

Family Practice and Internal Medicine Clinical Judgment in a University Setting

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There were no significant differences between family practice and internal medicine residents in the proportion of total diagnoses that were reasonable (72 percent and 77 percent, respectively) and unreasonable (14 percent and 15 percent, respectively) or average number of consultations requested per examination (.15 and .16, respectively). There was a significant difference between the two types of physicians in the average number of laboratory tests requested per examination (1.42 per family practice and 1.88 per internal medicine) and average number of x-ray examinations requested per examination (0.35 for family practice and 1.02 for internal medicine). The average length of examination for internal medicine tended to be longer than for family practice. Although generalizability of this study is limited, the results suggest that there may be important differences in the practice patterns of family practice and internal medicine with implications for training programs.

Following the application of the standardized patient technique to clinical judgment in a family practice residency,¹ the technique was applied to internal medicine residents to examine differences between the two disciplines. In this article clinical judgment is defined as the whole breadth of clinical decision making from the consideration of what history to obtain and physical examination items to perform, to the formulation of an assessment and a health care plan. Two general approaches have been used to develop information on practice differences between family practice and internal medicine. The first is a practice survey in which a large number of physicians are queried regarding such items as most common diagnoses, length of office visit, and number of x-ray and laboratory examinations ordered.^{2,3} The second approach directs more attention to the process of medical diagnostic thinking by physicians.^{4,5}

In 1984 Merenstein² reported information collected by chart review and personal interview of board-

certified, residency-trained internists and family physicians. Noren et al,³ in 1980, reported on data gathered through the National Ambulatory Medical Care Survey, a written survey sent to family practice and general practice physicians and internists. The following were among the consistent differences found between the disciplines: family physicians spent less time per patient encounter than did internists; laboratory and x-ray studies were ordered more often by internists than by family physicians, and family physicians referred to other specialists at a lower rate than did general internists. These significant differences led Merenstein to conclude, "primary care is not the same when practiced by internists or family practitioners."

Although a chart review has an advantage over a survey instrument in that the researcher does not depend upon individual recall, both rely upon a written record that may not be an accurate reflection of all that happened in the patient encounter. A second approach (discussed below) attempts to focus on the diagnostic methods of physicians by methods other than the survey, interview, or questionnaire.

In 1980 Scherger et al⁴ used written simulated patients to compare the diagnostic methods of family practice and internal medicine residents. The family practice group was found to select significantly fewer physical examination items ($P < .001$) than the internal

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medicine group in those patients seen in common. Smith and McWhinney in 1975⁵ similarly studied two groups of physicians who were presented with clinical problems by a programmed live patient, although the physician was not blinded to the identity of the patient and the situation did not simulate a clinical patient encounter. In two thirds of these cases family physicians inquired to a greater extent about mental status and life situation than the internists. No significant differences were found in the final diagnoses reached by the two groups.

Previous studies attempting to observe clinical judgment of physicians have been limited by the study style utilized.⁶⁻⁹ In direct observation the physician subject is not blinded to that observation. Unblinded studies using a live simulated patient or studies using paper simulation of patients both collect data from a known artificial encounter. The standardized patient technique, as described earlier,¹ allows blinded observation of a physician in an encounter indistinguishable from real practice. This paper reports information gathered on family practice and internal medicine resident practice patterns in a university setting using the standardized patient technique.

METHODS

POPULATION

Family practice and general internal medicine residents at the University of Arizona Health Sciences Center in Tucson comprised the populations under study. Residents from all three years of each program were included. The ratios of first-, second-, and third-year residents to total residents for family practice and internal medicine were similar. Residents knew that the study utilized standardized patients but were blinded as to their identity and the timing of their clinic appointments.

Over the study period (1981 to 1983) a total of 29 family practice residents with 62 standardized patient encounters were studied. Each standardized patient was scheduled for a new, brief (20-minute) appointment. During the study 33 individual internal medicine residents had a total of 50 encounters with standardized patients. Each standardized patient was scheduled into the internal medicine clinic for a brief (30-minute) new appointment.

