
Redesigning the care of rheumatic diseases at the practice and system levels

Part 2: System level process improvement (Redesign 201)

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ABSTRACT

Changing delivery-of-care processes for rheumatic diseases to improve outcomes and costs will require redesign not only within rheumatology practices but also within health systems. Preventive services, acute care, management of chronic co-morbidities, and rheumatology care for rheumatic disease patients can only be accomplished through the close integration of multiple practices and other health system resources. Rheumatologists can play an important role in system-level process improvement without which our own patient care will be compromised. Continuous Quality Improvement methods, also known as Plan-Do-Study-Act (PDSA) cycles, are ideally suited for system-level process redesign. This second of two companion articles describes the properties of systems and explores the redesign of interdisciplinary rheumatic disease care.

Introduction

“Every system is perfectly designed to get the results it gets” (1).

Patients with rheumatic diseases require dependable, accessible rheumatology care over the many years of their disease, accurate monitoring of their disease activity, treatment safety, and therapies that control their disease as effectively as possible. The process changes required to achieve this level of care within rheumatology practices will be fundamental, as suggested in Part 1.

The demands on those physicians who provide chronic disease care are further complicated by their patients’ coexisting needs for preventive and acute care, and for the integrated management of chronic co-morbidities across multiple specialties and providers over many years. An accelerating infusion of new knowledge and capabilities also needs

to be incorporated more rapidly and dependably into health systems. And finally, the reduced number of rheumatologists available in future years to treat an increasing population of patients with rheumatic diseases will require much higher efficiency and partnering with other health professionals to share the burden of necessary work (2).

Many of the delivery-of-care redesigns recommended by the Institute of Medicine to improve outcomes and reduce costs, as itemized in Part 1, Table I, will require health system initiatives and external financing, but others can be accomplished through the closer integration of care among physician practices. Since the latter opportunities are within the control of the rheumatologists, we will emphasize them in this paper and show how clinical process improvement methods are optimally suited to achieving them. What distinguishes system level redesign from the practice level redesign discussed in Part 1 are the requirement for close cooperation across practices and specialties and the encouragement of system leadership for provider-centered initiatives.

Optimal chronic disease care requires that health system providers and administrators ask a series of critical questions, each requiring distinct approaches and process tools to arrive at the correct answers (Table I). Consulting specialists bring several important assets to this effort, including knowledge of the research and clinical guidelines for their area of specialization, their key role in determining how care can best be provided and who will provide it, the leverage to optimize patient flow across the system by using advanced access methods and pre-appointment management in their consultative practices, and the capacity to provide best care for those with severe disease.

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Table I. Critical questions and approaches required for improving health care delivery.

Who are the patients?	• (Algorithms, planning, PDSA, population management software)
Who will provide it most effectively?	• (Defined provider roles and communications, referral service contracts, referral management programs)
How will the outcomes be verified?	• (Disease population registries)
What care needs to be provided?	• (Research and guidelines)
How can it best be provided?	• (Defined measurable targets, process monitoring, outcomes management software)
How will the care and the improvement work be financed?	• (Business and resource planning, piloting before implementing changes)

To gain further insight into systems-based care, it is important to have a basic understanding of systems, how they relate to healthcare, and what the role of the rheumatologist might be. The remainder of this article will be dedicated to defining a system, exploring systems-based care, why systems-based care is important for rheumatologists, some rheumatology systems-based care examples, ingredients needed for system redesign, challenges, and next steps.

What is a system?

A system is a set of interdependent parts that interact with one another to achieve a common goal (3). Each of these parts may itself consist of smaller systems. A system has certain properties that are not found in its separate elements (like the letters of the alphabet – when combined together properly they form words which have meaning that the individual letters do not hold). In addition, the behavior of a system cannot be adequately explained based on the behavior of its pieces, and small changes within a system can lead to very large and/or unanticipated changes in the system as a whole. As an example, a child learning to ride a bike decides to make a left turn for the first time. He turns the handlebars a little to the left, then a little more, then a little more, and then finds himself sprawled on the pavement. In other words, a series of logical sequential events leads to an unpredicted consequence. It is precisely for this reason that many deci-

sions made in good faith within health care have poor consequences, because we fail to consider that we are functioning together in a system of patient care. It is also why small-scale tests of change (Plan-Do-Study-Act or PDSA cycles) are such an important tool to effect change in systems (see Part 1).

What is Systems-Based Care and why should it matter to me?

