

## Microsystems in Health Care

# Microsystems in Health Care:

## Part 4. Planning Patient-Centered Care

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**E**ffective microsystems are designed with the patient (or “customer”) in mind.<sup>1</sup> They know how to make their services best meet the needs of the distinct subpopulations they serve. In this article we focus on the way effective microsystems individualize services (offered by the microsystem itself or by other microsystems in the organization or the community) to best meet a patient’s needs.

In Part 3 of the Microsystem Series,<sup>2</sup> we describe how microsystem awareness of the “four P’s”—patients, people, processes, and patterns—can result in greater efficiency. Planned services result in less unwanted variation and waste, smoother process flow, more effective use of information, and better matching between staff roles and work.

This article describes how a self-aware microsystem can ground efficient services in the patient-centered planned care model. Planned care results in productive patient–provider communication and improved patient self-management. The natural synergy between planned services and planned care results in doing it right the first time for every single patient.

Decades of clinical research confirm the power of productive interactions between informed, activated patients and the clinical staff. This research is summarized in a planned (or chronic) care model.<sup>3,4</sup> The planned care model has several critical components that support a productive interaction (Figure 1, p 228), and there is considerable overlap between the planned care model and microsystems. In an effective microsystem, self-management support, decision support,

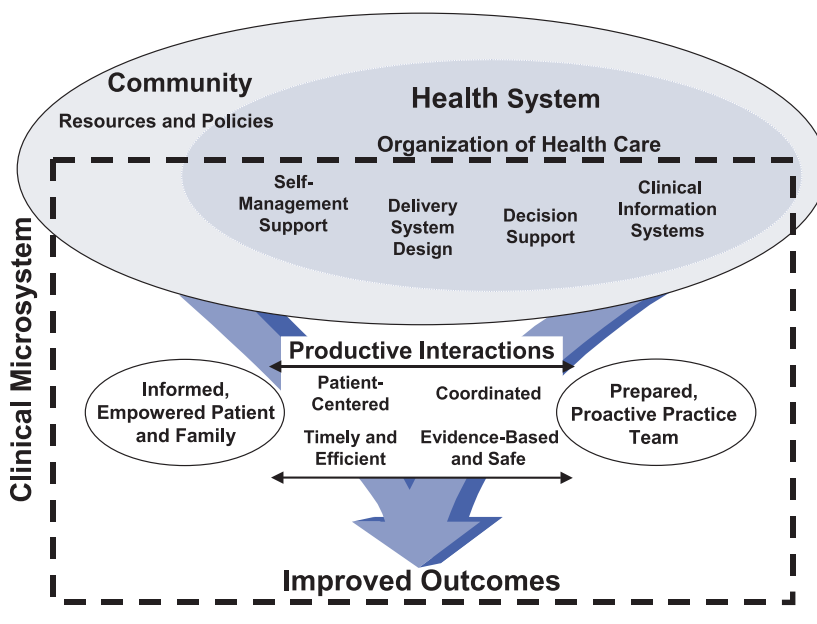
### Article-at-a-Glance

**Background:** Clinical microsystems are the essential building blocks of all health systems. At the heart of an effective microsystem is a productive interaction between an informed, activated patient and a prepared, proactive practice staff. Support, which increases the patient’s ability for self-management, is an essential result of a productive interaction. This series on high-performing clinical microsystems is based on interviews and site visits to 20 clinical microsystems in the United States. This fourth article in the series describes how high-performing microsystems design and plan patient-centered care.

**Planning patient-centered care:** Well-planned, patient-centered care results in improved practice efficiency and better patient outcomes. However, planning this care is not an easy task. Excellent planned care requires that the microsystem have services that match what really matters to a patient and family and protected time to reflect and plan. Patient self-management support, clinical decision support, delivery system design, and clinical information systems must be planned to be effective, timely, and efficient for each individual patient and for all patients.

**Conclusion:** Excellent planned services and planned care are attainable today in microsystems that understand what really matters to a patient and family and have the capacity to provide services to meet the patient’s needs.

## Schematic of the Planned (Chronic) Care Model



**Figure 1.** This figure shows the various key elements leading to productive interaction and the overlap with clinical microsystems. Source for the care model figure: Wagner EH: *Chronic disease management. What will it take to improve care for chronic illness?* *Eff Clin Pract* 1(1): 2-24, 1998.

delivery system design, and clinical information systems are planned to be effective, timely, and efficient for each individual patient and for all patients. In an effective microsystem, planned services evolve to fit the care needs of an individual patient like a glove fits a hand.