THE STANDARDIZED PATIENT

The development of the standardized patient program and training of individual standardized patients has been described in depth in an earlier paper.¹ Standardized patients are an outgrowth of the patient instructor programs, which were also developed at the

University of Arizona.¹⁰⁻¹⁷ Four standardized patients were utilized in this study, one each with early rheumatoid arthritis, fibrositis, low back pain, and degenerative joint disease. Each patient had a fixed set of historical information and physical examination information available to be elicited. Reliability of the standardized patient is cultivated so that variations in information gathered by the physician related to physician activities, not to the standardized patient. Data on each encounter are gathered by checklists completed by the standardized patient after the visit. Coaching of clinic staff and manipulation of the chart to preserve the standardized patient identity followed methods described in an earlier study.¹

DATA COLLECTION

Three checklists were developed, validated, and standardized for each of the four standardized patients.¹ Information for the first two checklists derived from a detailed history and a physical examination performed by the study physicians (a family physician and a rheumatologist). The history checklist included all information likely to be relevant to the disease and was divided into sections such as "onset," "present symptoms," and "influencing factors." The physical examination checklist included items to measure the assessment and plan for care as outlined to the standardized patient by the physician. The following three items were studied: the physician's ability to state the diagnosis, the physician's ability to state the prognosis, and the physician's ability to give the appropriate patient education. Under "care plan" was listed such information as medication, diagnostic studies, and return visit.

A third checklist was then developed from the first two. This last checklist was designed to be an audit of the progress note. It enabled the study physicians to examine the physician's ability to develop an assessment and treatment plan. This third checklist was also used to determine the proportion of acceptable or inappropriate diagnoses for each encounter.

DATA ANALYSIS

Performance for each item was determined for the family practice and internal medicine resident groups. Differences were reviewed for significance using either a test of independent proportions or a test of independent means. Unless otherwise stated, all significant findings have a probability of less than or equal to .05. In addition, analyses were conducted for each standardized patient to study differences in performance for each specific item across residency year (eg, variation in performance from first to second

year) in anticipation that performance might differ according to year in residence.

RESULTS

Information collected from the resident subjects demonstrated that the data collected by a standardized patient are credible (99 percent of the subjects found the standardized patients to be believable as patients). Residents similarly were consistently blinded (96 percent were unaware that the patient was a standardized patient).

Each of the four standardized patients encountered about the same number of family practice and internal medicine residents. The fibrositis standardized patient was the single exception, having 26 visits with family practice residents and 15 visits with internal medicine residents.

There were insufficient numbers of standardized patient visits to each specialty under each of the four diagnoses to determine whether there were significant differences among standardized patient diagnoses, either within or between specialties. For this reason, similar types of questions and physical examination maneuvers across the four standardized patients were aggregated under general titles such as "time of onset" or "range of motion."

HISTORY TAKING PERFORMANCE

The history checklist contained five subsets of questions: initial occurrence, past care, interim events, current description, and influencing factors. In the following narrative the first of two percentages always relates to family practice performance, and the second to internal medicine performance. Table 1 displays these comparisons from the history checklist.

Significant differences ($P \leq .05$) were found between family practice and internal medicine on questions addressing interim events (67 percent, 48 percent) and current events as well as joint inflammation (45 percent, 68 percent), involvement of joints other than that identified in the chief complaint (56 percent, 75 percent), and what makes symptoms better (59 percent, 41 percent). All physicians addressed the issue of chief complaint. While most physicians (91 percent, 100 percent) elicited when the symptoms began, significantly fewer (68 percent, 57 percent) addressed the characteristics of initial symptoms. All items within "past care" were addressed less than 60 percent of the time. Very few residents sought past medical records (7 percent, 20 percent).

