

Optimal Shift Duration For Emergency Physician Efficiency, Effectiveness and Safety: A Comparison of 6, 7, and 8-Hour Shifts

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ABSTRACT

Completed Studies

Objective: Our objective is to determine if there is a difference in the efficiency of patients seen per hour between 6, 7, or 8-hour shifts in the ED. Secondary outcomes include the number of patient handovers, and unscheduled ED revisit rates associated with different shift lengths.

Methods: This retrospective study is based on one urban ED, where 81 physicians provided care for 79,941 visits during the study period (2013/09/01 to 2014/08/31). Forty-one physicians met our inclusion criteria, working a minimum of 30 shifts of varying lengths over this period. Minor treatment shifts were excluded from analysis. Administrative data and an online scheduling system was used to compare scheduled shift length and number of patients seen per hour as well as percentage of patients handed over to the next physician from the total seen that shift, and return visits within 72 hours. One way analysis of variance and T-tests were used to compare the means between 3 different shift types.

Results: A total of 3214 shifts of varying start times (1467 6-hour shifts, 531 7-hour shifts and 1216 8-hour shifts) were included. Mean start times for 6, 7 and 8-hour shifts were 12:00, 17:00 and 10:00 respectively. The average number of patients seen per hour for 6,7 and 8-hour shifts was 2.56 (95%CI 2.53-2.59), 2.75 (95%CI 2.68-2.82) and 2.50 (95%CI 2.47-2.53), respectively; $p < 0.001$ for comparison of 7 against 6 and 8 hour shifts. The average handover rate for 6,7, and 8-hour shifts was 22.14 (95%CI 21.50-22.78), 27.45 (95%CI 26.37-28.53) and 17.36 (95%CI 16.86-17.87) percent, respectively; $p < 0.001$ for the comparison of 8 against 6 and 7. All night shifts in this ED are 7-hours; a limitation of this result is the inclusion of night shifts which have higher handover rates. There was no significant difference between shifts for 72-hour return rates.

Conclusion: In this comparison, a 7-hour shift duration offers optimal physician efficiency, while 8-hour shifts may be more desirable from a safety perspective, as fewer handovers mean less opportunity for error.