

Validation of a Triage Algorithm for Psychiatric Screening (TAPS) for Patients With Psychiatric Chief Complaints

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Context: The process of medical clearance screening for patients with psychiatric chief complaints has not been standardized.

Objective: To investigate the validity of a triage algorithm for psychiatric screening (TAPS) as a method to screen for the absence of acute medical illness in these patients.

Methods: The current study was a structured, retrospective medical record review in a suburban community teaching hospital with 37,000 emergency department visits per year. All ambulatory patients presenting to triage with a psychiatric chief complaint from January 31, 2001, to June 21, 2002, were assessed with TAPS. Patients with a completed TAPS and a negative assessment were identified and included in the study. A negative TAPS assessment comprised age younger than 65 years, normal vital signs, no medical complaints, no evidence of recent substance use, and no history of schizophrenia, mental retardation, or hallucinations. Emergency department records, return visit records, and inpatient admission records were reviewed for the diagnosis or management of acute medical illness.

Results: A total of 1179 patients were assessed with TAPS, of whom 825 (70%) had negative TAPS assessment and were eligible for inclusion. A random sample of 100 patients was selected from this group, with 7 exclusions. Sixty-six (71%) had a history of mental illness and 51 (55%) were admitted. Further, 25 (27%) had laboratory tests ordered, and none of the laboratory results required medical intervention. Twenty-nine patients (31%) received medication, mostly previously prescribed medications or sleep aids. None of the medications were for treating patients with violent or aggressive behavior. The average length of stay was 409 minutes. No patients (95% confidence interval, 0%-3%; $P < .05$) received a diagnosis of or treatment for acute medical illness.

Conclusion: The TAPS form is potentially an effective tool in screening for the absence of acute medical illness.

J Am Osteopath Assoc. 2012;112(8):502-508

In 2007, US adults made 95 million visits to emergency departments (EDs). Of these visits, approximately 7.6 million (8%) were related to mental health.¹ The ED often served as the primary portal into the mental health care system.² Many studies have shown a high incidence of coexisting medical disease in psychiatric patients.³⁻¹¹ Medical illness may be the cause of or contributing factor to the psychiatric illness. One study showed that new psychiatric symptoms in 63 of 100 patients had an organic etiology.¹² Medical illness in this patient population is often overlooked and may lead to unfortunate outcomes.^{9,11,13,14} Although diagnosing an etiologic origin is important, EDs devote many untoward and often unnecessary resources to this effort. These resources can often be extensive, comprising increased laboratory testing, staffing hours, and occupied acute care bed space.

The “medical clearance examination”—initially developed in 1986 for the Emergency Medical Treatment and Active Labor Act as part of the Consolidated Omnibus Budget Reconciliation Act—requires a physician to “identify emergency medical conditions suggested by presenting signs and symptoms.”¹⁵ However, the process of medical clearance was never standardized, and health professionals continue to meet the obligation with a great deal of vari-

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Financial Disclosures: None reported.

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Submitted June 25, 2011; revision received April 18, 2012; accepted May 7, 2012.

ability. Multiple studies¹⁶⁻¹⁸ have shown that psychiatric patients require few ancillary medical tests, and American College of Emergency Physicians clinical policy recommends testing only in patients whose history and results of physical examination (including abnormal vital signs) are suggestive of acute medical illness. One study¹⁹ found that history alone was extremely sensitive in detecting medical illness in this patient population. In 1989, Sox et al²⁰ developed an algorithm for detecting physical disease in psychiatric patients, showing time and cost savings, with an increased sensitivity toward detecting medical disease; yet in today's common practice, to our knowledge, no accepted standard-of-care algorithm has emerged.

Patients with mental health complaints are considered less acute in triage, creating extended wait times for medical examinations of patients with no acute medical condition. To identify those patients who could safely be brought directly to our Emergency Behavioral Health (EBH) unit while awaiting a physician's medical screening examination, we created a triage algorithm for psychiatric screening (TAPS). Patients with a negative TAPS assessment would be deemed as nonemergent medically and could be transferred to this specialized psychiatric ED unit without immediate examination and evaluation from an emergency physician.

