☐Yes An important new symptom
☐No ☐Yes Side effect(s) of any drug
☐No ☐Yes Smoke cigarettes regularly
☐No ☐Yes Change(s) of arthritis drugs or other drugs
☐No ☐Yes Change(s) of address
☐No ☐Yes Change(s) of marital status
☐No ☐Yes Change job or work duties, quit work, retired
☐No ☐Yes Change of medical insurance, Medicare, etc.
☐No ☐Yes Change of primary care or other doctor

Please explain any "Yes" answer below, or indicate any other health matter that affects you:

SEX: ☐ Female, ☐ Male **ETHNIC GROUP:** ☐ Asian, ☐ Black, ☐ Hispanic, ☐ White, ☐ Other_____

Your Occupation _____ **Please circle the number of years of school you have completed:**
Work Status: ☐ Full-time, ☐ Part-time, ☐ Disabled
☐ Homemaker, ☐ Self-Employed, ☐Retired,
☐ Seeking work, ☐ Other_____
1 2 3 4 5 6 7 8 9 10
11 12 13 14 15 16 17 18 19 20

Please write your weight: _____ lbs. height: _____ inches

Your Name_____ **Date of Birth** _____ **Today's Date** _____

Page 2 of 2 Thank you for completing this questionnaire to help keep track of your medical care. **R785NP2**

FOR OFFICE USE ONLY: I have reviewed the questionnaire [check(✓)]: ___ Date_____
Name: _____ Signature_____

Figure 1 (continued) The reverse side (B) includes a review of systems, fatigue VAS, recent medical history, and demographic data (not included in scoring, but provide useful data in clinical care).

Quantitative Data are Required to Document Patient Improvement, Results and Quality of Rheumatology Care

Most rheumatology patient visits do not include quantitative data beyond laboratory tests to document results and quality of care. Obviously, patients and their physicians have a "gestalt" sense of improvement or worsening over time, without quantitative data. However, quantitative data are needed for persons other than the patient and physician—including payers and judges of quality—to recognize benefit (or worsening). The author believes that rheumatologists may offer as much benefit as any type of physician in contemporary medical care. Quantitative data, rather than gestalt impressions in a medical record, can distinguish a genuine improvement in patient status from a simple impression on the part of an optimistic physician or patient who desires to please the treating physician that improvement has occurred.

Physicians Underestimate Severity of the Patient Pain and Functional Disability, and Patient Self-Report Data Appear as Sensitive as Physician- or Assessor-Reported Data to Recognize Clinical Improvement

Many studies indicate that physicians underestimate the severity of patient pain and functional disability.[40-44] A care-

Table 1 Rationale for RAPID3 at All Visits of All patients with Any Rheumatic Disease

1. Quantitative data are required to document patient improvement, i.e., results and quality of rheumatology care.
2. Physicians underestimate severity of patient pain and functional disability.
3. RAPID3 performs as well as American College of Rheumatology (ACR) criteria or disease activity score (DAS28) to distinguish active from control treatment in clinical trials.
4. RAPID3 can be calculated in fewer than 10 seconds compared to 90 seconds for a swollen and tender joint count and 2 minutes for a CDAI or DAS28.
5. Most rheumatologists do not perform quantitative joints at most visits.
6. The joint count has many limitations.
7. Treatment guided by quantitative data results in better patient status than usual non-quantitative clinical care.
8. RAPID3 includes physical function, the best predictor of long-term outcomes of RA including work disability and mortality, for which patient data are far more informative than radiographic or laboratory data.
9. Definitive documentation that any therapy improves mortality outcomes of RA will require data concerning physical function scores.
10. A RAPID3 score is useful in all rheumatic diseases.

ful joint examination is clearly required for diagnosis and to contribute to treatment decisions. However, identification of an incomplete response to therapy and of a need to adjust treatment appears more likely to be recognized according to data from a patient than data from a physician. Furthermore, patient self-report data appear as sensitive or more sensitive than physician- or assessor-reported data sensitive to improvement in clinical trials of nonsteroidal antiinflammatory drugs (NSAIDs)[45] and disease-modifying antirheumatic drugs (DMARDs).[46,47]

