

Medical Screening of Psychiatric Patients

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Introduction

Since its inception, psychiatry has struggled to define the importance of medical issues which affect the evaluation and management of its patients. Under current practice, most psychiatric patients receive at best only a cursory physical examination, unless blatant physical abnormalities or symptoms are present. While the rest of medicine has begun to rely on sophisticated medical screening procedures, the vast majority of psychiatrists fail to conduct or obtain even routine physical examinations on their patients.

Throughout the last century, leaders of the medical community have pointed to the need for good medical training on the part of psychiatrists and for the provision of consistent and high quality medical treatment for the psychiatrically ill. Much of the medical

profession's concern regarding the mental health care system is related to what we hope has been a previous isolationist position taken by some providers of that care. The controversy centers around the psychiatrists' responsibility for providing good medical as well as good psychiatric care. Medical practitioners see mental health care providers in general, and psychiatrists in particular, as separating psychiatric/psychological treatments from medical treatments and consequently as neglecting the latter.

As early as 1894, physicians were concerned about the type and quality of care being rendered to mental patients. In his address to the Fifteenth Annual Meeting of the American Medico-Psychological Association, S. Weir Mitchell expressed his concern, "I..lament the day when the treatment of the insane passed so completely out of the hands of the profession at large and into those of a group of physicians who constitute almost a sect apart from our more vitalized existence" (Mitchell, 1894, pp.414-415).

In 1925, Dr. W. A. White expressed the same opinion when he stated, "The psychiatrist is a specialist in the reactions of the organism as a whole and these reactions he cannot understand, unless he knows all

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parts of the organism...His principal medical qualification should be a broad, comprehensive, sympathetic contact with the whole field of medicine" (White, 1925, p. 3). Dr. Allen Gregg discussed the same concept as President of the American Psychiatric Association in 1944. In 1961, Dr. Robert Felix again pleaded the case for sound medical practice on the part of all psychiatrists. In his address to the American Psychiatric Association, he pushed hard on the theme of medical competence. "This means that not now or ever can we allow our medical skills to atrophy if we are to keep abreast of our field as it develops and thereby give our patients that to which they are entitled—the best that can be obtained" (Felix, 1961, p.3). Dr. Felix further expressed his concern that medical students lost most of their medical knowledge soon after going into psychiatry as a specialty.

The field of psychiatry has evidently disregarded these pleas. In a recent study, McIntyre and Roman (1975) found that approximately two-thirds of the psychiatrists they questioned failed to physically examine their patients while seven percent reported that a physical exam was rarely indicated or useful. Many respondents indicated that they omitted a physical exam because another physician did the exam either upon referring the patient or upon referral back from the psychiatrist. Thirty-two percent of the psychiatrists questioned reported that their lack of competence in performing physical exams was the major reason for not doing them. Of those who did physical exams, 94 percent found them useful.

Incidence of Medical Disease in Psychiatric Patients

Psychiatric symptoms are not illness specific and may occur across a wide range of medical as well as psychiatric diseases. The identification of a specific symptom may be of little help in determining the etiology or even the type of illness with which the patient presents (Hall, 1980). Research supports the fact that a psychiatric diagnosis is related to a high risk of medical illness (Comroe, 1936; Marshall, 1949; Herridge, 1960; Davis, 1965; Johnson, 1968; McCuire and Gran-

ville-Grossman, 1968; Hall et al., 1978; Koranyi, 1977; Koranyi, 1979). Such studies demonstrate that the psychiatrically impaired population is at greater risk than the general population for having concomitant physical illness. The incidence of such medical illness in psychiatric patients has been variously reported to range from 25 percent to 80 percent. In addition, the reported incidence of medical illness productive of patients' initial psychiatric symptoms range from 5 percent to 42 percent (See Table 1). The following prospective study was undertaken in an attempt to define those medical screening procedures which proved most useful for defining unrecognized medical illness in psychiatric patients.

Study Design

This study was conducted on the clinical research unit of a state psychiatric inpatient facility. All subjects were voluntary patients selected for admission from various referral agencies and community based inpatient facilities. Each subject received a pre-admission evaluation which included a review of previous hospital records, social history, medical history, family history and mental status exam. No one was accepted for admission who had a significant drug history, currently diagnosed medical illness, or criminal charges pending. The study population consisted of 105 consecutive voluntary admissions. Of this total, two patients refused to sign consents to participate in the study; two left against medical advice prior to completing the medical workup; and one patient left AMA after the workup, but prior to completing treatment. This left a population of 100 patients who gave consent and completed all aspects of the study.

