

## When the Meds Don't Reach the Bed

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### The Case

A 69-year-old man with cognitive impairment and marginal housing was admitted for acute exacerbation of chronic obstructive pulmonary disease (COPD). Over the course of a four-day admission, his condition moderately improved with bronchodilators, steroids, and antibiotics. The medical team planned to discharge the patient to his residential care home on a weekend day with conventional treatments for COPD exacerbations including doxycycline and prednisone along with control inhalers budesonide-formoterol and tiotropium, and nebulized albuterol for rescue.

The clinician caring for the patient scheduled transport for 4:00 pm and arranged for Meds-to-Beds (M2B), a service available in some hospitals to have a local retail pharmacy deliver medications to the bedside prior to discharge. Given the patient's inability to pay for the discharge medications, the social worker on the discharge planning team sent a voucher to cover the cost of medications to the commercial pharmacy around 11:00 am. The clinician later informed the nursing staff that he/she would personally pick up and deliver the medications due to concern about recent delays in M2B deliveries.

During the early afternoon, medication pick-up was delayed for several hours because the voucher amount sent by the social worker did not match the out-of-pocket cost of the medications. Around 3:30 pm, the social worker directly communicated with the pharmacy to resolve the voucher issue. However, the clinician was about to perform a high-risk procedure for another patient and no longer available to pick up the medications. Before performing the procedure, the clinician contacted the pharmacy with instructions to proceed with the medication delivery but did not communicate this change in plan to the patient's nurse or social worker. Scheduled transport arrived at 4:00pm and the patient was discharged without his medications.

After the procedure was completed around 4:30 pm, the clinician was informed that the medication delivery still had not arrived due to limited weekend staffing at the pharmacy. The discharge medications were delivered to the hospital at 4:45 pm, after the patient had been discharged and therefore too late.

The patient was subsequently readmitted to the same hospital approximately five hours after discharge due to dyspnea and hypoxia after shutting off his supplemental oxygen to smoke cigarettes. Unfortunately, he had been unable to relieve these symptoms with the medications he had available at the residential care home. His presentation likely represented poor pulmonary status secondary to end-stage COPD rather than an acute exacerbation of COPD. Both admissions were thought to be triggered by hypoxia secondary to being off home oxygen in the setting of smoking cigarettes. After discussion of goals of care with the family and patient during the second admission, the patient was transitioned to comfort care.

## The Commentary

*By Mithu Molla, MD, Kathie Le, PharmD, Pamela Mendoza, PharmD*

The discharge process can be quite complex, requiring alignment of multiple disciplines with unique roles and shared accountability. Three key factors contributed to a suboptimal discharge in this case: lack of interdisciplinary coordination and collaboration, failure to provide medications at discharge due to issues associated with the Meds-to-Beds program, and lack of knowledge of patient wishes, abilities, and goals of care. Ultimately, these failures led to an avoidable readmission.

### The Hospital Readmission Reduction Program

An avoidable readmission occurs when a patient who has been discharged from the hospital (the initial, or index admission) is admitted again within a certain time interval (typically 30 days), and the readmission is clinically related to the index admission.<sup>1</sup> In most avoidable readmissions, there are usually several contributing factors. Policymakers have embraced readmission reduction, with the presumption that variation among readmission rates is due to differences in measures of hospital quality,<sup>2</sup> and that a hospital readmission reflects poor quality care. Based on this premise, the Hospital Readmissions Reduction Program, which was authorized by the Affordable Care Act (ACA) in 2010, started applying financial penalties to hospitals that have higher-than-expected readmission rates for targeted conditions at thirty days post-discharge.<sup>3</sup> Despite widespread implementation of the program, there have been several criticisms of the policy. For example, in a hospital-level analysis of COPD, one of the targeted conditions, 30-day all-cause readmission rates have declined since inception of the program, while mortality rates actually increased.<sup>4</sup> This and other studies have led to concerns that hospitals may be focusing on reducing 30-day readmission rates through undesirable activities such as delaying readmissions beyond the 30-day period or admitting patients for observation and thereby avoid penalties.<sup>4</sup> The 30-day time frame may also not accurately reflect the quality of care provided by the hospital. For example, it has been shown that the hospital quality signal, or hospital-level effect on avoiding readmission, is strongest within the first seven days after discharge; therefore factors outside the hospital's control (related to community or household characteristics) could be having relatively larger effects on readmission risk over longer intervals.<sup>5</sup> Evidence currently suggests that hospital mitigation efforts would likely be most effective in the five to seven days immediately after discharge.<sup>5</sup>

