

Hot Topics 2025 Abstract:

Title:

Digital Health Tech Reduces Treatment Duration and Medication Exposure in Opioid-Exposed Newborns

Digital Health Tech Cuts Treatment Days and Medication Use in Opioid-Exposed Newborns

Introduction:

Neonatal Opioid Withdrawal Syndrome (NOWS) presents in infants exposed to opioids in utero. Diagnosed through symptom-based assessments that guide treatment decisions, current approaches are subjective, non-standardized, and prone to user bias, resulting in unnecessary medication and increased healthcare costs.

In a prior three-year quality improvement study (n=111), sequential interventions, including a simplified 6-symptom assessment and dual medication guidelines, reduced treatment duration by 67% (39→13 days; $p<0.001$), graph-1. A subsequent pilot at a secondary site achieved a comparable reduction to 16 days. This study aimed to determine whether treatment duration could be further reduced using digital health technology, specifically an iOS app, to guide assessment and treatment.

Methods:

The 6-symptom assessment and dual pharmacology guidelines were incorporated into a responsive, question-driven, point-of-care iOS app (*AssessPro*) and implemented at the prior pilot site from 2021 to 2023. Opioid-exposed newborns born at ≥ 36 weeks were assessed and treated using the app (intervention) and compared to outcomes from the prior pilot (pre-intervention) including length of treatment, medication use, and hospital stay.

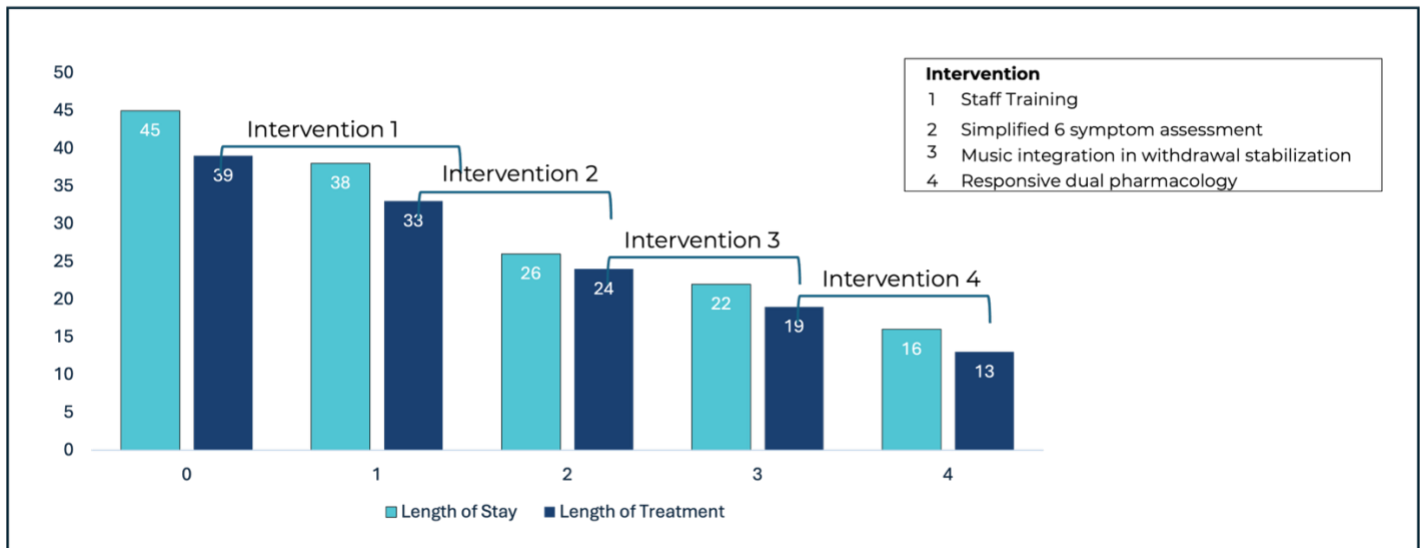
Results:

After exclusions, 222 patients were evaluated (151 pre-intervention; 71 intervention). Treatment length decreased from 16.0 to 7.2 days (55%; $p=0.002$), medication use declined from 47.0% to 7.0% (79%; $p<0.001$), and average hospital stay decreased from 11.9 to 4.8 days (60%; $p<0.001$). Graph -2.

