DRIVERS OF LIVE DISCHARGE FROM THE MEDICARE HOSPICE PROGRAM: A MIXED METHODS STUDY

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A dissertation submitted to the faculty at the University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the Department of Health Policy and Management in the Gillings School of Global Public Health.

Chapel Hill 2017

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ABSTRACT

Rachel B. Dolin: Drivers of Live Discharge from the Medicare Hospice Program: A Mixed Methods Study (Under the direction of Pam Silberman)

The proportion of Medicare decedents accessing the hospice benefit at the end of life increased by more than 30 percentage points between 2000 and 2013. Yet the share of patients disenrolling from hospice prior to death has steadily increased over the last decade, representing nearly a fifth of all hospice discharges in 2012. Due to variations in the rate of live discharge at the hospice- and market-level, this outcome has come under scrutiny from policymakers, providers, and advocates as a potential indicator of poor quality. Such variations in live discharge rates and their documented association with hospice characteristics suggest that factors beyond patient choice may be driving these trends.

The overall objective of this dissertation study was to better understand the factors driving live discharge from hospice. To explore this area of inquiry, I conducted three studies: 1) A qualitative study exploring provider perceptions of the factors driving live discharge from hospices (chapter 2), 2) a quantitative facility-level study analyzing the relationship between hospice margins and live discharge rates (chapter 3), and 3) an empirical work delving into the relationship between the timing of live discharges relative to the hospice aggregate cap (and each hospice's respective risk of exceeding the cap at different points in the year) and the likelihood of an individual patient's experiencing a live discharge (chapter 4).

Overall, the results from these three studies together paint a complicated picture in which live discharges stem from not one primary driver but the confluence of many factors, arrayed in

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a variety of ways, to produce each individual patient-level outcome. Although these three studies provide evidence for "gaming" in the hospice delivery system, such trends do not suggest that higher live discharge rates are automatically reflective of poor quality — and vice versa. The Centers for Medicare & Medicaid Services ought to, thus, exercise caution before proceeding with a live discharge claims-based quality indicator. More generally, the totality of this work suggests that the Medicare hospice program has serious issues that must be resolved through payment system reform, increased oversight, benefit redesign, or some combination thereof.

To my grandparents, Inez and Saul Dolin, Irma and Eli Etscovitz, whose experiences with hospice inspired me to pursue research on end-of-life care.

ACKNOWLEDGMENTS

Completion of my doctoral training would not have been possible without my vast personal and professional support network of family, friends, colleagues, and mentors. Specifically, I would like to thank my dissertation committee for their continued wisdom, thoughtfulness, and support: Pam Silberman (chair and co-advisor), JD, DrPH; Mark Holmes (co-advisor), PhD; Laura C. Hanson, MD, MPH; Sally Stearns, PhD; and Donald H. Taylor, Jr., PhD, MPA. I would also like to thank Denise Kirk, MS, for her tireless assistance with Medicare claims management, and my colleagues at L&M Policy Research for their professional support throughout this process. I would additionally like to thank Morris Weinberger, PhD, for his mentorship throughout my time in UNC's doctoral program, and Laura Pinheiro for her friendship and inspiring work ethic. Finally, I would like to thank my parents, Diane and Scott Dolin; my brother, Adam Dolin; and my partner, Thomas Eager, for their unconditional love and support.

This material is based upon work supported by the National Science Foundation Graduate Research Fellowship Program under Grant No. DGE-1144081.

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PROLOGUE

"We can do much more to relieve suffering, respect personal dignity, and provide opportunities for people to find meaning in life's conclusion." — Institute of Medicine, Committee on Care at the End of Life, 1997

When the U.S. Congress passed the Affordable Care Act (ACA) in 2010, the 2,000-plus page bill excluded proposed legislation policymakers had introduced in 2009 to reimburse physicians for the time they spent counseling Medicare patients on end-of-life (EOL) care options (Zeytinoglu 2011). The nationwide debate over the suggested change in Medicare reimbursement — the so-called "death panels" — and the ultimate decision to omit this reimbursement change from the final bill capped off a decade of significant change in EOL care delivery, marked by notable expansion in the volume of hospice and palliative care providers on the one hand and misperceptions regarding the value of such services on the other.

That decade of change began in 1997 when the Institute of Medicine (IOM) issued a landmark report on the EOL care delivery system, entitled *Approaching Death: Improving Care at the End of Life* (1997). The IOM Committee on Care at the End of Life catalogued the insufficiencies of the national, regional, and local services and supports available to individuals nearing the end of life and provided suggestions for improvement (1997). "We can do much more to relieve suffering, respect personal dignity, and provide opportunities for people to find meaning in life's conclusion," the report said (1997).

Approaching Death heralded in an era of change: Between 2000 and 2012, Medicare hospice spending increased by more than 400 percent — from \$2.9 billion in 2000 to \$15.1

billion in 2012 — and the number of hospice providers increased by 65 percent during that time (MedPAC March 2015). The rate of enrollment also kept pace with the boom in spending and provider availability: In 2013, 1.3 million Medicare beneficiaries received hospice services — a far cry from the 197,400 patients who had enrolled in services in 1992, 10 years after Congress had passed the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA) to create the Medicare hospice program for terminally ill patients (Bernstein, Hing et al. 2003, MedPAC March 2015).

Despite the increasing availability and visibility of hospice providers and palliative care programs, there is consensus that the U.S. health care system is still ill-equipped to provide the necessary services and supports to individuals nearing the end of life and, furthermore, that the payment mechanisms currently in place do not appropriately reflect the complexity of patient social, emotional, psychological, and physical needs at the end of life. At the same time that the public conversation about EOL care turned into an acrimonious debate about death panels, the Medicare Payment Advisory Commission (MedPAC) released a report encouraging significant reforms to the Medicare hospice payment system, which the commission believed encouraged inappropriate profit-maximization behavior among some providers (MedPAC March 2009). In fact, a CMS Proposed Rule published in the Federal Register in May 2015 expressed these concerns in no uncertain terms: "We are concerned that some hospices are making determinations of hospice coverage based solely on cost and reimbursement as opposed to being based on patient-centered needs, preferences and goals for those approaching the end of life," (CMS May 2015). Although the Medicare payment system has experienced a wave of reform since the passage of the ACA, it still largely resembles the per-diem hospice payment system the U.S. Congress put in place through TEFRA in 1983.

Concerns regarding the Medicare hospice program are reflective of larger issues in the EOL care delivery system: The need for services at the end of life has grown and, yet, the payment mechanisms to facilitate such services are either non-existent or products of an era that catered primarily to cancer patients. In the fall of 2014, the IOM released another report discussing the insufficiencies of a care delivery system oriented toward acute, curative treatments rather than palliative, comfort treatments. "At present, the U.S. health care system is ill designed to meet the needs of patients near the end of life and their families," the IOM's Committee on Approaching Death said in its report, *Dying in America: Improving Quality and Honoring Individual Preferences Near the End of Life* (2014).

Although the Medicare hospice program is not the only mechanism for the delivery of palliative treatments for individuals with terminal illness, it is by far the most institutionalized, making it ripe for initial research and reform. Analyses that enhance our understanding of inappropriate or inadequate patterns of hospice use — inconsistent with patient preferences — may highlight priority areas for change that could ultimately ensure higher quality care is provided at the end of life. Accordingly, through a thorough literature review (Chapter 1) and a series of three related studies (Chapters 2, 3, and 4), this dissertation explores an outcome that, in some instances, may signal poor quality care: live discharge from hospice (also referred to as "live disenrollment" throughout this report). We define a "live discharge" as instances when a patient enrolls in hospice and then disenrolls — for various patient- or provider-initiated reasons — prior to death. Such patterns of hospice use are important to understand and explore in further depth because they may reflect larger issues in the EOL delivery system: fragmented care, potential lack of adherence to patient preferences at the end of life, and misaligned financial incentives. More nuanced understanding of issues such as these may provide additional evidence

for payment and delivery system reform, which, in turn, may begin to turn around a system in dire need of the type of change the IOM encouraged nearly two decades ago.

CHAPTER ONE: BACKGROUND

Review of the literature

Overview of the Medicare hospice program

Twenty years before Congress passed TEFRA, solidifying hospice as a staple of the Medicare program, Florence Wald, Dean of the Yale School of Nursing, invited Cicely Saunders to deliver a series of lectures cataloguing her innovative hospice work in the United Kingdom (Connor 2008). Saunders's visit marked the beginning of the modern hospice movement, leading to the establishment of the United States' first hospice in Branford, Connecticut, in 1973 (Connor 2008). The early U.S. hospice movement of the 1970s emphasized home-based alternative care for terminally ill patients, delivered by a large number of volunteers — both lay and professional (Kelley and Meier 2014) (Connor 2008). National stakeholder meetings in the mid- to late 1970s cemented hospice's presence in the health care delivery system, manifesting in the 1978 establishment of the National Hospice Organization (which became the National Hospice and Palliative Care Organization in 1999) and paving the way for the development of a formal benefit package and payment mechanism under the Medicare program (Connor 2008).

Hospice benefit design

As conceived in 1982, the Medicare hospice program continues to provide palliative and support services for terminally ill individuals expected to live six months or fewer, as certified by two physicians (Aldridge Carlson, Barry et al. 2012, MedPAC October 2014). Eighty-four percent of hospices enrollees in 2011 received services from the Medicare program, ¹

encompassing 87.9 percent of patient days that year (NHPCO 2012). The program requires beneficiaries to opt out of traditional services covered under Medicare, though they may still receive support for conditions unrelated to the terminal condition² (Plotzke, Christian et al. May 2014, CMS May 2015, MedPAC October 2014). Once the patient enrolls in the program, the Medicare Hospice Benefit (MHB) covers two 90-day periods followed by unlimited 60-day stints; the hospice medical director must certify the patient's terminal condition at the end of each benefit period (Kutner, Meyer et al. 2004, MedPAC March 2015). Although these timelimited restrictions do not result in an automatic discharge once hospice patients exceed the sixmonth limit, they must continue to show persistent decline to continue to receive the MHB (LeSage, Borgert et al. 2014). Alternatively, enrollees have the option of revoking the benefit at any point in time to seek curative treatment therapies (Johnson, Kuchibhatla et al. 2008, MedPAC March 2015).

Patients can receive hospice care in a range of service locations: their home, an assisted living facility, a nursing home, an inpatient hospital, an inpatient hospice facility, or other locations (Bogasky, Sheingold et al. 2014). As has been the case since the beginning of the Medicare hospice program, the largest proportion of Medicare beneficiaries receive care in their own homes; however, other settings of care have increased in popularity — particularly nursing homes, following the 1989 Omnibus Reconciliation Act, which reduced restrictions associated with receiving hospice care while in a nursing home (Stevenson and Bramson 2009). According to an analysis Bogasky, Sheingold et al. (2014) conducted using hospice claims from 2008 to

¹Other payers covering hospice use that year included: managed care or private insurance (7.7 percent), Medicaid (5.2 percent), uncompensated care (1.3 percent), self-pay (1.1 percent), and other (0.7 percent).

²In Fiscal Year (FY) 2013, Medicare paid \$694.1 million for Part A and Part B services and \$347.1 million for Part D for patients receiving hospice care. In a recent Department of Health and Human Services Office of Inspector General report, it was found that some of these Part D claims should have been paid for by the hospices.

2011, 55 percent of all users received care at home during that time, followed by nursing homes (27 percent), inpatient hospices (16 percent), inpatient hospitals (11 percent), assisted living facilities (eight percent), and other sites (two percent) (Stevenson, Huskamp et al. 2007).³

Upon admission to hospice, patients receive a plan of care — outlining the range and frequency of services to be provided — from a multidisciplinary team of providers, which must include a hospice nurse, social worker, and counselor (MedPAC March 2015). The MHB covers a range of services, including but not limited to: nursing care, physician services, home health and homemaker services, short-term hospice inpatient care, physical therapy, occupational therapy, speech therapy,⁴ drugs (for symptom control), medical equipment, and family bereavement services (MedPAC March 2015, MedPAC October 2014). And such services can be provided from a number of staff members participating in the hospice multidisciplinary care teams, including: physicians, nurses, social workers, therapists, spiritual counselors, home health aides, bereavement counselors, and volunteers (NHPCO 2012).

Out-of-pockets costs are minimal under the program, as hospices can only charge up to five percent coinsurance for drugs delivered outside inpatient settings (though the coinsurance cannot exceed \$5 per drug) (MedPAC October 2014). In 2012, daily average coinsurance across total hospice days was \$1.51 (Plotzke, Christian et al. May 2014). Beneficiaries enrolled in inpatient respite care are responsible for paying five percent of Medicare's daily rate, although annual payments are capped at the Part A inpatient hospital deductible amount for the enrollment year (\$1,216 in 2014) (MedPAC October 2014).

³Typically, hospice agencies contract with nursing homes, assisted living facilities, and other institutional care providers to deliver palliative care related to the patient's terminal illness; all other services (e.g., room/board and long-term services in a nursing home) are provided by the institutional setting.

⁴Physical, occupational, and speech therapists assist patients with pain relief by working with clients on issues associated with sensory, motor, emotional, and cognitive decline.

Criticism and responses

Although the MHB has remained consistent since the program began providing services in 1983, its design has come under criticism in recent years — particularly as beneficiaries continue to enroll in greater numbers. As early as 1997, the IOM noted that the restrictions associated with hospice eligibility may exclude "many [people] who might benefit from hospice services" (1997). Of specific concern is the six-month prognostic criterion, which some consider to be an arbitrary timeframe and, perhaps more importantly, difficult to forecast for many patients, particularly those with non-cancer diagnoses who may not experience a predictable decline (Kutner, Blake et al. 2002, Kelley and Meier 2014). Such eligibility restrictions often result in patients being referred to and enrolling in hospice too late, which frequently yields worse outcomes for patients and their families (Teno, Shu et al. 2007). Nearly one-third of hospice patients and family members interviewed for a survey conducted in West Texas said they would have preferred starting hospice earlier in the course of illness (Adams, Bader et al. 2009). Similarly, 11.4 percent of family members surveyed by Teno, Shu et al. (2007) said their loved one received hospice services too late.

In response to these restrictions, some hospices have enacted open-access enrollment policies, which enable them to enroll patients prior to their eligibility for the MHB (Aldridge Carlson, Barry et al. 2012). In such instances, hospices absorb the costs of care for patients until they enroll in the MHB — which, in some instances, can include chemotherapy and radiation treatments (Aldridge Carlson, Barry et al. 2012). Open access policies vary across hospices, with some having completely unrestricted policies and others putting in place some combination of restrictions, which can include: requiring that the patient has a caregiver at home or refusing admission to patients receiving chemotherapy, transfusions, tube feeding, palliative radiation,

etc. (Aldridge Carlson, Barry et al. 2012). According to a national survey of hospices conducted between 2008 and 2009, nearly one-third (29 percent) of hospices had an open-access enrollment policy, with large, non-profits located in the South Atlantic region more likely to enact these less restrictive enrollment procedures (Aldridge Carlson, Barry et al. 2012). On the other hand, hospices located in the Pacific and Mountain regions were more likely to have restrictive enrollment rules (Aldridge Carlson, Barry et al. 2012).

Furthermore, the requirement that patients forgo conventional treatment options upon hospice enrollment has come under such debate that Section 3021 of the Affordable Care Act (ACA) mandated the Centers for Medicare & Medicaid Services (CMS) launch the Medicare Care Choice Model demonstration, to test the effect of eliminating this requirement on the timing of enrollment/referral and the costs and quality of care delivered (CMS, MedPAC March 2015).