During the admission procedure, all patients received the standard screening battery for admission to the state facility (See Table 2). Within 24 hours of admission, each patient received the following additional evaluations: (1) complete in-depth physical and neurological examinations, (2) electroencephalogram, (3) SMA-34 blood chemistry, (4) routine urinalysis, and (5) urine drug screen. During the next five days,

additional data consisting of: (1) Life History Questionnaire, (2) psychological testing, (3) indepth psychiatric and social history, and (4) research mental status examinations were obtained. During the first week, they also received a sleep deprived electroencephalogram. Any "additional tests or procedures which would clarify diagnosis in a particular case were obtained.

At the end of the first week of hospitalization, specific psychiatric and medical diagnoses were made for each patient. When possible, the Spitzer-Endicott Research Diagnostic Criteria were used (Spitzer, Endicott et al., 1975). The rest of the diagnoses were assigned using DSM II criteria. If questions arose regarding medical diagnosis, consultation with appropriate medical specialists was obtained.

In extreme cases where diagnosis of an unusual medical problem (e.g., lead toxicity) was involved, the time to confirm the medical diagnosis may have exceeded one week. However, all medical diagnoses used in this study were clinically proven. If any doubt remained about a medical diagnosis, it was not represented in the outcome data.

As standard practice, each patient received all treatment, psychiatric and/or medical, considered appropriate for his condition. Prior to discharge, each patient was evaluated by two psychiatrists who wrote a discharge summary based on their consensus. Discharge summaries contained a review of all psychiatric and medical findings obtained during the patient's hospitalization. If a medical illness was found, the physician was asked to demonstrate by whatever additional laboratory tests or physical findings necessary that the condition had been corrected insofar as was medically possible.

All patients were referred to appropriate agencies for followup as part of the discharge planning. The patient's family was kept informed of the patient's progress through regular meetings with members of the treatment team.

Results

The patients in the study ranged in age from 18 to 52 years with an average age of 28.31 years. A significant number of patients

were young with 69 percent of the population being between 18 and 30 years of age. Males represented 45 percent and females 55 percent of the study population. Sixty-seven percent of the population were Caucasian, 29 percent were black and four percent were Latin Americans. The types of psychiatric presentations seen in the study population are as follows: 38 percent of the population were diagnosed as schizophrenic; 29 percent depressive disorder; nine percent manic depressive disorder; nine percent personality disorder; seven percent acute psychotic episode; four percent organic brain syndrome and four percent other psychiatric disorders, including paranoid state, anxiety neurosis, acute anxiety reaction and adjustment reaction of adult life.

Of the 100 patients studied, 80 percent were found to have at least one previously undetected physical illness which required medical intervention or treatment. Forty-two percent of the patients had previously undiagnosed medical illnesses which were felt to be causative of their presenting psychiatric symptoms. An additional four percent of the patients showed significant psychiatric improvement when their medical illnesses were treated. Thus 46 percent of the total population and 57 percent of those patients with medical illness showed marked improvement of their psychiatric symptoms following treatment of their medical illness.

Of the 186 medical illnesses found in this study, 65 percent were treated by the administration of medication. Surgery was prescribed as the primary treatment in eight percent of cases and a combination of medication and surgery accounted for one percent. Physical illnesses which responded to a change in diet alone represented eight percent of the total. Five percent responded to a combination of medication and dietary change. Six percent of the patients with medical illness had treatment prescribed which could not be easily classified. These included manual removal of fecal impaction; hydration in five cases of dehydration-use of a hearing aid; casting and bracing of fractures and other musculoskeletal

problems, and the suturing of a laceration. In eight percent of medical illnesses, no particular medical treatment was available. In some instances, prophylactic treatment was instituted, while in many cases the only help available was for the patients to better understand their illness, its course, and any limitations it might place on them.

The largest percentage (41 percent) of illnesses were found to be multiple system diseases. These were medical conditions which affected multiple physiological systems of the body and were, therefore, impossible to attribute to a single physiological system. However, of the 62 multiple system diseases, only 16 were found to produce psychiatric symptoms. The incidence of medical illness found in other physiological systems and their relationship to psychiatric symptoms are reported in Table 3. Endocrine and central nervous system disease produced the largest number of medical illnesses causing psychiatric symptoms. Respiratory and musculoskeletal illnesses were not found to produce specific psychiatric symptoms in this study, although previous studies have demonstrated their ability to do so (Hall, 1980).