A high proportion (89 percent, 89 percent) of inquiries addressed a general description of symptoms. Detailed questions regarding those symptoms,

TABLE 1. PERCENTAGE OF HISTORY QUESTIONS ASKED BY SPECIALTY

History Questions	Family Practice (%)	Internal Practice (%)
Chief complaint	100	100
Initial occurrence		
When symptoms began	91	100
Initial symptoms	68	57
Past care		
Was medical care sought	41	39
Physician diagnosis	41	53
Laboratory tests at onset	20	27
Treatment at onset	26	26
Treatment side effects	57	60
Past medical records sought	7	20*
Interim		
What has happened since onset	67	48**
Current		
Description of symptoms	89	89
Joint inflammation	45	68*
Other joint involvement	56	75*
Time of day symptoms worse	41	52
Stiffness	31	36
Joint tap performed	50	58
Family history, similar problems	45	62*
Influencing factors		
What makes symptoms worse	61	50
What makes symptoms better	59	41*
Current medications	71	83
Effect of medication	57	56
Dosage of medication	41	41
Interfere with activities	24	25
General emotions	14	15
General health	80	89
Anything else	24	20

*Significant at $P < .05$

**Significant at $P < .01$

however, were recorded less frequently. For example, questions addressing stiffness were noted least often (31 percent, 36 percent).

Although residents inquired about general health (80 percent, 89 percent), markedly fewer asked whether the major complaint interfered with activities (24 percent, 25 percent) or whether emotional difficulties were being encountered (14 percent, 15 percent). A moderately high percentage of residents inquired about current medications (71 percent, 83 percent) yet markedly fewer addressed the effect of the medication

TABLE 2. PERCENTAGE OF PROCEDURES ATTEMPTED DURING PHYSICAL EXAMINATION BY SPECIALTY

Physical Examination Procedures Attempted	N = 62 Family Practice (%)	N = 50 Internal Medicine (%)
Introduction to examination	82	88
Ask patient to disrobe	75	84
Inspection of involved area(s)	68	62
Palpation of involved area(s)	71	79
Range of motion	44	41
Muscle wasting	41	41
Exploration for systemic joint involvement	46	54
Diagnostic summary disclosure	98	96
Prognosis disclosure	76	74
Patient education	73	49*
Plan for return to clinic	95	96
Treatment instructions	52	45
Referrals made	13	7

*Significant at $P < .01$

(57 percent, 56 percent) or the dosage (41 percent, 41 percent). Very few (24 percent, 20 percent) solicited additional comments or questions from the standardized patient.

PHYSICAL EXAMINATION PERFORMANCE

The physical examination checklist contains both procedural items such as "introduction to examination" or "patient education" and physical maneuvers such as "inspection of involved areas." A list of these items is presented in Table 2. Of the items in the physical examination checklist, only "patient education" shows a significant difference between family practice (73 percent) and internal medicine (33 percent). The percentage of attempted items otherwise tends to fall into three major groups, as follows.

A group of items that physicians in both family practice and internal medicine performed a high proportion of the time were procedural. The first is the "introduction to the examination," which implies that most physicians do have a transition to the examination rather than to proceed to physical contact without notice. The second was the diagnostic summary. Both family practice and internal medicine conveyed a diagnosis to the patient nearly 100 percent of the time. Similarly, both disciplines provided a plan for return to the clinic about 95 percent of the time.

A second group of items was attempted a moderately high percentage of the time. There was no significant difference between the two disciplines.

Items in this category included "ask patient to disrobe," "inspection of involved areas," "palpation of involved areas," and "prognosis."

A third group of items, which was attempted a moderately low percentage of the time, includes three physical examination items: "range of motion," "muscle wasting," and "exploration for systemic joint involvement." Both family practice and internal medicine residents gave treatment instructions during approximately one half the examinations (52 percent, 45 percent). The final item on the physical examination checklist was "referrals made." Frequency of request by individual resident of one or more referrals was 13 percent for family practice and 7 percent for internal medicine residents. These were the least performed of all of the items ($P > .05$). The average number of consultations requested per examination showed no significant differences (.15, .16) between specialties.

Procedural items were recorded as done or not done on the checklist. Further data were collected on the physical examination maneuvers. Those maneuvers that were attempted were subdivided into either an "adequately performed" or an "inadequately performed" category. There did not appear to be any correlation between how often a procedure was attempted with how adequately the procedure was performed. For example, inspection of involved areas was performed adequately 96 percent and 92 percent of the time when attempted by family physicians and internists, respectively, whereas it was attempted by only 68 percent and 62 percent of the respective specialties. Inspection for muscle wasting was performed 100 percent adequately when done by family physicians and 95 percent by internists but was attempted by only 41 percent of each group. While only 44 percent of the family practice group and 41 percent of the internal medicine group attempted range of motion, 86 percent of family practice group performed it adequately and 78 percent of internal medicine group did the same.