### Planning Care Well: Exemplary Clinical Microsystems

In this section we provide a brief description of several microsystems that excel at planning care. As described in Part 2 of the Microsystem Series,<sup>5</sup> in planning care, the Dartmouth-Hitchcock Spine Center (Lebanon, NH) uses touch pads to collect information on the patient's general and disease-specific health status to provide a sound basis for the patients and the clinicians to engage in shared decision making to best match the patient's changing needs with the preferred treatment plan. At the Intermountain Health Care Shock Trauma Intensive Care Unit (IHC STRICU; Salt Lake City),<sup>5</sup> predetermined pro-

ocols, data collection, and feedback between all members of the care staff help link the planned services to patient-centered planned care.

A patient who visits the Dartmouth-Hitchcock Spine Center is given a touch-screen computer that inquires about his or her symptoms, functional status, expectations for care results, and results of past treatment. The clinical staff uses a summary of this to guide the patient's evaluation and treatment. Whenever possible, the clinical staff employs additional technology to guide the evaluation and management of the patient's concerns. Most of the care is preplanned for the most common types of patient concerns and bothers. For example, if the patient has low back pain, the clinician will ask the patient to view shared decision-making video programs that customize management information to the patient's needs.<sup>6</sup>

Effective and safe care is ensured because little evaluation and management is left to chance. A patient receives phone follow-up to ensure that the information and management plan are understood and in place. At subsequent office visits the patient's symptoms, function, and response to treatment are reassessed, using the touch-screen computer.

Any patient sent to the 12-bed IHC STRICU is critically ill, and about 15% of the time, he or she may not survive. Many standard protocols are used. Computers are at the bedside of every patient, and the staff has developed several long (2-hour) and short (10-minute) reporting formats to augment the information contained in the bedside electronic medical record. Data elements tracked over time for improvement purposes include the usual physiological measures (for example, vital signs, blood gases, intake/output), 30 types of errors, 11 bacterial infections, and administrative information (diagnoses, treatments, costs, staffing). The information flow ensures that everyone knows which management plan has been

chosen for each patient and what each staff member must do to deliver the planned care. The staff also has the ability to complete shift reports on unstable patients within minutes. Despite all the activity and technology, the STRICU preserves a very human interaction with family members, who can visit the patient at any time.

As described in Part 3 of this series,<sup>2</sup> a patient calling the Norumbega Evergreen Woods primary care office (Bangor, Me) is interviewed by a patient representative who uses a software program called the Problem-Knowledge Coupler (PKC®).<sup>\*</sup> This program uses protocols that can handle everything from a simple cough to complex chest pains and prompts the staff to order needed diagnostic tests before the patient comes to the office. The program also helps schedule patients in time slots according to the severity of their conditions. Patients complete program-based questions that inquire about the mental and physical components of the problem. The software also displays all possible diagnoses for the problem, organized for easy review, and suggests possible actions.

Each exam room contains a computer that is used for patient records, scheduling patient visits, telephone triage, and the software. The staff uses the software to manage patient concerns and generate information for the patient about the problems. Process control charts are posted, and measures of preventive interventions are available automatically from the PKC®.

*On Lok* (“place of peace and happiness” in Cantonese), which is located in San Francisco, provides a program of all-inclusive care for the elderly to optimize the patient’s quality of life and sense of independence, enhance physical and cognitive function, and maintain patients in their communities and homes. A standard assessment of physical and mental health and social functioning is completed on enrollment to determine the services most suitable to patient and family needs. All patient information is entered into a computer system to allow access by a multidisciplinary staff. The information system is used to document care, transmit medication orders to local pharmacies, and ensure feedback of performance measures to the staff.

<sup>\*</sup> Problem-Knowledge Couplers® are available at [www.PKC.com](http://www.PKC.com) (accessed Oct 18, 2002).

These four exemplary microsystems know their four P’s. They have the information and knowledge needed to plan efficient services for the benefit of patients and practice staff. They have rejected the common myths that underlie much of current practice (Table 1, p 230).

Exemplary microsystems reject the notion that they must have advanced information systems before they can provide great care and service. In fact, inappropriate information systems can make inefficient processes more difficult to change. It is best to learn how to optimally match work to patient needs before committing to information systems. The information systems described here in the exemplary microsystems have resulted from months and years of tests to understand their four P’s.