The objective of the present study was to investigate the validity of TAPS as an effective tool. We hypothesized that TAPS could be used to adequately screen for the absence of acute medical illness in patients presenting with psychiatric chief complaints.

Methods

Study Design and Setting

The current study was a structured, institutional review board–approved, retrospective review of medical records performed at 1 medical center. Our suburban community teaching hospital's ED receives 37,000 patients annually. A dedicated 6-bed, secured EBH unit is directly adjacent to the main ED and, on average, cares for up to 2500 patients annually. The cohort of patients who were selected for review presented through triage with a chief psychiatric complaint from January 31, 2001, to June 21, 2002. We set out to determine the presence or absence of acute medical illness in these patients as well as their ED management and subsequent care. We prospectively defined acute medical illness as a medical condition that manifests within the ED or immediate period after hospital admission and requires urgent treatment to prevent long-term damage or sequelae to that patient.

The TAPS Tool

We introduced TAPS (*Appendix*) on January 31, 2001. This tool is a form with 6 questions that are answered "yes" or

"no" by the first-contact triage nurse as the initial history of the patient is obtained. The form was designed to be completed when ambulatory patients presented to the ED with psychiatric chief complaints. Developed after a comprehensive literature review, TAPS isolates "markers" or indicators of acute medical illness in ED patients with psychiatric chief complaints, a population that would more likely be found to have acute medical illness in the ED or soon after hospital admission. We did not develop the TAPS form from a single previous study. Instead, our cumulative experience made us confident that the parameters we chose for the form would successfully identify which psychiatric patients could bypass the ED.

The criteria are set up in a way for the medical professional to ask about and assess for the absence of acute medical illness by using 6 simple yes-no questions. A "yes" answer to any of the questions required a patient to, at minimum, be immediately screened by an emergency medicine practitioner. Question 1, which applies to a patient age of older than 65 years, addresses the risk of cerebral events that could be misidentified as psychosis, especially when there is no previous history of psychosis. Question 2 deals with the assessment of normal vital signs (as defined by TAPS), which for obvious reasons may reveal medical causes of patients' psychiatric chief complaints. Question 3 concerns whether the complaints include any medical conditions. Question 4 documents any patient hallucinations or delusions, which often require medical intervention for sedation and diagnostic workup from laboratory testing or other studies. Question 5 asks whether the patient has a history of schizophrenia or mental retardation that may interfere with an accurate triage assessment or complaints of symptoms from acute medical illness. Finally, question 6 assesses visible intoxication or admission of drug or alcohol use during the past 8 hours.

We used TAPS to identify those patients who should be sent directly to the EBH unit, bypassing the main ED. If all 6 screening answers were "no," the patient was directed to the nonacute area of the EBH unit with an anticipated low likelihood of medical illness. Once in the EBH unit, the care for these patients, which still includes an ED physician evaluation, can be more efficiently performed. Psychiatric social workers also work out of the EBH unit, arranging inpatient and outpatient care for these patients. All ED nurses who worked in the triage area received training on filling out the TAPS form for all ambulatory patients presenting with psychiatric chief complaints.

Participants

At the initiation of our study, TAPS was incorporated into the ED process of nurse triage of patients with psychiatric chief complaints as a standard of care. During a period of approximately 18 months, a random sampling of patients

ORIGINAL CONTRIBUTION

presenting with a psychiatric chief complaint and screening negative on TAPS assessment were reviewed. A negative TAPS assessment was defined as all questions answered “no.”

Measures

After identifying the population of patients with a negative TAPS assessment, we conducted a structured retrospective review of a computer-generated random sample of 100 medical records to assess for the presence of acute medical illness requiring treatment. We selected a sample size of 100 expecting that if there were zero events of acute medical illness, then the study would have 80% power to detect a statistically significant event at $P \leq .05$.