Patterns of hospice use and care delivery

Despite such perceived limitations in eligibility requirements, for patients who ultimately enroll, the MHB improves outcomes through its holistic approach to care delivery, managing physical, spiritual, social, and psychological symptoms; supporting caregivers; and reducing inpatient stays (Kutner, Blake et al. 2002, Kelley and Meier 2014). According to a study of hospice enrollees in the late 1990s and early 2000s, hospice beneficiaries lived an average of 29 days longer than comparable non-enrolled Medicare beneficiaries (Connor, Pyenson et al. 2007). Furthermore, research has shown hospice reduces costs: Compared to a similar group of beneficiaries who do not use hospice during the last two months of life, those who enroll in hospice incur less Medicare spending (MedPAC March 2015). Between 1993 and 2003, Medicare on average spent \$2309 less per hospice user compared to a similar comparison group

of non-enrollees⁵ (Taylor, Ostermann et al. 2007). Such general patterns of positive healthrelated and cost outcomes may be good news for an industry that continues to grow: In 2013, 47.3 percent of Medicare beneficiaries who died that year used hospice, marking an increase from the 46.7 percent who used it in 2012 (MedPAC March 2015). This uptick represented only a small shift in use for an industry that saw the number of hospice users double between 2000 and 2012, however (MedPAC October 2014).

Patient-level trends

During that time, the hospice industry also experienced an increase in the diversity of the patient population accessing the benefit (Aldridge 2015). Overall, hospice users tend to be older, female, White, and urban-dwelling with a non-cancer diagnoses — but such a profile does not fully capture an industry increasingly in flux (MedPAC March 2015). Between 2000 and 2010, the number of 65-plus Medicare decedents who accessed the MHB increased from 15.9 percent to 32.3 percent, with the 85-plus population group experiencing the largest rate of growth, encompassing 46 percent of all users in 2010 (Aldridge 2015). The racial/ethnic makeup of hospice users remained relatively unchanged during that same period, however, with an overwhelming majority of White decedents (88 to 89 percent) accessing the benefit, compared to seven to eight percent of African Americans and one to two percent of Hispanic beneficiaries (Aldridge 2015). Regionally, the greatest growth in the number of users has come in the South Atlantic region — encompassing, Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia, and Washington, D.C. — while the New England region experienced the greatest rate of growth during that decade at 152 percent (Aldridge 2015).

⁵The study accounted for selection bias (through propensity scores) and length of stay in hospice.

Perhaps the most notable change in patient-level characteristics among hospice enrollees during the 30-plus years of the program's existence has been primary patient diagnoses. When Medicare began offering the MHB in 1983, an overwhelming majority of beneficiaries were cancer patients (May 2015). In 1992, cancer patients represented 75 percent of the hospice population and 58 percent in 2000 (Kutner, Meyer et al. 2004, Aldridge 2015). By 2013, however, 68 percent of hospice decedents had a non-cancer diagnosis (MedPAC March 2015). During fiscal year (FY) 2012, the top five principal diagnoses among hospice enrollees were: lung cancer (11 percent), congestive heart failure (CHF) (seven percent), debility unspecified (six percent) (May 2015). From 2000 to 2010, the industry saw a 501 percent increase in beneficiaries with ill-defined conditions, leading to a regulatory change on Oct. 1, 2014, that prohibited hospices from including "debility" and "adult failure to thrive" as the principal hospice diagnoses on a claim (Aldridge 2015, May 2015).

Provider-level trends

Similar to the patient population, the profile of hospice providers has shifted dramatically over the last decade, marked, most notably, by the rise of the for-profit hospice. When Medicare started reimbursing for hospice care, it certified 40 hospices — and only 10 percent of them were for-profit (Thompson, Carlson et al. 2012). Now, the picture is much different: Between 2000 and 2012, the number of agencies increased by 65 percent, with the proportion of individuals enrolled in for-profit hospices more than tripling (Aldridge 2015, MedPAC March 2015). During that same period, both the number of non-profit and government-owned hospices declined (Stevenson, Dalton et al. 2015). In 2013, 61 percent of the industry was for-profit, 33 percent

was non-profit, and five percent was government-owned — with the number of for-profit providers increasing by 9.6 percent in that year alone (MedPAC March 2015).

The changing face of the hospice provider over the last decade-and-a-half can not only be attributed to the opening of new hospice agencies but also hospice closures and ownership changes (Thompson, Carlson et al. 2012). One-fifth of Medicare-certified hospices delivering care in 1999 had closed by 2009, while 44 percent had changed ownership (Thompson, Carlson et al. 2012). Such changes in the industry are notable, as, compared to non-profits, for-profit hospices tend to provide a smaller scope of services with a lower staff-to-patient ratio (Aldridge, Schlesinger et al. 2014). Furthermore, Gandhi (2012) found that for-profit hospices more often enroll non-cancer patients who are likely to have longer lengths of stay (see Notable patterns of use: Length of stay section below for more details on the implications of length of stay) and obtain referrals from long-term care facilities; in contrast, they less frequently receive referrals from physician practices.

Stevenson, Dalton et al. (2015) argue that such for-profit/non-profit distinctions are too broad to draw conclusions about hospice provider behavior in a meaningful way, as chain ownership and corporate behavior often drive care delivery practice patterns more so than mere for-profit or non-profit financing structure. The authors found that between 2000 and 2011, the proportion of chain-owned hospices — particularly in the for-profit sector — increased dramatically, from 19 percent of the market share in 2000 to 41 percent in 2011, accounting for the care of 45 percent of enrollees, compared to 26 percent in 2000 (Stevenson, Dalton et al. 2015). More specifically, the market share of for-profit chains increased from 13 percent in 2000 to 32 percent in 2011, while the market share of non-profit chains grew from five to nine percent during that same period (Stevenson, Dalton et al. 2015). The number of non-profit non-chains

remained relatively stable, as did the number of government-owned facilities; for-profit nonchains increased in number from 379 to 917 (Stevenson, Dalton et al. 2015).

Nearly all (91 percent) of for-profit chains operated in freestanding facilities in 2011 — a trend that extended to 85.4 percent of for-profit non-chains (Stevenson, Dalton et al. 2015). Overall, in 2013, 72 percent of hospices were freestanding, 14 percent were co-located in a hospital, 13 percent were home-health based, and less than one percent were located in a skilled nursing facility (SNF) (MedPAC March 2015). Between 2012 and 2013, hospital-based facilities declined by 2.6 percent, while freestanding and home health-based providers increased by 7.6 and 2.2 percent, respectively (MedPAC March 2015). Such changes represented an even greater shift from just over a decade earlier in 1999, in which 40 percent of hospices were freestanding, 34 percent were home health-affiliated, and 25 percent were associated with a hospital (Thompson, Carlson et al. 2012).

During the decade of 2000 to 2010, the percentage of hospice users served by small hospices declined by 19 percent, while the group served by large hospices grew by 29 percent a trend largely driven by the fact that for-profit chains represent a group of larger agencies than non-chains and non-profit chains (Stevenson, Dalton et al. 2015, MedPAC March 2015). Of the 10 largest chains in 2011, only one was non-profit (Stevenson, Dalton et al. 2015). Geographically, the distribution of for-profit chains is concentrated in the South, where the percentage of hospice enrollees receiving care from these types of agencies was highest: Louisiana (61 percent), Delaware (61 percent), Alabama (56 percent), Georgia (55 percent), and Texas (55 percent) (Stevenson, Dalton et al. 2015).

The boom in number of hospice providers has yielded improved geographic access to hospice providers — yet geographic variations in hospice supply persist. In 2008, the

Midwestern and Southwestern regions of the United States had the smallest supply of hospices, while the two coasts – east of the Mississippi River and west of the Rocky Mountains had the greatest supply (Silveira, Connor et al. 2011). There were an average of 24.3 hospice agencies per county that year, with 26 counties having no hospice services (Silveira, Connor et al. 2011). According to a multivariate analysis Silveira, Connor et al. (2011) conducted, predictors of high hospice supply in 2008 included: county population size, wealth (median household income), race (proportion of African American residents), and age (proportion over 65 years). Still, a 2015 MedPAC analysis emphasized that there is no relationship between the supply of hospices and the hospice enrollment rate (MedPAC March 2015).

Since a majority of hospice enrollees do not receive care in an inpatient hospice facility, a better indicator of geographic access to care may be driving distance to the nearest hospice. According to a study Carlson, Bradley et al. (2010) conducted using data from 2008, a large majority of hospice beneficiaries (88 percent) lived within 30 minutes driving time of the nearest hospice, while 98 percent lived within 60 minutes of the local hospice. Furthermore, the mean driving time to the nearest hospice was 15 minutes with certain regional characteristics more frequently associated with greater geographic access to hospice: higher population density, higher median income, higher educational attainment, higher proportion of African American residents, and absence of a state Certificate of Need law (Carlson, Bradley et al. 2010).

Notable patterns of use: Length of stay

Such shifting patient and provider characteristics have come hand-in-hand with extreme patterns of use — both short and long length of stay (LOS) — which, in some instances, could indicate poor quality care delivery and inappropriate provider behavior (Aldridge 2015). On the one hand, incredibly short stays may signal late referral, limiting patients from receiving

palliative services and other resources aimed at symptom management that would have been beneficial had they been delivered sooner (Williams 2003, Aldridge 2015). On the other hand, long stays are concerning because they may be associated with patients' inappropriate referral to hospice (Aldridge 2015). Although more than half (53.4 percent) of hospice enrollees in 2010 were enrolled for a short period of time, and, on average, a quarter were enrolled for five days or fewer between 2000 and 2010, the main area of concern among policymakers and regulators has been long stays (Thompson, Carlson et al. 2012, Aldridge 2015). As opposed to short LOS, which likely reflects difficulty providing accurate prognoses earlier in the course of a patient's illness or hesitation on the part of a patient and his/her family to forgo curative treatments, long LOS may reflect misaligned hospice incentives — which could require payment system reform (MedPAC March 2015) (2014).⁶ Because hospice stays are typically more expensive at the beginning and the end of the episode of care and Medicare reimburses according to a daily rate regardless of services rendered (for more details on the payment system, see Hospice payment system section below), patients with longer stays are more financially lucrative (Gandhi 2012).

Beginning in the late 1990s, the Department of Health and Human Services (HHS) Office of Inspector General (OIG) began investigating potential fraudulent behavior among hospices trying to enroll patients more likely to have longer LOS. Such practices, the OIG concluded, could stem from hospices trying to leverage the per diem payment structure (Gandhi 2012). When Medicare began reimbursing hospices in 1983, the average lifetime LOS was between 55 and 75 days (May 2015). LOS has increased steadily since that time to 88 days in 2013, with growth at the 90th percentile from 141 to 246 days between 2000 and 2012 (MedPAC March

⁶Short stays may also reflect misaligned incentives, but these are likely driven by the larger payment system, in which the fee-for-service reimbursement structure encourages the use of high-intensity treatments and discourages earlier hospice referral. This issue is beyond the scope of this study, however, so we do not discuss these implications here.

2015). Although hospices cannot predict a patient's LOS upon referral or enrollment, certain conditions are associated with longer LOS — and, thus, the concern among regulators is the potential cherry-picking that might occur among providers hoping to gain a more favorable financial return on their patient panels (Gandhi 2012). More specifically, according to a MedPAC (March 2015) report, in 2013, patients with neurological conditions or whose primary diagnosis was debility or adult failure to thrive had substantially longer LOS (147 days and 116 days, respectively) compared to cancer patients (53 days). Aldridge (2015) found that the largest predictor of a long stay was a non-cancer diagnosis.

Of particular concern is the relationship between long LOS and hospice provider type. In contrast with non-profit hospices, for-profits have a much longer LOS — 105 days compared to 68 days in 2013. Although for-profit hospices enroll patients with diagnoses that tend to have longer LOS in greater numbers than their non-profit and government-owned counterparts, they also have longer LOS across all diagnosis types, yielding higher profit margins overall (MedPAC March 2015). LOS also varies by setting of care, in which hospice patients in assisted living facilities had an average LOS of 152 days in 2013, followed by nursing facilities (111 days) and patients at home (89 days). In January 2015, the HHS OIG released a report discussing the implications of for-profit hospices receiving a large share of their respective revenues from assisted living facility patients (January 2015).

Hospice payment system

In the early 1980s, when policymakers first conceived of the Medicare hospice program, they launched 26 demonstrations to examine the cost-effectiveness of the potential benefit as well as the services that should be offered (Ruiz 2011, MedPAC October 2014). Hospice payments have remained virtually unchanged since that time — despite the fact that utilization

and cost patterns have transformed significantly over the last 30-plus years of the program's existence (MedPAC October 2014). CMS pays hospice providers a daily rate for each enrolled patient, whether or not the patient uses services in a given day and regardless of patient diagnosis (MedPAC March 2015). The per diem rate is calculated based on four base categories of care, which are updated annually according to the hospital market basket index⁷ and encompass a labor- and non-labor-related adjustment (CMS August 2015). Notably, the hospice payment system does not make adjustments for case mix, urban/rural location, or particularly costly outlier patients (Nicosia, Reardon et al. June 2006).

The four categories include: routine home care, continuous home care, inpatient respite care, and general inpatient care; Table 1 provides an overview of these payment categories and associated reimbursement rates (MedPAC October 2014).

Category of care	Purpose	Percent of hospice days (2013)	Base payment rate (2015)	
Routine home care	Typical/basic care	97.6 percent	\$159.34/day	
Continuous home care	Crisis situations	0.4 percent	\$38.75/hour	
Inpatient respite care	To provide reprieve for caregiver (short periods only)	0.3 percent	\$164.81/day	
General inpatient care	Inpatient services	1.7 percent	\$706.77/day	
Adapted from MedPAC (March 2015).				

Table 1. Categories of hospice care

Routine home care is ubiquitous, accounting for 97.6 percent of hospice days in 2013 and reimbursed at a rate of \$159.34 per day in 2015 (MedPAC March 2015). Continuous home care represents the other end of the spectrum, billed in 0.4 percent of hospice days in 2013 (MedPAC March 2015). Because continuous home care is intended for acute crisis situations, it is the only

⁷Section 3401(g) of the Affordable Care Act (ACA) mandated the hospice payment rate be annually reduced to reflect changes in economic productivity, starting in fiscal year (FY) 2013.

care category reimbursed at an hourly rate — \$38.75 per hour in 2015. More than half (58 percent) of hospices did not provide continuous care to their patients in 2013 (MedPAC March 2015). Inpatient respite care is available to provide brief stints of reprieve for the primary caregiver when patients are receiving hospice services at home (MedPAC March 2015). The per diem is \$164.81, accounting for 0.3 percent of 2013 hospice days. Similar to continuous home care, inpatient respite care is not widely used, with 25 percent of hospices not delivering this category of care in 2015 (MedPAC March 2015). General inpatient care represents the highest per diem rate at \$708.77 in 2015; 1.7 percent of hospice days that year were paid for with general inpatient care (MedPAC March 2015). According to a 2015 MedPAC analysis, 28 percent of hospices did not provide general inpatient care in 2013, while 19 percent delivered neither general inpatient nor continuous home care. And even more limited, 12 percent of hospices — mostly smaller hospices — provided only routine home care in 2013 (MedPAC March 2015).

CMS adjusts the per diem base rate according to the hospice wage index — based on the previous fiscal year's (FY) pre-reclassified, pre-floor hospital wage index adjustment factors⁸ — to account for geographic differences across markets (2011, CMS August 2015, MedPAC October 2014). CMS determines geographic location for the labor adjustment based on the Core-Based Statistical Area (CBSA)⁹ in which the beneficiary resides when receiving routine or continuous home care (CMS August 2015). Adjustments for patients receiving inpatient respite care or general inpatient care are based on the location of the facility at which the patient obtains care (CMS August 2015). For urban CBSAs that do not have a hospital from which to derive the

⁸This index refers to values prior to changes CMS makes on the basis of hospital requests for labor market classification changes as well as the application of lower limits to the wage index.

⁹CMS transitioned from an MSA-based to a CBSA-based designation in 2006. Per a 2015 CMS Final Rule, the hospice wage index underwent a one-year transition to new Office of Management and Budget CBSA delineations, which encompassed a blended wage index for FY 2016.

hospice wage index, CMS calculates a statewide pre-reclassified, pre-floor CBSA average and uses this as a proxy; only Hinesville, Georgia, required this calculation for FY 2016. In contrast, CMS calculates the hospice wage index for rural CBSAs without a hospital by averaging the pre-reclassified, pre-floor wage data for hospitals in all contiguous CBSAs.¹⁰

Until FY 2016, hospice wage index values below 0.8 were subject to either a budget neutrality factor (BANF) adjustment or a hospice floor adjustment, amounting to a 15 percent maximum increase to create a wage value no higher than 0.8 (CMS August 2015). CMS began a seven-year BANF phase-out (15 percent reduction each year) as mandated by the 2010 Hospice Wage Index Final Rule, which was completed in FY 2016 (CMS August 2015). The hospice floor adjustment is still in effect.