As described in detail previously,<sup>2</sup> exploring the four P’s of a clinical microsystem provides deeper knowledge of the patients, the people providing care, the processes (how services and care are provided), and the patterns of social interactions, health outcomes, and process measures to better position a microsystem to engage in meaningful improvements. The microsystem becomes informed, self-aware, and curious to make improvements based on this new information.

Exemplary microsystems reject the notion that factors such as educational level will automatically affect a patient’s ability to absorb information or to act on information. They know that patient self-management is critical to effective planned care.<sup>7</sup> The belief that particular types of patients (or their families) are “too limited” to self-manage their problems is a myth.

Exemplary microsystems reject the notion that new approaches will not work for a particular setting or for certain types of patients. Self-management support and monitoring of progress is increasingly facilitated by the telephone, patient registries, and e-mail and Web-based technologies. Technology facilitates the extension of care beyond the office. Innovative microsystems learn that electronics are right for many of their patients; that patient-centered technology can build patient self-management support into everyday practice. And for those patients who may not be able to use electronics, family members and community organizations can be encouraged to offer assistance.

Exemplary microsystems reject the notion that all care must be visit based. They know that there are many

**Table 1. Common Myths Rejected by Effective Clinical Microsystems**

Negative attitude or myth	More useful reality
Advanced information systems are needed before services and care can be improved.	Better to understand patient, people, processes, and patterns; test changes; retest changes; then build information systems to make the best processes more efficient.
Patient self-management skill is dependent on education, income, language, etc.	Better to realize that patient self-management skills can be learned, and the microsystem has a central role in supporting these skills.
Electronics are not right for my patients. Many practices assume that they have to spend money for hardware and software and the space and personnel to maintain it.	Better to realize that a rapidly increasing number of patients will welcome "patient-centered" electronic methods for information and self-management. Because the patients can do a lot of the data entry, the practice flow immediately benefits.
Ambulatory care is visit based. Fee-for-service practices most often build patient flow around visits because that is how they are paid.	Better to think about what the patient needs to attain high levels of self-management so inefficient rework is minimized. Many revisits "clog" the system with low-reimbursement care.
All paths lead to a doctor. When the doctor is the final common pathway for care and service, the pathway is likely to become badly congested.	Better to think about what has to be done to serve patient needs and deliver efficient, effective care. Once the "what" is answered, the "who" often turns out not to be the doctor.
"Demand" is patient driven. A perfect example: 70% of the variation in scheduled revisits is determined not by patient need but by professional choice.	Better to realize that many demands are caused by professional habits and rework. Once rework is reduced and demand is managed, the microsystem will have enough time to plan how to do the right thing at the right time.
Resources are needed to help patients develop their self-management skills.	Better to have planned services; the efficiencies will result in more resources and capacity to plan care.
A designated person to plan care (eg, care manager) will correct our deficiencies.	Better to make planned care part of planned service; eg, involve all roles and all "work."
All resources and capacity to support patient care exist within the four walls of the practice.	Better to explore resources within the practice and outside the four walls, in the community.

ways to provide planned care; it is seldom confined to an office visit, nor is it confined to the care provided by a physician. Physician-centered care often results in bottlenecks, which can be minimized by the use of other professionals, peers, and community services. Providing only physician-dominant, visit-based care is often more costly and less complete for patients and yet it may paradoxically reduce net practice revenue.