The primary investigator and a trained ED nurse reviewed the 100 electronic medical records simultaneously. Within each medical record, the TAPS form was examined for completeness and accuracy. The records were reviewed for patient demographics, medical history and physical examination, laboratory and diagnostic tests, medications, restraint usage, and emergency department diagnoses. The records were assessed to determine the diagnosis and management of acute medical illness.

Medical records of patients who were admitted to our hospital's inpatient psychiatric unit were reviewed to determine if acute medical illness was identified and managed. Patients were defined as having acute medical illness if they required immediate hospitalization, workup, or treatment other than maintenance medications during their ED visit. The patient's records from their next ED visit (up until June 2004), clinic visits, or dictated psychiatric consults were also examined in an effort to detect acute medical illness.

Descriptive statistics were reported as medians, percentages, or frequencies to summarize patient characteristics. Outcome analysis was computed with SPSS statistical software (version 15.0; SPSS Inc, Chicago, Illinois) using Pearson's χ^2 for categorical data and t tests for continuous data.

Results

A total of 1179 patients who presented to the ED with psychiatric chief complaints were assessed with the TAPS form. Of these, 825 patients (70%) had a negative TAPS assessment. We reviewed medical records of a random sampling of 100 (8.5%) of these patients (Figure 1). Seven medical records were excluded from this study: 4 on the basis of incorrectly filled-out TAPS forms, 2 because of data extraction errors, and 1 because the patient left the waiting room after being seen in triage.

The remaining 93 medical records revealed that 51 patients (55%) were women and 42 (45%) were men. The median age was 29.8 years. Sixty-six patients (71%) had a

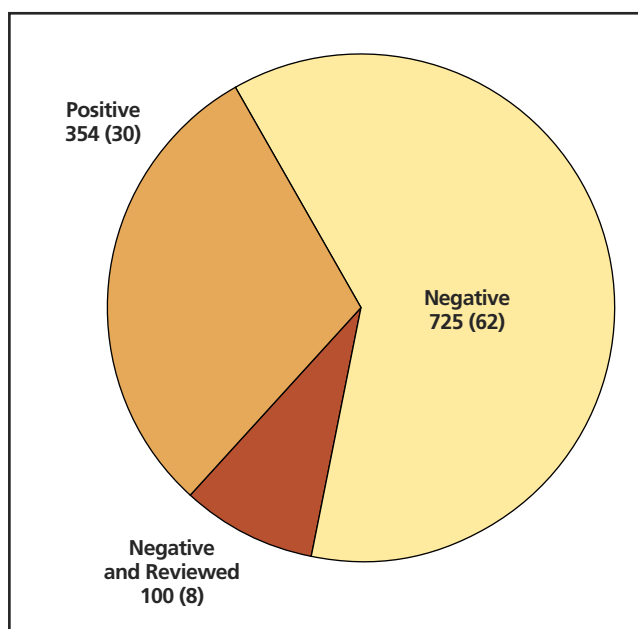


Figure 1. Distribution of patients (No. [%]) with completed triage algorithm for psychiatric screening (TAPS) form (N=1179). Patients presented to the emergency department with a psychiatric chief complaint from January 31, 2001, to June 21, 2002. A random sample of patients with a negative TAPS assessment were identified and included in the study (N=100).

previous history of mental illness and 51 patients (55%) were admitted, the majority to the EBH unit. General demographics were available, and we were able to review the characteristics of the patients in the total TAPS-screened population of patients with psychiatric chief complaints during the selected period. In the total TAPS-screened cohort of 1179 patients, 601 (51%) were women, the median age of the patients was 31 years, and 814 (69%) had a previous history of mental illness. Thus, the demographics of our sample and of the total population of patients presenting with mental health complaints during the study period were similar. The sample represented the population in mean (standard deviation [SD]) age (30.00 [13.22] years; $P=.78$) and sex (46.3% male; $P=.998$).

