The Creation and Evaluation of a Systems-Based Practice/Managed Care Curriculum in a Primary Care Internal Medicine Residency Program

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Abstract

Background: A systems-based practice (SBP) is defined by the Accreditation Council for Graduate Medical Education as "manifested by actions that demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value" (1). We developed a systems-based practice / managed care curriculum in a monthly workshop format, and integrated it into our Mount Sinai School of Medicine (Elmhurst) program in internal medicine. We evaluated the success of this workshop by utilizing both subjective and objective assessments of knowledge obtained by medical residents in attendance.

Methods: We surveyed our medical residents in order to assess their educational experiences in the workshop with regard to their comfort level with the use, application, and discussion with patients of 13 concepts central to current SBP issues, as well as to what extent they believed the workshop improved or enhanced this level of comfort (subjective assessment). Residents then completed10 *true/false* questions designed to measure their understanding of key SBP points (objective assessment). Their performance on this section was evaluated based on their individual experiences with the workshop.

Results: The mean comfort level for all 13 SBP topics increased via Likert scale from 2.79 before participation in the workshop, to 3.51 after participation. The mean comfort level improved for 11 out of the 13 topics (only "Medicaid" and "Medicare" did not show this improvement). Results of the 10-question test revealed that the mean percent correct score was lowest for those who did not attend the workshop (60% for interns and 67% for residents), intermediate for those who attended once (78%), and highest for those who attended more than once (84%). Of those who attended at least once, senior residents scored slightly lower than interns and junior residents (78% vs. 81%); the difference was not statistically significant.

Conclusion: The inclusion of an SBP curriculum can increase internal medicine residents' understanding of, and comfort with, important topics in managed care and SBP.

Key Words: Systems-based practice, managed care, core competency.

Background

A FAMILIARITY WITH SYSTEMS-BASED PRACTICE (SBP) is one of the six required core competencies of graduate medical education (1). As described by the Accreditation Council for Graduate Medical Education (ACGME), "residents are expected to demonstrate an awareness of and responsiveness to the larger context and system of health care, and the ability to effectively call on system resources to provide care that is of optimal value" (1). We have developed relevant sections in our ambulatory care curriculum in order to address this goal. These sections include community medicine, social aspects of medicine, legal medicine, occupational and environmental medicine, laboratory medicine, evidence-based medicine, as well as our curriculum in managed care. Additionally, we have borrowed material (with permission from the Tufts Health Care Institute's *Curriculum Guide on Managing Care: A Systems-Based Approach* and the Federated Council of Internal Medicine (FCIM) curriculum) to create a focused SBP curriculum most applicable and appropriate to our own practice and learning settings (2, 3). The goal of this SBP curriculum is to train residents to:

- understand, access and utilize the resources, providers and systems necessary to provide optimal care;

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- understand the limitations and opportunities inherent in various practice types and delivery systems, as well as those processes especially prone to error, and develop strategies to optimize care for individual patients;
- apply evidence-based, cost-conscious strategies for the prevention, diagnosis and management of disease; and collaborate with other members of the health care team to assist patients in dealing effectively with complex health care systems and to improve processes of care;
- understand the role of the system in facilitating medical errors, and suggest ways of improving the system as these problems are discovered; and
- apply their sense of professionalism and practice-based learning towards their ability to understand their own role in committing and/or admitting errors, and focus on improvement of themselves as well as the system within which they work.

Within the Mount Sinai School of Medicine (Elmhurst) Program in Internal Medicine, we created, implemented, and evaluated an SBP curriculum with the above goals in mind. The curriculum is distributed prior to a small group workshop, via self-learning slide presentations and other (written) syllabus materials on electronic files. This material is kept at a workstation available to all medical residents as well as on our program's intranet website. Then, in small group settings of 8–12 medical residents and a faculty facilitator, a senior medical resident leads a 90-minute discussion on the curriculum. These SBP workshops occur on a monthly basis, and over three years of medical residency each resident attends three such workshops, one of which he/she leads. Additionally, the senior resident completes a 25-question test prior to the workshop. After the workshop the facilitator evaluates the senior resident's presentation and test performance, and the results of both are included in the resident's file. What follows is a summary of our evaluation of the curriculum's effectiveness.

Methods

All 36 residents in our program as of June 2001 were asked to complete a questionnaire designed to assess their educational experiences in the SBP workshop over the preceding year. This questionnaire asked them to rank, on a 5-point Likert scale, their comfort level with the use, application, and discussion with patients of 13 concepts central to current managed care (MC) issues, and to then assess to what extent the SBP workshop improved or enhanced this level of comfort. They were then asked 10 *true/false* type questions designed to assess their understanding of key MC points (Table 1). Their performance on this section was evaluated based on their individual experiences with the MC workshop.

TABLE 1
True/False Assessment Test

1. In a capitated program, patients need to pay more if they see their doctor more.
2. Most Medicaid recipients in New York State are enrolled in managed care plans.
3. The first HMOs (health maintenance organizations) in the United States date to the mid-1980s.
4. A staff model HMO is generally a closed-panel HMO.
5. An IPA (independent practice association) is generally associated with an open-panel HMO.
6. In general, members of Medicaid managed care plans are able to visit sub-specialists without first seeing their primary care provider.
7. In New York, nurse practitioners are able to write prescriptions for medication.
8. Currently, Medicaid does not provide coverage for any prescription medication.
9. Medicare provides coverage for long-term home health care.
10. There are no "fee-for-service" patients seen in our Medical Primary Care Clinic.

