Implementing a Protocol-driven Medical Clearance Algorithm in Behavioral Health Crisis Services

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Problem Statement, Purpose, & Goals

Background:
- In 2015, 5.7 million visits to the emergency department (ED) were for psychiatric complaints.
- In 2016, 44.7 million adults reported having mental illness and 19.7 sought treatment from either an ED, inpatient psychiatry, and/or outpatient behavioral health services.

Problem Statement: A lack of standardized recommendations for medical clearance for admissions to inpatient behavioral health units (BHU) from emergency care settings can lead to:

- Increased patient distress
- Often unnecessary lab work/diagnostic testing with low yield
- Increased health care costs
- Increased length-of-stay (LOS) with reduced bed turnover in emergency services
- Delays in receipt of specialty psychiatric services
- Increased morbidity and mortality due to increase in medical errors

Practice Change Question: Will a protocol-driven medical clearance algorithm decrease the LOS from patient triage to disposition decision without affecting patient safety?

Setting: Behavioral Health Crisis Intervention Center

Population: Adult patients with psychiatric symptoms presenting to a crisis center for emergency care

Implementation procedure: Weekly data collection and analysis of medical clearance checklist

Short-term Goals:
- Approval of the medical clearance algorithm
- At least 50% utilization of the algorithm as evidenced by completion of the medical clearance check list
- More comprehensive history and physical assessments (H&P)
- Appropriate diagnostic testing for clinically significant findings on H&P
- Reduced length of time (minutes) from triage to disposition decision
- **Balancing Measure:** No change in number of transfers to medical units within 72-hours upon admission to inpatient BHU

Long-term Goals:
- Improved patient safety related to more comprehensive H&Ps
- Reduction in unnecessary or duplicative lab work
- Reduction in related health care costs

Search Strategy/Evidence Appraisal

- **Search Terms:** "Medical clearance; Emergency department; Laboratory testing; Psychiatric" (447 studies)

- **Search Platform:** Pubmed, PsychINFO, MEDLINE, CINAHL

- **Appraisal of level & quality of evidence:** Johns Hopkins Nursing Evidence-based Practice Rating Scale (Newhouse, et al., 2006)

- **Project Development:** Seven Steps of Evidence-based Practice Model (Melnyk & Fineout-Overholt, 2011)

- **Project Implementation:** Mobilize, Assess, Plan, Implement and Track (MAP-IT) Framework