Conclusion:

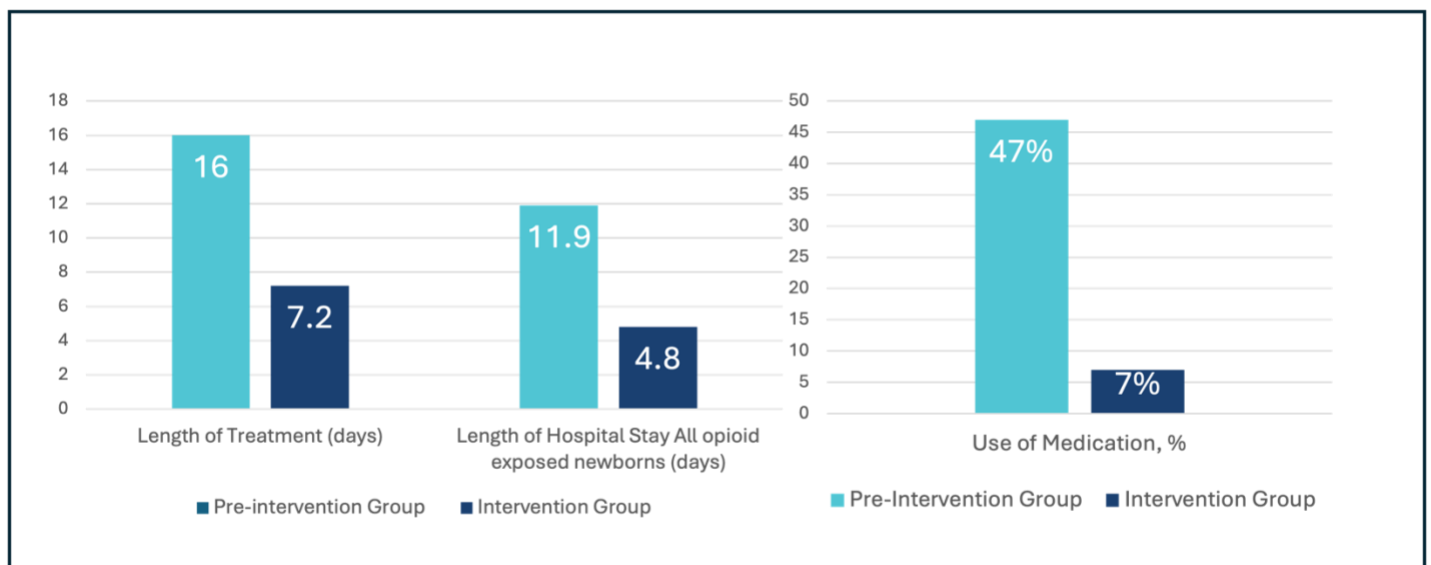
Use of a digital, point-of-care app significantly reduced treatment duration, medication exposure, and hospital stay for opioid-exposed newborns. A larger multi-site study is warranted to validate *AssessPro* as a scalable tool for standardized NOWS assessment and management.

From Complexity to Clarity: Sequential Interventions Reduce Treatment Duration for Opioid-Exposed Infants



Graph 1: Four sequential interventions implemented over a three-year quality improvement initiative each contributed to progressive reductions in treatment duration—by 5 to 9 days per phase—resulting in an overall 67% decrease for opioid-exposed newborns (39→13 days; $p<0.001$). Total hospital days for infants requiring treatment decreased by 64% (45→16 days; $p<0.001$).

Digital Precision in Action: Digital Health Tech Reduces Treatment Duration and Medication Exposure



Graph 2. Implementation of the *AssessPro* digital health application further enhanced outcomes achieved through prior quality improvement interventions. Use of the app significantly reduced treatment duration from 16.0 to 7.2 days (55%; $p=0.002$), decreased medication use from 47% to 7% (79%; $p<0.001$), and shortened average hospital stay from 11.9 to 4.8 days (60%; $p<0.001$). These findings demonstrate the power of digital health technology to standardize clinical decision-making and drive measurable improvements in the care of opioid-exposed newborns.