

Clinical Microsystems Series

Clinical Microsystems, Part 2. Learning from Micro Practices About Providing Patients the Care They Want and Need

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Usual medical care in the United States is frequently not a satisfying experience for either patients or primary care physicians. For example, only a minority of patients agree that they receive “exactly the care they want and need exactly when and how the patients want and need it,” whereas many primary care physicians are leaving primary care or not entering primary care at all.^{1,2} Whether primary care can be saved and its quality improved is a subject of national concern. In this context, an increasing number of physicians are using microsystem principles to radically redesign their practices.^{1,3} The transformation is motivated both by physicians’ self-interest and altruistic interest for the sake of their patients.

Two problems confront health systems when they try to improve the quality of office practice. First, there is the problem of the weak link in the chain. From the patient’s perspective, the value of care in a health system can be no better than the services generated by the small clinical units—or microsystems—of which it is composed.⁴ When some of its microsystems are weak links, essential services of the health system will back up, break down, or result in inefficient and costly workarounds.

The second problem is the need to get many processes and handoffs right. For example, there seem to be at least nine attributes of successful microsystems within an exemplary health system.^{4,5} Imagine that your health system can reliably produce each of those nine attributes 90% of the time. Using simple probability, the odds of all nine attributes being present at the same time would be 90% to the eighth power. This means that, from the perspective of a patient, the odds may be as great as 6 in 10 that one of the nine attributes will not be applied to his or her care. For example, it might be that a clear goal relevant to the patient’s needs was not established or that a member of the clinical team was not sufficiently trained to deliver a service well.

Since the late 1990s, some of us [J.H.W., L.G.M., L.H. E.C.N.] have worked with small office practices through both

Article-at-a-Glance

Background: Usual medical care in the United States is frequently not a satisfying experience for either patients or primary care physicians. Whether primary care can be saved and its quality improved is a subject of national concern. An increasing number of physicians are using microsystem principles to radically redesign their practices. Small, independent practices—micro practices—are often able to incorporate into a few people the frontline attributes of successful microsystems such as clear leadership, patient focus, process improvement, performance patterns, and information technology.

Patient Focus, Process Improvement, and Performance Patterns: An exemplary microsystem will (1) have as its primary purpose a focus on the patient—a commitment to meet all patient needs; (2) make fundamental to its work the study, measurement, and improvement of care—a commitment to process improvement; and (3) routinely measure its patterns of performance, “feed back” the data, and make changes based on the data.

Lessons from Micro Practices: The literature and experience with micro practices suggest that they (1) constitute an important group in which to demonstrate the value of microsystem thinking; (2) can become very effective clinical microsystems; (3) can reduce their overhead costs to half that of larger freestanding practices, enabling them to spend more time working with their patients; (4) can develop new tools and approaches without going through layers of clearance; and (5) need not reinvent the wheel.

Conclusions: Patient-reported data demonstrate how micro practices are using patient focus, process improvement, performance patterns, and information technology to improve performance. Patients should be able to report that they receive “exactly the care they want and need exactly when and how they want and need it.”

a regional primary care practice-based research network,⁶ now known as the Dartmouth Cooperative Information Project, and a national network of independent physicians, Ideal Medical Practices (<http://www.idealmedicalpractices.org>). Small, independent practices are often able to incorporate into a few people the frontline attributes of successful microsystems such as clear leadership, patient focus, process improvement, performance patterns, and information technology (IT). It is from such practices—which can be termed *micro practices* (regardless of the size of the parent organization with which they may be affiliated)—that we have generated tools and approaches⁷ to use with large office practices to mitigate the weak link and missing attributes.⁸

In this article, we use patient-reported data to demonstrate how patient focus, process improvement, performance patterns, and IT can be used to improve performance. It is our hope that medical practices, health systems, and other organizations can improve their own performance by building on the experience of these highly effective clinical microsystems.

