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Policy-driven Improvements In Crowding: System-level Changes Introduced By A Provincial Health Authority And Its Impact On Emergency Department Operations In 15 Centers

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Abstract:
Background: System-level changes that target both ED throughput and output show the most promise in alleviating crowding. In December 2010, Alberta Health Services (AHS) implemented a province-wide hospital overcapacity protocol (OCP) structured upon the Viccellio model.
Objectives: We sought to determine if the OCP policy resulted in a meaningful and sustained improvement in ED throughput and output metrics.
Methods: A prospective pre-post experimental study was conducted using administrative data from 15 community and tertiary centers across the province. The study phases consisted of the 8 months from February to September 2010 compared against the same months in 2011. Operational data for all centres were collected through the EDIS tracking systems used in the province. The OCP included 3 main triggers: ED bed occupancy >110%; at least 35% of ED stretchers blocked by patients awaiting inpatient bed or disposition decision and no stretcher available for high acuity patients. When all criteria were met, selected boarded patients were moved to an inpatient unit (non-traditional care space if no bed available). The primary outcome was ED length of stay (LOS) for admitted patients. The ED load of boarded patients from 10 - 11am was reported in patient-hours (pt-hrs). Throughput is reported as time from ED arrival to MD assessment and percent left without being seen (LWBS). Continuous variables were compared with the Student's t-test.
Results: The volume of ED patients across all sites increased by 6.3% from pre to the post-phase (579071 vs. 615787; $p < 0.001$) while admission rates remained constant (12.9% vs. 13.1%; p = NS). ED LOS for admitted patients decreased from 17.2 hours to 11.6 hours ($p < 0.001$); the load of admitted patients at 10am declined from 11.3 pt-hrs to 6.1 ($p < 0.001$). Average time from ED arrival to MD assessment decreased in the post-phase (113.2 vs. 99.3 minutes; $p < 0.001$) as did % LWBS (4.0% vs 3.8%; $p < 0.001$). All OCP effects remained constant over time; however, there were regional disparities in its impact.
Conclusion: Policy-driven changes in ED and hospital operations were associated with significant improvements in both throughput and output metrics, despite increased input. Which components of the OCP program had the greatest impact are uncertain, as are explanations for the differential regional impact.
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