Systems can take many forms in health care. For the rheumatologist a system might be the process of treating someone with rheumatoid arthritis, or it could be a rheumatology clinic, or the testing of a new immunosuppressive IV treatment. Most people do not identify themselves based on the systems in which they function. They call themselves nurses, primary care physicians, specialists, front desk staff, administrators, or insurers, yet they do not consider that they form part of an overall system, and of many smaller systems within the whole, that deliver care to the patient.

A systems-based approach is crucial to improving health care for the patients with rheumatic diseases whom we serve. In a landmark series of articles, Don Berwick and others set the stage by defining the problems within the health care system and the ingredients that are needed to successfully change the systems in which we function (3-5). Berwick speaks of understanding systems, the importance of measurement, the necessity for leadership, the use of tools for the testing of change,

and the requirement for cooperation. Traditional, linear-based thinking has led us to the health care problems we face today; systems-based thinking offers the opportunity to effect real and meaningful change for our patients. The rheumatologist should be strongly interested in playing a major role in a systems-based approach to rheumatologic care. From an academic perspective, systems-based practice is now a core-competency requirement of the ACGME for fellowship training (6, 7). If we cannot understand how to do it ourselves, how are we to teach our fellows? From a clinical care perspective, the rheumatologist must be the physician champion for a number of highly prevalent, morbid, and expensive diseases: rheumatoid arthritis, osteoarthritis, osteoporosis, and others. Safe, efficient, effective, patient-centric care for these diseases requires system-level improvement.

What are some examples of a systems-based approach to rheumatologic care?

In contrast to the examples in Part 1, each of the following describes changing the system of care by redesigning processes and involving other, non-rheumatology members of the patient's health care team.

Example 1 – Improving the DXA Callback Process (Geisinger)

Follow-up dual x-ray absorptiometry (DXA) is commonly recommended as part of osteoporosis care, most often to be scheduled several years after a current study. This is too often overlooked in traditional health care settings. We initiated an improvement project to address this problem using our electronic health records communication tool, but the same could be undertaken with other scheduling and reminder systems. In Cycle 1, our rheumatology secretary sent herself a message when the results of the original DXA were reported, which included the suggested date for a future DXA. When this future reminder appeared in her in-box, she created a standardized message addressed to the patient's primary care physician (PCP) explaining that

a follow-up DXA was due, and making reference to an electronic ordering tool (smartset) to facilitate re-ordering the test. In doing so we perturbed the system of care for osteoporosis testing, thinking that we were making it easier for our colleagues to re-order the test at the appropriate time, but when we tested the yield of this change on 100 sequential DXA callback patients, only 18% received an order for a follow-up DXA within 3 months of our messaging the PCP.

After further discussion with our PCP colleagues, we discovered that the process worked well for us, but was onerous for them. In PDSA Cycle 2 we sent an electronic message with the actual DXA order appended. All the PCP needed to do was sign the order (one mouse click) and route it to their front desk for scheduling (3 mouse clicks). Measurement on the next 100 patients showed that the percent scheduled had only risen to 56%.

The next discussion revealed that the PCPs felt their front desk was overburdened with requests, which made them reluctant to sign and route the orders to their own staff. In PDSA Cycle 3, we sent the message with the order ready for signing, but now asked the PCP to simply route it back to the sender – our rheumatology department – in order to schedule the DXA on behalf of their clinic. Follow-up measurement showed an 86% scheduling rate. For every 100 follow-up DXAs needed, revenue increased by over \$9,000. By working together to improve the osteoporosis care system, trying to meet the needs and balance the work requirements of all those involved, and testing/measuring/changing/retesting on a small scale and over a brief period, we achieved a marked improvement in this process of care while minimizing work and maximizing financial performance.

Example 2 – Caring for Patients with Knee Osteoarthritis (Geisinger) (8)

With the introduction of hyaluronic acid injections as a treatment modality for osteoarthritis of the knee in 1999, our rheumatology department was overwhelmed with referrals of patients with knee osteoarthritis (OA) for whom

very little care had been provided prior to the referral for “injection treatment.” To address this problem, we led a knee OA referral effectiveness program in cooperation with our PCP colleagues to help them provide the basic care needed for knee OA patients and to improve rheumatology access for patients with more complex knee OA or inflammatory arthritis.