The proportion of the base category attributed to the labor- and non-labor-related adjustments varies by base category to reflect the estimated proportion of each category likely attributable to labor/non-labor costs; the non-labor portion is 100 percent minus the labor portion for each base category. More specifically, for routine home care and continuous home care, the labor portion is 68.71 percent and the non-labor portion is 31.29 percent; for general inpatient care, the labor portion is 64.01 percent and the non-labor portion is 35.99 percent; and for respite care, the labor portion is 54.13 percent, whereas the non-labor portion is 45.87 percent (CMS August 2015).

The Medicare hospice program also includes two caps on payments — an inpatient cap and an aggregate cap. Seldom exceeded, the inpatient cap limits the provision of inpatient care to 20 percent of a given hospice's total Medicare patient days (MedPAC March 2015). CMS reimburses hospices that provide inpatient care in excess of this cap at the routine home care rate

¹⁰Puerto Rico is the only rural CBSA that cannot be classified in this manner; CMS uses the value of 0.4047.

(MedPAC March 2015). The purpose of this cap is to ensure hospice care continues to be a primarily home-based benefit (May 2015).

The second cap, which has garnered attention over the last few years due to increased scrutiny of trends in excessive length of stays, restricts the aggregate payments hospices receive from Medicare within the November 1 to October 31 calendar year¹¹ (MedPAC March 2015, May 2015). Hospices must repay Medicare any total payments in excess of the cap amount (\$27,820.75 for the year ending on October 31, 2016) times the number of Medicare beneficiaries the hospice serves (CMS August 2015). In essence, CMS implemented the aggregate cap to ensure hospices solely provide terminal care and do not exceed conventional care expenditures at the end of life; today, the cap penalizes hospices with a high average LOS (Aldridge, Schlesinger et al. 2014, May 2015). According to MedPAC (March 2015), the cap "represents the only significant fiscal constraint in growth of hospice expenditures for hospice care."

Until recently, CMS exclusively employed a "streamlined" approach to count patients for the cap year, by which hospice patients were counted in only the first year of their hospice election (which starts on September 28 and ends on September 27 of the following year) and not in subsequent years (CMS August 2015). This counting year differed from the cap year to ensure that patients who enrolled in hospice right before the end of the cap year were included in the calculation for the following year — in which they likely received more services (CMS August 2015). Beneficiaries who obtained care from multiple hospices during the cap year were only

¹¹This timeframe does not align with the hospice rate update year (also the federal fiscal year (FY)), which extends from October 1 to September 30. The FY 2012 Hospice Wage Index Proposed Rule considered aligning the cap accounting year with the FY, but this change never came to fruition. Finally, in a Final Rule published in the Federal Register on August 6, 2015, CMS changed the cap year to align with the federal FY starting in FY 2017.

included in an individual hospice's cap calculation as the proportion of the patient's *total* hospice days spent in that hospice (CMS August 2015).

The FY 2012 Hospice Wage Index Final Rule added the cap calculation to include an alternative patient-by-patient proportional methodology — a slightly different way to count beneficiaries — which applied to new hospices or existing hospices that decided not to use the original streamlined methodology (May 2015). By the 2013 cap year, a majority of hospices had transitioned to patient-by-patient methodology, with only 486 hospices still relying on the streamlined approach (CMS August 2015). Through this new method, hospices count beneficiaries by dividing the number of days a patient spent in that hospice during the cap year by the *total* number of hospice days for a given patient across *all* years in hospice (CMS August 2015). The new patient-by-patient methodology counts patients according to the cap accounting year (November 1-October 31) rather than the timeframe used in the streamlined approach (September 28-September 27) (CMS August 2015).

When initially enacted in 1983, the cap amount equaled \$6500 per beneficiary; Medicare adjusts this amount each year to reflect annual changes in the consumer price index for urban consumers (CPI-U) medical care expenditure category based on the CPI-U medical expenditures amount in the fifth month of the current accounting year — in this case, March (CMS August 2015, May 2015). To calculate the annual cap amount, Medicare divides this current rate (444.020 in March 2015) by the rate from March 1984 (105.4) and then multiplies this amount by the original cap base amount in 1984 (\$6500) (CMS August 2015). In FY 2016, CMS further multiplied this rate by an additional 1.016 to account for the payment system update during that year, ultimately yielding a cap amount of \$27,820.75.

Despite these annual updates to the cap calculation literature notes potentially troubling trends regarding the rates of hospices exceeding — or nearly exceeding — the cap, as well as the types of providers more likely to incur the penalty. The proportion of hospices surpassing the cap peaked in 2009, although the rate began to grow again a couple years later, from 9.8 percent in 2011 to 11 percent of hospices in 2012. And in 2012, more hospices finished the year just below the cap compared to several years earlier in 2006¹² (MedPAC March 2015, Plotzke, Christian et al. May 2014). According to an analysis Plotzke, Christian et al. (May 2014) conducted for CMS in anticipation of potential revisions to the hospice payment system, newer hospices certified since 2000 were more likely to exceed the cap in 2012 (19.9 percent) than those certified in the 1990s (4.0 percent) or earlier (1.2 percent); for-profit hospices were also more likely to exceed the cap than their non-profit counterparts (17.9 percent compared to 2.4 percent). Similarly, 15.1 percent of freestanding compared to 2.7 percent of facility-based hospices surpassed the aggregate cap in 2012, while 14.2 percent of urban and 7.3 percent of rural hospices experienced the same trend (Plotzke, Christian et al. May 2014). Finally, hospices operating in the South were the most likely to exceed the cap (16.5 percent) compared to the West (14.2 percent), Northeast (5.0 percent), and Midwest (4.0 percent) (Plotzke, Christian et al. May 2014). Such 2012 trends appeared to hold across time, as Plotzke, Christian et al. (May 2014) found the same hospice-level predictors in 2006. A follow-up analysis using 2014 data found similar trends in above-cap hospices with significant geographic variations (Plotzke, Christian et al. 2015). States with the highest rate of above-cap hospices that year included: Nevada (40.7 percent), South Carolina (29.6 percent), Mississippi (29.4 percent), and Georgia (27.2 percent) (Plotzke,

¹²2006 was the first year of data included in this analysis.

Christian et al. 2015). In comparison, fewer than one percent of hospices in a number of states were above the cap in 2014 (Plotzke, Christian et al. 2015).

Misaligned incentives and the potential for reform?

Such LOS patterns have prompted calls to reform the hospice payment system that more appropriately account for its evolution over the last 30 years. A year before Congress passed the ACA, MedPAC released a report recommending reforms to the hospice payment system to better reflect the trajectory of episodes of care. Although, among other reforms, Section 3132(a) of the ACA authorizes the Secretary of Health and Human Services to conduct a review of the payment system to make budget-neutral reforms, MedPAC's 2015 report conveyed the same message as its 2009 report. "Medicare's hospice payment system is not well aligned with the costs of providing care through a hospice episode," the report said (MedPAC March 2015). Reliance on a per diem has created perverse financial incentives for hospices to not only cherry pick lower cost patients but also to enroll patients for longer stays (Aldridge Carlson, Barry et al. 2012, Kelley and Meier 2014, MedPAC March 2015). As such, MedPAC recommended the payment rate be restructured in the form of a u-shaped curve, in which hospices are paid more at the beginning and the end of an episode of care and less in the middle. The Commission also recommended a focused review of hospices with excessive long stays.

Plotzke, Christian et al. (May 2014) delivered a report to CMS in 2014, which served as the first step on the path toward payment reform, spurring an effort to monitor vulnerabilities in the payment system using real-time claims data. This work culminated in passage of the Improving Medicare Post-Acute Care Transformation (IMPACT) Act on Sept. 18, 2014 (Plotzke, Christian et al. May 2014, May 2015). IMPACT required further CMS hospice monitoring activities, including: surveying hospices every three years for the next decade and implementing an ACA provision for face-to-face medical review of patients in hospice more than 180 days (May 2015).

A May 2015 CMS Proposed Rule referenced both the Plotzke, Christian et al. (May 2014) study as well as the 2009 MedPAC recommendations in its proposal to alter routine home care payments (Section III.A) to reflect the beneficiaries' LOS by offering a higher base payment for the first 60 days and a reduced rate thereafter,¹³ with a service intensity add-on (Nicosia, Reardon et al.), which would pay for service rendered in the last seven days of life, provided the patient meets certain criteria (May 2015). The SIA would equal the continuous home care rate multiplied by the amount of direct patient care a registered nurse or social worker provides in the last days of a patient's life. The Rule also proposed changes to the calculation of the aggregate cap and the hospice wage index, including aligning the cap accounting year with the federal FY starting in FY 2017 (Section III.C and Section III.D) (May 2015). CMS ultimately published its Final Rule in the Federal Register on August 6, 2015, implementing the aforementioned changes on Jan. 1, 2016 (CMS August 2015). As such, for FY 2016, the per diem for a typical day on routine care was \$187 for days 1-60 and \$147 thereafter (MedPAC March 2016). During the last seven days of life, CMS reimburses up to four hours of nursing or social work visits a day at \$39 per hour (MedPAC March 2016).

Disenrollment from hospice

Concerns regarding potential misalignment of hospice incentives have also increased scrutiny over the rate of live discharges (or disenrollments) from hospice, which, in some cases could reflect good quality care — through adherence to patient preferences, stabilization of

¹³CMS also considered a "tiered" payment system but determined that this approach relied too heavily on the patient receiving skilled visits in the last few days of life.

conditions, etc. — but, in others, potentially inappropriate behaviors motivated by the payment system structure. Although the most common way to be discharged from hospice is through death, there are also a significant proportion of patients who disenroll from hospice while they are still alive. Once discharged, the patient resumes traditional Medicare coverage that had been waived upon hospice enrollment (May 2015). The reasons for live hospice discharges vary and can be either patient/family- or hospice-initiated, as shown in Figure 1 (Carlson, Herrin et al. 2009, LeSage, Borgert et al. 2014). Patients may choose to disenroll to pursue life-sustaining treatment because they are dissatisfied with the hospice program (i.e., its focus on comfort rather than curative care) upon initial enrollment, or as a result of sudden changes in hospice personnel (Casarett, Marenberg et al. 2001, Carlson, Herrin et al. 2009, LeSage, Borgert et al. 2014). They may also disenroll because their condition has stabilized or a family member/caregiver suddenly becomes available to provide care (Kutner, Blake et al. 2002, LeSage, Borgert et al. 2014).

Although the decision to revoke hospice care lies in the beneficiary's hands (42 CFR §418.28) — federal regulations require that the patient and/or proxy sign a statement attesting to this course of action — providers can initiate discharge through a written physician discharge order (42 CFR §418.26).¹⁴ Hospices may discharge a patient alive if they determine the patient is no longer eligible for hospice (i.e., the patient's health status improves and the prognosis changes); if the patient moves from the hospice's service area; if the patient is disruptive, aggressive, or uncooperative; or in situations when the hospice does not have a contract with a facility (e.g., hospital) to which the patient must be transferred (LeSage, Borgert et al. 2014,

¹⁴Although hospice revocation and discharge both result in a patient disenrolling from the Medicare hospice program, federal regulations distinguish between the two acts: Patients revoke hospice care, while providers discharge patients.
Chung 2015). Furthermore, it is possible that hospice-initiated disenrollment could reflect improper behavior on the part of the hospice, with hospice providers electing to avoid hospitalization costs by disenrolling the patient when he/she requires short-term inpatient care to stabilize acute conditions associated with the terminal illness (Teno, Plotzke et al. 2014, Chung 2015). According to federal regulations, hospices must contract with institutional settings prior to making a general inpatient referral (i.e., hospitals and SNFs) and are financially responsible for reimbursing the hospital or SNF the general inpatient rate received from Medicare. When patients disenroll from hospice prior to an inpatient stay, such costs fall on the institutional setting rather than the hospice (Chung, Richards et al. 2015).





LeSage, Borgert et al. (2014) conducted a medical chart review in one hospice between 2006 and 2011 and found that patients were discharged from hospice because: they no longer

met the hospice criteria (57.5 percent), the patient/family initiated the discharge (30 percent), they were transferred to another hospice (10 percent), or the hospice staff deemed the patient unsafe (2.5 percent). Another more representative study found that 32 percent of live discharges in 2007 occurred because the patient stabilized or improved, 29 percent occurred because the patient opted to pursue more aggressive treatment, 13 percent occurred because the patient moved outside the hospice service area, and 27 percent occurred for "other" reasons (Chung 2015). Such other reasons fell into three distinct categories: 1) the hospice was unable to contract with a hospital or nursing facility in which the patient was to be admitted, 2) the hospice could not provide an inpatient bed for the patient, or 3) a crisis occurred that the hospice could not control (e.g., the patient's caregiver called 911 instead of the hospice) (Chung 2015).

Beginning in July 2012, Medicare included new occurrence codes on claims to allow for further clarification of the reasons for a live discharge, differentiating between patient- and hospice-initiated discharge (Plotzke, Christian et al. May 2014). MedPAC's 2016 report on hospices found that 39 percent of discharges occurred because a patient revoked his/her service, while the rest were provider-initiated, primarily because the hospice deemed the patient to be no longer terminally ill (MedPAC March 2016). Another study using claims from the last four months of 2012 additionally found that African American and cancer patients had higher rates of patient-initiated revocation (Plotzke, Christian et al. May 2014).

The reasons underlying live disenrollment are key to determining whether this pattern of EOL service utilization reflects good or poor quality care delivery. A 2011 technical advisory panel convened to provide recommendations for the development of hospice quality metrics¹⁵

¹⁵The ACA required for the public reporting of hospice quality metrics through the Hospice Quality Reporting Program. Until that time, there had been no publicly reported quality data on hospice service delivery.

suggested several claims-based measures, including live discharge rates, as indicators of potential poor quality care delivery (MedPAC March 2015). Because live disenrollment may create discontinuities in care and disrupt ongoing patient-provider relationships — oftentimes landing frail and terminally ill patients in the hospital, ED, or ICU — it is important to understand the key drivers of this trend (Casarett, Marenberg et al. 2001, Taylor, Steinhauser et al. 2008, Carlson, Herrin et al. 2010, Unroe, Greiner et al. 2012). Patient-preference-driven discharges and condition stabilization may reflect an EOL system that appropriately caters to the changing individual needs/prognoses of patients, while discharges that occur because hospices do not have the appropriate resources to provide care or — worse — because hospices do not want to shoulder the financial burden, could point to signs of provider misuse or abuse of the hospice benefit.

Current state of the literature

To date, we found 15 peer-reviewed articles published between 2001 and 2016 focused solely on exploring patterns of live discharge from hospice. Despite the limited number of studies on the topic and the range of data sources used (across nearly two decades), the papers point to similar trends across patient- and hospice-level predictors/outcomes of live disenrollment. *Overall, the studies together suggest that non-White, unmarried patients with non-cancer diagnoses who have had a longer LOS in hospice are more likely to be discharged alive than other types of patients. At the hospice level, smaller, newer (five years or fewer), for-profit hospices operating in more competitive markets have higher rates of disenrollment. Patient-level predictors*

The majority of the studies on this topic catalogue some component of patient-level live disenrollment predictors, with nearly half exploring the relationship between

comorbidities/primary diagnoses and disenrollment and others reporting statistical significance of covariates: age, race, sex, marital status/caregivers, average LOS, and institutional residence. Among the four studies that reported a statistically significant relationship between age and the likelihood of live disenrollment, one study found that younger patients were more likely to withdraw from hospice before death (Casarett, Marenberg et al. 2001), while two reported that older age was associated with live discharge from hospice (Johnson, Kuchibhatla et al. 2008, Carlson, Herrin et al. 2009). Another study, still, reported that the median age of 72 for the group of individuals discharged alive was not statistically different from the group that died while in hospice (Kutner, Blake et al. 2002).