RAPID3 Performs as well as the American College of Rheumatology (ACR) Criteria or the Disease Activity Score (DAS28) to Distinguish Active from Control Treatments in Clinical Trials

As noted above, the relative efficiencies of the three patient-reported outcome measures in the Core Data Set (physical function, pain, and global estimate), to distinguish active from control group treatment responses, are as great as the swollen or tender joint count.[48-51] Indices of these three measures distinguish active from control treatments as effectively as DAS28 or ACR20/50/70 percent criteria in clinical trials of leflunomide, methotrexate, adalimumab, and abatacept[38,52-54] and also are correlated significantly with DAS and CDAI in clinical trials and usual clinical care.[37,55] Therefore, while joint counts constitute the most specific measure to assess RA; their sensitivity to detect treatment effects is generally no greater, and often lesser, than patient self-report measures.

The author does not advocate exclusive use of RAPID3 in clinical trials, as inclusion of a careful quantitative joint count adds valuable specificity in this setting. Rheumatology sites at which clinical trials are conducted are compensated for performance of formal joint counts far more than for a usual rheumatology visit in the United States, reflecting the effort involved. However, RAPID3 can serve as a healthcare tool to assess, monitor, and document clinical status in a busy clinical setting.

RAPID3 can be Calculated in Fewer than 10 Seconds, Compared to 90 Seconds for a Swollen and Tender Joint Count and 2 Minutes for a CDAI or DAS28

As noted, a RAPID3 score can be calculated in fewer than 10 seconds.[39] By contrast, performance of a swollen and tender 28-joint count requires about 90 seconds. Calculation of a DAS28 or CDAI requires at least 2 minutes (including the joint counts), even when all the data are readily available.[39]

Quantitative measures and indices for RA and rheumatic diseases have been analyzed extensively for validity and reliability.[1,2,56] However, relatively little attention has been directed to feasibility and acceptability to patients and health professionals in busy clinical settings.[57] Many research measures and indices appear too complex for collection and calculation at a usual clinical visit. A difference of 10 seconds for a RAPID3 score versus 2 minutes per patient for a DAS or CDAI can be important to a rheumatologist who sees 20 or more patients a day.

Most Rheumatologists do not Perform Quantitative Joints at most Visits

The 90 seconds required to perform a quantitative formal joint count or 2 minutes to calculate a DAS may represent 5% to 15% of an office visit, time that might be more productively spent in a discussion of patient concerns. A careful, nonquantitative joint examination without quantitative data is not as effective as quantitative data to improve patient status[58-61] or to document improvement or worsening from one visit to the next. RAPID3 provides the most feasible method to assess and monitor patients with RA, according to quantitative data.

The Joint Count has Many Limitations

Although a careful joint examination clearly is required for diagnosis, a formal tender and swollen joint count has many limitations that generally are overlooked in the rheumatology literature. Joint counts are poorly reproducible in formal

studies,[62-66] although reproducibility can be improved with training.[64] A joint examination may be insensitive to detect inflammatory activity in certain joints that have apparent disease on magnetic resonance imaging (MRI) or ultrasound.[67] Among the seven ACR Core Data Set measures, improvement of patients who receive placebo or control treatment in clinical trials, generally, is greater for swollen and tender joint counts than for patient questionnaire measures and laboratory tests.[49] The numbers of abnormal joints often are improved over 5 to 15 years, while concomitant joint damage and functional declines are seen, leading to work disability and premature death.[68-77] Therefore, improvement in a tender or swollen joint count at a 20% or even 50% level may, nonetheless, be associated with further joint damage over time.[78,79] While a joint examination clearly reflects pathogenic mechanisms and is more specific for RA than other Core Data Set measures, a joint count may not be superior to a patient questionnaire measure as a quantitative measure of patient status.