The reviewed medical records also revealed that laboratory tests were ordered for 25 patients (27%). However, the majority ($n=22$) of these tests were rapid urine drug screens (RUDS) or pregnancy tests, both of which are required by inpatient psychiatric facilities prior to admission. Three of the patients (3%) were taking prescribed lithium, and their serum lithium levels were assessed. Of the 17 patients (18%) who underwent RUDS, 6 (7%) had positive test results for benzodiazepines, which were previously prescribed by their outpatient psychiatrist. One

patient (1%) had a positive test result for opiates, and 2 patients (2%) had a positive test result for tetrahydrocannabinol (ie, cannabis); these 3 patients admitted to using these illicit drugs prior to their testing. Laboratory results for these patients were normal, and none of the patients required acute medical intervention (Figure 2).

Of the 93 patients, 29 (31%) received medication. However, the medications given were previously prescribed to the patients, over-the-counter medications, or sleep aids. No patients required medications for violent or aggressive behavior, and no patients in this population required physical restraints. One patient did undergo computed tomography of the brain because of trauma 2 weeks prior; however, the patient had no corresponding illness that required treatment (Figure 3).

From the medical records we reviewed, we learned that the average length of stay in the EBH unit was 409 minutes. A majority of patients (84 [90%]) were admitted to a mental health facility, and 81 of these patients (96%) were admitted to our institution's mental health facility, which allowed us to follow up for the diagnosis of acute medical illness. The rest of the patients were discharged. All except 2 patients were followed up for at least 6 months. After 18 months of data collection in which TAPS was used in the triage process for all of the patients presenting with psychiatric chief complaints, no formal or informal quality assurance problems for missed medical issues were generated for patients whose medical records were reviewed.

No patients from this sample were diagnosed as having or having been treated for acute medical illness ($P < .05$).

Comment

The process of evaluating patients who present with psychiatric chief complaints is common and occurs daily in practice. Some studies have looked at the utility of medical testing on these patients and its yield with reference to normal vital signs, history, and physical examinations.¹⁶ Korn et al¹⁸ reviewed the medical records of 212 patients with isolated psychiatric chief complaints, documenting past psychiatric history along with normal vital signs and physical examination results, and found that all patients had negative findings for acute medical illness in the ED and at subsequent admission, essentially ruling out acute medical illness. Other studies focused on patients with psychiatric chief complaints and the sensitivity of self-

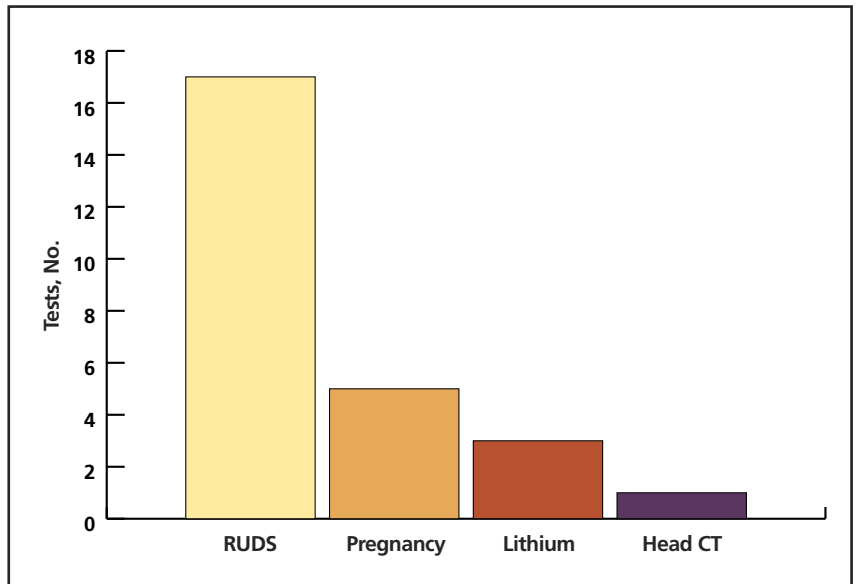


Figure 2. Laboratory tests and diagnostic examinations for random sample of 100 patients ($n=26$). Rapid urine drug screening (RUDS) and pregnancy tests are required by inpatient psychiatric facilities prior to admission. Of the 17 patients (18%) who underwent RUDS, 6 (7%) had positive test results for benzodiazepines, which were previously prescribed by their outpatient psychiatrist. One patient (1%) had positive test results for opiates and 2 patients (2%) had positive test results for tetrahydrocannabinol (ie, cannabis). Laboratory results for these patients were normal, and none of the patients required acute medical intervention. **Abbreviation:** CT, computed tomography.

