

Patient Compliance: The Effect of the Doctor as a Therapeutic Agent

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This paper is a review of the available literature on patient compliance with medical regimens. An effort is made to focus on those features or characteristics associated with compliance or noncompliance that are clinically relevant for the practicing physician. These include the intelligence of the patient, the patient's knowledge of his disease, the complexity of the medical regimen, the influence of the family, the health belief model, and the doctor-patient relationship. From this review of research data, 12 concrete suggestions are presented for the purpose of enhancing patient compliance and enabling the doctor himself to be more effective as a therapeutic agent.

In 1937 at a meeting of the American College of Physicians, W. R. Houston read a paper entitled "The Doctor Himself as a Therapeutic Agent."¹ This is an articulate and almost poetic discussion of what George Engel² has recently called the true basic science of clinical medicine. On critical review, however, this paper must be classified as rhetorical and anecdotal. Those of us who are caught up in the family medicine movement are the most recent to espouse the principles described by Houston. All too often, we rely heavily on rhetoric and anecdote. Surely the state of our art has advanced over the past 40 years.

There are three major areas in which the physician and his person-

ality exert a therapeutic effect. First, the physician comforts the distressed. His warm, confident manner reassures the "worried-well" and symptoms disappear. Secondly, the manner in which the physician dispenses his medication exerts a powerful effect. It is now recognized that complicated double-blind, cross-over studies must be designed to truly assess the efficacy of a pharmacologic agent. Such studies are needed to sort out the physician's contribution to the placebo effect. Thirdly, the physician and the doctor-patient encounter may determine whether or not the patient and his family follow a recommended medical regimen. The doctor himself effects patient compliance. This paper will examine the last aspect of the physician's therapeutic effect, that is, his role in patient compliance.

Statement of the Problem

Despite the fact that Americans pay dearly for their medical advice, frequently they do not follow it. How

much of a problem is there with noncompliance? Schwartz³ studied a random sample of elderly patients attending the General Medical Clinic at New York Hospital. In this project, a medication error was defined as: (1) an agent taken by the patient but not ordered by the doctor (not including cathartics or aspirin and including alka-seltzer only if the patient was on a low salt diet), (2) a drug ordered by the doctor but not taken by the patient, and (3) a drug ordered by the doctor but taken in incorrect dosage by the patient. It was demonstrated that 59 percent of this patient population was making at least one medication error. Furthermore, it was judged that 26 percent of these errors were potentially serious.

Noncompliance is not limited to the elderly. Bergman⁴ studied a clinic population of children who were given a ten-day course of penicillin for a variety of conditions. Using a count of the pills not taken, it was shown that 44 percent were receiving penicillin on the third day, 25 percent were receiving penicillin on the sixth day, and only 18 percent were receiving penicillin on the ninth day.

Noncompliance is also not limited to the lower socioeconomic group. Charney,⁵ in collaboration with private practitioners, studied a group of middle-class patients who were given a ten-day course of penicillin for otitis media or pharyngitis. Urine samples were obtained and analyzed for the presence or absence of penicillin. Eighty-one percent of the patients were taking the penicillin on the fifth day and only 56 percent were taking it on the ninth day. Another 13 percent were erratic takers at the end of therapy.

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Patient noncompliance with therapeutic regimens is a significant problem. It is the responsibility of the health-care system to address this problem, and it is the responsibility of the individual physician to realize that his task is not completed with the writing of a prescription. This paper will review a number of features or characteristics that have been shown to influence patient compliance. From this review of the literature one can develop concrete suggestions for how the practicing physician, through his own behavior, can enhance patient compliance.

Factors Influencing Patient Compliance

Intelligence of the Patient

The intelligence of the patient does not correlate, positively or negatively, with compliance. In an analysis of dropouts from an inner-city hypertension clinic, Finnerty⁶ felt that it was the intelligent patients who stopped coming to the clinic for anti-hypertensive therapy. When intelligence was measured with a Wechsler-Bellevue Scale, Winokur⁷ found that it did not correlate with adherence to a diet regimen or to vocational functioning in a group of 38 patients receiving chronic hemodialysis. In a study of psychiatric outpatients who failed to take their medication, Willcox⁸ found that intelligence was not a reliable predictor of compliance. Vincent⁹ demonstrated that the level of formal education did not correlate with whether or not patients took prescribed eye drops for glaucoma.