Patient Focus, Process Improvement, and Performance Patterns

To paraphrase the findings from the original series on clinical microsystems,¹ an exemplary microsystem will

- Have as its primary purpose a focus on the patient—a commitment to meet all patient needs

- Make fundamental to its work the study, measurement, and improvement of care—a commitment to process improvement

- Routinely measure its patterns of performance, “feed back” the data, and make changes based on the data

A useful measure of patient-centered care is strong agreement with the statement, “I receive exactly the care I want and need exactly when and how I want and need it.”^{9(p. 195)}

Table 1 (page 447) provides a sample of patient-centered measures that micro practices are routinely obtaining and using to compare themselves with other micro practices and a national sample representing usual or conventional care in medical practices. For example, patients in these micro practices are almost twice as likely to strongly agree that they receive “exactly the care. . .” than the national sample. Sidebar 1 (page 448) provides a case example drawn from the experience of one of the authors [L.H.].

IT

An exemplary clinical microsystem should have an information environment designed to support the work: “Everyone gets the right information at the right time to do his or her work.”^{4(p. 486)}

As shown in Sidebar 1, technology can be highly supportive, but few practices seem to have a highly supportive information environment. For example, of the 150 staff from the 50 micro practices participating in the Ideal Medical Practice network, only 54 (36%) strongly agreed with the following statement: “Technology in this office smoothly links patient care with a rich information environment. The information environment is designed to support the work of the clinical team.” To address the gap some member clinicians of micro practices have become sufficiently expert in IT to share ways in which the other practices can, at little cost, expand the value and efficiency of their information environment. Moreover, the micro practices use a Web-based technology designed to support patient-centered collaborative care (<http://www.HowsYourHealth.org>).^{1,10} Using branching logic, *HowsYourHealth* assesses a patient’s general function, concerns, symptoms, health habits, chronic condition management, communication with clinicians, and quality of health care services. It then tailors information to the patient’s responses, including specific guidelines and suggestions for the management of chronic conditions. It offers instantaneous feedback of responses for the patient and clinician. It also produces a portable health record for the patient and automatically enters data into a registry for the clinician (on the basis of the patient’s diagnoses, functional limitations, confidence with self-management, and several biochemical measures).

The case example of Dr. Ho (Sidebar 1) illustrates how a microsystem can use the aggregate information from this Web-based technology to provide useful patient-focused insights about performance patterns. There are additional modules to help patients solve problems and for documenting reasons for an office visit.

The Importance of Patient-Reported Measures to Micro Practices

Micro practices focus on the patient-provider dyad. According to the Chronic Care Model, a productive interaction between this dyad should lead to improved outcomes.¹¹ Micro practices emphasize the principle that measurable progress can be made in patient-centered care at little cost when patient-reported measures are used to do the following:

- Reliably and efficiently assess behaviorally sophisticated indicators of patient need (such as patient confidence with self-management)

- Plan efficient and effective resource allocation on the basis of patient needs and clinical evidence (segmentation)

- Implement solutions that can be efficiently applied to all

Table 1. Patient-Reported Measures of Care for Patients of 38 Micro Practices Compared with a National Sample of Medical Practices*

	Micro Practices		National Comparison	
	No Burden of Illness, [†] % (n = 1,000)	Burdened by Illness, [†] % (n = 1,600)	No Burden of Illness, [†] % (n = 14,500)	Burdened by Illness, [†] % (n = 14,800)
Overall Quality				
Get Exactly the Care I Want and Need	58	52	32	28
No Improvement Needed, Care Is Perfect	63	57	46	37
Care Processes				
Very Easy Access	64	62	50	45
No Waste of Patient Time (Efficiency)	82	86	61	63
A Personal Doctor (Continuity)	86	91	66	77
Care Not Fragmented	97	88	97	92
Prevention				
Mammogram in Past Year	91	85	84	85
Lipid Check in Past Two Years	80	88	77	87
PSA Test Explained	75	80	79	78
Bowel Cancer Screening in Past Two Years	60	65	58	60
ASA and Beta Blocker Following MI	—	80	—	77
Communication and Patient Self-Management				
Aware of Emotional Problems, if Present	—	58	—	40
Very Good Overall Chronic Disease Information	—	80	—	65
Hypertension: Very Good Information About Salt and Weight	—	72	—	62
Diabetes: Very Good Information About Adjusting for Control	—	62	—	54
Respiratory: Very Good Information Adjusting for Breathing	—	71	—	58
Patient Confident with Self-Management of any Conditions	65	46	61	43
Outcomes				
Diabetes: Blood Sugar Often 80–150	—	62	—	51
Cardiovascular: Cholesterol < 200	—	79	—	82
Hypertension: Last Systolic < 150	—	93	—	93
Medication Not Causing Illness	—	83	—	83
Functioning Well	87	65	91	71
Not Hospitalized	95	89	95	89
No Harms	99.7	97.6	99.3	98.1