## Medications and Hospital Readmission

Medication-related problems after hospital discharge play a big role in hospital readmissions. In a study by Forster et al., one in five Medicare patients was re-hospitalized within 30 days, and over two-thirds of those readmissions were medication-related.<sup>6</sup> In 2017, the World Health Organization reported that about 1.3 million people annually are injured by medication errors in the United States,<sup>7</sup> and 80% of those errors occur during transitions of care.<sup>8</sup> A similar concern about the prevalence of medication errors after hospital discharge was reported in a recent systematic review.<sup>9</sup>

Accordingly, interventions have been put in place for hospital discharge processes to reduce readmissions. These interventions include: patient education, medication reconciliation, ensuring follow-up appointments are made prior to discharge, warm hand-off communications with the primary care physician, and follow-up phone calls.<sup>10</sup> Medication reconciliation and pharmacist-led interventions have been a point of emphasis for many programs, and several studies have documented positive results in terms of readmissions and cost savings via reducing medication discrepancies.<sup>11-15</sup> Medication access issues can also be problematic and have been shown to have negative impacts on readmission rates. In one study, 22% of patients did not pick up their post-discharge medications.<sup>16</sup> The number of new prescriptions added upon discharge and higher “out-of-pocket medication costs” were associated with higher failure rates in following medication changes made at hospital discharge in another study.<sup>17-18</sup> About one in five new prescriptions are not filled in the United States and 50% of those filled are taken incorrectly.<sup>19</sup> The Meds-to-Beds program was conceived as one possible solution to help with problems around access and adherence to medications prescribed at hospital discharge.

## Meds-to-Beds Programs

Meds-to-Beds (M2B) is a unique quality improvement initiative aimed at preventing hospital readmissions. M2B provides patients the convenience of not having to stop at outpatient pharmacies or wait at hospital to pick up prescriptions before discharge, thereby preventing delays in taking medications as prescribed.<sup>20</sup> The service also addresses the issue of costs of the medications with patients ahead of discharge. If medications are unaffordable, pharmacists play a collaborative role with the patients and their care providers by navigating cost-saving strategies.<sup>21</sup> Eliminating barriers to medication access through M2B reduces the risk of prescription abandonment and promotes medication adherence, which, in turn, can indirectly improve hospital readmission rates. Since utilizing M2B is not feasible for all patients being discharged given limited availability of the staff required to coordinate deliveries, it may be useful to narrow the population of patients that qualify for the service to those that are at highest risk of prescription abandonment.

While M2B programs are increasingly utilized in hospital settings, there exists little evidence on which to conclude that this single intervention can reduce hospital readmissions when used alone. <sup>22 23 24</sup> Therefore, some hospitals have taken more comprehensive approaches to enhance the M2B program by having pharmacists review discharge medication lists for discrepancies prior to delivery of the medications

to a patient's bedside.<sup>20</sup> The M2B program at Vanderbilt University was designed to incorporate financial assistance, proactive refill reminders, and bedside counseling by a pharmacist at the time of delivery.<sup>20</sup> Other hospitals provide post-discharge follow-up phone calls with pharmacist consultants to help reduce 7-day and 30-day readmission rates. These types of "intervention bundles" that combine M2B programs with existing initiatives to improve transitions of care are more likely to be beneficial than simply delivering medications to hospital patients. [25-26-27-28](#)

### **Vouchers and Manufacturer's Coupon Programs**

As was done in this case, institutions can take advantage of programs that help mitigate prescription cost barriers for their uninsured or underinsured patients. For example, hospitals participating in the Federal 340 B program may elect to fund a 30-day supply of a medication through use of a voucher at discharge, and at no cost to the patient. Vouchers issued for this purpose must precisely match the price stated by the pharmacy, however, as was evident in this case. Manufacturer-sponsored free trial coupons are also utilized in a similar fashion<sup>27</sup> and have become readily available to outpatient pharmacies. Though it is tempting to take the path of least resistance and reach for these resources when medications are not covered or require a prior authorization, patients should be cautioned that these types of financial assistance programs apply only to their first fill of medications at discharge. To promote adherence and prevent prescription abandonment long term, it is necessary to provide solutions that mitigate cost barriers to future refills. Bedside delivery is, after all, merely an enhancement of customer service principles aimed at improving a patient's initial access to medications; achieving long-term adherence may require multiple visits during which patients are coached by caregivers adhering to the concepts of shared decision-making.<sup>29</sup> Approaches like this are unlikely to be successful, however, without an infrastructure in place. Every effort was made in this case to ensure that the patient received the discharge medications prior to going home. Additionally, what's more important in this end stage of COPD would be reinforcing education about the disease state management with the medications, oxygen usage, and smoking cessation as well as the discussion of goals of care. It is possible that if he had the COPD medications, especially the rescue therapy along with the aforementioned communications, he might have been able to manage his symptoms at home thereby avoiding re-admission.