A number of patients were found to have medical conditions which, if left untreated, would have a high probability of resulting in permanent damage or eventual death. The procedures used in the study identified two cases of undescended testicle, a precancerous abnormal pap smear, and a case of vaginal polyps, all previously undetected and all of which had a high probability of leading to death or serious future illnesses, if untreated. The medical screening procedures identified 78 specific medical illnesses that either caused or exacerbated psychiatric symptoms. A list of these illnesses with the tests and procedures used to identify each is included in Table 4, while the frequency of yield for each screening procedure is given in Table 2. The single best procedure for identifying medical illnesses in psychiatric inpatients was the SMA-34 blood chemistry (Table 5). The SMA-34 was instrumental in diagnosing 60 of the 78 illnesses found; the SMA-12 identified only 11 of these illnesses. A complete physical examination specifically identified 40 medical illnesses, while the cursory physical found only six illnesses. The

routine electroencephalogram identified two cases of medical illness, while the sleep deprived EEC identified both of these as well as an additional seven for a total of nine. The electrocardiogram pointed to nine cases of medical illness, routine urinalysis six cases, complete neurological exam five cases, and the urine drug screen, one case. The hearing and vision test, computerized medical history, social history, life history questionnaire, and psychological testing, failed to specifically identify any of the medical illnesses, although they raised questions concerning their presence.

A combination of complete history and physical exam, SMA-34 blood chemistry, electrocardiogram, routine urinalysis and sleep deprived electroencephalogram identified over 95 percent of all medical illnesses subsequently found to be present.

Discussion

This study confirms previous research regarding the incidence of medical illness in psychiatric patients. It suggests, however, that the incidence of such medical illness is higher than previously reported. The increased number of positive findings is thought to reflect three important variables. First, the population studied is similar to that of a state hospital population. Most other studies have been carried out in general psychiatric hospitals. Therefore, the patients in this study are, perhaps, less likely to have regular medical attention. Second, the present study relied on many highly sophisticated medical screening procedures which were unavailable during previous studies or were prohibitive because of cost. Third, the level of medical knowledge has increased dramatically in the past ten years, permitting more sophisticated routine screening.

A number of patients with medically induced psychiatric symptoms had been previously hospitalized for the same symptoms. In most cases, their medical illnesses could be logically assumed to have been present at the time of their previous hospitalization. These patients had" histories of short term

stays, diagnostic confusion, trials on multiple different psychotropic medications, and a much higher recidivism rate than patients with similar psychiatric diagnoses, but no medical illness. There was no indication in any of their records that they had been given a full medical evaluation.

The single best diagnostic procedure for identifying medical illnesses which caused or exacerbated psychiatric symptoms was an SMA-34 blood chemistry (Table 5). This supports a previous finding by Hall et al. (1978) and is particularly important since the SMA-34 is a relatively inexpensive test and in most cases is readily available.

The second most productive procedure was a complete physical examination. This finding is disturbing in light of the research of McIntyre and Romano (1975) who demonstrated that most practicing psychiatrists fail to physically examine their patients. It appears that several factors may prevent adequate medical evaluation of psychiatric patients. First, many medical problems present as psychiatric symptoms and thus are assumed to be "functional." Second, most psychiatrists do not see the medical treatment of psychiatric patients as part of their professional responsibility and third, many psychiatrists feel "incompetent" to provide diagnosis and treatment of such medical disorders.

The sleep deprived electroencephalogram (EEG) was the third most useful diagnostic tool. It had a four to one yield over the routine awake electroencephalogram in identifying medical illness. The procedure used to obtain the sleep deprived EEG was to deprive the patients of sleep for one night and to perform the EEG at 8 or 9 a.m. the following morning. During the EEG itself, various auditory and visual stimuli were presented and the EEG recording then interpreted. Most of the illnesses

found only by the sleep deprived electroencephalogram were treatable when known, with psychiatric symptoms abating shortly after medical treatment was begun.

Conclusions

The following conclusions seem justified from this study:

1) Approximately 80 percent of state psychiatric hospital inpatients have some medical illness requiring treatment.

2) It is difficult to distinguish physical disorders from functional psychiatric disorders

on the basis of psychiatric symptoms alone.

