

Discharge Before Noon (DCBN)

This chart, and companion article in *The Hospitalist*, is part of an on-going series that explores performance measures commonly used in hospital medicine. Assembled and reviewed by the Performance Measurement and Reporting Committee.

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Measure Name	Discharge before noon (DCBN)
Domain	Hospital throughput, patient flow
Measure Type	Process
Attribution (Group, Individual)	Hospital/system, department/division, clinician
Data Source(s)	Electronic health record
Measurability	Requires discharge order timestamp.
Alignment with Federal or Other Reporting Programs	No
Measurement Cadence	Variable. Typically: day, week, or month.
Directly Actionable by Hospitalist Group?	Hospital medicine clinician behavior may impact the percentage of patients who are discharged before noon. However, there are multiple potential confounding factors, including nursing workflows, placement delays, transportation issues, and other systems or stakeholder influences that may impact the measure.
Balancing or Complementary Measures	Balancing measures might include 30-day readmission rates, length of stay (LOS), clinician and staff experience of care, and the cost to sustain interventions or incentive programs necessary to promote DCBN. Complementary measures might include emergency department (ED) LOS, ED crowding, inpatient LOS, and in-hospital mortality.
Unintended Consequences	Concerns have been raised that DCBN could lead clinicians to keep patients who are otherwise ready for discharge in the afternoon until the following morning. Results are inconclusive as to whether this occurs. Wertheimer et al. (<i>JHM</i> , 2015) concluded this theoretical risk was not occurring based on the intervention group (38% DCBN, up from 11%) having a statistically significant decrease in the observed to expected (O:E) LOS ratio from 1.06 to 0.96. Comparing DCBN and non-DCBN, Rachoin et al. (<i>AJMC</i> , 2020) found that DCBN was associated with lower O:E LOS amongst surgical patients, but noted that O:E LOS was higher amongst medical patients. A second theoretical concern is that an early discharge could be an incomplete discharge, thereby increasing 30-day readmissions. This is not supported by current evidence. Kirubarajan et al. (<i>JHM</i> , 2021), Rachoin et al. (<i>AJMC</i> , 2020) and Wertheimer et al. (<i>JHM</i> , 2013) found that DCBN did not increase 30-day readmission rates.
Upstream/ Downstream Impact Factors	DCBN will require a collaborative interdisciplinary team.
Evidence for Clinical Concept of the Measure	Late afternoon discharges are thought to contribute to ED crowding, which is associated with worse patient outcomes, increased LOS, and worse patient and staff experience of care scores. Discharging patients earlier in the day, typically before noon, is hypothesized to make available inpatient beds for admitted patients in the ED, thereby reducing ED crowding.

