

Readmissions and Diuretic Dosing



Sud et al. (1) do an amazing job of examining factors associated with readmission and length of stay “with the aim of developing targeted approaches to mitigate readmission risk.” However, adequate diuresis of patients is neither in their analysis nor in heart failure guidelines and may be an opportunity for all of us to reduce readmissions and improve outcomes. Because it is impossible to define adequate diuresis, it of course cannot be a quality indicator. Studies show that increasing the furosemide dosage may improve outcomes, however. In a landmark study from 1997 (2) showing that invasive hemodynamic monitoring improves a patient’s status, the dosage of furosemide was significantly increased from an average of 48 to 90 mg daily along with an increased angiotensin-converting enzyme inhibitor dose. The DOSE (Diuretic Optimization Strategies Evaluation) study (3) showed that a higher dosage of furosemide reduced rehospitalization rates from 36% to 27%. Although the p value was only 0.1, as Dr. Pocock says, “a p value is no substitute for a brain” (4). In the DOSE study, a creatinine bump >0.3 was considered a safety problem. However, Metra et al. (5) showed that in patients without congestion at discharge, such an increase in creatinine level was not associated with any adverse outcomes.

There has been no decrease in the rate of heart failure readmissions the past few years despite multiple well-thought-out initiatives. An increased emphasis on adequate diuresis might be a simple but overlooked way to improve outcomes. There is certainly no drug lobby pushing for more furosemide, and the difficulty in objectively measuring volume status has kept this important clinical issue relatively low on the radar. Perhaps in addition to guideline-based therapy, we need to focus a bit more on some of the basics. The recent failure of serelaxin, as well as other agents such as tolvaptan and natrecor, in the setting of acute decompensated heart failure is disappointing. They also highlight the urgency of re-examining the DOSE study and considering more diuretics for our patients before discharge. The fact that diuretics are not shown to improve mortality does not mean they should be ignored. We might be able to make people feel better and reduce readmission rates at the same time by acting now on this simple change. More focus on the patient volume status, more diuretics, and less concern with an isolated laboratory finding is a

process improvement we can all do now with no additional resources.

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REPLY: Readmissions and Diuretic Dosing



We thank Dr. Peled for raising an interesting point that is relevant to strategies to reduce heart failure (HF) readmissions. Predicting 30-day readmission for HF has been a significant challenge, with most predictive models demonstrating only modest discrimination. In part, this may be due to the fact that important predictive factors have not yet been identified. One example that we reported is hospital length of stay (LOS) (1). Along these lines, the adequacy of diuresis may be another potential marker of readmission risk.

However, adequacy of diuresis is difficult to incorporate as risk predictor because of the challenges it presents. Adequacy of diuresis has not been robustly quantified as a quality measure. Furthermore, it requires accurate evaluation of volume status, but there is interphysician variability in physicians’ assessments. Finally, despite meticulous clinical assessment, even when resting signs and symptoms of clinical congestion are absent, it may not accurately reflect intravascular volume status or an elevated pulmonary capillary wedge pressure (2).

We reported that patients with a short hospital LOS exhibited higher risks of 30-day readmission, and it is certainly possible that inadequate diuresis

was at least one of the mechanisms underlying this observation (1). Inadequate diuresis and persistent volume excess requires not only good clinical examination but also titration of diuretic dose to ensure a therapeutic effect. Thus, all the aforementioned factors may have contributed to the heightened risk of 30-day HF readmission.

As alluded to by Dr. Peled and from the discussion above, there are gaps in current knowledge in this aspect of acute HF care. New tools may assist physicians to better assess cardiac filling pressures, potentially resulting in more effective diuretic therapy (2,3). In addition, improvements in transitional post-discharge care may be a potentially useful strategy for HF patients who are discharged after a short hospital LOS (4). A rapid post-discharge strategy may allow for improved diuresis and other HF management as patients transition from the inpatient to outpatient setting. Whether the latter strategy will reduce readmissions or death will be tested in HF patients discharged from the emergency department or after a short hospital stay in the COACH (Comparison of Outcomes and Access to Care for Heart Failure Trial) (NCT02674438).

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