reported alcohol and drug use. Olshaker et al¹⁹ performed a retrospective review of patients presenting with psychiatric chief complaints and determined that patient self-reporting of ethanol and illicit drug use had 96% sensitivity and 92% sensitivity, respectively. This finding reaffirms the notion that universal laboratory and toxicologic screening of patients with psychiatric chief complaints has a low yield.

To our knowledge, there have been no investigations aimed at developing specific triage screening criteria to identify the absence of acute medical illness in patients presenting with psychiatric chief complaints. Once adequately and safely identified, patients belonging to this group could potentially bypass the ED. Ideally, primary care physicians might refer patients directly to the appropriate facilities, where they will undergo inpatient medical consultation after psychiatric admission. The TAPS screening criteria could serve as the standard for "medical clearance," and patients could be safely redirected.

The objective of the present study was to assess the validity of TAPS at screening for the absence of acute med-

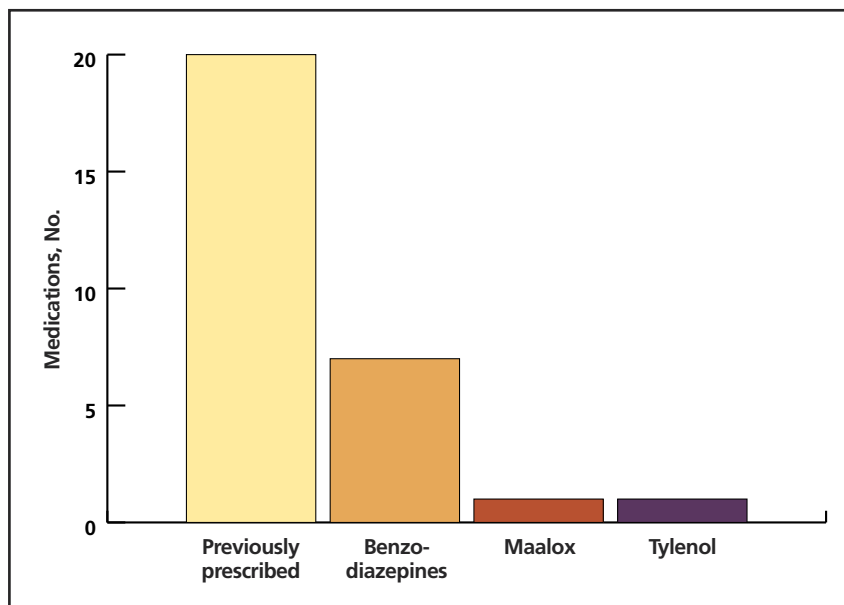


Figure 3. Medications administered to patients in the emergency department. Of the 100 patients in our sample, 29 (31%) received medications. However, none of the medications were for acute medical illness. The majority of patients were given doses of previously prescribed antidepressants or antipsychotics.

ical illness in patients presenting with a psychiatric chief complaint. Acute medical illness manifests while the patient is in the ED or immediately after hospital admission and necessitates urgent treatment to prevent long-term damage or sequelae to the patient. A patient requiring medical workup or treatment during an ED visit or hospitalization would be considered as having acute medical illness. Although 25 of the 93 patients were tested while they were in the ED, none had acute medical illness. Test results caused no change in ED or inpatient management and did not reveal acute medical illness in these patients. Nearly a third of the patients (29 [31%]) received medical treatment while they were in the ED. Review of these records, however, revealed that none of the medications were for acute medical illness. The majority of patients were given doses of previously prescribed antidepressants or antipsychotics. The remaining patients were given sleep aids or over-the-counter medications, which is a standard treatment for anxiety caused by lengthy wait times for psychiatric case management evaluation and placement in psychiatric facilities.