* PSA, prostate specific antigen; ASA, acetylsalicylic acid; MI, myocardial infarction. Data, drawn from <http://www.HowsYourHealth.org>, are for Jan. 2005–Apr. 2008.

[†] Burden of illness: chronic diseases, significant functional limitations, or three or more prescribed medications.

patients and not just to specific clinical conditions

- Organize all work around clinical microsystem principles, not just a group of health workers called a team

- Aggressively share and adapt good ideas and strategies from other micro practices

Lessons from Micro Practices

We have derived the following five lessons, drawn from the published literature and our experience with micro practices:

1. Most Americans receive health care from small groups of physicians. Yet the smaller the practice group, the less likely it

is to engage in quality improvement activities and use technology to improve practice efficiency.¹² Because small practices provide so much care and have so much room to improve, they constitute an important group in which to demonstrate the value of microsystem thinking.

2. Small primary care practices can become very effective clinical microsystems. They can attain high levels of patient focus, process improvement, and understanding of performance patterns and use of IT to improve their performance.

3. Small primary care practices can reduce their overhead costs to half that of larger freestanding practices. The lower

Sidebar 1. Case Example

Since October 2004, Lynn Ho, M.D., has had a solo family physician practice in North Kingstown, a coastal town of about 26,000 people that is about 16 miles south of Providence, Rhode Island. On her <http://www.HowsYourHealth.org> portal, she can examine her patients' reports of their health care needs and experiences of care. She sees that her patients' ratings of care experience and outcomes are quite good. For example, for patients with some burden of illness, very easy access is 74% (versus 45% "usual care" nationwide, as shown in Table 1). Similarly, continuity is 91% (versus 77%) and efficiency is 92% (versus 63%)—and 64% of her patients strongly agree that they receive exactly the care they want and need (versus 28%).

However, for her and the other micro practices, good is not the best, which prompted two opportunities for improvement.

Blood Pressure Control

Although most of Dr. Ho's patients reported reasonable blood pressure control (for example, 92% had a systolic of < 150 mmHg 2006), patients with hypertension reported low rates of understanding their condition. For instance, only 59% reported that they were informed of potential side effects of their medicines, and only 68% reported they knew what to do if they missed a dose of their medicine.

Perceiving the opportunity, she used the following strategies in 2007 to improve the care of patients with high blood pressure:

- Asked the patient to repeat information
- Gave a copy of note (plan) to patient
- Used selected written templates to teach basic facts about hypertension, including why treatment is important, the treatment goal, what to do if a dose of medication is missed, and good health habits that enhance control of blood pressure
- Reviewed real-time, Web-based information sources with patient
- Sent/printed links from Web sites

The results of this effort to date, drawn from cross-sectional data (from <http://www.HowsYourHealth.org>), are shown below. All measures were moving in the right direction.

	2006 (n = 60)	2007 (n = 58)
Hypertension		
Patient knows what to do if missed dose	68%	75%
Patient knows effect of weight/salt on hypertension	76%	82%
Patient is informed about side effects of medications	59%	79%
Systolic blood pressure < 150	92%	94%

Efficiency

In 2006, most (90%) of Dr. Ho's patients reported that her practice was efficient—it did not waste their time. The national rate is about 60% (Table 1). Yet Dr. Ho felt she could do better. From August through December 2006, she adopted in a stepwise fashion multiple "add-ons" to boost the efficiency of her electronic health record, online appointment scheduling, and e-mail with patients, as well as other technologies that made it easier for her to continue practicing out of a few rooms with no support staff.¹ Rather than rely on a proxy measure for efficiency, such as office visit cycle time, she used the structured survey to elicit patient reports on how much the practice wastes the patients' time. By June 2007 her office patient-reported efficiency increased to more than 96%.