Treatment Guided by Quantitative Data Results in Better Patient Status than Usual, Nonquantitative Clinical Care

Four clinical trials have now documented that guidance using quantitative data results in better patient status than usual care without such guidance: the Finnish Rheumatoid Arthritis Combination Therapy (FIN-RACo) trial[58,78]; Tight Control for Rheumatoid Arthritis (TICORA) trial[59]; Behandel Strategien (BeSt), or "treatment strategies" trial[60,80]; and the Computer Assisted Management in Early Rheumatoid Arthritis (CAMERA) study.[61] All four trials used the DAS28 to generate quantitative data. An accurate DAS is difficult to assess in usual clinical care, and RAPID3 is correlated significantly with DAS. Therefore, a RAPID3 score could be appropriate for usual clinical care, although prospective studies are needed to confirm this hypothesis.

RAPID3 Includes Physical Function, the Best Predictor of Long-term Outcomes of RA Including Work Disability and Mortality, for which Patient Data are far more Informative than Radiographic or Laboratory Data

All studies that include a patient questionnaire indicate that a baseline questionnaire measure of physical function is a far more significant predictor of severe, long-term outcomes of RA, including work disability, costs, joint replacement surgery, and death (all outcomes except radiographic damage), than a baseline radiograph or laboratory test.[26] Nonetheless, the rheumatology community continues to emphasize radiographs and laboratory tests, which clearly are related to pathogenic mechanisms, in the prognosis and outcomes of RA. However, the collection of rheumatoid factor or erythrocyte sedimentation rate (ESR), but not physical function scores on a HAQ or MDHAQ, reflects an approach based on "eminence" or beliefs, rather than "evidence" or scientific data.[81] It appears appropriate that rheumatologists collect physical function scores as the most valuable prognostic data for long-term outcomes in order to document improved outcomes.

Definitive Documentation that any Therapy Improves Mortality Outcomes of RA will Require Data Concerning Physical Function Scores

The ultimate rationale for aggressive treatment of individuals with chronic conditions, such as hypertension and hyperlipidemia, is based on documentation that such treatment reduces premature mortality associated with these conditions. Definitive documentation of reduction in RA mortality rates cannot be accomplished on the basis of clinical trials, as seen for hypertension or hyperlipidemia, for ethical, logistical, and budgetary reasons.[58-61] Documentation of improved mortality outcomes in RA will require evidence from usual clinical care rather than from clinical trials.

Some evidence has been reported that treatment of RA reduces mortality rates,[82-84] but further documentation appears required for acceptance by the medical community, general public, and payers for medical services. Such documentation could be greatly enhanced with evidence that therapies that lead to reduction in physical function scores or RAPID3 scores are associated with improved survival. Recognition that rheumatology care for RA reduces mortality rates could provide a substantial advance for rheumatologists and RA patients.

A RAPID3 Score is Useful in all Rheumatic Diseases

As noted, many valuable disease-specific questionnaires and indices have been developed over the last two decades for rheumatic diseases other than RA, such as the Western Ontario McMaster osteoarthritis scale (WOMAC),[10] fibromyalgia impact questionnaire,[11] systemic lupus erythematosus disease activity index (SLEDAI),[12] British Isles lupus activity score (BILAG),[13] systemic lupus activities measurement (SLAM),[14] lupus activity index (LAI),[15] European Consensus Lupus Activity Measurement (ECLAM),[16,17] Bath ankylosing spondylitis functional index (BASFI),[18] Bath ankylosing spondylitis disease activity index (BASDAI),[19] Modified Stoke ankylosing spondylitis spinal score (mSASSS),[20] Bath ankylosing spondylitis Metrology index (BASMI),[21] Dougados functional index (DFI)[22] in ankylosing spondylitis, Birmingham vasculitis activity score (BVAS),[23] vasculitis activity index (VAI),[24] and BVAS-derived Wegener's Granulomasosis Activity Index[25] in vasculitis. However, as with the DAS or CDAI in RA, few patients with OA, fibromyalgia, RA, SLE, AS, or vasculitis are monitored according to any of these measures and indices.

