Variations In Laboratory Testing During Medical Clearance of Psychiatric Patients In the Emergency Department

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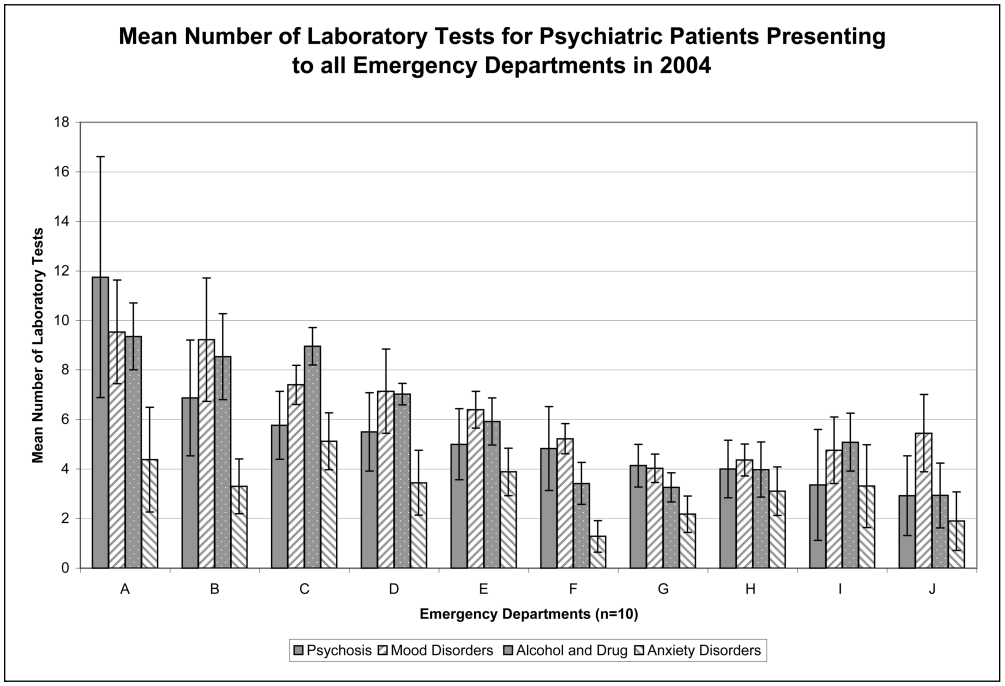
Patients who present to the emergency department (ED) with psychiatric symptoms must undergo "medical clearance" prior to assessment and transfer to a psychiatric service. This term refers to the medical evaluation of patients with possible psychiatric illness to identify patients who have acute medical illnesses that cannot be safely treated by an inpatient psychiatric service.

There is no universally accepted protocol for medical clearance of psychiatric patients. A literature review shows that a complete history with a review of systems, vital signs, a physical exam, and a mental status exam are useful for detecting underlying medical problems in patients presenting with psychiatric complaints.[1] Several studies have examined the utility of routine laboratory tests in this population. In a retrospective review of 212 patients presenting to Los Angeles County & University of Southern California Medical Center, of the 80 patients who presented with isolated psychiatric complaints, none had screening laboratory or radiographic findings that changed patient management or disposition.[2] In a randomized trial, researchers found that routine drug screening in a psychiatric emergency service did not alter disposition, management, or length of stay when compared to testing when clinically indicated.[3]

Important to this debate is the acknowledgement that included in the population of psychiatric patients presenting to the ED are several subsets of patients who are at increased risk of having organic pathology present with psychiatric symptoms. These high-risk groups include the elderly, patients with no prior psychiatric history, substance abusers, and patients with preexisting medical problems.[1] In one study of 100 consecutive patients presenting with new onset psychiatric symptoms, 63% had an identifiable organic etiology.[4] A 1992 literature review found that the percentage of clinically significant laboratory results (i.e. results that altered care) from routine screening ranged from 0.8% to 4.0%. Based on these findings, researchers advocated that physicians use their clinical judgment when ordering laboratory tests for psychiatric patients.[5] After a 2004 literature review, researchers concluded that no laboratory investigation is required unless clinically indicated, in patients who have a previous psychiatric history and established psychiatric diagnosis.[1] They further recommended that for patients over 60, patients presenting with new psychiatric symptoms, substance abusers, or patients with concurrent/established medical complaints, a Chem-7, CBC, blood alcohol level, and a urine drug screen should be obtained along with other clinically indicated laboratory tests. In a 2006 clinical policy statement, the **American College of Emergency Physicians (ACEP)** asked: "What testing is necessary to determine medical stability in alert, cooperative patients with normal vital signs, a noncontributory history and physical examination and psychiatric symptoms?" and then reviewed the relevant literature. Based on Class III literature, they recommended that in an adult patient presenting to the ED with primary psychiatric complaints, the history and physical should drive patient diagnosis. They concluded, "Routine laboratory testing of all patients is of very low yield and need not be performed as part of the ED assessment."[6]

Unnecessary laboratory testing consumes time, resources, and money and contributes to ED overcrowding. Identifying inconsistency in the medical clearance of psychiatric patients and the factors driving this inconsistency is needed. This study sought to describe the aggregate laboratory ordering practices of emergency departments across the state when medically clearing a psychiatric patient. Our intent was to not to identify which tests are best, but to describe variation between departments in how they evaluate patients with psychiatric illness.