In Cycle 1, using our electronic health record, whenever a consult was placed for a knee OA referral to rheumatology, a best practice alert would appear on the referring physician’s screen, including an overview of knee OA and web-based hotlinks for further details. The referring physician was next provided with a guideline-driven ordering “smartset” that included patient education, nutrition, assistive devices, physical therapy, radiographs, and medication choices. The physician could pick from the order menu, or simply continue with ordering a rheumatology consult as originally planned. PCPs were instructed regarding the new process and the reasons why it would provide superior care and access to rheumatology. Over the measurement period, the number of new knee OA referrals decreased by 6.7% from the large number originally requested, while new rheumatoid arthritis referrals increased by 50.4% from the relatively small number that we had been able to see previously.

Example 3 – Glucocorticoid-Induced Osteoporosis Program (Geisinger) (9-11)

Preliminary work by our group revealed a poor rate of osteoporosis testing and treatment in patients receiving chronic glucocorticoid (GC) treatment, as noted by others nationally as well (12). Repeated CME programs and discussions with prescribing physicians failed to improve this care gap. A change in the reporting of DXA recommendations for patients on long-term GC therapy did result in improved bone protection for those tested, but failed to improve the testing rate for the GC-treated population.

We decided to develop a special system of care for patients on long-term glucocorticoid treatment to make it

easier for GC prescribers to “do the right thing” and to provide standardized system-level care for patients. This improvement project was led by our rheumatology department and utilized PDSA methods. Multiple cycles included identifying at-risk patients, educating them, developing and implementing pathways of care, monitoring outcomes, and using technology to support new processes. Outcome measures at one year demonstrated significant improvement in the patients’ use of exercise, vitamin D levels, treatment and treatment adherence, DXA measurements, and follow-up DXA results, so the new program was adopted.

Example 4: New Patient Pre-Appointment Management (University of Wisconsin) (13)

Delays in referral and long lag times from referral to first appointment for rheumatic disease patients are well documented, as are similar problems for other patients with chronic diseases (2). Limited access for established patients with acute problems, high no-show rates, and the routine scheduling of follow-up visits for no defined purpose are also indications of sub-optimal and inefficient care. Our practices have completed several PDSA projects to improve access, the timeliness of services, and manpower efficiency that illustrate the opportunities for improving the unfavorable status quo. These scheduling process initiatives were begun within our rheumatology practices, and some have now been applied to other specialty practices and at the system level. Geisinger’s advanced access scheduling was discussed in Part 1. The University of Wisconsin’s pre-appointment management of new patient referrals will be described here.

When, seven years ago, our rheumatology practice seemed to be faced with inadequate manpower to provide timely new consultations, we began an improvement project by reviewing 100 consecutive prior consultation letters, and found that 40% of the patients could have either continued appropriate primary care with our advice, should have been referred to other specialists, or did not require a consultation at all.

To address the problem, we first set the requirement that a documented provider request for consultation and prior records be furnished before an appointment was scheduled. We then tested and implemented a physician review of records to determine the best plan for the care of each patient's problem. In the first 6 months, we still found that 40% of patients did not require an appointment, in many cases after we had discussed alternatives with their referring physician.

However, continuing present care, arranging alternative consultation, and simple reassurance regarding the problem at hand were all acceptable to the patients and their referring physicians; in the rare cases where this was not sufficient, the patients were seen. Urgent, brief, and extended appointments could be arranged. Within several years, fewer than 10% of referrals were not being seen, while the total number of referrals had increased, suggesting an improved decision-making process by the referring physicians and their satisfaction with the new process. Patient surveys also indicated high satisfaction with the pre-appointment management process, even among those not seen by a rheumatologist, and subsequent chart reviews did not indicate any adverse outcomes from their other care. Each of our rheumatologists now spends about 45 minutes/week doing pre-appointment management.

This approach takes into account the systemic nature of a rheumatology referral, with the system's pieces including the patient, the referring physician, and the rheumatologist and staff. The new process was shown to meet the needs of all of those involved by reducing unnecessary care and improving access for necessary consultations. This appointment process change has been employed successfully in other rheumatology practices (14), and is now being adopted by other specialties. It provides a rational approach to systems, defining who can provide the best care for each patient's problem most efficiently, and vests leadership for this process in those specialist physicians who are best prepared to guide the decisions.

What are the ingredients needed in system redesign?

Thomas Nolan describes eight basic principles surrounding system-level improvement (3):

1. A system needs a purpose
2. A system's structure dictates its performance
3. Changes in a system's structure can lead to significant unpredicted effects
4. A system's structure determines the benefits to those in the system
5. A system's size determines the degree of achievable improvement
6. Cooperation is important for system improvement
7. Management of systems is essential
8. Leadership is necessary for system improvement.