The four articles that reported a statistically significant relationship between race and live discharge all pointed to the same relationship: Non-White patients (African Americans, Hispanics, and Other race/ethnicity) were more likely to be discharged alive than White patients (Johnson, Kuchibhatla et al. 2008, Carlson, Herrin et al. 2009, Unroe, Greiner et al. 2012, Teno, Plotzke et al. 2014, Aldridge 2015). One study found that 4.5 percent of African American patients revoked hospice specifically to pursue more aggressive care compared to 2.5 percent of White patients, which is consistent with evidence that Non-White populations tend to receive/prefer a higher intensity of care at the end of life (Chiriboga 2008, Johnson, Kuchibhatla et al. 2008, Hanchate, Kronman et al. 2009). Fewer studies reported a statistically significant relationship between sex and live disenrollment, with one suggesting that males were more likely to disenroll alive (Casarett, Marenberg et al. 2001) while two later studies reported that a larger proportion of females had a live discharge (Kutner, Blake et al. 2002, Johnson, Elbert-Avila et al. 2012). In terms of marital status/caregiver relationships, two studies found that unmarried hospice patients were more likely to disenroll from hospice before death while individuals with a

primary caregiver were more likely to die in hospice care (Casarett, Marenberg et al. 2001, Kutner, Blake et al. 2002). In addition to caregiver support, living in an institutional setting may also be associated with being discharged alive, although this covariate was only considered in one study (Kutner, Blake et al. 2002).

Overall, the literature points to a positive correlation between non-cancer diagnosis and live discharge. Among the six studies that specifically reported results on the relationship between comorbidities/primary diagnoses and likelihood of having a live discharge, four compared cancer to non-cancer patients, and all four reached this same conclusion (Casarett, Marenberg et al. 2001, Kutner, Blake et al. 2002, Taylor, Steinhauser et al. 2008, Teno, Plotzke et al. 2014). More specifically, the most common primary diagnoses among patients discharged alive were: dementia, failure to thrive,¹⁶ cerebral vascular accident, congestive heart failure, and pneumonia, according to a recent study, which used 2010 Medicare fee-for-service (FFS) claims data (Teno, Plotzke et al. 2014). Further, Carlson, Herrin et al. (2009) found that patients with a higher score on the Charlson Comorbidity Index¹⁷ were more likely to have a live disenrollment, whereas, Kutner, Blake et al. (2002) reported that patients with three or more activities of daily living (ADLs) were more likely to die in hospice.

Findings related to LOS were disparate, with one study reporting a mean LOS prior to live discharge of 70 days (Kutner, Blake et al. 2002), while another reported a median of 22 days (Johnson, Kuchibhatla et al. 2008) — and yet another found a median stay of 236 days prior to live disenrollment, compared to 12 days for those who died while receiving hospice care

¹⁶In October 2014, CMS restricted the use of non-specific condition codes as the principal diagnosis on a hospice claim (August 2014). Hospice Manual Update for Diagnosis Reporting and Filing Hospice Notice of Election (NOE) and Termination or Revocation of Election., Centers for Medicare & Medicaid Services..

¹⁷The Charlson Comorbidity Index is based on International Classification of Diseases (ICD) diagnosis codes.

(Johnson, Elbert-Avila et al. 2012). Despite the range of these estimates, there is evidence that patients enrolled longer are more likely to be discharged alive; in fact, as Johnson, Elbert-Avila et al. (2012) report, individuals enrolled for longer than 180 days had more than 12 times the odds of being discharged alive relative to those enrolled in hospice for fewer than 180 days. Similarly, Teno, Plotzke et al. (2014) found that 26.6 percent of live discharges in 2010 were among patients who had a LOS of 180 days or more. On the other end of the spectrum, 10.8 percent of live discharges represented patients who had spent seven days or fewer on hospice (Teno, Plotzke et al. 2014).

Patient-level outcomes

Beyond predictors, the literature — particularly the studies published in more recent years — explores some of the patient-level outcomes associated with live disenrollment, with a particular emphasis on patterns of re-enrollment in hospice as well as length of survival following discharge; a sampling of studies also explore patterns of post-discharge utilization (e.g., inpatient hospitalizations) and costs. Across the studies, the rate of live disenrollment ranged from five to 18.5 percent, although one study that focused on patients who disenrolled expressly to pursue more aggressive care estimated the rate of disenrollment to be 2.8 percent; Plotzke, Christian et al. (May 2014) report to CMS on hospice payment reform recommendations estimated the rate to be 18.1 percent in 2012 (an increase from 13.2 percent in 2000 and 17.2 percent in 2006); MedPAC's 2016 hospice report found the average rate in 2012 to be 18.5 percent, decreasing to 18.4 percent in 2013 and 17.2 percent in 2014 (MedPAC March 2016). In contrast, Aldridge (2015), using a 2000 and 2010 cross-section of FFS claims, estimated that the disenrollment rate *decreased* from 2000 to 2010. Such variation in the estimated overall rate is likely a product of the range of datasets employed as well as the years of that data, which,

spanning nearly two decades, encompassed a period of significant change in the hospice industry (Aldridge, Schlesinger et al. 2014).

Nine of the 15 studies noted a distinct pattern of disenrollment and re-enrollment in the same hospice, often sandwiching an inpatient hospital stay. Estimates of the proportion of patients experiencing such a trend ranged, although three of the studies reported that approximately one-third of those who disenrolled re-enrolled shortly thereafter (Kutner, Meyer et al. 2004, Carlson, Herrin et al. 2010, LeSage, Borgert et al. 2014). And among those who re-enrolled, 75 percent used the same hospice; only 10 percent of all disenrollees re-enrolled with a different hospice (Carlson, Herrin et al. 2009). Despite this disenrollment-reenrollment trend, between 2000 and 2010, fewer than one percent of patients experienced more than two enrollment-disenrollment-reenrollment patterns (Aldridge 2015).

In 2010, 7.6 percent of all patients discharged alive endured a pattern of hospice discharge, hospital admission and discharge, and hospice re-enrollment¹⁸ (Teno, Plotzke et al. 2014). In fact, 6.4 percent (unadjusted) of those with a live discharge were defined as having a "burdensome transition" — hospitalization within two days of hospice discharge followed by a hospice readmission within two days of hospital discharge — in 2012, according to a follow-up analysis conducted by Plotzke, Christian et al. (May 2014). That rate represented a noticeable increase from 3.4 percent in 2000 (Plotzke, Christian et al. May 2014). Adjusted analyses determined that burdensome transitions were higher in for-profits (6.4 percent) compared to non-profits (4.0 percent) in 2012 (Prsic, Plotzke et al. 2016), and that, when controlling for chain status, for-profits without a chain had a higher burdensome transition rate compared to their chain counterparts (Teno, Bowman et al. 2015). Non-profit hospices had the lowest rate of

¹⁸A majority of those discharged alive (75.9 percent) were not hospitalized within 30 days of disenrollment; 16.5 percent were hospitalized but not subsequently readmitted to hospice.

burdensome transitions (Teno, Bowman et al. 2015). Hospices at the 90th percentile in discharges occurring on or after 180 days in hospice or on or before seven days exhibited similar trends by chain affiliation and profit status (Teno, Bowman et al. 2015).

A number of the 15 of the peer-reviewed studies explored this pattern of hospice discharge followed by a hospital stay — and the trend was clear: Those who disenrolled were more likely to be hospitalized, admitted to an emergency department (ED), or admitted to the intensive care unit (ICU) than those who remained continuously enrolled in hospice until death (Taylor, Steinhauser et al. 2008, Carlson, Herrin et al. 2010, Unroe, Greiner et al. 2012). Among patients with cancer, the trend appeared particularly striking, with 39.8 percent of disenrollees (compared to 1.6 percent of those who remained on hospice) being admitted as an inpatient to the hospital, ultimately spending almost three times as many days in the hospital as their counterparts (19.3 vs. 6.7 days) (Carlson, Herrin et al. 2010). ED and ICU admission were similarly significant: 33.9 percent of disenrollees vs. 3.1 percent of those who remained on hospice landed in the ED, while 5.7 percent compared to 0.1 percent accessed the ICU (Carlson, Herrin et al. 2010). Such trends are not specific to cancer patients, however. Across all patient groups, using data from 1993-2000, Taylor, Steinhauser et al. (2008) found that only 2.6 percent of those who remained continuously enrolled were admitted to a hospital, while 31.3 percent of patients who were discharged (and did not subsequently re-enroll) and 42.4 percent of those who disenrolled and re-enrolled ultimately entered a hospital.

The timing of such hospitalizations underscores a potential insufficiency in the care provided at the end of life to individuals who disenroll from hospice: Twenty-five percent of individuals who experienced a live discharge were hospitalized within 48 hours of that discharge (Carlson, Herrin et al. 2010). Similarly, Teno, Plotzke et al. (2014) estimated that nearly a

quarter of all disenrollees nationwide in 2010 were hospitalized one or more times within 30 days of leaving hospice. Such patterns associated with patient movement into and out of hospice, as well as institutional settings, have negative ramifications for patients and their caregivers. According to two recently published qualitative studies, discharged patients described feelings of suffering pertaining to loneliness, abandonment, uncertainty, and anger (Campbell 2015), while caregivers of dementia patients said they were confused, emotionally unprepared, and unsettled after the decision to discharge (Wladkowski 2016).

Oftentimes hospitalizations not only exact a physical and emotional toll on patients and their families — but they also elicit a hefty price tag (Horn and Tesh 2000, Meier 2011). On average, Medicare paid \$30,848 for individuals who disenrolled from hospice compared to \$6,537 for those continuously enrolled in hospice, according to Carlson, Herrin et al. (2010), who followed 90,826 cancer patients enrolled in hospice between 1998 and 2002. Eight years later, in 2010, hospice disenrollees accounted for \$664 million in Medicare expenditures in the 30 days post-hospice discharge (Teno, Plotzke et al. 2014). During that time, Medicare also reimbursed SNFs \$68.6 million for live disenrollees in the month after discharge from hospice. For the group of individuals who never returned to hospice, Teno, Plotzke et al. (2014) estimated that Medicare reimbursed \$27.8 million for Part B and \$4.4 million for outpatient services; those who ultimately re-enrolled in hospice within 30 days accounted for \$19.3 million in Part B and \$1.8 million in outpatient Medicare spending.

Although many of the studies tried to ascertain trends in the timing of disenrollment as well as survival times post-discharge from hospice, neither outcomes yielded conclusive findings across the literature. Average time to disenrollment ranged from a median of 28 days (cancer patients only) in one study to 85 in another (Carlson, Herrin et al. 2010, Teno, Plotzke et al.

2014). Furthermore, Carlson, Herrin et al. (2009) suggested that 35 percent of disenrollees left hospice within two weeks; Teno, Plotzke et al. (2014) estimated that 25 percent left within three weeks. Survival analyses produced similarly inconsistent evidence across five different studies. More specifically, the two studies that used data from a single hospice chain (VITAS) found drastically longer survival times following disenrollment (i.e., 75.5 percent of those who disenrolled were alive after one year) compared to the other four studies (Johnson, Kuchibhatla et al. 2008, Johnson, Elbert-Avila et al. 2012, LeSage, Borgert et al. 2014). One reported that 57 percent of disenrollees died within 30 days (Carlson, Herrin et al. 2010); and two others found 35 percent (Kutner, Blake et al. 2002) and 40 percent (LeSage, Borgert et al. 2014) died within six months of discharge, respectively.

Hospice-level predictors and outcomes

Only four of the 15 peer-reviewed articles that explored trends in live disenrollment examined hospice-level predictors and outcomes; however, a few federal reports on the hospice payment system also explored some of these trends as part of larger studies. Across the peerreviewed studies, the mean rate of disenrollment across hospices was found to be 15.3 percent, according to a study using Surveillance, Epidemiology, and End Results Program (SEER) Medicare data from 1998-2002 (Carlson, Herrin et al. 2009). When eliminating hospices with a small sample size (fewer than 10 observations per year) from the analysis, the mean rate dropped to 11.5 percent with a range of zero to 38 percent across hospices (Carlson, Herrin et al. 2009). Similarly, a later study using Medicare FFS claims from 2010 reported the rate varied from 11.5 percent (25th percentile) to 20.5 percent (75th percentile) among hospices with at least 30 discharges (Teno, Plotzke et al. 2014). A follow-up CMS report using 2012 data estimated the mean rate across hospices to be 22.5 percent in 2012 (Plotzke, Christian et al. May 2014), while MedPAC asserted that 10 percent of providers had a disenrollment rate of 29 percent or greater that year (MedPAC March 2015).

In terms of hospice-level predictors, the two peer-reviewed studies only overlapped in two covariates — time in operation and hospice size – and both concluded that newer and smaller hospices had higher rates of live disenrollment than older and larger hospices, indicating that experience and resources could account for some of the variation in rates across providers (Carlson, Herrin et al. 2009, Teno, Plotzke et al. 2014). Notably, there was no statistically significant difference between *older* for-profit and non-profit hospices in that study (Teno, Plotzke et al. 2014). Both Carlson, Herrin et al. (2009) and Teno, Plotzke et al. (2014) looked at the relationship between urban vs. rural location, and neither found a statistically significant association.

Furthermore, Teno, Plotzke et al. (2014) determined that newer (less than five years since receiving Medicare certification), for-profit hospices that exceeded their aggregate reimbursement caps were most likely to have high disenrollment rates. Through a national survey of hospice providers conducted from 2008-2009 Aldridge, Schlesinger et al. (2014), found a similar relationship between for-profit status, likelihood of exceeding the aggregate cap, and patient disenrollment.

In particular, hospices that exceeded their aggregate cap had an average live disenrollment rate of 38.8 percent in 2012, compared to 17.4 percent among hospice below the cap (Teno, Plotzke et al. 2014). Plotzke, Christian et al. (May 2014) furthermore found that the timing of live discharge may also be tied to a hospice's risk of hitting its ceiling, with the rate of live discharge progressively increasing across hospices grouped according to percentage of aggregate cap attained – in overall adjusted live discharge rate, rate of patient revocation, and

rate of patients deemed no longer terminally ill (Plotzke, Christian et al. 2015). For example, the percentage of live discharges attributed to hospices at 0-20 percent of their cap in 2012 was 12.5 percent, whereas, the rate for hospices at 150-plus percent of their annual cap was 72.4 percent (Teno, Plotzke et al. 2014). A more recent study expanded upon this knowledge to ascertain the relationship between the percentage of cap attainment and monthly rates of live discharge for year-end above- and below-cap hospices, using a 10 percent random sample of beneficiaries in 2012-14 (Plotzke, Christian et al. 2015). The study estimated that the rate of live discharge for above- and below-cap groups increased in the later part of the cap year (July through October), providing some evidence that the cap year may influence the timing of live discharges.

The rate of live discharge by percentage of aggregate cap attained did not increase uniformly across primary diagnoses, with a high of 87.8 percent live disenrollment for non-CHF heart failure patients in hospices at 150-plus percent of their aggregate caps. Pneumonia and cancer patients had the lowest live discharge rates across cap levels, though the relationship between a hospice's percentage of aggregate cap attained and the rate of live discharge steadily increase across all conditions (Teno, Plotzke et al. 2014). MedPAC expressed concern over this relationship in its annual 2015 hospice payment system report, encouraging OIG and CMS to review admission practices for hospices in excess of their aggregate caps, as this trend may indicate such hospices are admitting patients ineligible for the program (MedPAC March 2015). *Market-level predictors and outcomes*

Two of the peer-reviewed studies that explored hospice-level predictors/outcomes also included a market component to their analyses. In terms of market-level predictors, Carlson, Herrin et al. (2009) found that hospices located in more competitive markets had higher rates of live disenrollment; the study also reported that the hospice fiscal intermediary accounted for

some of the variation in live disenrollment rates. Although Teno, Plotzke et al. (2014) did not include any market-level covariates in their multivariate models, they estimated state averages for live discharge rates and found significant variation — from a low of 12.8 percent in Connecticut to a high of 40.5 percent in Mississippi during 2010 (MedPAC October 2014).¹⁹ A follow-up government report found the state-level rates during FY 2013 to range from 11.6 percent in Kentucky to 37.0 percent in Mississippi (Plotzke, Christian et al. 2015).