3) A large percentage of patients admitted to a state psychiatric hospital have previously undiagnosed medical illnesses which cause or exacerbate their psychiatric symptoms.

4) The endocrine and central nervous systems are the physiological systems of the body most often associated with medical illnesses which cause or exacerbate psychiatric symptoms.

5) Patients with medically determined major psychiatric symptoms are most often diagnosed as suffering from schizophrenia or depressive disorders.

6) The vast majority of medical illnesses which cause or exacerbate psychiatric symptoms respond rapidly to treatment with medication.

7) A combination of complete psychiatric history, in-depth physical and neurological examinations, SMA-34 blood chemistry, electrocardiogram, routine urinalysis, and sleep deprived electroencephalogram should be considered the minimum standards for the medical evaluation of all patients being admitted to an inpatient psychiatric facility.

TABLE 1

	RESEARCHER	YEAR	N	INCIDENCE	% CAUSING SYMPTOMS	% CONTRIBUTING SYMPTOMS	% REQUIRING TREATMENT	COMMENTS
OUTPATIENTS	Comroe	1936	100	44%				All neurotics
	Davis	1965	?	58%	42%			
	Hall	1978	658		9.1%			
	Koranyi	1979	2090	43%				46% of illnesses previously unknown
INPATIENTS	Marshall	1949	?	44%				
	Herridge	1960	209	50%	5%	21%	34%	8% of illnesses previously unknown
	Johnson	1968	250	60%	12%			
	McGuire & Granville-Grossman	1968	200	33.5%	23.45%			1/2 of these illnesses previously unknown
	Hall, Gardner, et al.	1980	100	80%	42%	4%	80%	

TABLE 2

YIELD ON MEDICAL SCREENING PROCEDURES*

NORMAL SCREENING BATTERY	POSITIVE FINDINGS	ADDITIONAL SCREENING PROCEDURES	POSITIVE FINDINGS
Hearing and vision	0		
EKG	9		
SMA-12 blood chemistry	11	SMA-34	60
Cursory physical	6	Complete physical exam	40
Computerized medical history	0		
Mental status	1		
EEG	2	Sleep deprived EEG	9
Routine urine	6	Complete neurological urine	5
		Drug screen	1
		Social history	0
		Life History Questionnaire	0
		Psychological testing	0

(*) Only medical illnesses which caused or exacerbated psychiatric symptoms are included. Some medical illnesses were suspected or confirmed by more than one procedure. Where this occurred, all positive findings are included.

MEDICAL SCREENING OF PSYCHIATRIC PATIENTS

TABLE 3
FREQUENCY OF MEDICAL ILLNESS BY PHYSIOLOGICAL SYSTEM AND ITS RELATIONSHIP TO PSYCHIATRIC SYMPTOMS

SYSTEM	PROBABLE CAUSE	EXACERBATED SYMPTOMS	UNRELATED	TOTAL
ENDOCRINE	26	2	3	31 (17%)
CENTRAL NERVOUS SYSTEM	12	-	-	12 (6%)
CARDIOVASCULAR	4	2	7	13 (7%)
HEMATOLOGIC	7	5	3	15 (8%)
GASTROINTESTINAL	3	1	5	9 (5%)
GENITOURINARY	1	-	9	10 (5%)
RESPIRATORY	-	-	6	6 (3%)
MUSCULO-SKELETAL	-	1	14	15 (8%)
MULTIPLE SYSTEM	10	4	61	75 (40%)
TOTAL	63 (34%)	15 (8%)	108 (58%)	186

* Some patients had more than one medical illness and all medical illnesses found are reported.

Table 4 -- see page 214

TABLE 5
TESTS IN THE SMA-34 SERIES

<ul style="list-style-type: none"> *Glucose BUN Creatinine Sodium Potassium Chloride CO₂ *Uric Acid *Total Protein *Albumin *Globulin *A/G Ratio *Calcium *Phosphorus *Cholesterol Triglyceride *Alk. Phos. *SGOT 	<ul style="list-style-type: none"> SGPT *LDH *Total Bilirubin Direct Bilirubin BUN/Creatinine Ratio Complete Blood Count White Cell Count Red Cell Count Hematocrit Hemoglobin Differential MCV MCHC Platelet Count T₃ T₄ T₇
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* These are the tests which are run in the SMA-12 series.