Materials and Methods

Study Design

This is a retrospective analysis of a single health insurer's database of laboratory testing performed for the medical clearance of psychiatric and substance abuse patients presenting to the Emergency Department. Study subjects were evaluated at the state's ten adult EDs from January 1st to December 31st, 2004. This study examined patients age 18 years or older, presenting to the ED with a psychiatric or substance abuse chief complaint (discharge ICD-9 diagnosis of 291 to 314). Only patients ultimately given a psychiatric diagnosis were included. Patients who were found to have an acute medical problem as well a potential concurrent or related psychiatric illness were excluded. Annual censuses of the EDs for 2004 ranged from 30,000 to 85,000 visits. All patients had the same commercial health insurance.

Demographic patient data and the number of laboratory tests performed per visit were provided by the insurer, which, in 2004, covered 62% of the state's 1,080,632 citizens.[7]

Data Collection, Processing, and Primary Outcome

Data were collected on the primary psychiatric diagnosis, age and gender of the patient, hospital of ED visit, and the number of medical clearance tests performed. Patients were grouped in one of four categories based upon their ICD-9 diagnosis: Psychosis (291.0 – 295.9, 297.1 – 298.9, and 310.2), Mood Disorders (296.0 – 296.99, 311, and 313.0), Anxiety (300.0 – 300.9, 306.0 – 306.1, and 308.0 – 309.9), and Alcohol or Drug Abuse (303.0 – 303.92, and 304.0 - 305.92). The mean number of medical clearance tests per patient was the primary outcome measure of interest. Tests with multiple components such as a CBC or a Basic Metabolic Panel were counted as one. Data were analyzed using SAS for Windows version 9.1 (SAS Institute, Inc. Gery, NC).

Primary Data Analysis

We conducted a three-way **Analysis of Variance (ANOVA)** using a General Linear Modeling approach to assess the main effects of psychiatric diagnosis, gender, and hospital of ED visit on the number medical clearance tests received by the patients. *Post hoc* follow-up tests using Tukey's Standardized Range Test were conducted to examine pairwise differences in the number of tests conducted as a function of hospital of ED visit, gender, and diagnosis.

Results

A total of 2291 patients were included in the analysis. The mean patient age was 34 years (SD = 15.5); 54% were female. Across the sample the mean number of laboratory tests performed per patient evaluation was 5.1 (SD = 4.6). The results of the data analysis demonstrated three main findings.

First, to determine if medical clearance tests significantly varied in our sample across the hospitals of ED visit we controlled for age and ICD-9 diagnosis in the ANOVA analysis. The analysis showed that number of laboratory tests used to medically clear a psychiatric patient significantly varied according to the hospital of patient presentation ($F(9,2289) = 6.13$, $p < .001$). (Figure #1) Follow up Tukey's tests showed that two EDs administered significantly more medical clearance tests across all psychiatric diagnoses compared to state peers.

Next, we analyzed the data to see if the psychiatric diagnosis had an effect on the number of medical tests. Patients presenting with the ICD-9 grouping of anxiety disorder received significantly fewer medical clearance tests in comparison with the other diagnostic groupings ($F(3, 2289) = 6.01$, $p < .001$). There were no significant differences in the number of laboratory tests used to medically clear patients among the ICD-9 groupings of psychosis, mood disorder, or alcohol and drug use.

In summary, after controlling for both age and ICD-9 psychiatric diagnosis there were still significant differences in medical clearance practice as a function of hospital of ED visit.

Limitations

An important caveat to the conclusions that can be drawn from this study is that the data, while covering nearly two thirds of the state's population, did not include patients with Medicare, Medicaid, or the uninsured. These populations are potentially different than the two-thirds of the population with this commercial insurance and our findings may not be generalizable to them. Nevertheless, we intended only to describe variability in how psychiatric patients are evaluated in EDs: having government-provided or no insurance is unlikely to account for the variability in the medical clearance process.