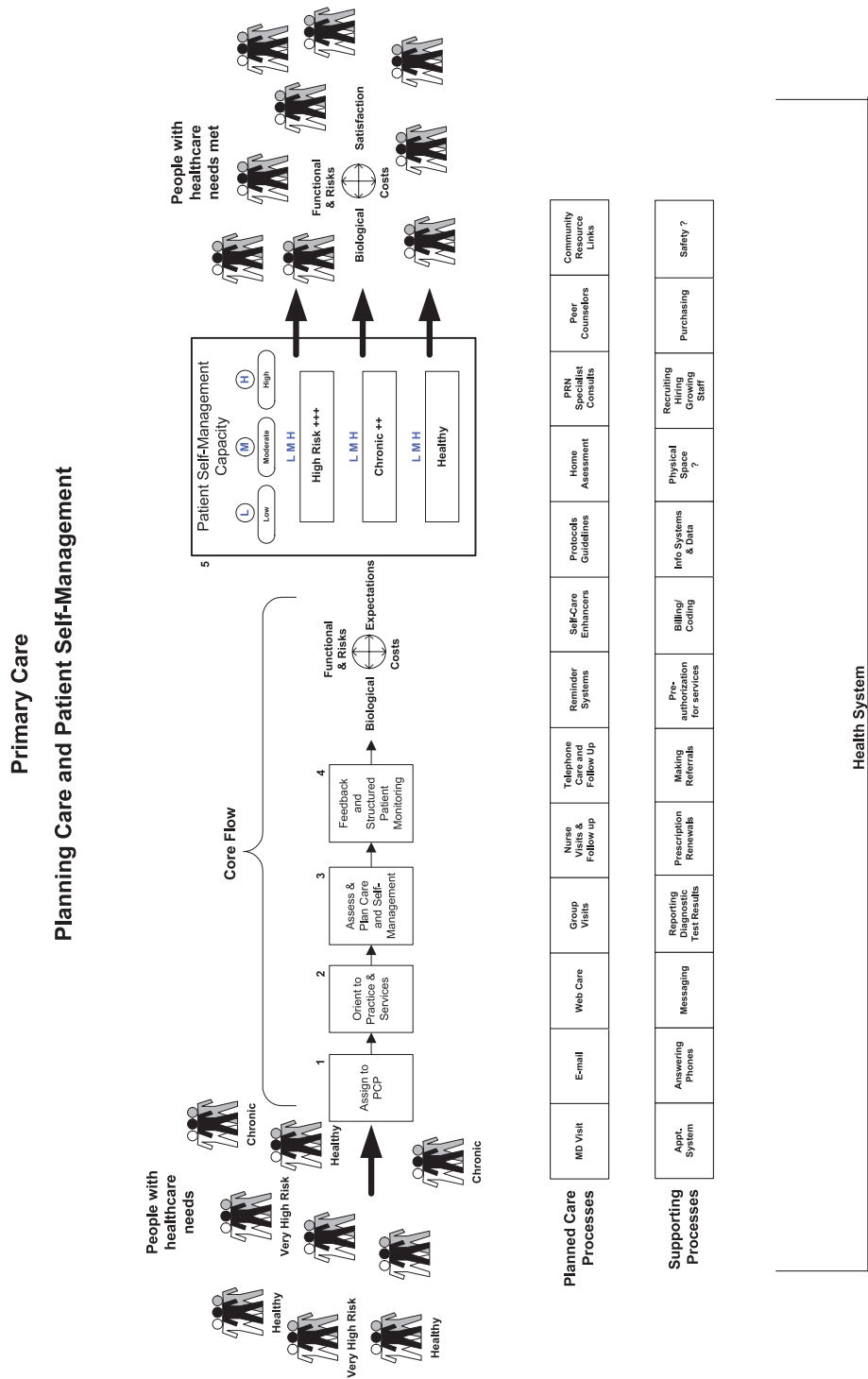
Exemplary microsystems also reject the notion that offering to meet all patient needs will overwhelm a practice. They know that patient demand largely results from the way the microsystem has operated in the past; demand will change to match the way services and care are planned.<sup>8,9</sup>

Finally, exemplary microsystems use the efficiencies of their planned services to capture planned care capacity. This capacity is spread across the microsystem staff as it develops the new roles and tasks needed to help patients become better self-managers.

### Planning Care in Any Microsystem

The microsystem staff must make sure that as it develops more efficient services, it focuses on the provision of planned care. Attributes of planned care are summarized in Figure 2 (p 231) and Table 2 (p 232). By incorporating components of the planned care model into practice, a clinical microsystem ensures productive interactions between patients and clinical staff. (Additional information about the planned [chronic] care model and practice assessment forms can be found at [www.improvingchroniccare.org](http://www.improvingchroniccare.org).)

## Service and Information Flow in a Microsystem



Microsystem Approach 6/17/98

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**Figure 2.** This diagram depicts the core flow of patients in a microsystem and where planned services and planned care are designed to meet individual patient needs. PCP, primary care physician; PRN, as needed.

**Table 2. Attributes of Planned Care**

**Health Care Organization**

- Organization's business plan includes measurable goals for system improvement.
- Senior leaders visibly support system improvement.
- Organization uses effective improvement strategies aimed at comprehensive system change.
- Organization encourages open and systematic handling of errors with a view to improving quality of care.
- Provider incentives and avoidance of disincentives encourage better care.
- Developing staff members and integrating them into the culture is an organizational priority.
- Leadership develops relationships that facilitate care coordination.