Most patients with any rheumatic disease may experience problems in physical function, pain, or global status, quantified by RAPID3 scores, as well as morning stiffness and fatigue, as assessed on the MDHAQ. In osteoarthritis clinical

Table 2 Strategy for Implementation of RAPID3 in a Physician's Office

1. Use a questionnaire designed for standard care, not for research, although the information may be quite useful for research.
2. Orient the staff regarding the importance of patient questionnaires in patient care.
3. The questionnaire should be part of the office infrastructure and should be completed by every patient with any diagnosis at every visit, as the only efficient distribution system.
4. The questionnaire should be completed before the visit, ideally in the waiting room rather than the examination room, and not after the visit.
5. Let the patient do the work; the office staff should do as little as possible.
6. Scoring templates on the MDHAQ add to its utility in usual care.
7. The clinician should review the questionnaire with the patient.
8. Flow sheets are very desirable.

trials, the MDHAQ physical function scale was found to be more sensitive to changes in clinical trials than traditional physical measures,[85] and a pain VAS is more sensitive than a WOMAC scale in distinguishing the efficacy of diclofenac-misoprostol or celecoxib from acetaminophen.[86,87] Furthermore, in fibromyalgia, ratios of pain or fatigue to physical function scores, as well as the number of symptoms reported on a review-of-systems symptom checklist on an MDHAQ, distinguish these patients from those with RA as effectively as ESR.[88,89] These data provide evidence that an MDHAQ is useful in patients with all rheumatic diseases.[90]

Implementation of RAPID3 in Routine Clinical Care

Implementation of collection, scoring, and management of RAPID3 in clinical care is briefly summarized here (Table 2), adapted from previous reports, reviews, and editorials (in particular, see reference 93).[37,38,90-93]

Use a Questionnaire Designed for Standard Care, not for Research, Although the Information may be Quite Useful for Research

Patient questionnaires designed for research may be long and tedious, and they are not designed for an "eyeball" review by the clinician to obtain relevant information. Indeed, research questionnaires are sent to a data center for analysis and may add a burden to a clinical care site without adding a benefit to patient care.[94-96] By contrast, simple patient questionnaires designed for usual care are short, can save time for the clinician, and may improve the quality of patient visits.[94-96] Even the most widely available questionnaire for RA, the HAQ, while easily completed by patients in 5 to 10 minutes, involves two sides of a page, is difficult to review ("eyeball") in usual care by most rheumatologists (with a few notable exceptions),[97] and requires 40 seconds to score. By contrast, the MDHAQ[33,34] facilitates scoring of RAPID3 in usual care in fewer than 10 seconds,[39] as noted above.

One side of the MDHAQ (Fig. 1A) includes 10 activities of daily living, three items to assess psychological distress, VAS for pain and global status estimate, and a rheumatoid arthritis disease activity index (RADAI) self-report joint count[98] (not included in RAPID3 score). Scoring templates and a 21-circle VAS format facilitate quick "eyeball" review and scoring by the clinician.[36] The reverse side (Fig. 1B) includes a review of systems, a fatigue VAS, recent medical history, and demographic data, items not included in the scoring but informative in clinical care.

Orient the Staff Regarding the Importance of Patient Questionnaires in Patient Care

The use of patient questionnaires requires a change in office procedure, which can appear to add complexity and engender resistance to change. However, a patient questionnaire can streamline the flow of information from patient to physician with quantitative data. If office staff members see the rheumatologist reviewing a questionnaire in clinical care, they are likely to respond positively. However, if questionnaires are presented to the patient in an uncaring manner or their use explained as for research, documentation, reimbursement, collaboration with colleagues, or any reason other than better care of the individual patient, staff members and patients lose interest and resent the apparent extra work.

The Questionnaire Should be Part of the Office Infrastructure and Should be Completed by Every Patient with any Diagnosis at Every Visit, as the Only Efficient Distribution System

Many rheumatologists suggest that patient questionnaires might be used only for certain patients, such as those with RA, or at certain intervals, such as every 6 months. This approach generally fails in standard care, as it is virtually impossible for the staff to organize distribution of questionnaires selectively. As noted above, an MDHAQ is useful for all people with all rheumatic diseases. If there is a reason for a visit, there is a reason for a questionnaire.

