Discharge before noon: an urban legend

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Like all institutions, hospitals are susceptible to beliefs that propagate and certify themselves through re-telling – to urban legends. One of these legends is that discharging more patients before noon must improve hospital kinetics.

**Evidence for the benefit of early discharge**

Studies of morning hospital discharge come almost entirely from the emergency department and focus on the important issue of overcrowding. Kravet et al. suggested in 2007 that earlier inpatient discharge might improve Emergency Department boarding times; they piloted a physician-focused intervention that moved average discharge time almost two hours earlier, but they did not measure the effect on crowding. Powell et al. modeled the effect of early discharge on Emergency Department boarding in his Ontario hospital and found that moving peak discharge time four hours earlier should eliminate boarding altogether. In Australia, Khanna et al. analyzed Australian hospital data retrospectively in a series of papers and found early discharge associated with lower Emergency Department volumes. Vermeulen et al. showed in a retrospective analysis that fluctuation in the daily ratio of hospital discharges to admissions (particularly among medical patients) was associated with Emergency Department crowding the following day.

But there no study has measured Emergency Department occupancy before and after instituting early discharge, and only a single published report describing any hospital outcome after a change in discharge policy.
Wertheimer et al. measured changes in internal medicine length of stay after a sustained, multipronged, and dramatically successful effort that increased the percentage of pre-noon medical discharges from 11% to 38%. Shorter inpatient stays, these authors argued, was a likely outcome because patients admitted early in the day should receive (as a result of enhanced bed availability) more of the diagnostic and therapeutic benefit of that day. In fact, they did find a reduction of 9% in the ratio of observed to expected stay among all study patients after the increase in early discharge.

At the time of their study many other things were changing at the authors’ institution, not only efforts to increase early discharges. One change was a substantial allocation of medical and social services to weekends. The observed decrease in length of stay (and the authors’ odd finding that readmissions also decreased) may represent confounding by other institutional improvements.

Wertheimer’s study design could not distinguish between the effects of a general effort to discharge and the choice of noon as a particular goal. Unfortunately, like Kravet, Powell, Khanna, and Vermeulen, Wertheimer did not study changes in Emergency Department boarding. A decrease in pre-noon boarding time might have suggested that specifically pre-noon discharge caused an improvement in length of stay.

So evidence for any benefit is, overall, remarkably weak. However, early discharge has become so generic and undisputed a good that University Healthsystems Consortium, a respected national quality arbiter, describes 50% discharges before 11 am as “best practice,” raising the ante on those calling merely for discharge before noon. Another measure of the de facto acceptance of early discharge is that in recent publications the only hospital outcome described is success of adoption.

Why Noon?
How often and to what extent is it even necessary to "clear the Emergency Department"? Methods exist for the measurement of Emergency Department crowding on a moment-to-moment basis, but there are no published data describing how many patients need beds during the hours before noon \(^{12}\).

Might "early" be better conceived as an ideal distribution of discharges among several time intervals throughout the day, and not dichotomized as "before" and "after" any single hour. Certainly, the definition of "early" should reflect local bed needs of each institution, at least until we learn that most institutions have the same needs.

If, however, a single national cut-off must be chosen, to frame the task and rally support, noon would probably not be the best choice. The most recent national data are that Emergency Department occupancy begins to increase in the morning but does not peak until 8 pm \(^{13}\). So it is not before noon when ED's typically need beds for their newly admitted medical patients; it is half a day later, during the evening hours.

**Early Discharge and Measurable Hospital Outcomes**

Measuring ED occupancy would certainly illuminate the proposed mechanism of benefit, but the effect of early discharge on a range of other hospital outcomes must also be considered. These outcomes could be measured among all patients before and after a successful discharge intervention (bias lower) or else compared between patients discharged early and late using risk adjustment or propensity scoring (power greater).

Hospital length of stay is an outcome widely believed to improve with early discharge, but this may not be so. For one thing, doctors and nurses often prioritize hospital rules and goals or work "creatively" with them. When this activity is admired it is called "systems based practice," when disapproved of it is called "using work-arounds." Under pressure to discharge before noon, caregivers might well be tempted to hold a patient over for next-morning departure if preparations have not been completed by noon. The practice would reduce or even reverse any
gains in length of stay.

Even if there were grass-roots and full-throated support for prioritizing pre-noon discharge, would other floor duties be postponed as a result, slowing progress toward the future discharge of other patients? Morning in a hospital is, after all, temporal real estate of the greatest value.

A second important outcome is patient satisfaction, a marker of financial consequence to hospitals for both reimbursement and market share. It is not obvious what effect early discharge might have.

A third is nursing and support staff satisfaction, which affects morale and recruitment. In academic hospitals early discharges occur during teaching rounds, often pulling house officers away to deal with last minute obstructions to departure. If teaching is perceived as a casualty of early discharge, resident and attending satisfaction might decline; on the other hand starting the day with a smaller patient census might satisfy residents.

An easily measured outcome is readmission rate. Does early discharge really decrease readmissions, as Wertheimer found? Perhaps the aggressive social service effort required for early discharge also results in better planning for home care. Or perhaps patients discharged pre-noon were not readmitted because they chose to go to a different hospital, one less ready to bounce them out.

Increasingly front loaded, costs are unlikely to change with early discharge, but in a very busy hospital the opportunity cost of beds that are occupied too long may represent a cost that is hidden but large.

Finally, early discharge may affect the rate of hospital complications, actual or detected.

Conclusions
Pre-noon discharge is rapidly becoming a universal goal without much evidence that the required effort produces benefit in any hospital outcome. It may be too late to explore differences between institutions, to study variations in the definition of "early" discharge, or to question this urban legend.

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