Gaps in the literature

Given the relative dearth of peer-reviewed literature on this topic and the range of inconsistencies in evidence that exist, there are a number of gaps in the literature that ought to be highlighted. Although every study examined disenrollment trends through some combination of patient-level demographic/health status covariates, there does not appear to be clear consensus on associations between patient-level factors and likelihood of disenrollment from hospice. Such variation across studies underscores a need to better understand patient decision-making at the end of life, as a multiplicity of factors, often in unique and complex combinations and unaccounted for in the data, drive such preferences and make it difficult to "predict" certain outcomes based on a finite dataset.

The absence of qualitative work on this topic highlights a gap in understanding that ought to be filled by future work aimed at profiling potential patterns of patient and family decisionmaking at the end of life that might ultimately lead to hospice disenrollment (and potential reenrollment). There is also room for significant qualitative work focused on better understanding provider-initiated disenrollment — how decisions are made across different

¹⁹Payments to hospices vary geographically based on the hospice wage index as well as a non-labor-related adjustment.

hospices, the ways in which different providers conceptualize disenrollment in terms of good vs. bad quality, and the potential barriers providers experience in keeping patients enrolled in hospice until death.

Although only two peer-reviewed studies explored variations in provider- and marketlevel disenrollment patterns, they highlight an additional gap in knowledge that could raise concern. Such variation across hospice types — and particularly across states — suggests that differences in patient preferences alone may not be driving disenrollment patterns. The literature on this topic potentially raises more questions than it answers, underscoring a need to investigate the key drivers of provider-initiated disenrollment and whether certain policies (e.g., the hospice payment system — particularly the aggregate cap — state CON laws, Medicaid payment rates, availability of certain home- and community-based service waivers, and other existing long-term services and supports) contribute to some of the state/market-level variations.

More specifically, Carlson, Herrin et al. (2009)'s finding that market competition is associated with disenrollment suggests that the decision to discharge a patient may, perhaps, be driven in part by a financial calculus — rather than what is best for the individual patient and his/her family. And because many disenrollees are ultimately admitted to the hospital, it is possible they are victim of cost-shifting, in which hospices, for certain financial reasons, can no longer care for the patient and ultimately send him/her elsewhere for services. The possibility for such a phenomenon suggests an urgency in conducting research to better understand the marketlevel forces that could incentivize potentially inappropriate discharges from hospice.

Rationale

The value in conducting research aimed at better understanding patterns of hospice use — and potential misuse — cannot be emphasized enough. As the proportion of the U.S.

population 65 and older continues to rise and life expectancy continues to increase, the need for a highly functioning system of services and supports for individuals nearing the end of life will only continue to grow. Although patient preferences certainly vary across individuals, families, markets, and larger regions, the variation in patterns of live disenrollment from hospice across hospices and markets tells a story of an industry driven by potentially misaligned incentives and fragmented care. The development of a more nuanced understanding of the factors driving provider-initiated live disenrollment from hospice may yield insights into which aspects of the hospice payment system are in greatest need of reform.

CHAPTER TWO: AIM 1 STUDY

Factors driving live discharge from hospice: Provider perspectives

The proportion of the U.S. population over the age of 65 is projected to double from 12 to 20 percent between 2005 and 2040 (Reznik, Shoffner et al. 2005/06). This demographic trend will result in a surge in the number of patients seeking end-of-life services. Despite the increasing availability and visibility of hospice providers and palliative care programs over the last decade, researchers, policymakers, and providers agree that the U.S. health care system is still ill-equipped to deliver care to individuals nearing the end of life. Further, the payment mechanisms currently in place do not appropriately reflect the complexity of patient social, emotional, psychological, and physical needs (2014, MedPAC March 2009).

The Medicare hospice program has witnessed a more than 400 percent increase in spending between 2000 and 2012, with the percentage of 65-plus Medicare decedents accessing the benefit increasing from 22.9 to 47.8 percent between 2000 and 2014 (MedPAC March 2016). Across the same period of time, the proportion of patients disenrolling from hospice prior to death has also steadily increased, peaking at an estimated 18.4 percent of all enrollees in 2013 (MedPAC March 2016). Due to variations in the rate of live discharge at the hospice- and market-level, this outcome has come under federal scrutiny as a potential indicator of poor quality (MedPAC March 2016).

Because live disenrollment may create discontinuities in care and disrupt ongoing patient-provider relationships — often landing terminally ill patients in the hospital, emergency department, or intensive care unit — it is important to understand the key drivers of this trend

(Casarett, Marenberg et al. 2001, Taylor, Steinhauser et al. 2008, Carlson, Herrin et al. 2010, Unroe, Greiner et al. 2012). Discharges due to patient preferences or condition stabilization may reflect a system that appropriately caters to changing patient needs/prognoses, while discharges that occur because hospices do not want to shoulder the financial burdens of some aspects of desired care could point to signs of provider misuse or abuse of the benefit (MedPAC March 2015, MedPAC March 2016). This latter issue is tied to broader concerns among regulators that the rising discharge rate reflects an attempt of some hospices to maximize the system's flat daily payment rate²⁰ by inappropriately admitting longer stay patients and then discharging them when they live longer than is consistent with the six-month expected prognosis for hospice (MedPAC March 2016, CMS May 2015).

Variations in rates of live disenrollment across hospice types and states indicate that patient preferences alone do not drive such patterns of care, but research exploring the drivers of live discharge is limited. Secondary data analyses suggest certain patient characteristics, including non-cancer diagnosis and longer lengths of stay, are associated with higher rates of live discharge (Casarett, Marenberg et al. 2001, Kutner, Blake et al. 2002, Kutner, Meyer et al. 2004, Johnson, Kuchibhatla et al. 2008, Taylor, Steinhauser et al. 2008, Carlson, Herrin et al. 2009, Carlson, Herrin et al. 2010, Unroe, Greiner et al. 2012, LeSage, Borgert et al. 2014, Teno, Plotzke et al. 2014, Aldridge 2015). Despite these patient-level differences, much of the variation in live disenrollment patterns remains unexplained: States ranged in average unadjusted live discharge rate from 11.6 percent (Kentucky) to 37.0 percent (Mississippi) in FY 2013 (Plotzke,

²⁰CMS released its fiscal year (FY) 2016 Hospice Wage Index and Payment Rate Update in August 2015, which altered routine home care payments to reflect the beneficiaries' length of stay by offering a higher base payment for the first 60 days and a reduced rate thereafter. The 2016 rule also included a service intensity add-on, which pays for service rendered in the last seven days of life, provided the patient meets certain criteria. The Final Rule went into effect January 1, 2016.

Christian et al. 2015), and a limited number of studies suggest an association between live discharge rates and hospice/market characteristics (e.g., for-profit status) (Carlson, Herrin et al. 2010, Teno, Plotzke et al. 2014, Teno, Bowman et al. 2015, Plotzke, Christian et al. May 2014).

Given the nuanced nature of live discharges — the fact that it can at times be evidence of good quality and at times be evidence of bad — and its significant provider/regional variations, there is a need for qualitative work that delves beyond finite secondary datasets to more fully clarify the factors underlying these trends. This information is particularly crucial as the Centers for Medicare & Medicaid Services (CMS) considers adopting live discharge rates as a claims-based national quality indicator (MedPAC March 2016). To date, we are not aware of any qualitative studies exploring why the rate of live discharge has been steadily increasing and how providers make the decision to disenroll living patients. Accordingly, the objective of this study was to ascertain provider perspectives on key drivers of live discharge from the Medicare hospice program.

Study data and methods

We conducted a series of semi-structured telephone-based interviews with hospice providers around the country, including medical and executive directors. This approach promoted a free-flowing and formative exploration of emergent ideas, while ensuring each interview consistently hit on key topics. The University of North Carolina Institutional Review Board exempted this study (No. 16-0090).

Participants

To identify a cohort of interview candidates, we spoke with nationally recognized hospice leaders. Recruitment occurred primarily via e-mail — with a standard template tailored to each individual — and secondarily by phone if multiple e-mails went unanswered.

We recruited participants from a diversity of regions and hospice types, segmenting respondents into three groups based on the state-level rate of live discharge (i.e., high, medium, and low). We defined states with high rates of discharge as those with a live discharge rate greater than 19.7 percent of all discharges; states with medium rates of discharge included those between 14.4 and 19.6 percent; states with low discharge rates represented those at or below 14.3 percent (Teno, Plotzke et al. 2014).²¹ Within each discharge rate tertile, we sought a diversity of respondents across hospice characteristics (e.g., profit status, size, rurality, etc.). We ceased recruitment once we reached theme saturation (Guest 2006).

Interviews

The first author conducted all interviews using a semi-structured interview guide informed by a thorough literature review and conceptual model (see Appendix 1, Figure 5) depicting the range of pathways through which patients could revoke (patient-initiated) or be discharged from hospice (provider-initiated). Due to the wide range of factors affecting live discharges, we tailored Donabedian's structure-process-outcome conceptual model to the study (Donabedian 1966). The model specifically drills down on structure — patient, provider, and market characteristics, as well as state and federal policies — and its relationship with the constellation of patient- and provider-level processes/factors that yield the key outcome of interest: live discharge. Interview questions focused primarily on the relationship between provider and market characteristics, provider-initiated factors, and live disenrollment.

Investigators experienced with qualitative research methods and hospice care delivery vetted the interview guide. Each interview began with a brief introduction and warm-up, which

²¹We based these cut-offs on visual inspection of a state-level heat map in the analysis conducted by Teno et al. (2014). No data were provided with the exact percentage value for each state.

incorporated broad questions about the interviewee's background and basic structure of his/her hospice (e.g., average daily census). We promised respondents anonymity to encourage candor during the interviews; all interviews lasted an hour or less.

The main substance of interviews covered three broad topics: 1) barriers to keeping patients continuously enrolled in hospice until death, 2) best practices associated with live discharge, and 3) solutions to barriers identified during the first part of discussions. We transitioned to the topic of live discharge by asking respondents to describe, based on their professional experience, the "factors that drive live discharge" — particularly those that they thought might be contributing to the rising rate nationally. For individuals who had previously worked at other hospices or in other markets, we asked them to compare their experiences in an effort to broadly understand differences in business/care delivery approaches across hospices and markets. To elicit possible solutions, we asked respondents to imagine they worked for the CMS and suggest ways to "fix" the barriers they had mentioned.

Analysis

We recorded and transcribed all interviews, uploading notes into Dedoose, a Web-based relational database. We employed a template analysis approach, popular for conducting qualitative analysis in health services research. This approach combines content analysis with grounded theory, yielding a hybrid inductive-deductive approach to coding and analysis (King 1998, Waring and Wainwright 2008). The conceptual model used to guide interview question development (see Appendix 1, Figure 5) was also employed during codebook development and the subsequent structured coding process (MacQueen, McLellan et al. 1998). Our codebook included three categories: code definition, inclusion/exclusion criteria, and examples of

appropriate use (MacQueen, McLellan et al. 1998). The initial codebook included 22 codes, which we expanded to 25 during the coding process.

To ensure inter-coder reliability, the first author and a research assistant trained to use the codebook separately reviewed and coded the first three sets of notes, a common approach to ensure a systematic approach to coding while maximizing limited resources (Barbour 2001). This process yielded a kappa coefficient of .86, considered "near perfect" according to Landis and Koch (1977)'s strength of agreement scale. Using the same coding approach employed to code the initial transcript sample, the first author and research assistant coded the remaining transcripts.

Study results

We conducted 14 telephone-based interviews with 18 individuals, including hospice medical directors, compliance/operations officers, and executive directors between March and May 2016. With the exception of one non-response, all individuals contacted for this study agreed to participate. Table 2 provides key respondent characteristics, which we present in aggregate to protect anonymity of respondents.

Respondent characteristic	Discharge region: Low n=4 hospices, 5 individuals	Discharge region: Medium n=6 hospices, 9 individuals	Discharge region: High n=4 hospices, 4 individuals	Total n=14 hospices, 18 individuals
Individual characteristics (n=18 individuals)				
Interviewee title/role				
Medical director	4	4	1	9
nursing/nurse specialist	0	1	1	2
Executive director/President	0	3	1	4
Other	1	1	1	3
Years at current hospice				
0-1 years	0	0	1	1
2-4 years	1	3	1	5
5-plus years	4	5	2	11
Missing	N/A	1	N/A	1
Hospice characteristics (n=14 hospices)				
Туре				
For-profit	0	3	2	5
Non-profit	4	3	2	9
National chain				
Yes	0	3	0	3
No	4	3	4	11
Size ²				
Small	1	1	2	4
Medium	0	2	1	3
Large	2	2	1	5
X-Large	1	1	0	2
Region ³				
Northeast	1	0	0	1
South	1	3	2	6
Midwest	2	2	0	4
West	0	1	2	3
Ownership of freestanding inpatient unit				
Yes	2	4	2	8
No	2	2	2	6

Table 2. Respondent characteristics¹

¹To the extent possible, we tried to recruit a diversity of respondents across discharge tertiles. Based on Teno et al.'s 2014 study (10), we defined states with high rates of discharge as those with a live discharge rate greater than 19.7 percent of all discharges; states with medium rates of discharge included those between 14.4 and 19.6 percent; states with low discharge rates represented those at or below 14.3 percent. Thirteen states nationally fall into the low tertile, 26 fall into the medium tertile, and 11 are in the high tertile.

²Hospice size defined as the average daily census, as estimated by interviewees (small = 150 or fewer patients, medium =151-500 patients, large= 501-1499 patients, x-large= 1500+ patients)

³We obtained a diversity of regional responses for each discharge tertile to the extent possible; in some cases, there were not states in certain regions that fit into a certain tertile.

Analysis generated four themes: 1) difficulty estimating patient prognosis on admission, 2) increased CMS oversight, 3) rising market competition, and 4) challenges with inpatient contracting. Interviewees also provided suggestions regarding ways the system could be improved. We did not find any trends in responses based on our segmented groups of state-level discharge rate tertiles, nor did we ascertain any trends by hospice size, rurality, region, profit status, or corporate ownership. Perspectives varied based on the number of hospices operating in a particular market area (see Rising Market Competition section for details).

Difficulty with prognostication

Across interviews, respondents explained that live discharges ought to be viewed as a function of a hospice's admissions process. Interviewees emphasized that hospices with higher rates of live discharge are likely less conservative in their approach to patient admissions, taking on patients who are either marginally appropriate for hospice or altogether ineligible, based on CMS regulatory stipulations that hospice patients be within six months of death. As such, many hypothesized that the rate of live discharge has been increasing because more hospices have been admitting inappropriate patients (see Rising Market Competition section for details), resulting, ultimately, in a discharge:

"Every year, the number of people that hospices admit that are not appropriate gets higher and higher, and then the number of patients that they subsequently have to discharge gets higher and higher for that same reason. So it's really just an overall look at how hospices admitted patients to begin with." Respondents explained, though, that determining eligibility is more of an art than a science: Even the most experienced hospice provider often struggles to predict whether a patient will die within six months. This issue has become particularly pronounced in the last decade as more hospices have taken on non-cancer patients — particularly those with dementia — whose disease trajectory is oftentimes challenging, if not impossible, to predict:

"The bottom line is that we're bad at it [prognostication], and especially when we start looking further out. It's one thing to say the patient is actively dying and is going to die within the next couple of days; it's another thing to say they have six months, a year, or two years."

At times, interviewees said, hospices can be a victim of their own good care, as quality hospice service delivery can stabilize a declining patient and extend life. In such instances, providers often have no choice but to discharge these patients, which oftentimes results in a quick decline, as these individuals no longer have access to the hospice care that had initially slowed their functional decline or reduced symptom distress.

On the other hand, many interviewees suggested that some hospices in their markets have been taking advantage of the ambiguity of prognostication and Medicare's per diem reimbursement. Although interviewees said that, according to CMS stipulations, patient stabilization should result in a near-immediate discharge, they explained that some of their counterparts use the first hospice certification period of 90 days to determine eligibility. And in some cases, once a patient is admitted, that patient will remain on hospice until death, regardless of stabilization in health status:

"When I first came here [to this hospice] and I started talking about, 'now you need to discharge that person who has been on service for two years, they're not dying within six months,' ... they rarely discharged the patient. Once they were on service, they just took care of them until they died, regardless of whether that was two years, three years, four years."