Contact

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Evidence Table

AUTHOR/ YEAR	PURPOSE	RESULTS	EVIDENCE LEVEL/QUALITY
Chennapan et al. (2018).	To determine the practices for medical screening adult patients that present to the emergency department for psychiatric complaints and which test alter patient care.	1. **Age required for additional screening**: 65 and older should have additional testing. 2. **Routine Screening for laboratory testing**: Abnormal test results rarely affect patient disposition. 3. **Elements of patient history**: Thorough history and physical needed. 4. **Vital signs**: important to measure. 5. **Physical exam**: Complete physical exam 6. **Mental Status Examination** (with Orientation): 7. **Routine urine drug screenings**: Rarely alters care 8. **Medical Screening Tools**: Weak evidence but may aid in standardization of care.	V (Systematic reviews of descriptive and qualitative studies) B (Good Quality)
Conigliaro et al. (2018).	To determine if a protocol for laboratory screening would be clinically significant for psychiatric patients in an ED.	While abnormal tests were seen from 0-41%, the tests had low clinical significance (0.0- 0.4%).	V (Systematic reviews of descriptive and qualitative studies) B (Good Quality)
Janiak, B.D, & Atteberry, S. (2012).	To determine if routine laboratory screening would affect medical clearance for psychiatric patients in the ED.	All had laboratory studies upon admission to the psychiatric service. N=148 (28.5%) had repeat studies. One patient admitted to psychiatry as manic was found to have hyperglycemia at an unsafe level and was transferred for medical management.	IV (Well-designed case-control and cohort studies) B (Good Quality)
Nazarian et al. (2017).	To determine if: 1. routine laboratory testing should be performed on alert adult patients presenting with acute psychiatric symptoms. 2. brain imaging should be obtained acutely when new onset psychosis without focal neurological deficit is present.	Further research is needed for each question. 1. Evidence that supports the use of history, physical exam, and previous psychiatric diagnosis to aid in what testing is needed. 2. Recommendation was to use risk factors to guide brain imaging.	V (Systematic reviews of descriptive and qualitative studies) B (Good Quality)
Parmar et al. (2012).	To determine the prevalence of laboratory and radiographic studies	1. 191 patients received testing after history and physical. 1 patient had an abnormal resulting in change in disposition. 2. Lab test frequency: CBC n=146 (33.6%), BMP n=151 (34.8%), UDS n=141 (32.5%), urinalysis n=97 (22.4%), and TSH n=85 (19.6%). Radiographic ordered infrequently.	IV (Well-designed case-control and cohort studies) B (Good Quality)
Korn, C.S., Currier, G.W., Henderson, S.O. (2000).	To evaluate usefulness of the medical clearance process that includes vital signs, physical exam, radiography and laboratory testing for patients with only a psychiatric complaint in the emergency department.	1. n=80 received protocol treatment all were within normal limits. One resulted with positive pregnancy test and one mild leukocytosis. Disposition unchanged. 2. Various medical reasons noted and treated before psychiatry consulted.	IV (Well-designed case-control and cohort studies) B (Good Quality)
Amin, M., & Wang, J. (2009).	To determine if laboratory studies are beneficial in ruling out medical illnesses in psychiatric patients presenting to the emergency department.	n=246 normal results. n= 247 abnormal results; from the abnormal results n=72 (29%) of these were related to a positive urine toxicology screen. n=56 (22%) abnormal results n=42 (17%) had a normal history and physical exam n=14 (5%) had an abnormal exam and 4 (1%) required medical treatment but no change in disposition.	IV (Well-designed case-control and cohort studies) B (Good Quality)

Practice Recommendations: Medical Clearance Algorithm

Figure 1. Crisis Center Medical Clearance Algorithm
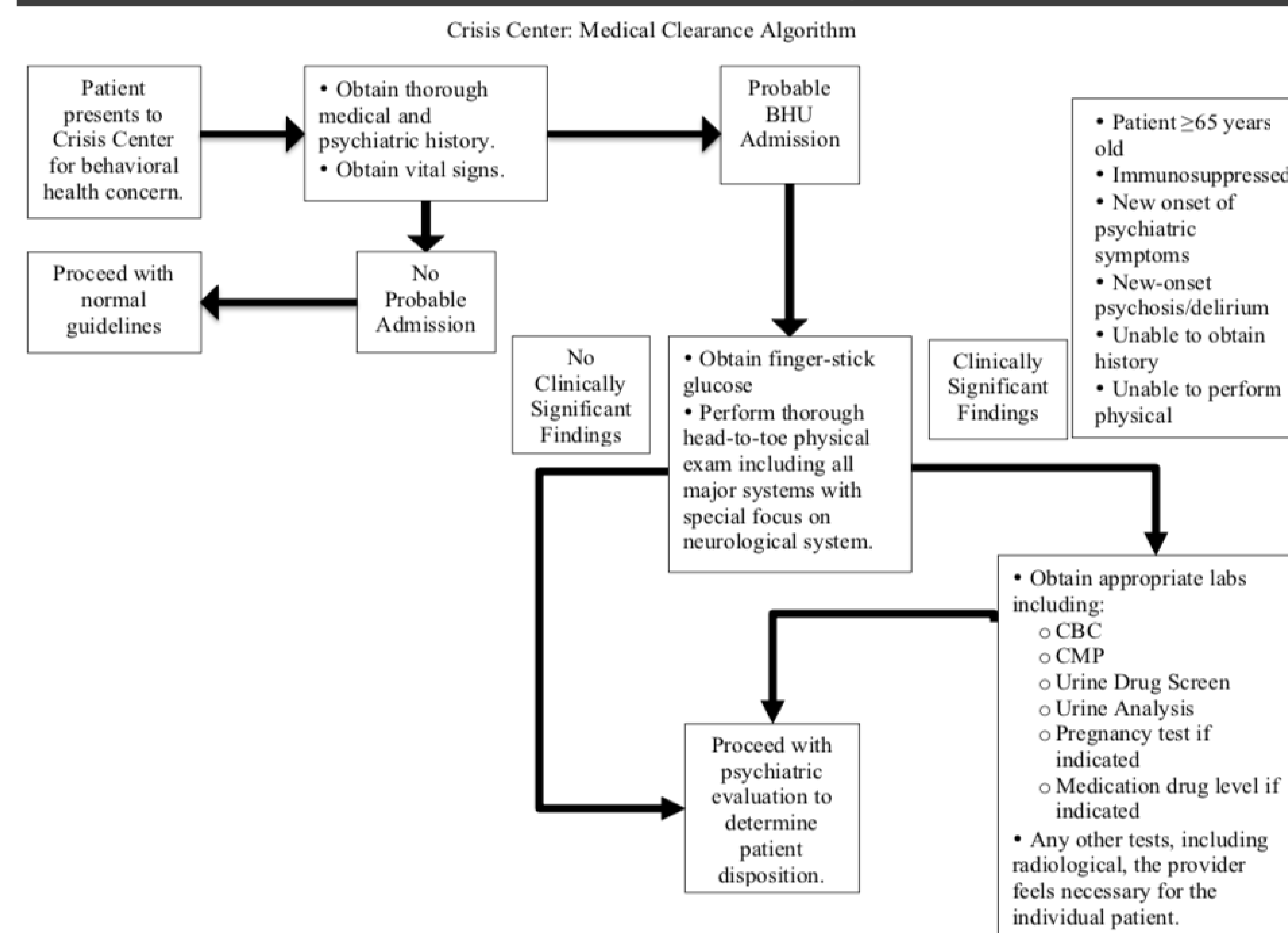
Results