**Community Resources and Policies**

- Identify effective programs and encourage patients to participate.
- Form partnerships with community organizations to support or develop interventions that meet patient needs.

**Self-Management Support**

- Emphasize the patient's central role in managing illness.
- Assess patient self-management knowledge, behaviors, confidence, and barriers.
- Provide effective behavior change interventions and ongoing support with peers or professionals.
- Use culturally competent and linguistically appropriate approaches in patient interactions.
- Ensure collaborative care planning and problem solving by the team.

**Delivery System Design**

- Define roles and delegate tasks among team members.

- Employ staff to the extent of their scope of practice.
- Measure demand and develop master schedules that match capacity and demand.
- Provide access to care when patients want it.
- Assure clinical case management services for complex patients, including communicating with other settings where patients are receiving care.
- Use planned visits to support evidence-based care.
- Assure regular follow-up by the primary care team.
- Provide interpretive services for non-English speakers and low-literacy patients.

**Decision Support**

- Embed evidence-based guidelines into daily clinical practice.
- Establish linkages between primary care and specialty providers that facilitate care coordination.
- Integrate specialist expertise into primary care.
- Use proven provider education modalities to support behavior change.
- Inform patients about guidelines pertinent to their care.
- Use standing orders.

**Clinical Information System**

- Registry function summarizes clinically useful and timely information on all patients with particular characteristics.
- Information system provides timely reminders and feedback for providers and patients and provides protection against errors.
- Registry can identify relevant patient subgroups for proactive care.
- Registry facilitates individual patient care planning.
- Information system facilitates timely sharing of information between care settings.

Many clinical groups currently do not get the right information to the right place, do not match staff roles to the work, and do not build efficiency and effectiveness into practice flow. Furthermore, for a significant number of issues, clinicians do not know what matters to their patients.<sup>10-12</sup> In the absence of a deep understanding of what matters to a patient, interactions are unlikely to be productive.

It is imperative that clinical microsystems plan services that match the needs of their patients. Because a patient with a chronic condition must manage it for many years, the microsystems must provide sufficient self-management support. Table 2 lists some attributes of good patient self-management support. The microsystem must provide care for the illness and guidance so that the patient can live as

normal a life as possible and help mollify the psychosocial impact of the condition.

As a general rule, the less ready the patient is for self-management, the more resources the microsystem needs to devote to this process. Resources are most effective if they seamlessly support self-management during assessment, management, and follow-up. As previously noted, a microsystem's staff resources go well beyond the number of available physicians.

In many clinical settings, patient and information flow follow the pattern illustrated in Figure 2; for almost every clinical need of a patient, a microsystem must ask itself who, what, when, where, and how. Alignment of the answers to the planned care model is ensured by cross-referencing the answers to these questions with the attributes of planned care listed in Table 2.

For example, when an inquisitive microsystem is concerned about the best way to manage a patient who has pain, it confronts a series of questions about "assessment and planning care," such as these:

1. Who will identify the patient? by interview or by a patient-assessment tool?
2. With what measure will the problem be identified? Will the measure be paper based or electronic? Will it assess other problems that matter to the patient at the same time?
3. When? at or before an office visit?

After the microsystem has developed answers to these questions, it can conduct a few tests on a few patients to see which answers will lead to the most efficient and effective processes. The same "question/test" process is used to discover the best approaches for the management of patient needs. Finally, the microsystem has to consider follow-up and monitoring: who, what, when, where, and how? Again, the preliminary answers to these questions need to be tested on a few patients.

### A Low-Tech Example for Ambulatory Services: CARE Vital Signs

The technology-heavy examples of the Spine Center, STRICU, Norumbega, and On Lok might seem to give credence to the myth that advanced information systems are a prerequisite for excellent patient-centered care. We

now describe a process called CARE Vital Signs to illustrate how microsystem services and staff resources can better match ambulatory patient needs without the need for expensive technology.

In almost every ambulatory care practice, someone obtains vital signs and moves patients to rooms. These people are usually certified medical assistants (CMAs) or licensed practical nurses (LPNs). When you compare what CMAs, LPNs, and even registered nurses (RNs) do in practice to what they have education and training to do, you find that they are usually greatly underutilizing their skills and training.