### **Interdisciplinary Communication and Coordination of Care**

Although the ideal discharge process involves collaboration amongst care providers, existing research provides a relatively poor understanding of how professionals in various medicine units communicate with each other during discharge. According to an analysis by Pinelli et al., communication during patient discharges from a medical service involves a significant number of providers, using both synchronous and asynchronous methods, and a high number of communication events.<sup>30</sup> Players crucial to the process include physicians, nurses, and pharmacists. One recent systematic review suggests that pharmacist interventions are especially effective when performed in close collaboration with nurses and physicians.<sup>31</sup> Other members of multidisciplinary teams that play important roles include discharge planning, social services, and physical therapy personnel.

The factors that enable care coordination and teamwork among the various disciplines during discharges from medicine units are not well understood.<sup>32</sup> Two primary methods for conducting team meetings in medical units are care coordination rounds and interprofessional team bedside rounds, the latter of which are infrequently utilized.<sup>33</sup> In one study, structured interdisciplinary bedside rounds had a significant impact on 7-day readmissions.<sup>34</sup> Team bedside rounds occur most commonly during initial hospitalization days, rather than focusing on discharge transitions.<sup>33</sup> Conducting both of these types of interprofessional team meetings may improve standardized communication relating to patient discharges. Accountable Care Units, i.e. geographic cohorts in which physicians are assigned to specific units, can serve as effective platforms for bringing in expertise from other disciplines relevant to the discharge process.<sup>35</sup> An effective discharge huddle should include a pharmacist to address medication reconciliation problems, a physical or occupational therapist to address durable medical equipment needs, and a case manager to address post-discharge needs – all in one place and during one sitting.<sup>36</sup> A huddle structured to include these key participants, conducted well in advance of the patient's discharge, may be the most effective strategy for facilitating the communication among multiple disciplines so critical to a safe and effective discharge; but no less important is the communication that occurs between the providers and the patient.

### **Patient Communication Breakdowns**

Patients or their caregivers sometimes receive conflicting recommendations, confusing medication regimens, and unclear instructions about follow-up care. Patients and caregivers are sometimes excluded from the planning related to transitions of care such as a discharge from the hospital and, consequently, they may not buy in to the importance of following the care plan or lack the knowledge or skills to do so.<sup>8</sup> Patient empowerment allows patients to assert greater control over their health and healthcare, and involves sharing information and decision-making while keeping important considerations, such as the patient's health literacy, in mind. Results from one meta-analysis indicated that interventions that support patient empowerment were effective in reducing hospital readmissions.<sup>37</sup> To promote patient empowerment, caregivers should be trained in how to increase patients' capacity for self-care.<sup>37</sup> Teach-back is one method through which healthcare providers can ensure that they have explained medical information clearly so that patients and their families understand what has been communicated to them. Empowerment is part of a broader focus on communication that should also include eliciting the patient's preferences, abilities, and goals of care. Goals of care and advance directives are key elements that can guide care during care transitions. Discussion of these topics with patients should be initiated by the primary care provider and revisited in all subsequent care settings but, unfortunately, often is not.<sup>38</sup> Ideally, goals of care are reviewed at every patient-care provider encounter. The index hospitalization during this case may have been a missed opportunity for conducting such a review; clarifying the goals of care with the patient and his family during the second admission ultimately led to an agreed upon transition to comfort care.

## **Recommendations**

Ultimately, the discharge process is too complex to expect that any single intervention will be effective without the collaboration of everyone involved. Patients selected for M2B services may benefit from a formalized process that includes sending prescriptions at least 24 hours ahead of hospital discharge so as to allow time to address problems that may arise in the immediate post-hospitalization period. Literature also suggests that limiting M2B services to a targeted population such as hospitalized patients presenting with transportation or medication access barriers to better justify the time and extensive care coordination required to operate this program successfully. Results from published studies suggest that effective, safe hospital discharges also require ongoing integration of healthcare providers via multidisciplinary communication, and huddles that purposely address patient-empowerment goals. Similarly, models developed to address medication barriers/safety during hospital discharges should be comprehensive and therefore “bundled” with M2B as an adjunct to other interventions designed to improve transitions of care. There is no optimal design for the perfect hospital discharge, so each institution’s protocol must be developed, formalized, reviewed, and continuously modified based on its specific outcomes.

## Take-Home Points

- A focus on 7-day readmission rates rather than 30-day may be more reflective of hospital readmission mitigation efforts.
- M2B programs are highly effective at improving adherence to medication regimens when coupled with other patient safety interventions designed to improve transitions of care.
- Multidisciplinary huddles can be an effective means to ensure care coordination and teamwork during discharges.
- Patient empowerment and discussions of patient goals for care facilitate communication with the patient and can also help reduce avoidable readmissions.

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