Patient Knowledge of Disease

Available evidence suggests that the patient's knowledge of his disease does not correlate with compliance. In the Vincent⁹ study of glaucoma patients, those who correctly took their medication *did* possess correct information about the action of the eye drops and *did* know that glaucoma is a disease involving elevated eye pressure. Nevertheless, awareness that glaucoma can cause blindness, and that the eye drops can prevent this blindness did not discriminate between compliers and

noncompliers when these two facts were taken individually and as pairs. In the Bergman⁴ study already mentioned, interviews with the families demonstrated that the vast majority possessed adequate knowledge of the diagnosis and knew that the medication was penicillin. In addition, nearly all were aware that the doctor advised them to take the drug for ten days. Nevertheless, only a small fraction of these patients received the ten-day course. An important comment on human nature is hidden in this paper. Although only 18 percent of these patients took the medication as directed, 83 percent insisted that the patient had been given the entire course of penicillin. Gordis¹⁰ found no relationship between patient knowledge of rheumatic fever and compliance with long-term antistreptococcal prophylaxis. He also demonstrated that there was no correlation between patient knowledge of penicillin and compliance. Weintraub¹¹ demonstrated that whether or not a patient knew why he should take digitalis (Digoxin) on a regular basis had no correlation with his doing so. Furthermore, by simply asking the question, "How often do you miss a dose of Digoxin?" and grouping all patients who admitted to a single omission, he was able to identify the patients with a non-therapeutic serum Digoxin concentration. A large percentage of those patients admitting to a single omission had a low digoxin level. Watkins¹² found that those patients with diabetes who had the highest cognitive knowledge of their disease also had the poorest control. Furthermore, the longer a patient had been receiving insulin the more likely he was to make an error in insulin dosage. The assumption must be discarded that the patient who has been living with his disease for some years, because he knows how to do so, does in fact take good care of himself.

Complexity of the Medical Regimen

Conventional wisdom suggests that the more complicated a medical program is, the greater the likelihood that a mistake will be made. A number of studies confirm this notion.¹³⁻¹⁵ A study by Curtis¹⁶ documents the degree to which complexity contributes

to noncompliance. In her study of 26 elderly patients, there was a total of 90 prescribed medications. Twenty-seven medications were taken inaccurately and seven were omitted completely. Fifteen of the 16 patients who made medication errors were taking more than three medications. All the patients with five or six medications a day were making one error consistently.

Influence of the Family

Heinzelmann¹⁷ studied the effect of wives' attitudes on their husbands' adherence to a program of physical activity. A group of 239 sedentary middle-aged men at high risk for developing coronary heart disease because of an increased blood pressure or an increased serum cholesterol level were advised to participate in a supervised physical activity program requiring one hour per day, three days per week. If the wife's attitude towards this participation was positive there was an 80 percent chance that the husband's adherence would be good to excellent. If the wife's attitude was neutral or negative there was only a 40 percent chance that the husband would participate. Oakes¹⁸ studied a group of patients with rheumatoid arthritis. Each was fitted with a static resting splint for the hand and wrist and was asked to put this on upon retiring and wear it throughout the night. For both males and females, and for both middle-upper and lower social classes, the compliance with this splint regimen was markedly improved when family members expressed expectation that the patient would follow the doctor's advice. Encouragement from family members enhances compliance.