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Evidence for Implementing the Measure	<p>While computer modeling supports a direct cause-and-effect relationship between DCBN and hospital LOS and ED crowding, real-world evidence is mixed.</p> <p>Implemented on two clinical units at an academic medical center, Wertheimer et al. (<i>JHM</i>, 2013) showed that increasing DCBM from baseline of 11% to 38% resulted in discharges occurring on average 1 hour 31 minutes earlier with a statistically significant decrease in O:E LOS from 1.06 to 0.96. In a follow-up study, Wertheimer et al. (<i>JHM</i>, 2015) detailed the operational benefits of DCBN, noting statistically significant changes in the median arrival time of patients to the medical unit from the ED and other units (5 p.m. pre-intervention, 4 p.m. post-intervention). They also documented a statistically significant change in when the majority of ED admissions were occurring, with 42.3% of admissions occurring between 5 p.m. and 10 p.m. pre-intervention and 40% of admissions occurring between 3 p.m. and 8 p.m. post-intervention.</p> <p>For hospitalized pediatric patients, a retrospective analysis by James et al. (<i>JHM</i>, 2019) found that DCBN was associated with decreased LOS for medical but not surgical patients.</p> <p>A multicenter retrospective cohort study led by Kirubarajan et al. (<i>JHM</i>, 2021) found no significant association between DCBN and hospital LOS (adjusted rate ratio [aRR], 1.000; 95% confidence interval [CI], 0.996-1.000; P = .997) or ED LOS (aRR, 0.999; 95% CI, 0.997-1.000; P = .307).</p> <p>Rachoin et al. (<i>AJMC</i>, 2020) found that for adult hospitalized patients with medical diagnoses, DCBN was associated with higher LOS (odds ratio [OR], 1.26; 95% CI, 1.18-1.35). Among the surgical population, DCBN was associated with a lower LOS (OR, 0.78; 95% CI, 0.71-0.86).</p> <p>Rajkomar et al. (<i>JHM</i>, 2016) found that DCBN was associated with longer LOS (adjusted OR: 1.043, 95% CI: 1.003-1.086).</p>
Other Comments	<p>According to Powell et al. (<i>JEM</i>, 2012), the effect on ED crowding attributable to DCBN may be dose dependent. Using computer modeling, they demonstrated that shifting discharge practices one hour earlier in the day, to have a peak discharge time of 2 p.m. instead of 3 p.m., decreased overall boarding hours of admitted patients by over 50%, from 77.0 hours per day to 34.4 hours per day. A shift of 4 hours (to 11 a.m.) was required to eliminate ED crowding. Therefore, the various studies with non-majority DCBN may not have led to profound changes because the intervention was insufficiently strong.</p> <p>Difficult for studies to determine cause and effect as many factors contribute to LOS.</p>
References	<p>James, H.J., Steiner, M.J., Holmes, G.M. and Stephens, J.R. (2019), The Association of Discharge Before Noon and Length of Stay in Hospitalized Pediatric Patients. <i>Journal of Hospital Medicine</i>, 14: 28-32. https://doi.org/10.12788/jhm.3111</p> <p>Kirubarajan, A., Shin, S., Fralick, M., Kwan, J., Lapointe-Shaw, L., Liu, J., Tang, T., Weinerman, A., Razak, F. and Verma, A. (2021), Morning Discharges and Patient Length of Stay in Inpatient General Internal Medicine. <i>Journal of Hospital Medicine</i>, 16: 333-338. https://doi.org/10.12788/jhm.3605</p> <p>Powell, E.S., Khare, R.K., Venkatesh, A.K., Van Roo, B.D., Adams, J.G., and Reinhardt, G. (2012). The relationship between inpatient discharge timing and emergency department boarding. <i>The Journal of Emergency Medicine</i>, 42(2), 186-196. https://doi.org/10.1016/j.jemermed.2010.06.028</p> <p>Rachoin, J-S., Aplin, K.S., Kupersmith, E., Gandhi, S., Travis, K., Stefaniak, M. and Cerceo, E. Discharge Before Noon: Is the Sun Half Up or Half Down? (2020) <i>American Journal of Managed Care</i>, 26(8):e246-e251. doi:10.37765/ajmc.2020.44074</p> <p>Rajkomar, A., Valencia, V., Novelero, M., Mourad, M., and Auerbach, A. (2016). The association between discharge before noon and length of stay in medical and surgical patients. <i>Journal of Hospital Medicine</i>, 11(12);859--861. https://doi.org/10.1002/jhm.2529</p> <p>Wertheimer, B., Jacobs, R.E., Bailey, M., Holstein, S., Chatfield, S., Ohta, B., Horrocks, A., and Hochman, K. (2014). Discharge before noon: an achievable hospital goal. <i>Journal of Hospital Medicine</i>, 9(4):210-214. https://doi.org/10.1002/jhm.2154</p> <p>Wertheimer, B., Jacobs, R.E., Iturrate, E., Bailey, M. and Hochman, K. (2015). Discharge before noon: Effect on throughput and sustainability. <i>Journal of Hospital Medicine</i>, 10(10):664-669. https://doi.org/10.1002/jhm.2412</p>