Reference

1. Ho L.: 7 strategies for creating a more efficient practice. *Fam Pract Manag* 14:27–30, Sep. 2007.

overhead enables the micro practices to spend more time working with their patients rather than working through their list of appointments.¹

4. Because of their size, micro practices are not distracted by going through layers of clearance to develop new tools and approaches that can be useful for others. A work group merely volunteers to make changes and analyzes the results.

5. Microsystem laboratories need not reinvent the wheel. A short curriculum, a communication framework, and the use of a low-cost technology to support patient-centered collaborative care (<http://www.idealmedicalpractices.org>).

IMPEDIMENTS TO ADAPTING THE LESSONS FROM MICRO PRACTICES

Many practices and health systems confront significant challenges in adapting the lessons for their use:

1. *Failure to promote leadership, culture, organizational support, staff focus, and interdependence of the care team.* For example, only 20 (14%) of 144 practices in New York State reported alignment of physician's values with those of the practice leadership.¹³ In that same study, practices that had work-life balance, emphasized quality of care, and had congruent values had much less physician burnout. High levels of physician burnout had a very negative effect on quality.

By being small and independent, the micro practices greatly mitigate many adverse influences of poor leadership, incongruent culture, lack of organizational support, insufficient staff focus, and lack of interdependence of the care team. As practices add layers of supervision and management, decision making moves away from the front lines and increases the risk that the decisions that are made do not reflect the reality of the work at hand and/or fail to recognize unintended consequences.

Table 2. Team Care: A Clinical Microsystem Perspective

	Large Practice Without Microsystem Focus	Small Practice Without Microsystem Focus	True Microsystem Focus in Any Size Practice
Information Environment	If automated, usually centralized with orientation toward administrative and bio-clinical data May have bioclinical, productivity, and general patient satisfaction measures for clinicians	When automated, similar to large practices but clinical and administrative pieces may not cross-communicate Performance data from payers delayed, narrow, and error-prone	Behaviorally sophisticated data about “what matters” to patients and “what is the matter” with patients is at the center. Available when needed to both patients and clinicians.
Speed of Decision Making	Layers of administration require multiple steps in decision making.	Fewer layers but may need to convince other physicians	Autonomy is within the team to test changes for improvements.
Sensitivity of Decision Making to Frontline Issues	Layers of management increase distance and introduce competing agendas.	Greater sensitivity to frontline issues, but physician typically the Number 1 customer	Frontline work informs decisions; patient is the focus.
Ease and Clarity of Communication	Multiple and shifting lines of communication	Fewer lines, but lack of specificity in team affiliation degrades communication	Small and defined teams limit the chances of communication failure.
Overhead	More staff and layers of administration mean more overhead, driving more “productivity” and depressing physician-patient interaction, increasing work burden on team, and driving increased overhead.	More staff mean more overhead, with similar challenges as large practices as seen in the panel to the left.	Lower overhead results in physicians having more time to interact with patients using different means, some of which may not be reimbursed.

Even when the impact of decisions is carefully assessed, layers of management create delays in decision making because of the large numbers of people involved.

2. Failure to develop an adaptable care team (“teamlet”¹⁴) within a microsystem. Many practices use teams to facilitate communication among professionals and share both work and administrative functions. However, team size and membership is often driven by history, national norms, available space, or preconceived justifications to have certain disciplines represented within the team. Team size has additional inherent risks that stem from the complexity of human interaction; for example, everyone knows how difficult it is to schedule an important meeting when the team is large. Some of the advantages and disadvantages of team care are represented in Table 2 (above); the essential message is that teams not built on microsystem principles tend to be costly and inefficient because they have a higher probability of weak links and poor handoffs.

