

From Doorknob Phenomenon to Anticipated Event: Discharge Vital Signs in the Emergency Department

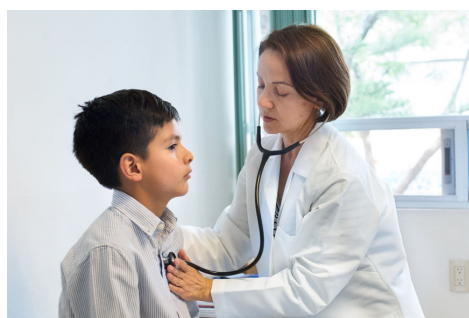
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How often do you obtain and review a fresh set of vital signs before discharging a child from your emergency department (ED)?

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How often do you obtain and review a fresh set of vital signs before discharging a child from your emergency department (ED)? Or from your clinic or the hospital for that matter? Given that discharge tachycardia alone can place a patient at higher risk for return to the ED or admission to the hospital, you may want to consider checking those vitals one last time.^{1,2} But how? In this month's *Pediatrics* ([10.1542/peds.2019-0436](#)), Vukovic and colleagues share their efforts to ensure patients have vital sign measurements prior to discharge from the ED in an effort to safely transition children home.

The quality improvement team set out to increase the percentage of pediatric patients discharged with a complete set of vital signs from 22% to 95% at a university-affiliated, tertiary-care pediatric ED. Children with an Emergency Severity Index (ESI) of 1, 2, or 3 (indicating higher-risk for severe illness) or children with abnormal presenting vital signs regardless of ESI were the focus of the QI efforts. An interprofessional team of nurses, paramedics, and attending physicians identified three key drivers that would lead to successful achievement of their goal: standardization of age-based abnormal vital signs, standardizing the process for when to obtain discharge vital signs, and providing guidance to reduce the risk of readmission or representation to the ED after discharge. Vukovic et. al. incorporated multiple interventions targeting these key drivers including instituting departmental policy requiring discharge vital signs for eligible patients, provider education, informational cards highlighting age-based abnormal vital signs, and best practice alerts (BPAs) for both providers and nurses. The QI team utilized continuous improvement cycles with interval assessments of the primary outcome. Secondary measures included the frequency of return to the ED within 72-hours and hospital admissions. Success of the intervention was balanced with mean length of stay (LOS) in the ED, where a longer LOS may indicate unanticipated burden to the ED workflow or providers delaying discharge for ongoing vital sign abnormalities.

Over 7,000 ED patients were assessed during the interventional period from September 2017 – January 2019. The QI team successfully increased the percentage of eligible patients with discharge vital signs from a baseline of 21.5% to nearly 85%, an improvement that was sustained for a period of at least seven months once the initiative concluded. As with many QI efforts, the successes were incremental, with each cycle of

improvement addressing a different barrier to success. An initial increase from baseline to just over 40% of patients receiving discharge vital signs was obtained with implementation of a paper-based discharge vital signs form, highlighting that even low-tech interventions can be impactful. Through careful study of initial interventional cycles, Vukovic and colleagues learned that it was difficult for nurses and providers to routinely identify which patients necessitated discharge vital signs among the hustle and bustle of a busy pediatric ED. The vital sign policy was accordingly updated to include all “core” rooms in the ED, which routinely housed patients already meeting inclusion criteria for receiving discharge vital signs. This seemingly simple but important change improved the success rate from approximately 50% to nearly 80%. Only a modest improvement to the final rate of ~85% came with initiation of the EMR-based BPAs.

Although the QI team ultimately did not meet their goal of 95% of eligible patients receiving discharge vital signs, an overall improvement by over 60% from baseline is far from failure. And, the team was able to reach this level of success without prolonging a patient’s LOS while in the ED. It should be noted that, although the intervention was predicated on the premise that reviewing discharge vital signs could ultimately reduce 72-hour ED re-visits, the QI team did not show any significant change in this metric during the study period. This is likely multifactorial, and our ability to learn from this observation is further limited by no mention on what proportion of patients re-presenting for care were originally discharged with abnormal vital signs (which could suggest a potential targetable intervention). Finally, as with all QI initiatives, the generalizability of this single center’s success to a community setting with or without pediatric-trained providers is unknown. However, the significant improvements seen with low-tech paper-based intervention and the cohorting of at-risk patient groups suggest such settings could feasibly implement these changes if desired. See the results for yourself and see which interventions by Vukovic et. al. could work for your institution in this month’s *Pediatrics!*

References

1. Wilson PM, Florin TA, Huang G, Fenchel M, Mittiga MR. Is Tachycardia at Discharge From the Pediatric Emergency Department a Cause for Concern? A Nonconcurrent Cohort Study. *Ann Emerg Med.* 2017;70(3):268-276 e262.
2. Scott HF, Deakyne Sj, Woods JM, Bajaj L. The prevalence and diagnostic utility of systemic inflammatory response syndrome vital signs in a pediatric emergency department. *Acad Emerg Med.* 2015;22(4):381-389.

- [Parental Management of Discharge Instructions: A Systematic Review](#)
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