More differences between the two disciplines show up in the portions of the encounter following collection of information than in techniques of obtaining history or performing physical examination items. It would appear that family physicians tend to emphasize patient education, while internists tend to perform a more detailed examination across the board. Family physicians also order significantly fewer radiologic procedures (0.35 vs 1.02 per examination) and laboratory tests (1.42 vs 1.88 per examination).

The time per encounter for a family practice new visit also was shorter (although not significantly so) than for internal medicine. It would appear that the difference in length of examination between family practice and internal medicine cannot be explained simply on the basis of the difference in scheduled

length of examination: 20 vs 30 minutes. Despite the above differences in number of radiologic procedures, number of laboratory tests, and duration of examination, there was no significant difference in the proportion of total diagnoses that were considered reasonable between family practice (72 percent) and internal medicine (77 percent).

DISCUSSION

Standardized patients provide a technique by which physician practice may be measured and evaluated. In this study, family practice and internal medicine resident physicians in a university hospital setting were studied as to their care of simple rheumatic problems during new, brief physician encounters. The largest difference between the two groups is seen in the attention to patient education provided (73 percent, 33 percent). This difference would be compatible with family medicine's avowed commitment to patient education. In other areas of information collection from history and physical examination items, the two groups parallel each other closely.

Other significant differences were seen. Although the present study reports on a much smaller group of family physicians and internists than either the article by Noren et al³ or Merenstein,² the results are similar in major categories. In each case, family physicians spent less time per patient encounter than did internists. Consistently laboratory studies and x-ray examinations were ordered a greater percentage of the time by the internist than by the family physician. All three sources indicate fairly similar attention to psychosocial issues by family physicians and internists. With the avowed commitment of family practice to behavioral issues, it is somewhat surprising to see that a difference is not apparent.

In both of the aforementioned studies family physicians referred to other specialists at a lower rate than did general internists. In the present study referral rates were virtually identical (.15, .16). That this study was conducted with residents and the other two with practicing physicians may account for the difference in referral rates. The low rate of referral is consistent with data showing that the majority of simple rheumatic disease is handled by primary care physicians.^{18,19} The standardized patient receiving the most referrals was a woman with degenerative arthritis of the hands, which because of an inflammatory component, looked similar to rheumatoid arthritis. Since her disease was not one commonly seen by primary physicians, it is not surprising that more referrals were requested.

In obtaining the history, internists consistently asked a greater proportion of questions pertaining to

current symptoms. In the physical examination, internists were slightly more likely to palpate the affected area and to check for systemic joint involvement, although the differences were not significant. Both disciplines showed deficiencies in checking range of motion and muscle wasting. The most consistent finding in this area is that when a physician of either specialty attempted a physical examination maneuver, he was able to do it adequately. One wonders whether those who do not have an adequate skill avoid attempting it. Perhaps the clearest educational implication to be drawn from this study is that the items which are performed and yet performed inadequately comprise a legitimate arena for corrective educational effort. The standardized patient is a technique to identify areas needing improvement. Whether using the standardized patient is the most cost effective technique was not addressed.

Multiple questions and issues are raised by these data and those in similar articles. The question as to the comparative clinical capabilities of the two disciplines is not answered. Only a new, brief encounter was studied, and outcome was not measured. However, this study does at least suggest that it may be possible to arrive at the same diagnosis with less expenditure of resources, and that perhaps such diagnostic skills may be taught. Before changes are made, such goals as patient satisfaction, quality of care, or cost containment need to be clarified.

In the present study, internal medicine residents requested more diagnostic studies, performed a more extensive examination, and spent more time per encounter than family practice residents. One might argue that more extensive diagnostic studies provide a more secure basis on which to place a diagnosis. Although plausible, there was no significant difference in proportions of total diagnoses that were considered reasonable. If physicians are to thrive in the financial environment of the future, there will need to be attention to teaching decision making that puts a premium on arriving at a correct diagnosis and treatment plan with a minimum of cost.

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