Truly functional teams are lacking in many settings. At baseline, only 60 (40%) of the 150 respondents from the 50 micro practices strongly agreed with the statement, “Our office staff works like a team. We have high levels of trust and communication. We appreciate complimentary roles and recognize that all contribute to a shared purpose.” In a 2007 collaborative of 18 newly enrolled health systems for which two of the authors

[J.H.W., L.G.M.] served as faculty, only 20% of the 310 physicians and staff had such a high level of agreement regarding team function.

3. Inertia: Change is difficult. Several types of inertia are apparent: mindset inertia, resource inertia, and regulatory inertia. One deeply ingrained form of mindset inertia is an inability to understand what patient-centered care really means within the context of a highly functional microsystem. Clinicians are increasingly confronted by bewildering jargon from academics and policymakers, conflicting mandates from payers, and incompatible guidelines from licensing boards. For example, it is a large leap for many health professionals to really embrace the concept of being patient-centered: how to give appropriate attention to both what is the matter with their patients (such as blood pressure, cholesterol) and what matters to their patients (such as their pain, their function, their confidence with self-management, their finances). In contrast, Dr. Ho (Sidebar 1) knows, in real time, both what is the matter with her patients and what matters to them. Many physicians may only know what is the matter.

Less ingrained, but usually expressed, is the mindset of many clinical practices that “we are different,” or “Yes, the micro practices are demonstrating tremendous results and use interesting methods, but at our practice. . .” A lack of understand-

Table 3. Common Concepts of Concern to Micro Practices and Methods for Addressing the Concern*

Concepts of Concern	Additional Description	Methods and Tools for Addressing the Concerns
Patient at the Center	<ul style="list-style-type: none"> ■ What does “patient-centered” care really mean? ■ How to identify what matters and plan a “patient-centered” visit? ■ How to incorporate a behaviorally sophisticated, effective, and efficient alternative to “N of 1” medical care? ■ What is needed to support patient confidence for self-management? 	<ul style="list-style-type: none"> ■ Measuring “what is the matter” and “what matters”^{9,16} ■ Trial of CARE Vital Signs⁸ (http://www.HowsYourHealth.org) and Visit Planning ■ Resource Planning[†] ■ Automated Problem-Solving Modules, Protocols for Phone Support, and Campaign for Confidence (http://www.idealmedicalpractices.org)
Access and Efficiency	<ul style="list-style-type: none"> ■ How do we get “breathing room” to make changes? How do we remove waste that is undermining care? ■ Can we offer our patients advanced access? ■ How do we get the most out of technology without breaking our bank? 	<ul style="list-style-type: none"> ■ Know Your Processes (http://www.clinicalmicrosystem.org)¹⁷ ■ 10 Points of Advanced Access; Advanced Access FAQs[‡] ■ http://www.idealmedicalpractices.org and practice story¹⁰
Handoffs and Fragmentation of Patient Care	<ul style="list-style-type: none"> ■ Many patients have multiple providers. Should we de-fragment care? If so, how? 	<ul style="list-style-type: none"> ■ Specialty Referral/Consult Form and Follow-up (http://www.idealmedicalpractices.org)
Quality Measurement	<ul style="list-style-type: none"> ■ How do we make this not a burden and part of everyday care? What do “patient experience” measures mean? How should we respond to them? 	<ul style="list-style-type: none"> ■ Patient Reported Outcome Measures (http://www.HowsYourHealth.org).

* Additional resources are noted in parentheses. References can be found on page 452 unless noted below.

[†]Wasson J.H., et al.: Resource planning for patient-centered, collaborative care. *J Ambul Care Manage* 29:207–214, Jul.–Sep. 2006; Ahles T.A., et al.: A controlled trial of methods for managing pain in primary care patients with or without co-occurring psychosocial problems. *Ann Fam Med* 4:341–350, Jul.–Aug. 2006.

[‡]Lukas C.V., et al.: Implementation of a clinical innovation: The case of advanced clinic access in the Department of Veterans Affairs. *J Ambul Care Manage* 31:94–108, Apr.–Jun. 2008.

ing that all practices—big and small, rural and urban, independent and owned—have microsystems is buried beneath the difference argument.