Results

Twenty-two of 36 (61%) of medical residents responded to the survey. Of these, 9 of 22 respondents (41%, including 6 interns and 3 junior and senior residents) had never attended the MC workshop, 8 (36%) had attended a single workshop, and 5 (23%) had attended the workshop more than once. The 13 (59%) medical residents who had attended the workshop at least once included 6 senior residents and 7 interns and junior residents. The mean comfort level for all 13 MC topics increased from 2.79 before participation in the workshop, to 3.51 after participation (see Tables 2 and 3). Looked at individually, the mean comfort level was seen to improve for 11 of the 13 topics. Only "Medicaid" and "Medicare" did not show this improvement, due to their generally higher baseline levels of comfort.

The performance on the 10-question test was clearly related to experience in the workshop (Table 4). The mean percent correct score was lowest for those who did not attend the workshop (60% for interns and 67% for residents), interme-

TABLE 2
*Residents' Level of Comfort with Managed Care Terms **Before** Participation in Workshop*

Term	All Residents	PGY-1	PGY-2	PGY-3
Capitation	2.6	2.5	2.2	3.0
Fee-for-service	3.5	4.0	3.2	3.6
Co-payment	3.5	3.5	3.0	4.0
Deductible	2.8	2.5	2.0	3.7
Gatekeeper	2.4	3.0	2.2	2.4
HEDIS	1.6	1.5	1.6	1.6
Out-of-pocket cost	3.1	1.5	2.8	3.8
Pre-certification	2.7	1.5	2.6	3.2
HMO	3.3	3.5	3.0	3.4
PPO	2.4	3.5	2.8	1.6
HCFA	1.4	1.5	1.6	1.2
Medicaid	3.5	4.0	3.0	3.8
Medicare	3.5	4.0	3.0	3.7

PGY-1 = postgraduate year one
HEDIS = Health Employer Data and Information Set
HMO = health maintenance organization
PPO = preferred provider organization
HCFA = Health Care Financing Administration

TABLE 3
*Residents' Level of Comfort with Managed Care Terms **After** Participation in Workshop*

Term	All Residents	PGY-1	PGY-2	PGY-3
Capitation	3.5	3.5	2.8	4.2
Fee-for-Service	3.9	4.0	3.6	4.2
Co-payment	3.8	3.5	3.6	4.2
Deductible	3.5	4.0	2.8	4.0
Gatekeeper	3.5	3.0	2.8	4.4
HEDIS	3.2	3.0	2.4	4.3
Out-of-pocket cost	3.4	3.2	2.8	4.0
Pre-certification	3.3	2.5	2.6	4.2
HMO	3.7	4.0	3.0	4.2
PPO	3.7	4.0	3.0	4.2
HCFA	3.1	2.5	2.4	4.3
Medicaid	3.5	4.0	3.0	3.8
Medicare	3.5	4.0	3.0	3.8

See Table 2 for definitions of all abbreviations.

diate for those who attended once (78%), and highest for those who attended more than once (84%). Of those who attended at least once, senior residents scored slightly lower than interns and junior residents (78% vs. 81%); the difference was not statistically significant.

Conclusions

We have demonstrated that the creation and implementation for medical residents of an SBP curriculum via a workshop format can enhance both learning and comfort levels with a number of

TABLE 4
Resident Performance (Percent Correct) on 10-Question Test

Residents' Experience	n	Mean Percent Correct
Did not attend (PGY-1)	6	60
Did not attend (PGY-2, 3)	3	67
Attended once	8	78
Attended more than once	5	84
Attended (PGY-3)	6	78
Attended (PGY-1, 2)	7	81

PGY-1 = postgraduate year one

topics vital to this core competency. However, it is important to remember that, given the broad scope of the SBP competency, ranging from medical errors and performance improvement to Medicare and various payment systems, there is no clear consensus as to exactly what constitutes a complete SBP curriculum. One compelling argument would be to follow the Institute of Medicine and the Joint Commission on Accreditation of Health Care Organizations' lead in focusing on aspects related to patient safety (4, 5). Both encourage a focus on patient-centeredness, enhanced systems' communication, and delivery of care that is effective, efficient, and equitable for all patients. Quality and consistency are recurrent themes.

A greater awareness of one's role within the health care system generates a clear opportunity to contribute to the system's improvement. Physicians, who are frequently aware of barriers to their patients' treatments, as well as the processes especially prone to error, are perfectly positioned to offer and execute ideas that can lead to positive change. And physicians who are aware of these issues are better able to offer optimal care to individual patients in a complex delivery system. However, it has been very difficult to effectively teach these SBP topics to residents. Residents often note being "bored" with these topics, seeing them as a diversion from learning "real" medicine. This presents great challenges to educators in designing an adult learner centered curriculum. The idea of enlisting the residents themselves in the process, and providing them with the knowledge needed to lead a small group workshop presentation, appears to create a more engaging learning atmosphere for workshop attendees. The process effectively empowers one member of the peer group, allowing that individual to become the champion of a new topic in a way that elevates the interest level of everyone involved. This appears to us to be the key to our success. The specific content chosen for the curriculum is easily changeable. And there are certainly differences of opinion as to ex-

actly what topics are most critical to optimum competency in SBP. But the approach of "training a trainer" resident appears to be one secret of our success that could be easily duplicated, despite differences in the specifics of the didactic material.

One of our senior residents became so fascinated by SBP that upon graduation she enrolled in a master's program in public health, the first to do so in our program's history. Several others have expressed greater confidence in their ability to better select a practice that is right for them. Perhaps if we teach them correctly, as senior residents, they will be better able to appreciate that knowing how to deliver medical care is as important as actually knowing what to deliver.

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