The Questionnaire Should be Completed Before the Visit, Ideally in the Waiting Room and, Preferably, not in the Examination Room or After the Visit

Most patients spend at least 10 minutes in the waiting room before seeing a rheumatologist, and often much longer. This is the time period in which it is most feasible and desirable for a patient to complete a questionnaire. The questionnaire may, of course, be completed in the examination room, or even after the visit. However, completion before the encoun-

ter with the physician helps the patient to focus his or her concerns, and provides information to the physician at the time of care to help guide clinical decisions. An office that functions efficiently can schedule patients 10 minutes earlier to include time for completion of a patient questionnaire.

Let the Patient do the Work—The Office Staff Should do as Little as Possible

Many health professionals feel that data collected by them is more accurate and informative than patient self-report data. Indeed, some data, such as diagnoses, are ascertained more accurately by health professionals than by patients.[99] However, most data concerning physical function, pain, fatigue, and global status are ascertained more accurately by patient self-report than by health professionals.[35]

When a patient completes a questionnaire, there is only a single observer. If a health professional is included in generating the data, there are two observers. Introduction of a second observer reduces, rather than enhances, reproducibility of the data. About 20% of patients need help from

PT Name_____ DX ICD9 710.9 , Onset(mo/yr) 09/2003 Record#_____

Rheumatologist TP , 1st Visit(mo/yr) 4Nov03, RF: **Pos** / Neg If+,titer_____, ANA: Pos / Neg If+,titer__

Address_____City, ST ZIP_____Home tel_____

SSN#_____, DOB --/--/1942 , Sex **M** / F , Marital: M , Race: C

Work st: FT , Occ:_____#Yrs Educ **12** , Consent given: **Y** / N, 1° MD_____ MD Tel__

	DATE	4Nov03	13Jan04	20Jul04	28Sep04	28Dec04	08Feb05	28Mar06
MDHAQ	FUNCTIONAL STATUS **(FN)** [0-10]	3.3	0	0	0	0	0	0
	PAIN **(PN)** [0-10]	9.5	0.5	3.5	0.5	6.0	0	0.5
	PATIENT GLOBAL **(PTGL)** [0-10]	9.5	0.5	2.0	1.0	5.5	0	0.5
	RAPID 3 [0-30]	22.3	1.0	5.5	1.5	11.5/4.0	0/0	1.0/0.3
	PT JOINT COUNT **(JT CT)** [0-10]					1.9	0	0
	RAPID 4 [0-40]					13.4/3.5	0/0	1.0/0.3
	PHYSICIAN GLOBAL **(MDACT)** [0-10]					6.5	1.0	0.5
	RAPID 5 [0-50]					19.9/4.0	1.0/0.2	1.5/0.4
LABORATORY	WEIGHT (lbs)	167	167	163.8	159	168	166	171
	BLOOD PRESSURE (mm/Hg)	114/70	131/81	116/76	128/80	111/71	120/72	129/79
	ESR (mm/hr) [M:0-20 / F:0-30]	43	8	11	10	14	14	14
	CRP (mg/dL) [0-10]	30	3		7	6	8	9.3
	WBC (thou/uL) [4-11]	6.3	7.9	7.1	8.1	9.1	9.6	9.4
	HGB(g/dL-M:14/F:12] **OR** HCT(%)[M:42/ F:37]	16.8	17	15.9	16.1	16.6	17	15.3
	PLATELETS (thou/uL) [150-400]	179	207	184	203	207	177	193
	ALBUMIN (g/dL) [3.5-5.0]	3.9	4.1	4.4	4	4.4	4.6	4.1
	SGOT (U/L) [4-40] **OR** SGPT (U/L) [4-40]	18	17	22	18	20	32	21
	CREATININE (mg/dL) [0.7-1.5]	1.1	0.8	0.9	0.9	0.9	1.1	1.0
	MED CODES: **N**- new drug, **O**-on at visit, **X**-toxicity, **C**-change dose, **D**-discontinue, **T**-taper, **R**-resume, **I**-injection, **V**-only today							
MEDICATIONS	Naproxen	O-880 Q6H	440 BID	440 BID	440 BID	440 BID	D-440 BID	
	Ranitidine	O-150 BID	150 BID	150 BID	150 BID	150 BID	150 BID	75 BID
	Acetaminophen with Codeine	O-30 TID	30 TID	D-30 TID				
	Prednisone	N-3 QD	1 BID	C-4 BID	C-3 BID	T-3 BID	T-2 BID	C-5 QD
	Methotrexate	N-10 QWK	20 QWK	C-15 QWK	15 QWK	C-25 QWK	15 QWK	15 QWK
	Folic Acid	N-1 QD	1 QD	1 QD	1 QD	1 QD	1 QD	1 QD
	Adalimumab					N-40 QOW	40 QOW	40 QOW
	Depo-Medrol					V-80		