Total Project: 11-weeks N=425
- 3 weeks Baseline n=115 (LOS and Disposition data only)
- 8 weeks Implementation n=310 (received medical clearance algorithm)

Disposition Decision Outcome (N=425)	Baseline (n=115) #(%)	Implementation (n=310) #(%)
No Admission (Discharge Home)	98 (85.22%)	259 (83.55%)
Transfer to Behavioral Health Unit	0 (0.00%)	1 (0.32%)
Transfer to local Emergency Department	5 (4.35%)	15 (4.84%)
Transfer to Crisis Residential Unit	12 (10.43%)	35 (11.29%)

- **No significant difference in Disposition between Baseline and Implementation: ($\alpha < 0.05$) $x2= .1739$ $p= .68$**
- Most patients discharged were seen at the Center's outpatient clinic within a week of visiting the Crisis Center

Length of Stay (LOS) Data	Mean (SD)	Medium	Range	P-value
Baseline (n=115)	211.70 (199.07)	168.00	1355.00	0.15
Implementation (n= 310)	188.90 (205.99)	146.00	2899.00	

- **No significant difference in LOS between Baseline and Implementation: ($\alpha < 0.05$) $t(423) = 1.02$, $p= .15$, one-tailed**
- **Safety Measure:** There were no transfers to a medical unit within 72 hours after transfer from the Crisis Center to a behavioral health service (n=0)

Discussion

Synthesis of Evidence: Studies analyzed for algorithm were systematic reviews and well-designed case-control and cohort studies with good quality ratings

Limitations:
- **The Crisis Center opened three months prior to project implementation**
  - Lack of onsite laboratory services during implementation; unable to obtain labs before disposition decision
- **Lack of full-time medical providers**
  - Relied heavily on nurses to complete the algorithm checklist; all patients gave history and received assessment by trained RN. Patients not seen by a provider were seen at a follow-up in the outpatient clinic typically within one week

Conclusions:
- Patient safety was not compromised with the use of this algorithm (balancing measure n=0)
- LOS did not appear to be compromised by the use of the algorithm ($p= .15$)
- LOS was significantly lower at the Crisis Center (3.3 hrs.), compared to the large study performed in Massachusetts emergency department (10.9 hrs.) (Pearlmutter, 2017)
- **A similar algorithm was implemented at a local ED with similarly positive results**
- **Welcome but unintended positive outcome:** The algorithm checklist helped to document a reduction in utilization of emergency department and inpatient behavioral health unit services

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