TABLE 4

TESTS AND PROCEDURES USED TO IDENTIFY MEDICAL ILLNESSES (*)

* These tests and procedures are only a sampling of those used to identify specific medical illnesses.

CHRONIC LEAD POISONING —	Suspected from neurological and physical examinations; confirmed by electroencephalogram, heavy metal screen and test for serum lead.	HYPERTHYROIDISM —	All cases first suspected from the SMA-34 blood chemistry; two cases showed electrocardiogram abnormalities; all cases confirmed by thyroid scan.
ARSENIC POISONING —	Suspected from history and physical exam; confirmed by test for serum arsenic.	THYROTOXIC STORM —	First suspected from SMA-34 blood chemistry and electrocardiogram abnormalities; confirmed by thyroid scan.
CENTRAL ANTICHOLINERGIC SYNDROME —	Suspected from history and physical examination; confirmed by urine drug screen.	HASHIMOTO'S THYROIDITIS —	All cases first suspected from SMA-34 blood chemistry; confirmed by thyroid scan and test for antibodies.
DIGOXIN INTOXICATION —	Suspected from history and physical examination; confirmed by drug screen for digoxin levels.	PARATHYROID ADENOMA —	Identified and diagnosed by SMA-34 blood chemistry.
SYPHILIS —	Suspected from history and physical examination, confirmed by VDRL blood test.	HYPOGLYCEMIA —	Two cases suspected from SMA-12 blood chemistry and two cases suspected from history and physical; each case confirmed by a five hour glucose tolerance test.
CHRONIC BRUCELLOSIS —	Suspected from history and physical examination; confirmed by test for specific brucella titer.	DIABETES MELLITUS —	All cases suspected from SMA-12 blood chemistry and routine urinalysis; all were confirmed by a five hour glucose tolerance test.
VIREMIA —	Suspected from history, physical examination and complete blood count; confirmed by viral acute and convalescent phase titers.	ADDISON'S DISEASE —	Suspected from SMA-34 blood chemistry and physical exam; confirmed by the above and neurological exam, electrocardiogram and test for 17 hydroxy and 17 keto steroids.
BETA STREPTOCOCCAL VAGINITIS —	Suspected from history and physical examination; confirmed by vaginal culture.	EPILEPSY —	All cases were confirmed by sleep deprived electroencephalograms; two of the cases were originally seen on normal electroencephalograms.
MIDDLE LOBE PNEUMONITIS —	Suspected from history and physical examination; confirmed by chest x-ray.	PICK'S DISEASE —	While this illness can only be confirmed on autopsy, there were significant signs on mental status exam, neurological exam, electroencephalogram and CAT scan. It was therefore felt that the diagnosis was substantiated.
GONORRHEA —	Suspected from history and physical examination; confirmed by specific culture.	POST CONCUSSIVE SYNDROME —	Diagnosed on the basis of the symptom presentation and history.
DEHYDRATION —	Confirmed by physical examination.	TOXIC ENCEPHALOPATHY —	Suspected from SMA-34 blood chemistry; confirmed by test of cerebral spinal fluid titers.
MALNUTRITION —	Suspected from history and physical examination; confirmed by serum B12 and folate levels.	IMPENDING DELIRIUM TREMENS —	Diagnosed by history and physical examination.
FOLIC ACID DEFICIENCY —	Suspected from SMA-34 blood chemistry, history and physical examination; confirmed by serum folate levels.	WILSON'S DISEASE —	Suspected from SMA-34 blood chemistry; confirmed by ceruloplasm, serum and urine copper and liver biopsy.
IRON DEFICIENCY ANEMIA —	Suspected from SMA-34 blood chemistry, history and physical examination; confirmed by tests of serum iron and total iron binding capacity.	ARRHYTHMIAS —	Diagnosed by physical examination and electrocardiogram.
PORPHYRIA —	Suspected from history and physical examination; confirmed by tests of blood and urine porphyrins.	HYPERTENSION —	Diagnosed by physical examination.
G6-PD DEFICIENCY —	Suspected from SMA-34 blood chemistry, history and physical examination; confirmed by tests of G6-PD.	POLYCYSTIC OVARY DISEASE —	Suspected from history and physical examination; confirmed by tests of 17 hydroxy and 17 keto steroids and antigen levels.
HEPATITIS —	Suspected from history and physical examination; confirmed by SMA-34 blood chemistry and tests for Australian antigens.		

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