Figure 2 Flow sheet to facilitate longitudinal assessment of patient in usual rheumatology clinical care. The flow sheet shown is of a man who presented at age 61 with RA on November 4, 2003. His scores for physical function were 3.3, pain 9.5, and global status 9.5, with a RAPID3 score of 22.3 (on a scale of 0 to 30). He was treated with methotrexate 10 mg/week and prednisone 3 mg/day. Two months later, on January 13, 2004, his RAPID3 score was 1, indicating a near-remission status. He did very well for almost a year, as documented for visits on July 20 and September 28, 2004 (his RAPID3 score was 5.5 on July 20, but this was due to acute back strain and not inflammation, so his therapy was not altered). On December 28, 2004, he presented with a severe flare. His joints were once again swollen, and although his physical function score was 0, his pain was 6.0 and global, 5.5. He was offered the possibility of an anti-TNF agent, adalimumab, which he elected to receive. Two months later, on February 5, 2005, all his scores were 0, indicating an excellent response. This status was maintained for more than a year, as indicated by his visit of March 28, 2006.

office staff or a family member to complete a questionnaire, which is provided willingly.[100,101] Nonetheless, the more the questionnaire is completed by the patient, the more accurate and reproducible it is likely to be, and the less staff time is involved.

Scoring Templates on the MDHAQ Add to Its Utility in Usual Care

All current MDHAQ versions include scoring templates to facilitate a RAPID3 score from the three Core Data Set measures of physical function, pain, and global estimate (0 to 10 score) without a ruler, calculator, computer, or web site. The 10 activities of daily living can be quickly totaled using the 0 to 10 scoring template. The VAS is presented as 21 numbered circles, rather than a traditional 10 cm scale, to facilitate scoring without a ruler.[36] The total RAPID3 score may be 0 to 30, or divided by three for a 0 to 10 score.

The Clinician Should Review the Questionnaire with the Patient

As noted above, "eyeball" review of the MDHAQ, generally with the patient, can improve the quality and efficiency of a patient visit. The 5 seconds for such a review gains information that would often involve 2 to 5 minutes of query, and greater efficiency is inevitable.

Flow Sheets are Very Desirable

Convenient entry onto a flow sheet (Fig. 2), along with selected laboratory tests and medications, organizes information to track scores serially on one page. This information provides an overview at a glance of the patient's course, a cost-effective procedure. It is not necessary to use a computer-automated device or system to develop flow sheets to monitor individual patients. Computerization obviously is necessary for analyses and reports of patients in groups. Automation of data should be pursued to the level of comfort of the rheumatologist and staff.

Conclusion

It has been proposed that "80% of the data in 100% of the patients may be preferable to 100% of the data in 5% of the patients" (or fewer) who might be included in clinical research.[96] Therefore, a less comprehensive measure, which is feasible and applicable in usual clinical care, appears preferable to no quantitative measure at all. However, a RAPID3 score may provide more than "80%"—and, indeed, may be as informative as a DAS or CDAI for patient assessment, reflecting patient and physician goals of treatment as accurately as the number of swollen and tender joints.

RAPID3 scores, based on self-report patient questionnaire scores, provide informative quantitative data for patient status from one visit to the next. If quantitative data are recorded, an opportunity for documentation and more rational monitoring is gained, along with enhanced efficiency of patient care. If no data are recorded, this opportunity is lost and can never be replaced. It is suggested that all rheumatologists would find it valuable to ask all patients to complete a MDHAQ and to score a RAPID3 (themselves or by a staff member) at all visits of all patients in usual care.

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