Table 1. Mean Number of Laboratory Tests for Psychiatric Patients Presenting to all Emergnecy Departments

	Alcohol and Drug			*Anxiety Disorders*			*Mood Disorders*			*Psychosis*			*All Psychiatric Diagnosis*		
Hospital	mean	SD	CI	mean	SD	CI	mean	SD	CI	mean	SD	CI	mean	*SD*	*CI*
A	9.4	4.6	[8.0-10.7]	4.4	5.3	[2.3-6.5]	9.5	5.4	[7.5-11.6]	11.8	7	[6.9-16.6]	8.5	5.6	[4.7-9.6]
B	8.5	4.3	[6.8-10.3]	3.3	4	[2.2-4.4]	9.2	5.4	[6.7-11.7]	6.9	5.7	[4.5-9.2]	6	5.2	[2.9-6.9]
C	9	4.6	[8.2-9.7]	5.1	5	[4.0-6.3]	7.4	5.2	[6.6-8.2]	5.8	5.8	[4.4-7.1]	7.3	5.3	[1.8-7.7]
D	7	2.8	[6.6-7.5]	3.5	3	[2.1-4.8]	7.1	3.2	[5.4-8.8]	5.5	3.4	[3.9-7.1]	6.6	3.1	[1.4-7.0]
E	5.9	3.6	[5.0-6.9]	3.9	3.6	[2.9-4.8]	6.4	2.8	[5.7-7.1]	5	4.4	[3.6-6.4]	5.4	3.7	[1.4-5.9]
F	3.4	2.9	[2.6-4.3]	1.3	2	[0.6-1.9]	5.2	2.7	[4.6-5.8]	4.8	3.7	[3.1-6.5]	3.8	3.1	[0.9-4.3]
G	3.3	4.4	[2.7-3.9]	2.2	3.6	[1.4-2.9]	4	4.4	[3.5-4.6]	4.1	4.3	[3.3-5.0]	3.5	4.3	[0.6-3.8]
H	4	3.8	[2.9-5.1]	3.1	4.1	[2.1-4.1]	4.4	2.7	[3.7-5.0]	4	2.8	[2.8-5.2]	3.8	3.5	[0.9-4.3]
I	5.1	4.6	[3.9-6.3]	3.3	4.6	[1.6-5.0]	4.8	3.4	[3.4-6.1]	3.4	4.3	[1.1-5.6]	4.6	4.5	[1.8-5.3]
J	2.9	2.6	[1.6-4.2]	1.9	2.7	[0.7-3.1]	5.5	3.6	[3.9-7.0]	2.9	3	[1.3-4.5]	3.5	3.3	[1.4-4.3]

Another caution is that this retrospective analysis used final diagnosis as the qualifier to be entered into the database. If a patient presented with a psychiatric complaint but was found to have no psychiatric illness but rather a medical illness, they would have not been included in this study's database. Thus, no inference can be made on what test should or should not be utilized or the optimal number of tests needed for medical clearance. We only document the inconsistencies in laboratory ordering practices across our state when evaluating patients who are ultimately diagnosed with a psychiatric illness.

Discussion

Our data illustrate the lack of consistency in the number of laboratory tests utilized during the medical clearance of psychiatric patients presenting to the ED. A patient presenting with a diagnosis of psychosis at one ED may receive up to four times the number of laboratory tests the same patient would receive if they presented to another ED. While the precise etiology of this may be unknown, and is likely to be multifactorial, several can be hypothesized. Knowledge of the literature and individual comfort level for ruling out a medical etiology without additional laboratory tests varies from physician to physician. Certain key physicians may either by example or departmental policy dictate departmental practice on this issue. Nursing may have variable authority in ordering laboratory studies between EDs; this may contribute to variability between departments. Long-standing working relationships of admitting patients from a particular ED to a psychiatric inpatient service may affect the mean number of laboratory tests ordered. The ability of an inpatient psychiatric service to obtain laboratory tests after admission is likely to decrease the number of labs are obtained in the ED. Emergency departments themselves may have adopted practice patterns that affect ordering practices (i.e. laboratory tests that are sent before the patient is seen by a physician).

Our data demonstrate inconsistent testing across emergency departments when medically clearing equivalent patient populations. Laboratory testing consumes the time and resources of EDs, which in turn exacerbates the nationwide problem of ED overcrowding. Identification of this problem is a first step. A solution depends upon a collaborated effort between the emergency medicine and psychiatric communities. The goal should be a set of evidence-guidelines that would standardize the process of medical clearance and outline the proper use of laboratory tests when admitting a psychiatric patient from an ED to an inpatient ward. Such a set of guidelines would need to address the varying needs of specific psychiatric subset populations, specifically the elderly, patients with no prior psychiatric history, patients with preexisting medical problems, and substance abusers. While the ACEP's 2006 Clinical Policy statement is a tremendous national accomplishment for the specialty, further work is needed to adopt current recommendations into clinical practice at the state and local levels. The Massachusetts ACEP "Joint Task Force Consensus Guidelines on the medical clearance exam and the use of toxic screens for the evaluation and management of the psychiatric patient in the Emergency Department "[8] may serve as a model for drafting similar guidelines in other states. Ultimately, a protocol that would be prospectively tested would be ideal to direct further clinical policy.

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