Limitations

As with all clinical research, the present study has limitations. One limitation was the unfortunate exclusion of 7 of our random selection of 100 medical records for review. Of these 7 records, all were reviewed for the detection of acute medical illness. We found 4 records in which a patient's vital signs were erroneously recorded as abnormal on the TAPS form. Although the abnormal ranges for vital signs are clearly printed on the form, the triage nurse in these 4 instances overlooked the criteria and gave the patient a negative TAPS assessment. It is not unusual to

encounter simple human error when using screening forms in this manner. All of these patients just missed the cutoff levels by marginal numbers, but on review, these patients were all deemed to have no acute medical illness. Two of the medical records were excluded primarily because of data extraction errors, which can occur

during any retrospective medical record review when data are entered and transferred. Finally, 1 of these patients left the hospital after triage while waiting to be brought back to the EBH unit. The patient visited the ED 3 months later, and no new medical issues were identified in the patient's record, indicating nothing was missed on the first ED visit. Some critics might recommend integrating these patients into the current study, but we believe that excluding the patients yielded the most confident, conservative results.

Another limitation was that we did not assess the group of patients with positive TAPS assessments (ie, the subset of patients who required medical workup or treatment). Without more resources, however, the study of the less-common positive event lies beyond our scope. Our efforts were concentrated on finding a tool to rule out patients who required further medical testing. Future studies might look to develop a tool that identifies patients who required further medical assessment.

Although we would recommend studying and expanding the use of the tool in other outpatient settings, the findings suggested here are not necessarily generalizable. Results are more likely to be replicated in EDs and during triage.

Another limitation was the inability to follow up with patients who came to the ED with psychiatric chief complaints and were not admitted to our inpatient psychiatric facility or followed up in our outpatient clinics. However, we were able to study the records of all except 2 of the patients who had presented back to our facility within 2 years of the ED visit in which TAPS was used; none had documented medical illness that had left them with comorbid conditions. None of the facilities that accepted patients after transfer from our ED reported back through

the quality assurance channels that a patient had been inappropriately admitted or that an acute medical condition was missed. With these limitations in mind, no patients with a negative TAPS assessment presented with acute medical illness.

Conclusion

The process of medical clearance for patients who present to the ED with psychiatric chief complaints has not, to our knowledge, been standardized and has considerable variation among health professionals. The current study found that TAPS is a clinically useful tool for identifying the absence of medical illness in ambulatory patients presenting with psychiatric chief complaints. Many emergency physicians believe that patients with psychiatric chief complaints and normal vital signs do not require medical testing.²¹ With TAPS, physicians may begin to eliminate the redundancy of the process and realize efficiencies throughout the health care system.

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(continued)

Appendix. Triage Algorithm for Psychiatric Screening

This tool contains 6 yes-no questions. It was designed to be completed when ambulatory patients present to triage with psychiatric chief complaints. The first-contact triage nurse completes the form as the initial history of the patient is obtained. The tool helps to assess the absence of acute medical illness and determine if patients with psychiatric chief complaints can bypass the emergency department (ED)

*and go directly to the Emergency Behavioral Health (EBH) unit. The original form contained a section for comments and the name of the physician reviewer. **Abbreviations:** DBP, diastolic blood pressure; HR, heart rate; RR, respiration rate; SBP, systolic blood pressure; T, temperature.*

Patients may go directly to the EBH if all of the following questions are answered NO:

1. Age >65?	YES	NO
2. Abnormal Vital Signs?		
T >100.4°C	YES	NO
HR >100 or <60	YES	NO
SBP >180 or <100	YES	NO
DBP >100 or <60	YES	NO
RR <10 or >24	YES	NO
3. Patient has a medical problem as a chief complaint?	YES	NO
4. Hallucinations or delusions with no prior history of the same?	YES	NO
5. Schizophrenia or mental retardation history?	YES	NO
6. Visibly intoxicated or admits to drug or alcohol use within the last 8 hours?	YES	NO