Influence of Family Stability

Dr. Alpert¹⁹ demonstrated that those patients who broke their appointments at the Boston Children's Hospital Medical Center Outpatient Department were more likely to have shown evidence of social disorganization. Diamond²⁰ demonstrated that those patients who failed to participate in a rehabilitation program at

Bellevue Hospital were characterized by having poor or nonexistent relationships with their families. Elling²¹ showed that low participation in a rheumatic fever prophylaxis program was related to evidence of relationship problems such as divorce or separation, obvious conflicts in the home requiring police action, and hospitalization for mental illness. In addition, recent residential moves correlated with noncompliance. White²² suggests that those families which are hard to reach by an offered comprehensive care program were characterized by illegitimacy, residential mobility, and family disorganization. Schwartz³ studied the medication errors made by elderly, chronically ill patients and showed that the error makers were more likely to be widowed, divorced, separated, or living alone. Family disorganization inhibits compliance.

Health Belief Model

The two major features important to the health belief model are the patient's perceived susceptibility to, and the severity of, a given disease. Heinzmann²³ demonstrated that penicillin prophylaxis behavior was related to the subjective estimate of the likelihood of another attack of rheumatic fever. In the study by Becker²⁴ it was shown that those mothers who felt that the child was resusceptible to otitis media would more often give the medication properly. In the Gordis¹⁰ study both the compliers and the noncompliers believed that the child could have another attack of rheumatic fever. However, it was the compliers who felt that another attack would be serious. In the Charney⁵ study, the mother's estimate of the severity of disease determined whether or not penicillin was given as prescribed. In Becker's²⁴ study of a group of children with otitis media, the administration of the medication and the keeping of follow-up appointments correlated with the mother's perception of potential resusceptibility to otitis media and the severity of the present illness. There is another comment on human nature hidden in this paper. The mother was more likely to administer the medication but not necessarily keep the follow-up appointment, if the child's illness interfered with her social role.

The Doctor-Patient Relationship

In the Charney⁵ study it was shown that the child was more apt to receive a full course of penicillin if it had been prescribed by his own physician. When a physician's associate prescribed the penicillin the compliance rate dropped significantly. In Becker's²⁵ study the extent to which the mother reported usually seeing the same physician on clinic visits correlated significantly with all the measures of compliance, suggesting that physician continuity does have an ameliorative effect on compliance. Reorganization of a hypertension clinic⁶ with an appointment system and an effort to have patients see one doctor on each visit reduced the dropout rate from 42 percent in 1966 to 1969 to eight percent in 1970 to 1971.

Davis²⁶ has analyzed the doctor-patient interaction. Outpatient encounters were audio-recorded and analyzed according to interactional process. Thirty-seven percent of all patients were noncompliant, and this noncompliance was found to be directly related to deviant behavior in the doctor-patient interaction. Good compliance was associated with doctor-patient agreement, demonstrated release of tension during the encounter, the patient's actively seeking the doctor's opinion, and the doctor's offering considerable explanation. Poor compliance was associated with the patient's remaining tense throughout the encounter, the doctor's exhibiting disagreement, formality, or rejection, and the doctor's asking for information without giving any feedback.

The beneficial effects of repeated visits to the doctor were demonstrated in a study by Lund²⁷ which measured serum diphenylhydantoin levels in ambulatory patients with epilepsy. All patients were given identical mg/kg doses of diphenylhydantoin upon discharge from the hospital. One group was not seen for 12 weeks. Another group was seen at two, six, and 12 weeks. In both groups, serum diphenylhydantoin levels were measured. At two weeks there was a significant number who had not yet reached a therapeutic serum level. The dosage was not changed but the patient was made aware of the low level and was reminded to take the medication as prescribed. At six weeks the number of patients with sub-optimal serum levels was reduced. These pa-

tients were once again encouraged to take the medication. At 12 weeks the vast majority of the patients in this group had achieved a therapeutic level. The group that was not seen since discharge had an unacceptable number of patients with sub-optimal serum levels. Frequent contact with the physician and repeated admonition to take the medicine clearly enhanced the therapeutic goal of maintaining an effective blood level of diphenylhydantoin. In a study of the therapeutic styles of psychotherapists, Howard²⁸ found that those doctors with low dropout rates were more positive in dealing with patients, more active and involved in a therapeutic program, had a more personalized interview structure, and had a greater liking for their patients and, generally, a warmer relationship with them. A finding in Elling's²¹ study of patient participation in a comprehensive pediatric program warrants emphasizing. Whether or not the child received the prescribed medication was significantly related to the mother's reflexive self-concept. The RSC is the mother's opinion of herself from the point of view of other specific persons — in this case, the clinic doctors. In other words, compliance can be improved by having the mother feel that the doctor thinks well of her.