Resource inertia refers to health systems’ inability, in the face of their large investments in personnel and fixed assets, to see beyond their current methods for doing business. Examples of ways to use low-cost technologies to augment patient care and reduce the need for support staff and fixed assets are of no solace to people who may lose jobs and do not pay the expenses on investments that have been amortized over many years into the future.

Current payment requirements, which dictate how care should be documented and provided, may impede the development of more advanced medical practice microsystems. Most primary care physicians find that commonsense attributes of patient-centered care—such as electronic communication, group visits, and patient self-management support—are not reimbursed. There clearly remains an urgent need to eliminate many of the reimbursement dilemmas through payment and

policy reform and to align the right work with the right payment.

Finally, it is ironic that many of the regulatory approaches that marry pay-for-performance with progress toward “medical homes” and patient-centered care continue to require a great degree of documentation of care processes and bioclinical measures.¹⁵ Patients’ reports are considered a helpful but unnecessary measure that is difficult to obtain. Meanwhile, micro practices continue to use patient-reported quality standards,¹⁶ as shown in Table 1, as part of their everyday work.

OVERCOMING THE IMPEDIMENTS

When large organizations and health systems do not attend to the adverse influences of poor leadership, incongruent culture, lack of organizational support, and insufficient staff focus, the frontline team will be likely to produce inadequate results.¹³ Yet, the experience of micro practices in applying the microsystem principles of patient focus, process improvement, performance patterns, and information technology can

Sidebar 2. Case Example

Twenty-eight microsystems provide services to 34,000 patients at Care South Carolina in rural South Carolina. Its leadership, culture, and organizational structures are directed toward data-rich “federalist” support of the 265 employees within its microsystems, with 143 measures of performance. Results from a micro practice within its organization are disseminated quickly with an expectation of uptake by the others. However, each microsystem has enough autonomy to adapt or even defer uptake. For example, the Chesterfield microsystem (part of Care South Carolina) initially declined an opportunity to adopt a successfully tested approach to better engage lower-literacy patients in self-management. However, the patient-centered data showed that Chesterfield’s measures of collaborative care were not good at baseline, as shown below.

Time Period	Patient-Reported Measures of Collaborative Care		Outcome Measures
	Information Is Excellent	Confidence with Self-Management	Blood Pressure Controlled
Baseline: 2007 (January–June)	10%–33%	40%–60%	51%–55%
Changing Phase 1: 2007 (July–December)	35%–88%	40%–80%	58%–64%
Changing Phase 2: 2008 (January–April)	80%–90%	80%–90%	66%–67%

In response to the data, the Chesterfield microsystem adopted the innovation and attained dramatic improvement. This example illustrates how organizations that support and integrate microsystems can improve care without dictating the details.

help other organizations apply them to their own settings ([http:// www.clinicalmicrosystem.org](http://www.clinicalmicrosystem.org)).¹⁷ Methods and tools for a sample of concerns—patient-centered care, access and efficiency, handoffs, fragmentation of care, and quality measurement—are listed in Table 3 (page 450).

Many medical practices that consist of multiple clinical microsystems choose a particular pilot site to test an innovation. However, they often have difficulty spreading the innovation from the pilot site to other practices throughout the system. The leadership at Care South Carolina seems to have solved this problem by establishing a culture in which all clinical entities are allowed to be micro practices (Sidebar 2, above).

Conclusions

In this article, we have used patient-reported data to demonstrate how micro practices are using patient focus, process improvement, performance patterns, and IT to improve performance. However, this article also demonstrates the many challenges for putting microsystems principle into everyday practice. For example, micro practices’ controlling organizations, by not providing necessary leadership, culture, organizational support, and staff focus, can make ineffective both nascent and highly functioning microsystems. Patients should be able to report that they receive “exactly the care they want and need exactly when and how they want and need it.” The challenge to health professionals is to build on what is already known to make this goal a reality. **J**

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