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13 Perceptions of a Resident Waterfall Schedule in an Academic Emergency Medicine Residency

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Background: Many EDs have adapted scheduling models due to boarding, increased wait times, and other logistical challenges. An overlapping shift model, or waterfall, has been shown to reduce handoffs and improve perceptions of patient safety and department flow. After an attending waterfall schedule made positive changes in our department, we applied the same concept to our resident schedule and studied perceptions of the change. We hypothesized that the resident waterfall schedule would improve perceived quality of education, wellness, and patient care.

Methods: This cross-sectional survey study was performed at a 55,000 visit per year academic emergency department with a 3-year emergency medicine residency program with 8 residents per year. A waterfall schedule was implemented in the 2019-2020 academic year with data collection in April 2020. Resident shifts and handoffs were staggered every 2-4 hours with most shifts having no handoff the first 2-4 hours. After nine months, a survey was sent to residents and attendings using a 5-point Likert scale to measure the schedule's impact. The primary outcome was median resident response to perceived improvements in workflow efficiency, handoffs, faculty teaching, overall education, chart completion, leaving on time, burnout, patient rapport, quality of care, patient satisfaction, and patient throughput. A one-sample Wilcoxon signed rank test was used to assess whether the median was equal to 3 (no effect).

Results: 14 residents (88%) and 8 attendings (40%) completed the survey. Both groups demonstrated statistically significant positive effects across most domains including faculty workflow (4.0, p=.014), resident workflow/efficiency (5.0, p<.001), number of handoffs received on shift (4.5, p=.004), overall education (4.0, p=.004), completion of documentation on shift (4.0, p=.003), ability to leave shift on time (4.0, p=.002), and quality of patient care (4.0, p=.004).

Conclusion: While limited to a small number of participants at a single center, this study is the first to incorporate a waterfall schedule change for residents and shows positive perceptions in multiple categories. In this era of systemic challenges to our specialty, this schedule change offers opportunities for other residencies to improve their workflows. Future studies could evaluate its efficacy at other programs with objective outcomes.

14 Point-of-Care Ultrasound as a Tool to Accurately Diagnose Diastolic Dysfunction

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Background: ACongestive heart failure (CHF) is a prevalent health condition affecting a significant portion of the U.S. population. Among the different forms of CHF, diastolic heart failure (DHF) is of significant clinical importance. Currently, a comprehensive echocardiogram interpreted by a cardiologist is considered the gold standard for diagnosing DHF; however, there is a growing need to rapidly screen patients in the emergency department (ED) by emergency physicians (EPs) to potentially avoid costly admissions.

Methods: We conducted a prospective, observational study on a convenience sample of adult ED patients diagnosed with congestive heart failure. Each subject underwent point-of-care ultrasound (POCUS) at the cardiac window (parasternal long-axis, apical 4-chamber) to assess for diastolic dysfunction using pulsed wave Doppler and tissue Doppler measurements. EP-performed POCUS findings were analyzed using STATA/SE 14.2 and compared with comprehensive echocardiography interpretations by cardiologists blinded to the EP interpretations.

Results: Among 148 enrolled patients, 86 were included in the final analysis. Patients were excluded from analysis if comprehensive echocardiography was not completed, was cancelled, or lacked sufficient Doppler parameters to determine diastolic function. Studies deemed indeterminate by cardiology interpretation were also excluded. When compared to cardiologist-interpreted echocardiogram results, EP-performed POCUS demonstrated a sensitivity of 81.9% [95% CI, 71.1-90.6%], specificity of 42.9% [17.7-71.1%], PPV of 88.1% [77.8-94.7%], NPV of 31.6% [12.6-56.6%], +LR 1.43 [0.899, 2.29], and -LR 0.421 [0.193-0.919].

Conclusion: EP-performed POCUS may serve as a useful initial screening adjunct to gold-standard comprehensive echocardiography for diastolic dysfunction in the ED. In this population of known CHF, there was a high sensitivity for detecting clinically significant CHF. Further studies should aim to look at all comers with CHF symptoms, and could potentially contribute to prevention of admissions.