Suggestions for the Physician

This review of research data can be translated into 12 concrete suggestions for the practicing physician. Adherence to these suggestions should enhance compliance and enable the doctor himself to be more effective as a therapeutic agent.

1. Remember that intelligent, upper-class patients also fail to follow medical advice and need your encouragement.

2. The patient who insists that he does everything you recommend is subject to occasional indiscretions; the one who admits to a rare mistake may well be markedly noncompliant.

3. Do not assume that the patient who has lived with his illness for many years is taking good care of himself. He, too, requires relatively frequent visits with renewed encouragement and re-enforcement.

4. Whenever possible avoid complex

regimens; if unavoidable, take the time to write out instructions or develop flow charts.

5. Bring family members into the consultation room; encourage family members to participate in the medical regimen.

6. Spend more time with the socially disorganized family (widowed, divorced, lower socioeconomic group). Seek outside support (public-health nurse, homemaker groups, etc) for this group.

7. Avoid minimizing the seriousness or the potential seriousness of the illness.

8. Emphasize the susceptibility to recurrence if the medical regimen is not followed.

9. Provide as much continuity of care as is humanly possible. If your surrogate sees a high-risk patient at night, a call from you the next morning may enhance compliance.

10. Try to minimize tension between you and the patient, provide explanation and feedback, and avoid formality and rejection.

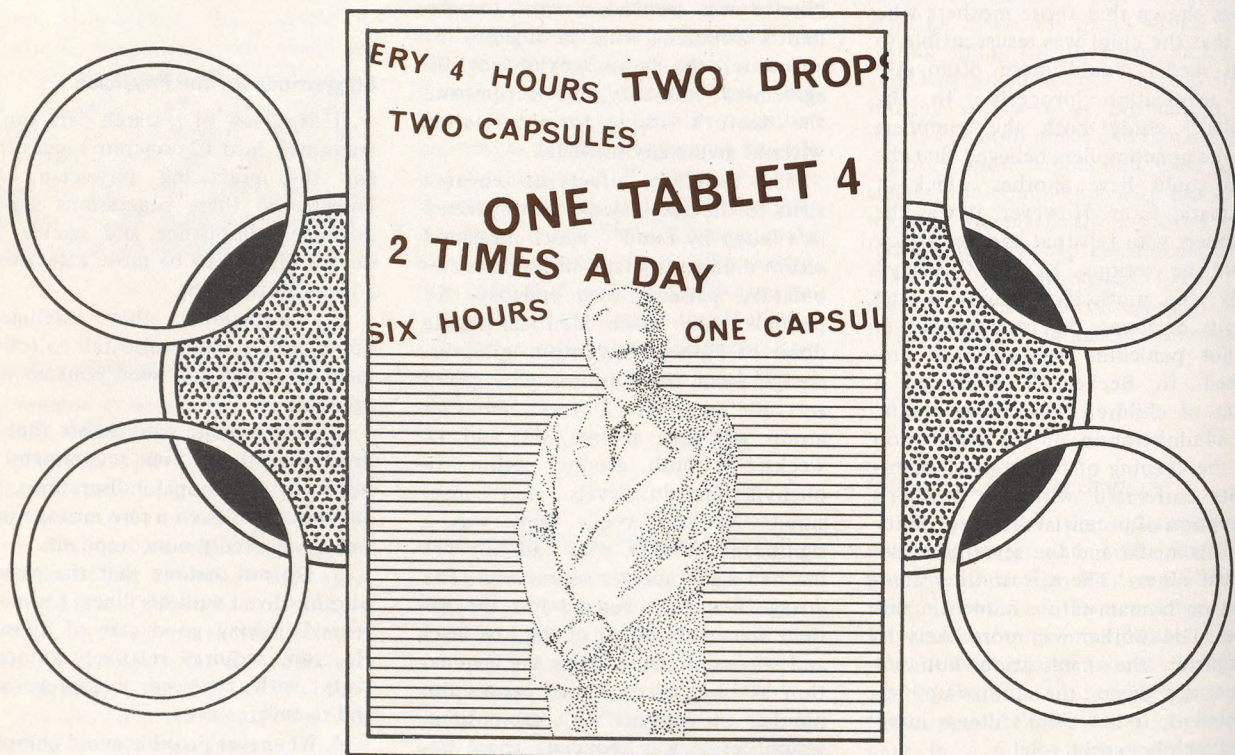
11. Do not hide your warm, genuine concern for the patient.