Increased CMS oversight

Across the board, respondents attributed the rise in live discharge rates over the last 10 to 15 years to more stringent CMS auditing — referred to by some as adversarial in nature. Interviewees described an industry fraught with fear and uncertainty, in which the previous "let's wait and see" attitude has been supplanted by a predisposition to discharge patients to avoid having to reimburse CMS millions of dollars for failed audits, which CMS and its contractors perform pre- and post-payment through medical reviews of hospice claims.²²

Particularly for smaller hospices operating with narrow margins or organizations serving as the sole hospice provider in a rural area, the next CMS audit could be the difference between staying afloat or going out of business. In such instances, respondents explained, taking a risk on a patient's borderline eligibility is often not worth the potential costs:

"That's a great concern for us, and it's not written anywhere that that's driving our live discharge policy, but I think it's reasonable to think that ... in addition to wanting to do the right thing, we also, we don't want to be either accused or found guilty of milking the system."

Some respondents recognized that the increased scrutiny has in part stemmed from CMS's desire to curb the rise in extremely long stays. Others suggested that CMS has focused on the tendency of some hospices to reap the financial benefits of keeping patients on hospice longer, particularly those who are relatively stable with less costly conditions, such as dementia. In the end, though, providers across the country described negative interactions with either their Medicare Fiscal Intermediary, who carries out pre-payment reviews, or the contractors

²²Hospice Fiscal Intermediaries (FIs) or Medicare Administrative Contractors (MACs) primarily carry out prepayment reviews to probe on service-, provider-, beneficiary-, or diagnosis-specific inquiries. On the post-payment side, FIs and MACs primarily rely on Recovery Auditor Contractors (RACs), as well as Zone Program Integrity Contractors (ZPICs) and Program Safeguard Contractors (PSCs), to reconcile past improper payments.

responsible for post-payment audits (e.g., Recovery Auditory Contractors (RACs), Zone

Program Integrity Contractors (ZPICs)):

"CMS – and our Fiscal Intermediary — was putting on so much pressure that we not keep these patients long because of ADRs [Additional Development Requests] and then having to pay money back that a real chill set in for hospice providers. And so keeping patients too long was no longer okay. And we even said, 'now wait a minute, if we look at some of the studies that have been done, hospice actually saves the system money instead of spending all that money end of life in a hospital.' And he [the Fiscal Intermediary] said, 'well, you would think that we would care about that, but we really don't. Because all I'm tasked to do is look at part of the pie called hospice, and our costs are going up, and therefore we're going to be looking only at the hospice.' And so whereas we would have felt more comfortable keeping people longer amounts of time, he was very clear with us in 2013 that we need to, you know, really be careful."

In particular, providers said recovery auditors have an incentive to find areas of non-

compliance, as CMS reimburses them according to a contingency fee, representing a percentage

of the dollar value associated with each improper over- and under-payment they correct

(December 2012). Given the constant ambiguity associated with prognostication, many

respondents said that these auditors often do not have the clinical expertise necessary to override

judgments of hospice clinical directors, despite their requirement that staff incorporate nurses,

therapists, and physicians. Interviewees described feelings of helplessness and defensiveness

associated with their clinical decision-making:

"With these RACs and ZPICs, I mean, they literally come in like bounty hunters and just pull everything out of the drawers and throw it all on the floor and sniff around until they find something valuable. And it's completely, it is very adversarial. It's very hostile, and they have a tremendous incentive to find something. So I think just our fear of such audits is much greater than our fear of a fiscal intermediary review 10 years ago would have been."

"There's also this requirement that each patient, their recertification has to have a face-to-face encounter by either a nurse practitioner or physician. And what was crazy that we were noticing — especially during this time — is it didn't matter what that professional said. They have reviewers sitting somewhere in Iowa going, 'Nope. Nope.' ... If you're not going to listen to the professional who has gone out to see the patient and is doing this unreimbursed visit ... then why mandate that we have to have someone full-time on our staff to go do these face-to-face visits?" "Medicare creates its own creatures: They put in all these ZPICs and everything else to audit charts, and they willy-nilly deny care based on nothing concrete, and so hospices are ... not going to hang on to patients as long."

Rising market competition and hospice business practices

In conjunction with the increase in CMS oversight during the last 10 to 15 years, respondents in many regions of the country described a boom in the number of hospices operating within a given geographic area, which they said has created a culture of "competition." One provider estimated her market area has upwards of 80 hospices, while a number of others came in just under that figure, with 50, 60, or 70 hospices. Interviewees explained that areas that used to be defined by friendly collaboration across hospices have experienced extreme transformations — prompting one respondent to call the hospice industry the "Wild, Wild West" and another to refer to hospice service delivery as "hand-to-hand combat."

Synthesis of responses across interviews revealed that the surge in competition across some markets has directly affected hospice admission and discharge patterns through four interrelated means: 1) inappropriate admissions and subsequent discharges, 2) discharged patients being immediately admitted by another hospice only to be discharged again, 3) aggressive marketing to patients and providers that subsequently encourages patients shifting across hospices, and 4) desire/perceived need to "keep up" with competitors through all of the aforementioned tactics. Notably, the four participants who estimated their markets have fewer than 10 hospices said they had only read or heard about these trends — they had not experienced them first-hand with any frequency, if at all, within their markets.

In more saturated markets, interviewees said that patients who would otherwise not be admitted to hospice are receiving care:

"When you have a market that's this saturated, it breeds temptation to admit inappropriate

In such instances, some hospices — many of them for-profit — have created "demand" by targeting more marginal patients, particularly those who are likely to be more lucrative (i.e., less costly, longer length-of-stay patients). Interviewees described providers selectively admitting nursing home patients in particular. Such business practices, several respondents noted, have resulted in providers coming close to their aggregate caps;²³ one provider said this phenomenon spurs hospices to "patient-dump in mass numbers" at the end of the cap year.

Providers also said that in these saturated markets, when they discharged a patient because they clinically assessed the patient to be ineligible for hospice, other hospices in the area immediately admitted the patient — a practice, some interviewees guessed, CMS has not yet tracked. Oftentimes, families of the discharged patient call other hospices in the service area:

"We would discharge somebody after... agonizing over whether it was the right thing to do, and then our for-profit competitors would come in and swoop them up and just bring them on service... so we agonize, we give the family the message and then — boop — because we have 30 other competitors ... [the patient's family members] just call for-profits and it's just, 'yep no problem, I'll pick them up. '"

"It almost became a little game, almost like ... catching fish that are not big enough to qualify as keepers, and then you keep throwing them back and catching them again."

In some markets, hospices have also started marketing their services to patients and providers, encouraging patients to switch providers and offering physicians payments for referring patients who are typically more lucrative to the hospice. Some of these activities have been more discreet, with hospices making themselves "easy" to work with, promising to always

²³The aggregate cap restricts total payments hospices receive per patient from Medicare and requires them to repay CMS any total payments in excess of the cap amount times the number of Medicare beneficiaries served during a 12-month period.

admit referred patients, for example. Other times, the marketing is more blatant: One respondent described a practice called "charting," in which hospices review patient records in nursing homes and guarantee the nursing homes that a certain proportion of patients (e.g., 60 percent) will qualify for a hospice referral. Another mentioned a local attorney who has been encouraging nursing homes in the region to open their own hospices, to which the nursing homes can funnel referrals:

"They're [certain for-profit hospices in the area] inducing referrals more than likely. And we've had them talk ... to our families in the long-term care or assisted living world, and the daughter is like, 'I'm sorry, they made me change, otherwise, not only would my dad not be able to get care, but my mom lives here too. And they said I'd have to find another assisted living program if I didn't choose [name of hospice redacted]. And I have no issues with you guys, I love you guys.' We're like, 'oh my gosh.' So guess what? There must be a big margin to be made, right?"

"When I worked in smaller hospices ... when we had a census of 50, if a group home who referred a patient to us, and we went out there, we admitted them almost 100 percent of the time, whether they met criteria or not."

As a byproduct of some of these selective marketing/admission practices, interviewees

explained that their hospices are now often responsible for taking care of a disproportionate share

of the higher acuity, complicated, and, thus, more costly patients.

Still, the temptation to engage in such financially oriented activities is high in some areas,

as hospices fear the loss of business if they don't "keep up" with competitors. One provider

described a number of conversations she had previously engaged in with members of her

organization who had been encouraging such practices. She said that these individuals believed

that stopping such activities could harm business:

"If we became the most restrictive hospice to work with, then all the business is going to go elsewhere, because hospitals and physician offices are going to refer down the path of least resistance."

Challenges with inpatient contracting

Beyond the challenges of operating within what interviewees described as competitive markets and an industry plagued by fear and uncertainty, a handful of providers discussed issues they have experienced contracting with local area hospitals to provide general inpatient care (GIP) to their patients. Interviewees attributed some of their live discharges to scenarios in which patients needed inpatient services and the hospice was unable to provide GIP due to the absence of a contract — which, these respondents explained, was not for lack of trying:

"A lot of patients that go into a hospital, we would love to follow them in any hospital, but, like [hospital name redacted], they won't sign a contract with us, even a one-time contract per patient, so we can follow that patient, so there's no choice given [but to discharge] ... I think with them it's because they have their own hospice, and so you know, it's that competition. ... And I know CMS is thinking that, ... they [hospices] just don't want to pay for it [GIP], and that's not always the case."

"There is one hospital particularly that won't contract with us despite years of discussions with them. ...We've heard different reasons, but, basically, the finance people in the hospital don't get why they would do it."

Solutions

Given the many barriers providers discussed, we also asked them to brainstorm some solutions CMS could consider moving forward. Among the most frequently discussed topics was CMS oversight, which interviewees suggested requires a more targeted approach directed exclusively at the "bad actors." Respondents suggested that a more nuanced method of oversight would not only avoid victimizing the hospices trying to deliver high-quality care but would also yield a more streamlined crackdown on the plethora of inappropriate activities plaguing the industry:

"CMS knows who the bad actors are. They can tell statistically from things like we're talking

about, ... where they should be focusing their efforts. But instead of doing that, they're going after everybody in the same manner. We don't know why that is but it's frustrating."

"I might also follow the live discharges if I were them [CMS]. You know, take a random sampling of a hospice that has a live discharge rate and follow — or any live discharges — do a study. Like we said, if we're discharging, we feel like we really gave them [patients] every opportunity, and if another hospice is picking them up the next day and starting billing, follow that — follow the money and say, 'hmm, how could one hospice say no and another say yes?'"

Interviewees also suggested CMS: 1) eliminate what providers described as the perverse incentive for recovery auditors to find issues with hospice admission decisions and 2) require hospice accreditation (e.g., The Joint Commission on Accreditation for Healthcare), which would yield a more standardized form of oversight.

Discussions about potential revisions to the hospice benefit were more mixed, with some respondents suggesting the six-month eligibility criterion is a "vestige of a different time" and should be extended to at least a year and others indicating that it still works fine. A couple respondents said they are interested in results from the Medicare Care Choices Model currently underway to test the effect of allowing patients to receive hospice-like services while obtaining curative treatments. Those who discussed the new payment change released under the FY 2016 Hospice Wage Index and Payment Rate Update, which altered routine home care payments starting Jan. 1, 2016, to reflect the beneficiaries' length of stay, said that CMS "got it right" — although others warned caution, with one respondent noting he had already started seeing hospices discharging patients around day 60.

Other reimbursement-related solutions ranged from discussions around implementing a medical home-like model, in which the hospice provider would be responsible for coordinating all services rendered, to reimbursing at different rates based on the setting of care (e.g., a lower

rate in nursing homes because it is less costly to provide care in that setting). Others also

suggested moving hospice toward a shared savings/value-based payment model:

"If I worked for CMS ... I might say if you manage to keep your GIP rate at two percent or less or three percent or less, you're going to share in some of the savings or you're going to get a bonus payment ... I might take the emphasis off the live discharges and start rewarding hospices that are able to keep people in the home and do it in routine care ... with no re-hospitalization."

Finally, a couple respondents discussed a glitch in the system, in which declining patients receiving hospice care at home are hospitalized (due to a fall, for example) and, instead of being eventually sent home on their hospice care, are discharged to a nursing home for short-term skilled care. Interviewees said that this trend often occurs because the family can no longer care for the patient at home — and Medicare covers room and board in a nursing home for up to 100 days while the patient meets the skilled care criterion.

"I would love to see some kind of a mandate for nursing homes that if the patient qualifies for hospice care, they're not eligible for those Part A days ... for really good-quality hospice programs, we're seeing live discharges for that reason, and it makes my heart sick because, like this man this morning [with metastatic cancer in six places], he needs us in there to be managing pain, symptoms. ... But the family is saying, 'please order this for us, you've been our doctor for 20 years and this helps us financially, you know, because it will pay for the nursing home bill and we can't manage the care at home."

Discussion

This study sought to expand the evidence base regarding provider perspectives on the factors increasing the rate of live discharge from hospice during the last decade. Given CMS' increasing scrutiny of hospice quality and costs over the last several years and, more specifically, its consideration of adopting live discharge rates as a claims-based quality indicator (MedPAC March 2015), this study provides significant contributions to the existing knowledge about hospice enrollment and disenrollment patterns from the provider perspective.

Participants emphasized the challenges underlying each decision to live discharge. Even for seasoned providers seeking to conscientiously follow CMS admission and discharge guidelines, assessments of prognosis are frequently shrouded in uncertainty, thus obscuring the line between "appropriate" and "inappropriate" admissions as well as discharges. Given the complexities and competing priorities providers face — to the patient's welfare and to CMS guidelines — the results from this study indicate that CMS should exercise caution before using live discharge rates as a measure of quality across hospices. At the very least, CMS should first evaluate the effect of audits on hospice discharge patterns and better understand the scenarios in which this outcome is appropriate. Live discharges driven by patient stabilization and life prolongation due to hospice care, as well as those simply due to a change in patient preferences, can be considered high-quality care. As the system stands, the interrelated factors that together yield a hospice's rate of live discharge, would make it difficult to set a reasonable threshold or range indicating "good" quality.

Still, respondents discussed certain scenarios in which financially motivated behaviors have resulted in clearly inappropriate enrollment and disenrollment practices — and may be prominent contributing factors in the rising and varying rate nationally. Providers spoke of these trends in black-and-white terms, implicitly drawing a line between discharges that occur as a result of the ambiguity of patient prognosis and those that occur as a profit-maximization strategy. Indeed, until CMS released its FY 2016 Payment Rate Update, the agency had been paying hospice providers a flat daily rate for each enrollee, regardless of services rendered and length of time enrolled. This payment structure encouraged hospices to select certain patients who typically have longer lengths of stay, as hospice stays are often more expensive at the beginning and end of the episode of care. As such, respondents emphasized that discharges

initiated to maximize profits rather than due to clinical uncertainty ought to be deemed "inappropriate," more effectively tracked, and eliminated at their root. A related implication is that patient deaths shortly after hospice discharge may suggest a pattern of avoidance of higher service costs during active dying.

It is possible that passage of the Improving Medicare Post-Acute Care Transformation Act in 2014, which mandates hospices be certified at least every three years, compared to the previous six-year requirement, could solve some of these issues (CMS May 2015), but only if these audits are carried out with a full understanding of the complexities of delivering hospice care. As respondents noted, the ability of CMS oversight to support high-quality providers depends on the way in which the agency implements those audits.

Delving into the intricacies of provider discharge decisions, this study also scratched the surface on larger issues facing the hospice industry as it continues to expand its national visibility and reach. Interviewees described an industry that has perhaps become overwhelmed by a surge in the number of hospices across many markets and one also operating within the confines of a benefit structure initially catering to cancer patients' disease trajectories. The changing profile of the hospice patient — one with a more prognostically ambiguous non-cancer disease — and the increasing demand for services suggests that the six-month benefit criterion could be critically reviewed to ensure the program structure appropriately caters to the patient population it now serves. The fact that respondents across the board described an industry so susceptible to negative market pressures — leading one interviewee to admit to already seeing shifts in the way hospices are gaming the system based on the payment change — emphasizes that the industry may require a holistic overhaul rather than tweaks to reimbursement.