In "usual care," after vital signs are obtained, most paths lead to the physician. This approach is usually inefficient and incomplete and often leads to bottlenecks. Opportunities to promote patient self-management are often limited to what happens in the "black box" of the physician's private examining room. The assessment, monitoring, and education needed by patients who have important needs and chronic diseases often get short shrift.

In contrast to usual care, with the CARE Vital Signs process there is an explicit plan for checking, activating, reinforcing, and engineering.

#### Checking

As patients come to the practice, they are routinely screened to see if they have issues that might benefit from a standardized self-management program. The LPN/CMA checks for other important preventive and patient-relevant issues while obtaining the patient's weight, blood pressure, and pulse. For patients aged 19–69 years of age the staff would usually inquire about the presence of three to five common chronic conditions, pain, health habits, feelings, medication problems, the patient's confidence with his or her self-management skills, and age-/gender-specific completion of necessary preventive tests.

#### Activating

When an issue is identified, it is brought to the attention of the clinical staff that has responsibility for it. When an issue is identified during the CARE Vital Signs process, the LPN/CMA informs the patient about valuable resources for self-management and brings the issue to the attention of the clinician.

## Reinforcing

When the clinician is warned about an important issue, he or she is in a powerful position to activate the patient for self-management and reinforce the importance of any planned care. Goals and priorities are identified.

## Engineering

*Engineering* refers to the need for a practice to systematically incorporate (“engineer”) components of planned care into the roles of its members, the planned services, and the flow of its processes. Patients with significant needs are usually asked to register for brief programs in which the LPN/CMA phones to check on understanding and completion of patient self-management goals.

An example of the CARE Vital Signs form is shown in Figure 3 (pp 235–236). A patient may have few needs for self-management, some needs, or many needs. When no or few needs are identified and the patient is confident with his or her self-management, the visit proceeds in the usual way, except that the relatively healthy patient is given the completed CARE Vital Signs form and is urged to refer to free, Web-based materials for additional assessment and individualized information.

For a patient who has some needs for self-management, brief, prescheduled telephone follow-up is used to reinforce goals over time and to adjust the goals to changing circumstances. For a patient with many needs or poor self-management skills, intensive monitoring and assistance are scheduled. A mnemonic is helpful to describe the focus of good self-management support the Five As—assess, advise, agree, assist and arrange.<sup>13</sup>

A “nontech” microsystem can refer patients to [www.howsyourhealth.org](http://www.howsyourhealth.org) for a more complete assessment of their needs and education tailored to their needs. When CARE Vital Signs is used, about half of a typical ambulatory care population of patients aged 19–69 years of age will be found to have important needs: About 40% of these patients will be quite confident with their self-management skills, 50% will be somewhat confident, and 10% will have little confidence that they can self-manage their problems. The generic question for members of the microsystem is “How can we provide services and plan care to

increase self-management competencies for patients with needs over the next year or two?

A microsystem will usually use a staggered, planned approach to introduce CARE Vital Signs. For example, by introducing CARE Vital Signs for patients aged 50–55, the practice staff tests its capacity to provide planned care. After successfully identifying and managing the needs of this group of patients, the practice staff then would use CARE Vital Signs on another age group. After repeating this cycle every 3–4 months, all age groups would have experienced better assessment, advice, agreement on goals, assistance with self-management, and effectively arranged follow-up to support self-management.

CARE Vital Signs is an example of a how a generic approach can address many patients’ needs and incorporate necessary screening and management functions into the everyday work of a microsystem. The CARE Vital Signs approach is an efficient, standardized gateway to effective patient self-management. However, it is evident that the use of a CARE Vital Signs form will not make planned care happens. Planned care requires that the interdisciplinary staff plans regular time to meet, designs planned care services, and makes the attributes of the planned care model vital components of everything it does.