12. Make every effort to bolster the mother's or patient's opinion of self.

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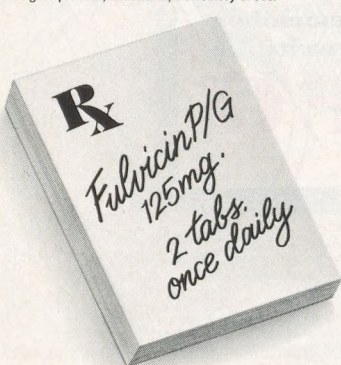
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Clinical Considerations: INDICATIONS FULVICIN P/G Tablets are indicated for the treatment of ringworm infections of the skin, hair, and nails, namely: tinea corporis, tinea pedis, tinea cruris, tinea barbae, tinea capitis, tinea unguium (onychomycosis) when caused by one or more of the following genera of fungi: *Trichophyton rubrum*, *Trichophyton tonsurans*, *Trichophyton mentagrophytes*, *Trichophyton interdigitale*, *Trichophyton verrucosum*, *Trichophyton megnini*, *Trichophyton gallinae*, *Trichophyton crateriform*, *Trichophyton sulphureum*, *Trichophyton schoenleinii*, *Microsporum audouinii*, *Microsporum canis*, *Microsporum gypseum*, and *Epidermophyton floccosum*. Note: Prior to therapy, the type of fungi responsible for the infection should be identified. The use of this drug is not justified in minor or trivial infections which will respond to topical agents alone. Griseofulvin is not effective in the following: Bacterial infections, Candidiasis (Moniliasis), Histoplasmosis, Actinomycosis, Sporotrichosis, Chromoblastomycosis, Coccidioidomycosis, North American Blastomycosis, Cryptococcosis (Torulosis), Tinea versicolor, and Nocardiosis.

CONTRAINDICATIONS This drug is contraindicated in patients with porphyria, hepatocellular failure, and in individuals with a history of hypersensitivity to griseofulvin. **WARNINGS** Prophylactic Usage: Safety and efficacy of griseofulvin for prophylaxis of fungal infections have not been established. **Animal Toxicology** Chronic feeding of griseofulvin, at levels ranging from 0.5-2.5% of the diet, resulted in the development of liver tumors in several strains of mice, particularly in males. Smaller particle sizes result in an enhanced effect. Lower oral dosage levels have not been tested. Subcutaneous administration of relatively small doses of griseofulvin once a week during the first three weeks of life has also been reported to induce hepatomata in mice. Although studies in other animal species have not yielded evidence of tumorigenicity, these studies were not of adequate design to form a basis for conclusions in this regard. In subacute toxicity studies, orally administered griseofulvin produced hepatocellular necrosis in mice, but this has not been seen in other species. Disturbances in porphyrin metabolism have been reported in griseofulvin-treated laboratory animals. Griseofulvin has been reported to have a colchicine-like effect on mitosis and cocarcinogenicity with methylcholanthrene in cutaneous tumor induction in laboratory animals. **Usage in Pregnancy.** The safety of this drug during pregnancy has not been established. **Animal Reproduction Studies:** It has been reported in the literature that griseofulvin was found to be embryotoxic and teratogenic on oral administration to pregnant rats. Pups with abnormalities have been reported in the litters of a few bitches treated with griseofulvin. Additional animal reproduction studies are in progress. Suppression of spermatogenesis has been reported to occur in rats, but investigation in man failed to confirm this. **PRECAUTIONS** Patients on prolonged therapy with any potent medication should be under close observation. Periodic monitoring of organ system function, including renal, hepatic, and hematopoietic, should be done. Since griseofulvin is derived from species of penicillin, the possibility of cross sensitivity with penicillin exists; however, known penicillin-sensitive patients have been treated without difficulty. Since a photosensitivity reaction is occasionally associated with griseofulvin therapy patients should be warned to avoid exposure to intense natural or artificial sunlight. Should a photosensitivity reaction occur, lupus erythematosus may be aggravated. Griseofulvin decreases the activity of warfarin-type anticoagulants so that patients receiving these drugs concomitantly may require dosage adjustment of the anticoagulant during and after griseofulvin therapy. Barbiturates usually depress griseofulvin activity, and concomitant administration may require a dosage adjustment of the antifungal agent. **ADVERSE REACTIONS** When adverse reactions occur, they are most commonly of the hypersensitivity type, such as skin rashes, urticaria, and rarely, angioneurotic edema, and may necessitate withdrawal of therapy and appropriate countermeasures. Paresthesias of the hands and feet have been reported rarely after extended therapy. Other side effects reported occasionally are oral thrush, nausea, vomiting, epigastric distress, diarrhea, headache, fatigue, dizziness, insomnia, mental confusion, and impairment of performance of routine activities. Proteinuria and leukopenia have been reported rarely. Administration of the drug should be discontinued if granulocytopenia occurs. When rare, serious reactions occur with griseofulvin, they are usually associated with high dosages, long periods of therapy, or both.

