Digitizing Care: Enhancing Efficiency and Accuracy through a Mobile Electronic Observation Record on an Inpatient Behavioral Health Unit

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BACKGROUND

- Mental health staff observe patients every 15 minutes to ensure safety and prevent suicide[1,2,3]
- Observations are documented into an observation record[1,2,3]
- Transition to a **mobile electronic observation record (MEOR)** could improve observation adherence and patient safety[4,6,8]

- **P:** Registered nurses (RN), licensed practical nurses (LPN), emergency medical technicians (EMT), and mental health technicians (MHT) completing safety observations on a behavioral health unit
- **I:** MEOR
- **C:** Paper Observation Record
- **O:** Observation compliance (<15 mins) and timeliness
- **T:** 30 days for each intervention

REVIEW OF LITERATURE

Limitations of Paper-Based Observation Charting

- No digital timestamping: Allows backdating or falsification of documentation[5,6,7]
- Lack of electronic alerts or reminders: Staff may miss or delay checks[8,9,10]
- Security risks of paper records: Higher risk of unauthorized access[11,12,13]

Advantages of MEOR Systems

- Timestamping ensures accurate, immutable documentation[5,6]
- Electronic alerts improve compliance of interventions[8,9,10]
- Improved auditing and access controls[11,12,13]

METHODS

Setting

- 5-bed inpatient behavioral health unit
- Avg. census: 2.1 patients/day

Sample

- Staff: 7 RNs, 3 LPNs, 2 EMTs, 8 MHTs
- Routine 15-minute observations by staff

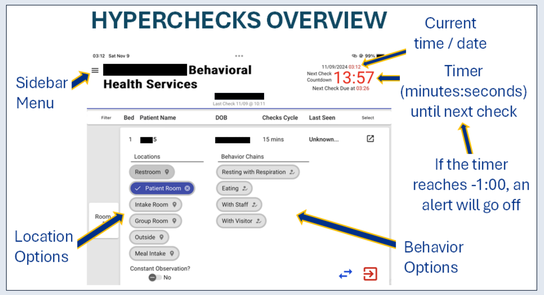

Figure 1: *Hyperchecks Overview*

Intervention: MEOR

- Tablet-based application developed for real-time documentation

Study of the Intervention

- *Paper Observation Period (30 days):*
  - Standard practice; times manually recorded
  - Compliance and timeliness manually calculated
- *MEOR Observation Period (30 days):*
  - Real-time documentation
  - Automatic compliance tracking
  - Data collected from SQL server

Measures

- Compliance rate (compliant ÷ total observations)
- Observation Intervals

RESULTS

PAPER OBSERVATION RECORD (30 Days)	
# of Compliant Observations	1157
Total Observations	2305
Compliance Rate	0.5020
Mean Time Since Last Observation	0:15:05
Std Dev	0:02:48
5 observations excluded (0:01:00<x<01:00:00)	
MOBILE ELECTRONIC OBSERVATION RECORD (30 Days)	
# of Compliant Observations	1606
Total Observations	2799
Compliance Rate	0.5738
Mean Time Since Last Observation	0:14:34
Std Dev	0:03:25
66 observations excluded (0:01:00<x<01:00:00)	

Figure 2: *Descriptive Statistics Pre- and Post- Intervention*

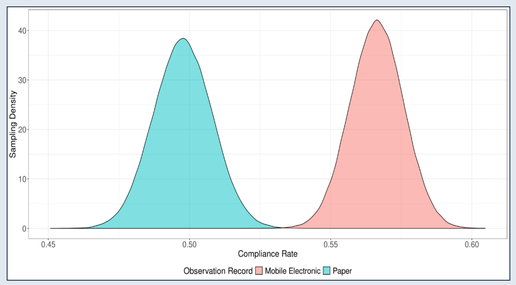

Figure 4: *Probability Scale from Logistic Regression Indicates Improvement in Compliance Rate with MEOR (from 49.8% to 56.6%)*

Paper Observation Record					
1%	25%	50%	75%	99%	
7.720	13.900	15.000	16.033	23.980	
Mobile Electronic Observation Record					
1%	25%	50%	75%	99%	
3.785	13.533	14.750	15.867	26.294	
Quantile Regression of All Observations (Pre- & Post- Intervention					
tau	Intercept	Value	Std. Error	t value	Pr(>|t|)
0.01	7.720	-3.950	0.667	-5.926	0.000
0.25	13.900	-0.367	0.083	-4.415	0.000
0.50	15.000	-0.250	0.046	-5.475	0.000
0.75	16.033	-0.167	0.081	-2.061	0.039
0.99	23.980	2.350	1.703	1.380	0.168
Logistic Regression of Compliance Rate					
Value	Std. Error	z value	Pr(>|z|)		
0.277	0.057	4.865	0.000		

Figure 3: *Quantile Regression Indicates Decreased Observation Time Intervals with MEOR*

- MEOR increased staff compliance of 15-minute safety observations from 49.86% ± 1.03% to 56.64% ± 0.95% (OR = 1.32, $p < 0.001$)
- MEOR reduced median observation intervals by 15 seconds ($p < 0.001$).

DISCUSSION

Facility Impact

- Improved compliance, surveillance, and safety culture
- Reduced paper use and physical storage
- Streamlined auditing and survey readiness
- Enhanced accountability and operational efficiency

Barriers

- Risk of fabricated times on paper charts
- Differences in allowed submission frequency between paper and MEOR

Limitations

- Single small unit, rural setting
- No patient-level outcomes measured

CONCLUSION

- MEOR improved observation compliance and timeliness
- Reduced falsified entries
- Supported safety initiatives and efficiency
- Findings align with literature supporting electronic alerts & timestamping[5,6,8,9,10]

REFERENCES