In essence, a physician leader is needed to form a team, focus on cooperation across disciplines, and redesign the system taking into account its purpose, size, structure, and management. This would appear to be a Herculean task, but in fact a physician leader can effect significant and lasting change with system leadership support, some simple redesign skills (as mentioned in Part 1), and a team of individuals who both function within the system and are willing to lend their thoughts and commitment to improving it. The recent example of a system-level, top-to-bottom commitment to continuous quality improvement provided by the Virginia Mason System in Seattle offers a stunning example of what is possible in improving patient outcomes, profitability, and health care costs (15).

The importance of forming and maintaining an atmosphere conducive to change both on the team and the system levels cannot be overemphasized. Our improvement teams include representatives from the front desk, office assistants, nurses, administrators, and physicians. Patients are added to the group on an *ad hoc* basis. We meet regularly to discuss best practices and opportunities for change. Failures and successes are shared with the group, and with the leadership. The majority of participants enjoy being granted the opportunity to have a meaningful impact on the delivery of care to patients and to have their voices heard. The most important skill

needed within such a team is a willingness to cooperate across the typical boundaries in traditional medical care.

What are the likely challenges?

The first challenge is overcoming inertia. As Berwick and Nolan have noted, "It is easier to defend the status quo than to change it" (4). The second challenge is lack of commitment. Leadership at the local level must support the activity, vocalize the need for change, and palpably support the activity by allowing the time required for the activities to occur. Improvement takes work, time and money. In the absence of system leadership support, motivated physicians must focus on practice level improvements within the limits imposed by the available resources. The third challenge is lack of experience and skill in system- and practice-level redesign. Physicians are taught how to make themselves better doctors – *i.e.*, how to function best within a system – but not how to make a better system within which to work. The fourth challenge is skepticism. Physicians need to accept that there is less scientific rigor in a PDSA than they may think, and that it is permissible – indeed to be expected – that the modification may sometimes fail. In fact, some of the most useful knowledge is gathered from "failed" PDSAs, so in essence there are no failures.

I am interested in improving care through redesign – what are my next steps?

1. Read more about redesign. The Recommended Reading List in Table II suggests some articles that could assist in building your skill sets or provide examples of successful redesign projects germane to rheumatology.
2. Attend a redesign workshop at the National American College of Rheumatology (ACR) Meeting and/or the Institute for Healthcare Improvement (IHI).
3. Ask a colleague. A number of ACR members have an interest in redesign and quality improvement.
4. Overcome inertia. Form a team, and meet regularly. Start by understanding and establishing some measure-

Table II. Recommended reading list.*Quality, Systems, and Redesign – General*

Committee on Quality on Health Care in America, Institute of Medicine. *Crossing the Quality Chasm: A New Health System for the 21st Century*. Washington, DC, National Academy Press, 2001

Berwick DM, Nolan TW. Physicians as leaders in improving health care: A new series in Annals of Internal Medicine. *Ann Intern Med* 1998; 128: 289-92

Berwick DM. Developing and testing changes in delivery of care. *Ann Intern Med* 1998; 128: 651-6

Nolan TW. Understanding medical systems. *Ann Intern Med* 1998; 128: 293-8

Porter ME, Teisberg EO. *Redefining Health Care: Creating Value-Based Competition on Results*. Boston, MA: Harvard Business School Press, 2006.

Quality, Systems, and Redesign – Rheumatology

Harrington JT, Walsh MB. Pre-appointment management of new patient referrals for rheumatology: A key strategy for improving health care delivery. *Arthritis Care Res* 2001; 45: 295-300

Harrington JT. A view of our future – The case for redesigning rheumatology practice. *Arthritis Rheum* 2003; 49: 716-19.

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Newman ED, Harrington TH, Oleginski TP, Perruquet JL, McKinley K. "The rheumatologist can see you now": Successful implementation of an advanced access model in a rheumatology practice. *Arthritis Care Res* 2004; 51: 253-7.

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ments for your own practice, such as provider and patient satisfaction, access, capacity, and demand. Choose a problem, gather some solutions, and try one solution using the PDSA methodology. Learn from the results, and then try again. The secrets to early success are to begin with small improvement projects that have a high probability for positive outcomes, learn from these experiences and from colleagues who have already traveled the same road, and keep on going.

Conclusion

The perspectives we have shared here are being adopted by many practices

and health systems with documented benefits. Our examples have focused on rheumatic disease care, but they parallel health care improvement work done by others. Understanding and engaging in health care redesign is shifting from an option to a requirement for physicians, to insure a successful future for both us and those whom we serve.

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