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cian performance. They should be included on any residency committee which "evaluates programs and processes and assesses their validity and utility."

In fact, patient feedback should be incorporated into the evaluative process in all stages of physician training and practice.

Sandy Mishkin, MEd
Steve Seifert, MD
Tucson, Arizona

The preceding letter was referred to Dr. Corley who responds as follows:

Contrary to what my article may have implied, our residency shares your correspondents' concern for the recipients of the health care delivered by our residents. Among the qualities of medical competency our program attempts to evaluate, the paper specifically included "the achievement of patient satisfaction and understanding."

Unfortunately, we have not been able, to date, to devise a reliable and valid instrument for patients to "regularly and meaningfully" evaluate the residents' professional knowledge, skills, and attitudes. A three-year study, conducted when Chief Examiner for the Canadian College of Family Physicians, revealed the sad fact that patients frequently misjudge a charming manner of health-care delivery for quality medical attention. Nevertheless, our attending medical faculty are requested, as they daily monitor resident performance via closed-circuit television, to assess six items, three of which are:

1. The respect shown for a patient as a person,
2. Listening well to the patient,
3. If the patient appeared satisfied with the resident as a physician.

The nurses report annually, in their evaluation of the residents, on "patient acceptance," while faculty annually evaluate each resident in 88 behavioral characteristics including, under the heading of "Relationship with Patient and Family," such specifics as "encourages patients to participate in planning and management of their medical problems," etc.

I can assure Drs. Mishkin and Seifert that they would observe, should they visit our program, that we do value "the opinion of the patient concerning the care which he/she experiences." We simply have not been able to devise a satisfactory model to measure it meaningfully. Any suggestions would be most welcome.

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The Family as a Relationship System
To the Editor:

For a decade the young specialty of family medicine has been struggling to create its own identity — that special set of characteristics which makes this field unique and gives it a cohesive framework which distinguishes it from all others. In my view one criterion which unequivocally sets family medicine apart is the concept of the family as a relationship system and the intervention techniques derived from family system therapy.

In the January 1977 issue of *The Journal of Family Practice* the authors of "Patients with Psychogenic Pain" do a satisfactory job of describing this syndrome from the traditional point of view of the individual patient. However, there is no mention of how the symptoms of the patient are related to psychological processes within the family, the effects of the symptoms on the other members, the possibility that family relationship problems might play a part in the perpetuation or even the causation of the pain, and no suggestions as to how such knowledge might be used by the family practitioner in the management of

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