## Summary

In this article, as in Part 3 of the Microsystem Series, we describe the ways that exemplary clinical microsystems have found to escape the conundrum of the many practices that are stuck in their traditional roles and processes. Inefficiently, they struggle “just to meet today’s demands.” They do not feel that they have the ability to change because they do not really understand how to overcome the mismatch between what they produce and what the patients really need. Exemplary clinical microsystems simply design their planned service to fit patient needs like a glove fits a hand. **I**

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## CARE Vital Sign Form

**C.A.R.E. VITAL SIGNS (FOR ADULTS AGED 19+)**

**PROVIDER COPY:** Complete on new patients or if not completed in past year

**Patient Name:** Cindy Jones      **Date:** 1/1/02      **ID #:** 0097007

What does patient want to discuss or expect to be done at this visit:  
Wants to deal (finally) with the feeling that have been upsetting her for a long time

Measure or Question CHECK	Clinical Flag ACTIVATION (Circle when noted)	Planned Care Standing Orders	
		REINFORCED Web-Based*	ENGINEERING Practice-Based**
Height <u>5-5</u> BMI <u>22</u> Weight <u>130</u>	BMI 25 -30    → BMI 30+        →	HYH: Exercise/Eating add Diet Evaluation	
BP <u>130 /70</u>	>140/80        → <100/60        →	HYH: Common Medical	
Pulse <u>70</u> RR <u>14</u>	<50; >100; irregular short of breath		
Any of the following: <input type="checkbox"/> Hypertension <input type="checkbox"/> Cardiac/Vascular Disease <input type="checkbox"/> Diabetes <input type="checkbox"/> Lung Problems/Asthma <input type="checkbox"/> Other	Any concerns: _____ _____ _____ _____ _____ Or no previous use HYH Condition Form	For condition management use <a href="http://www.howsyourhealth.com">www.howsyourhealth.com</a>  HYH: Common Medical	
Feeling Score <u>5</u> (see reverse)	4 or 5        →	HYH: Feelings/Emotion Evaluation	Phone follow-up for patients with Feelings/Emotion
Pain Score <u>4</u> (see reverse)	4 or 5        →	HYH: Pain Evaluation	Phone follow-up for patients with Pain
Are your pills making you ill? (Yes, no, maybe, not taking)	Yes or Maybe	HYH: Common Medical	
Not Good Health Habits (see reverse) <u>4</u>	4 or 5        →	HYH: Health Habits	
How confident are you that you can control and manage most of your health problems? (Very, Somewhat, Not at All)	Somewhat or Not    →	HYH: Self-Management Module	

**Prevention:** Circle if not completed.

19-49	50-69	70+
Female Only**	<u>Mammogram q 1 yr</u>	
	<u>Pap q 3 yr</u>	
Male Only**		
Both**	<u>Hemoccult q 1 yr</u>	

\*\* Criteria to be completed by the office.

**Patient Instructions:** Based on Discussion with your Provider.  
Any checks or circles above? Go to the web site before our  
next visit or phone contact.

After today's visit, we will call you  
twice to check on your progress;  
please use the problem solving  
form from the web form on the  
web when you talk to us.

**Figure 3.** The CARE Vital Signs sheet (available at [www.howsyourhealth.org](http://www.howsyourhealth.org)) illustrates a patient found to have pain and emotional problems. Based on the findings, the practice is prepared to offer her special follow-up care to improve self-management of these conditions. HYH, How's Your Health.






## CARE Vital Signs Form (continued)

Height in Shoes	Weight Range "Normal" <sup>TM</sup>	BMI 30+ Seriously Overweight
4'10"	91-119	145
4'11"	94-124	150
5'	97-128	156
5'1"	101-132	162
5'2"	104-137	167
5'3"	107-141	173
5'4"	111-146	179
5'5"	114-150	184
5'6"	118-155	190
5'7"	121-160	195
5'8"	125-164	200
5'9"	129-169	206
5'10"	132-174	212
5'11"	136-179	217
6'	140-184	223
6'1"	144-189	229
6'2"	148-195	234
6'3"	152-200	240
6'4"	156-205	245
6'5"	160-211	250
6'6"	164-216	255

\*(BMI 25-29 "overweight" is between upper range of normal and BMI 30+ "seriously overweight")

### PAIN






During the past 4 weeks . . .  
How much bodily pain have you generally had ?

No pain		1
Very mild pain		2
Mild pain		3
Moderate pain		4
Severe pain		5

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### FEELINGS

During the past 4 weeks . . .  
How much have you been bothered by emotional problems such as feeling anxious, depressed, irritable or downhearted and blue ?






Not at all		1
Slightly		2
Moderately		3
Quite a bit		4
Extremely		5

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2

### HEALTH HABITS ..

During the past month, how often did you practice good health habits such as; using a seat belt, getting exercise, eating right, getting enough sleep or wearing safety helmets?

All of the time		1
Most of the time		2
Some of the time		3
A little of the time		4
None of the time		5

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