Despite the dire reality the plurality of participants described, trends expressed in this study do not point to a wholly corrupt industry. Quite the contrary: The participants in this study implicitly revealed that in spite of the challenges the industry is facing, passionate individuals continue to deliver care to patients and their families during a difficult time in life. These are the providers that would benefit from a serious examination into ways end-of-life care delivery mechanisms can be improved.

Limitations

This study had a few limitations. First, due to its qualitative nature, the work relied on a purposive sample of interviews with hospice providers across the country. Although this approach is commonly employed in qualitative research, it is also inherently limited: The responses of a group of selected interviewees may not be representative of larger perspectives across the country. Our approach to geographic sampling and the selection of interviewees from various hospice types attempted to maximize generalizability. And the speed with which we reached theme saturation suggests there may be limited variation in experiences among participants.

Second, the data used in this study were based on interviewee perceptions and experiences, which are subject to personal biases. Still, due to the commonalities across interviews, we believe the results of this study reflect some of the realities currently challenging providers across the country.

Finally, due to our sampling approach, we likely did not speak with any of the truly "bad actors" discussed previously; it is not possible to know whether this sample reflects the larger industry. The sample was skewed toward hospices that have been in operation for more than a decade, which tend to have lower live discharge rates (Teno, Plotzke et al. 2014). Some

participants shared their rates of live discharge during the discussions and had rates well below the national average.

Conclusion

This exploratory qualitative work points to a number of considerations associated with live discharges from hospice that ought to be investigated in further detail and which could ultimately lend insight to necessary policy and regulatory changes. More specifically, the industry could further benefit from studies that systematically clarify inappropriate enrollment and disenrollment considerations — both through additional primary data collection (encompassing viewpoints of patients, providers, and regulators) as well as more targeted secondary analyses. Such studies could explore some of the relationships highlighted here, such as the association between market competition and admission/live discharge rates, patterns of patient disenrollment from one hospice and immediate admission to another, and movement of patients from hospice to the hospital and into skilled nursing facilities.
CHAPTER THREE: AIM 2 STUDY

Do hospice profitability and live discharge rates go hand-in-hand?

For more than a decade, the rate of live discharge from hospice increased steadily in the United States, from a median of 13.7 percent in 2000 to 19.4 percent in 2013, before dipping slightly to 18.7 percent in 2014 (MedPAC March 2016, Plotzke, Christian et al. May 2014). While changes in patient preferences, health status, and/or prognosis inevitably lead to some highly appropriate live discharges, the consistent uptick in national rates — as well as considerable variations across hospice types and markets — has raised concerns among federal regulators that other provider factors contribute to this trend. Particularly high rates of live discharge may indicate poor quality, as studies show that individuals discharged alive from hospice are more likely to be hospitalized, admitted to an emergency department, or admitted to the intensive care unit than those who remain continuously enrolled in hospice until death (Taylor, Steinhauser et al. 2008, Carlson, Herrin et al. 2010, Unroe, Greiner et al. 2012). Furthermore, in 2016, the Medicare Payment Advisory Commission (MedPAC) warned, "an unusually high rate of live discharges could indicate that a hospice provider is not meeting the needs of patients and families or is admitting patients who do not meet the eligibility criteria" (MedPAC March 2016).

Live discharges from hospice can occur for a variety of reasons — because the patient revoked the benefit, because patient prognosis changed and the provider determined the patient was no longer eligible for hospice under Medicare guidelines, or because the patient moved from the hospice service area, among others. MedPAC's 2016 Report to Congress found that for 39

percent of live discharges, patients indicated willingness to revoke hospice, while the remainder were entirely provider-initiated, primarily because the hospice physician deemed the patient no longer terminally ill (MedPAC March 2016). While many discharges are likely reflective of good quality — for example, the patient stabilized and his/her prognosis exceeded six months regulators have expressed concern that some hospices are incorporating financial considerations in these patient care decisions. In a Proposed Rule the Centers for Medicare & Medicaid Services (CMS) published in the Federal Register in May 2015, the agency stated: "We are concerned that some hospices are making determinations of hospice coverage based solely on cost and reimbursement as opposed to being based on patient-centered needs, preferences and goals for those approaching the end of life" (CMS May 2015).

Recent qualitative work identified several financial factors that might motivate a hospice to discharge a patient prior to death: 1) the patient required inpatient hospice care, and the hospice did not have a contract with a local inpatient facility through which it could provide general inpatient care because at least one party did not find a contract to be financially beneficial; 2) the hospice was approaching its aggregate cap — a limit on the total payments hospices receive per patient from Medicare during a 12-month period — and did not want to provide services that would require repayment penalties to CMS; and 3) the hospice feared repercussions from more stringent CMS audits, resulting in the discharge of patients who appeared to be marginally eligible for the hospice benefit, based on the CMS six-month prognostication criterion (Dolin, Hanson et al.). Indeed, existing empirical studies provide some evidence of such relationships, revealing associations between newer (fewer than five years since receiving Medicare certification) for-profit hospices that exceeded their aggregate reimbursement caps and high live discharge rates (Aldridge, Schlesinger et al. 2014, Plotzke,

Christian et al. May 2014). In theory, hospices might also discharge higher acuity, more complicated patients because they tend to be more costly to the hospice.

The totality of evidence in the literature emphasizes that more information is needed regarding the relationship between potential profit-maximization strategies on the part of some hospices and rates of live discharge. While a stable financial model is necessary for all hospice organizations, an association between profit margins and live discharge rates could indicate profit rather than financial stability as a determinant of discharge practices. Accordingly, this study aimed to explore whether hospice financial margins have a positive association with rates of live discharge from hospice. We hypothesized that some hospices may operate in a particularly business-minded manner, and because live discharges may at times be financially beneficial to hospices, providers with higher margins might also discharge patients at higher rates.

Study data and methods Conceptual model

The research question and hypothesis for this study emerged from a conceptual model (Donabedian 1966) that depicts the range of structural/environmental and patient care/processoriented factors that ultimately result in the outcome of interest: live discharge from hospice (see Appendix 1, Figure 5). As the model shows, live discharges can be either patient- or providerinitiated. This study focuses on provider-initiated drivers and, specifically, the relationship between hospice-based financial factors and live discharge as an outcome. We use hospice-level profit margin as a proxy for how organizational financial concerns may influence a patient-level discharge decision.

Data

Data for this study came from two sources: Medicare hospice cost reports and claims (Provider of Services file, the Hospice Research Identifiable File, and the Master Beneficiary Summary File). Cost report data, which are publicly available through the CMS Healthcare Cost Report Information System, were pulled for the years 2011, 2012, and 2013 (form CMS-1984-99). Because the literature shows that freestanding hospices operate differently from co-located hospices (e.g., hospital- or home health-based), particularly with regard to their margin, we included only freestanding hospices in this analysis (MedPAC March 2016). In 2013, freestanding facilities represented 72 percent of all hospices (MedPAC March 2016).

We used 100 percent Medicare hospice claims from 2012 and 2013 to construct a hospice-year file with two observations for each hospice (i.e., 2012 and 2013). Due to data use agreement restrictions, hospices with fewer than 10 observed discharges (either alive or deceased) were excluded; these missing live discharge values accounted for 11 percent of total discharges in the dataset. Prior studies indicate that this approach may understate the average hospice-level rate of live discharge, making our live discharge rate more conservative (Carlson, Herrin et al. 2009, Teno, Plotzke et al. 2014). Beneficiaries missing a count identifying the certification period of their stay in hospice (e.g., first 90-day days, second 90 days, etc.) (n=554) were deleted from the claims file.

To ensure beneficiaries in the study had no hospice stay in the previous 90 days, we implemented a washout period representing the first 90 days of 2012. As a result of this approach, beneficiaries enrolled in hospice in January, February, or March, 2012, were eliminated from the file (n=514,038), ensuring our dataset represented only those beginning a new stay on or after April 1, 2012. Although it is possible these beneficiaries could have

experienced a hospice stay prior to 2012, that prior stay would have been non-continuous for those individuals to remain in the file. Still, the 21 months of data (April 2012-December 2013) included in this data file is sufficient to capture the range of patient experiences, on average – allowing for both short and longer stays – given that the median length of stay in 2013 was 17 days (mean of 87.8 days) (MedPAC March 2016). Because this approach eliminated extreme outlier stays, the facility-level live discharge rates calculated for this study are likely conservative.

To account for varying hospice fiscal years in the cost report data, 2013 observations came from the 2012 and 2013 cost reports, representing hospice-level observations for the fiscal year that closed during the 2013 aggregate cap year (Nov. 1, 2012 to Oct. 31, 2013); see Appendix 2, Figure 6, for a graphical depiction of this approach. Likewise, 2012 observations came from the 2011 and 2012 cost reports (Appendix 2, Figure 7), representing the fiscal year that closed during the 2012 cap year (Nov. 1, 2011 to Oct. 31, 2012). We opted for this approach to account for potential strategic timing in discharge patterns, as studies point to a relationship between discharges and a given hospice's percentage of its cap attained, which inherently increases as hospices approach the end of the cap year on Oct. 31 (Plotzke, Christian et al. 2015, Plotzke, Christian et al. May 2014). Because our key explanatory variable — hospice margin — varies by the length of time, we dropped hospices with a fiscal year less than 364 days in the cost reports (n=395 across the two years of data).

We linked all files by hospice provider number to create a single hospice-year analytic file. During this process, 19 hospices were dropped when merging the POS data on to the cost reports, while 16 were lost when merging claims on to the POS/cost report file.

Key variables

This study uses both total and operating margins, two of the most common measures of profitability, as its key explanatory variables. We created total margin and operating margin variables using Worksheet G2, Parts I and II, from the hospice cost reports. Operating margin was calculated as operating revenues minus operating expenses, divided by operating revenues; total margin was defined as total revenue minus total expenses, divided by total revenue (see Appendix 4, Exhibit 1, for full equations). Non-operating revenue and expenses used in the total margin calculation were approximated from the total deductions and state Medicaid room & board (non-operating revenue) lines and total additions (non-operating expenses) line in the cost reports.

For this analysis, operating margin is more relevant because it reflects profitability from patient care operations, whereas total margin includes non-operating revenue, such as charitable contributions and investment income. However, both measures are used because of variation in reporting of operating and non-operating revenues and expenses in Medicare cost reports. Due to extreme outliers in both measures, we excluded observations with a margin greater than 50 percent or less than -50 percent from the analysis, representing fewer than five percent of observations at the upper and lower ends for both total and operating margin variables (Holmes, Kaufman et al. 2016).

The outcome for this study was the hospice-year rate of live discharge as a percentage of all discharges in 2012 and 2013, measured as the number of *total* live discharges in 2012 and 2013 divided by the number of *total* discharges (including decedents). Individuals who continued in hospice during the study period were excluded from the discharge rate numerator and denominator, as their discharge status had not yet been determined. We ascertained patient status

(i.e., discharged dead, discharged alive, still a patient) from the patient status code on the last beneficiary claim for each calendar year of data.

For purposes of unadjusted analyses, we created a variable representing three discharge tertiles, based on the rate of live discharge. Hospices in the "low" live discharge rate group included those with a rate at or below eight percent, those defined as "medium" had a rate greater than eight percent and less than 13.5 percent, and those in the "high" group had a live discharge rate greater than or equal to 13.5 percent.

<u>Analysis</u>

We estimated multiple regression models with hospice random effects and state-level clustering to test the association between hospice total/operating margins (explanatory variable) and rates of live discharge (outcome), adjusting for a number of covariates, including: log of total discharges, year, ownership type, chain status, urban/rural location, region, proportion of patients who were White, proportion of patients who were female, and mean age. We ran alternative models with an interaction of ownership type and total/operating margins, under the hypothesis that margins vary by hospice ownership type. We also ran several sensitivity analyses: First we restricted the model to hospices with 100 or more total discharges to account for the possibility of left-censoring (i.e., driven by unknown values for hospices with fewer than 10 discharges); second, to address potential year-to-year variation based on hospice size, we ran two pooled models, one weighted by total discharges and another without weights; and, third, we controlled for the percentage of patients with a primary diagnosis of failure to thrive and debility non-specified. This final model attempted to address potential patient selection by certain hospices with a high rate of patients with ill-defined conditions, who tend to have longer lengths of stay than those with cancer diagnoses (116 days compared to 53 days in 2013) (MedPAC

March 2015). We additionally ran hospice fixed effects models to compare estimates with the random effects models and determined the fixed effects estimates to be highly variable and inefficient due to the limited within-hospice variation among key variables and the short panel (T=2); for a more thorough explanation of why we chose random effects over fixed effects, see Appendix 5, Exhibit 2.

Study results

Our sample included a total of 1439 distinct freestanding hospices, which ranged in average live discharge rate (2012-2013) from 1.8 to 82.7 percent, with a mean of 13.4 percent and a median of 10.2 percent. Table 3 shows key descriptive characteristics for the entire sample and grouped according to average facility discharge rates — low (<=8 percent), medium (>8 percent and <13.5 percent), and high (>=13.5 percent) — during 2012 and 2013. The average total margin across hospices was 12.2 percent, while the average operating margin was 6.9 percent. Overall, on average, the patient population across freestanding facilities was 58.3 percent female and 88.7 percent White, with a mean age of 81.6. Furthermore, the largest proportion of freestanding hospices in 2012 and 2013 were for-profit (65.9 percent), chain-owned (55.9 percent), operating in urban areas (84.7 percent), and located in the South (46.2 percent).

	Low (<=8%)	Medium (>8% and <13.5%)	High (>=13.5%)	Total
n	820	789	807	2416
Hospice patient characteristics				
Total margins	11.5%	12.6%	12.6%	12.2%
Operating margins	4.2%	6.6%	11.1%	6.9%
Mean age	81.5	81.9	81.2	81.6
% White	91.1%	90.9%	82.0%	88.7%
% Black	7.7%	8.7%	19.4%	10.6%
% Hispanic	3.2%	5.1%	17.0%	5.2%
% Female	57.6%	58.7%	59.0%	58.3%
% Failure to Thrive, primary diagnosis % Debility non-specified, primary	5.0%	6.5%	8.7%	6.4%
diagnosis	7.3%	9.2%	11.7%	9.0%
Median length of stay (days)	46.5	61.8	82	62.2
Median years in operation	19.5	11.8	7.3	11.4
Hospice ownership type				
For-profit	46.8%	67.8%	83.6%	65.9%
Non-profit/Gov.	43.4%	23.1%	11.2%	26.1%
Other	9.8%	9.1%	5.3%	8.1%
Hospice chain ownership				
Non-chain	50.8%	39.4%	41.9%	44.1%
Chain	49.2%	60.6%	58.1%	55.9%
Rural				
Urban	88.0%	84.5%	81.3%	84.7%
Rural	12.0%	15.5%	18.7%	15.3%
Region				
Midwest	27.6%	20.0%	13.1%	20.4%
Northeast	12.9%	15.3%	8.1%	12.2%
South	42.0%	40.5%	56.8%	46.2%
West	17.6%	24.3%	22.0%	21.2%

Table 3. Descriptive statistics, 2012-13, distribution of hospice characteristics by discharge group tertile

Nearly all hospice characteristics were statistically different (p<0.05) across the three discharge rate tertiles. Average operating margin was higher for the group of hospices with high

discharge rates (11.1 percent) compared to those with low (4.2 percent) and medium (6.6 percent) rates. Consistent with expectations, total margin exhibited less of a trend, with hospices in the medium group and those in the high group having the same total margin — nearly 13 percent — on average; total margin was the only variable that was not statistically different across the discharge tertiles (p=0.596).

In terms of patient characteristics, hospices with higher rates of live discharge had much larger proportions of Black enrollees (19.4 percent on average) compared to facilities with low (7.7 percent) and medium (8.7 percent) rates. Similarly, hospices in the high discharge tertile had higher median rates of patients with primary diagnoses of failure to thrive and debility non-specified, compared to their medium and low discharge counterparts; these hospices with higher live discharge rates also had higher average lengths of stay (82.0 days) compared to low (46.5 days) and medium (61.8 days) groups. They also tended to be newer (7.3 years in operation on average) compared to the low and medium discharge tertiles (19.5 and 11.8 years, respectively).

Among facility characteristics, hospices with higher rates of live discharge showed sharp contrasts with hospices in the low tertile: They were more likely to be for-profit (83.6 percent vs. 46.8 percent), chain-owned (58.1 percent vs. 49.2 percent), operating in a rural area (18.7 percent vs. 12.0 percent), and located in the South (56.8 percent vs. 42.0 percent). Hospices in the middle tertile were 67.8 percent for-profit, 60.6 percent chain-owned (the highest rate of chain ownership across the three tertiles), and 40.5 percent were located in the South. All facility characteristics were statistically different across the three groups (p=0.000).

Figure 2 graphically shows bivariate associations between select hospice characteristics (i.e., median proportion White, median years in operation, median length of stay, and median

operating margins). These graphs reinforce the trends in Table 3 depicting differences in descriptive statistics across the three groups.



Figure 2. Select descriptive characteristics by discharge tertile, 2012-13

Table 4 compares coefficients for two models with hospice random effects: one with total margin as the outcome variable (model 1) and one with operating margin as the outcome variable (model 2), both of which are clustered at the state level to adjust for correlated errors among hospices operating in the same state. Overall, adjusted analyses showed a positive association between total and operating margins and hospice-level rates of live discharge, with statistically significant results (p<0.05). In other words, as operating and total margins increase, respectively, the expected rate of live discharges increases, holding all else constant.

	Live discharge rate			
	(1) Total margins Clustered, state-level Coefficient p-value		(2) Operating margins Clustered, state-level Coefficient p-value	
Hospice total margins	0.0377*	0.010		
Hospice operating margins			0.0346**	0.002
Log total discharges	-0.0530***	0.000	-0.0532***	0.000
Proportion of White patients	-0.155***	0.000	-0.161***	0.000
Proportion of female patients	0.0556	0.269	0.0506	0.313
Hospice mean age	-0.00725***	0.000	-0.00704***	0.000
Hospice years in operation	-0.00113**	0.002	-0.00107**	0.003
Northeast	0.0178***	0.000	0.0159**	0.001
South	-0.000353	0.974	-0.00208	0.851
West	0.0158	0.080	0.0140	0.090
Rural	0.00558	0.572	0.00819	0.413
Non-profit/Gov.	-0.00776	0.144	-0.00407	0.398
Other	-0.00282	0.709	-0.000650	0.934
Chain	-0.0139***	0.001	-0.0141**	0.001
Analysis year, 2013	0.0394***	0.000	0.0393***	0.000
Constant	1.100***	0.000	1.094***	0.000
n	2133		2179	

Table 4. Multivariate analysis of live discharge, by hospice characteristics, 2012 and 2013

 $p^* < 0.05, p^* < 0.01, p^* < 0.001$

Hospice-level demographic covariates — proportion White and mean age — were negatively associated with total and operating margins and statistically significant across the models. Among hospice facility characteristics, number of years in operation (negative association) and chain ownership status (negative association relative to non-chain status) were statistically significant in the two models. Across geographic regions, only the Northeast was statistically different from the Midwest. Coefficients on the interaction effects between facility ownership type and total/operating margins were statistically insignificant and not presented in Table 4.

Sensitivity analyses produced similar results, with positive associations between total margin and live discharge rates as well as operating margin and live discharge rates (see Appendix 3, Table 8 and Table 9 for more information) in the models restricted to hospices with at least 100 total discharges (p=0.011 and p=0.000, respectively). Confidence intervals in weighted and unweighted pooled analyses appeared generally comparable, suggesting year-to-year variation based on hospice size was not an issue. Finally, models that controlled for the percentage of patients with a primary diagnosis of failure to thrive and debility, non-specified, did not yield a statistically significant relationship between operating/total margins and live discharges rates; however, these models had a much smaller sample size than other models (n=662 vs. n=2100+) due to missing data from suppression of values with fewer than 10 observations.

Discussion

Results from this study show a positive and statistically significant relationship between higher operating and total margins and higher hospice-level rates of live discharge in 2012 and 2013. These findings build on the current literature, which highlights associations between hospice- and market-level characteristics and rates of live discharge and speculates that factors beyond patient preferences may drive discharge decisions. Specifically, as the first study to quantitatively explore the relationship between hospice profit margins and rates of live discharge, this work provides evidence to substantiate some of that speculation — that some

hospice business practices may be driving the decision to live discharge. Ultimately, findings from this study have the potential to enhance our understanding of drivers of hospice use — beyond patient preferences — and may highlight priority areas for change that could ensure higher quality care is provided to patients accessing hospice at the end of life.

Although the findings presented here align with the literature on this topic to date, they further emphasize the existence of a recent trend across sectors of the industry that ought to be explored in greater depth by both researchers and federal regulators. Based on the relationships highlighted in this study, it is indeed possible that CMS' concern expressed in its 2015 Proposed Rule — that some hospices are making care decisions based on financial reasons rather than patient needs — reflects a reality among some hospices. Both adjusted and unadjusted analyses show clear differences between hospices with higher and lower rates of live discharge, not only pertaining to profit margins but also patient- and hospice-level characteristics. While causal estimates are not possible in this observational study, the statistically significant associations presented here reveal that hospice-level factors are in some way likely affecting rates of live discharge: If live discharges were determined completely based on patient needs and health status, we would expect to see no relationship between total/operating margins and live discharge rates when controlling for hospice and regional factors — which is not what we found here. Furthermore, if hospices were simply making live discharge decisions to stay afloat when facing financial challenges, then we would expect to see the opposite relationship, with lower profit margins associated with higher live discharge rates.

Although we tested the hypothesis that profit margins affect live discharge rates, the relationship could plausibly go the other direction, in which high profit margins are simply an unintended consequence of a hospice organization's internal policies and procedures resulting in

more live discharges. We estimated this association in the other direction, however, to align with the current evidence in the literature — and our conceptual model (see Appendix 1, Figure 5) — which indicated that hospice decision-making focused on profit maximization drives live discharges. Still, this relationship is virtually impossible to disentangle.

The association between margins and live discharge rates does not on its own provide the strength of evidence for CMS to adopt live discharge rates as a quality indicator, however. Each individual live discharge from hospice occurs as a result of a number of interrelated factors, and it is possible that the associations presented here are truly the result of other hospice-level factors — that are not necessarily an indication of poor quality — beyond profit maximization. For example, a hospice organization with generous interpretations of hospice eligibility criteria could enroll greater numbers of patients who later stabilize and require live discharge.

Additionally, hospices with higher rates of live discharge tended to have higher proportions of patients with minority races, on average This difference in enrollee composition between hospices with higher and lower live discharges could serve as a proxy for patient motivations/preferences, as the literature shows that, relative to White patients, minority groups have higher rates of patient-initiated hospice revocation (Chiriboga 2008, Johnson, Kuchibhatla et al. 2008, Hanchate, Kronman et al. 2009). In such instances, it is possible that larger profit margins are merely a byproduct of the patients enrolled and their higher propensity to live discharge rather than a provider-driven business decision. Furthermore, although live discharges may have a direct relationship with profit-maximizing strategies, there is also the possibility that they reflect a shift toward the use of hospice as a back-door long-term-care benefit, in which some hospices select longer stay, lower acuity patients, whose prognoses are difficult to predict

and whose live discharges are an unintended consequence of this shift — rather than an operational priority.

Still, these results should serve as a clarion call for broader benefit and payment reform. As the population continues to age and the number of individuals requiring end-of-life services and supports increases, the ability of the hospice industry to effectively deliver quality care to those vulnerable individuals is of paramount importance. The development of better patient- and family-centered definitions of "appropriate" live discharges versus those considered "inappropriate" will play a vital role in ensuring individuals at the end of life receive care consistent with their needs and preferences.

Limitations

Our study had several limitations. First, our financial measures are only as reliable as the cost report data from which they were generated. Indeed, federal regulators have expressed concern regarding the quality of these data. In September 2016, the Government Accountability Office noted the lack of reliability of skilled nursing facility cost reports due to the absence of routine auditing, a fact that extends to hospice cost reports (McCue and Thompson 2005, 2016). Still, cost reports are the only national dataset available with hospice financial performance information. We attempted to minimize these issues by trimming extreme outliers that appeared unusual, and plausibly inaccurate as a result, based on the size of the margin. Additionally, due to limited instructions in hospice form CMS-1984-99 (used for 2011-13 cost reports), we calculated a "best guess" for non-operating revenue and expenses (see Appendix 4, Exhibit 1, for more details). Thus, our total margin variable may not be as reliable as our operating margin variable.

Second, due to data use limitations, we suppressed hospices with fewer than 10 total discharges. As a result of this approach, we were concerned with left-censoring of our data, so we conducted a sensitivity analysis, restricting our model to hospices with 100 total discharges or more, which produced similar results. A related implication, we were unable to include covariates for certain demographics, such as proportion Black or Hispanic, because the populations in many hospices were so small that the values were suppressed, resulting in many missing values for these variables. Still, our inclusion of a proportion White variable ought to account for differences in both the proportion of White and non-White populations enrolled at a given hospice.

Third, due to the washout period we implemented, enrollees with extremely long lengths of stay were eliminated from the file. While it is theoretically possible that these individuals were disproportionately enrolled in facilities with lower margins, therein altering the relationship between facility margins and live discharge rates, it is extremely unlikely. The fact that longer lengths of stay are more lucrative to hospices indicates that our live discharge rate is likely conservative, and the strength of the relationship between margins and live discharges may be even greater than what we have presented here.

Fourth, given the limited number of time periods (T=2) and within-hospice variation, this study was cross-sectional in nature. Thus, we can only draw conclusions about a snapshot in time, rather than broad trends across a longer period.

Finally, live discharges as an outcome can be viewed in the context of competing risk, in which beneficiaries face a hazard of being discharged alive, dying (discharged dead), or remaining enrolled in hospice on a daily basis. It is possible that this alternative — and more complicated — approach might yield different results from the one modeled here, though there is

no evidence to indicate that one approach is more reflective of the "true" hospice experience for enrollees compared to the other.

Conclusion

The results from this study point to a positive association between hospice margin and hospice-level live discharge rates, and, as such, further research is needed to provide additional evidence linking hospice business practices with rates of live discharge. Future studies could expand on this work to include longer panels of individual-level data aimed at understanding potential profit motivations over time and how margins change as the rate of live discharge increases or vice versa. Such an individual-level analysis could also more closely control for changes in patient diagnoses/acuity and explore longer term effects on live discharge patterns. Furthermore, clarifying the relationship between margins and live discharge rates in light of hospice ownership changes (e.g., corporate buy-outs, changes in hospice profit status from nonprofit to for-profit, etc.) could shed additional light on decision-making at the hospice level around admissions and discharges, potentially teasing out differences between nonprofit/government-owned hospices and for-profit hospices. In particular, researchers ought to explore the relationship between the aggregate cap, profit maximization, and live discharges, as the cap has been shown to be associated with higher rates of live discharge (Plotzke, Christian et al. 2015, Plotzke, Christian et al. May 2014).

More broadly, the industry could benefit from future work aimed at estimating an expected range of hospice-level live discharge rates, given that the rate should not be zero and could vary based on patient population characteristics. Such insights could eventually inform development of a live discharge quality measure and help CMS more effectively detect hospices that may be operating in a manner with insufficient regard for patient preferences and needs.

Furthermore, research testing alternative models of hospice delivery for patients with uncertain prognosis — such as those with advanced dementia, frailty, or multiple comorbid conditions — may help to reduce live discharges based on clinical inability to define the last six months of life. Finally, the live discharge literature could be expanded to include additional qualitative studies that explore patient and family experiences of care related to live discharges to better understand the effect hospice decision-making — potentially pertaining to profit maximization — has on patient outcomes of care.

CHAPTER FOUR: AIM 3 STUDY

Do live discharge rates increase as hospices approach their Medicare aggregate payment caps?

For the last decade-and-a-half, the rate of live discharge from the Medicare hospice program increased steadily, from a national rate of 13.2 percent in 2000 to 17.2 percent in 2014, reaching a high of 18.5 percent in 2012 (MedPAC March 2016, Plotzke, Christian et al. May 2014). Live discharges are associated with increased rates of patient emergency department visits, intensive care days, and inpatient admissions post-hospice discharge relative to persons continuously enrolled in hospice (Taylor, Steinhauser et al. 2008, Carlson, Herrin et al. 2010, Unroe, Greiner et al. 2012). Thus, this outcome has become a source of federal scrutiny, as the factors driving this rise remain unclear (Taylor, Steinhauser et al. 2008, Carlson, Herrin et al. 2010, Unroe, Greiner et al. 2012). Live discharges can be either patient- or provider-initiated, but the documented relationship between hospice- and market-level factors and rates of live discharge suggests that variations in patient preference alone are likely not the sole source of the rising rate (Carlson, Herrin et al. 2009, Teno, Plotzke et al. 2014, Plotzke, Christian et al. 2015, Teno, Bowman et al. 2015, Plotzke, Christian et al. May 2014).

Recent research shows that newer (Medicare certified in the last five years) or for-profit hospices that exceeded their aggregate reimbursement caps are more likely than other hospices to have high discharge rates (Aldridge, Schlesinger et al. 2014, Plotzke, Christian et al. May 2014). Like the rate of live discharge, the proportion of hospices exceeding their respective aggregate

caps has been on the rise over the last 15 years. Congress implemented the aggregate cap as part of the Medicare hospice payment system in 1983 to safeguard hospice's short-term terminal carebenefit and prevent beneficiaries from relying on the hospice program for indefinite periods of time (Aldridge, Schlesinger et al. 2014, May 2015). The cap is calculated as a flat amount (\$27,820.75 for the year that ended on October 31, 2016) times the number of Medicare enrollees served by a given hospice during a 12-month period (November 1 to October 31); hospices exceeding their respective caps during this time span face a repayment penalty (CMS August 2015). Because hospices are reimbursed on a per-diem basis, the aggregate cap essentially constrains the annual *average* length of stay at a given facility, restricting the average cumulative per-patient reimbursement during a 12-month period (MedPAC March 2015, May 2015).

This risk of repayment to CMS and the manner in which the cap is calculated may incentivize hospices coming close to their respective cap ceilings to either admit more patients near the end of the cap year or discharge existing patients, especially longer stay patients who have been in hospice since the beginning of the cap year. Admitting more patients — particularly those most likely to have a shorter stay — would increase an individual hospice's total cap dollar amount since the cap is calculated per-capita, while discharging patients alive would keep the average LOS from rising, therein reducing expenditures that contribute to the cap. Although limited, prior evidence in the literature suggests that some hospices may employ the latter method of discharging patients (Dolin, Hanson et al.). In particular, hospices that exceeded their aggregate cap had an average live discharge rate of 38.8 percent in 2012, compared to 17.4 percent among hospices below the cap (Teno, Plotzke et al. 2014). This difference is particularly stark at the upper and lower ends of cap attainment, with hospices experiencing an average

discharge rate of 12.5 percent when 0-20 percent of their cap had been attained, whereas, when hospices reached 150-plus percent of their annual cap, their average rate of live discharge was 72.4 percent (Teno, Plotzke et al. 2014). In its 2015 annual hospice payment system report, the Medicare Payment Advisory Commission (MedPAC) expressed concern over this relationship, encouraging the Office of the Inspector General and the Centers for Medicare & Medicaid Services (CMS) to review admission practices for hospices in excess of their aggregate caps, as this practice may indicate such hospices are admitting patients ineligible for the program (MedPAC March 2015).

A more recent government report expanded upon this knowledge to ascertain the relationship between the percentage of cap attainment and monthly rates of live discharge for hospices above and below their caps (this latter group incorporated facilities nearly exceeding their caps), using a 10 percent random sample of beneficiaries in 2012-14 (Plotzke, Christian et al. 2015). The study estimated that the rate of live discharge for above- and below-cap groups increased in the later part of the cap year (July through October), providing some evidence that the cap year may influence the timing of live discharges.

The objective of this study was to more closely model hospice live discharge decisionmaking pertaining to cap status. Rather than employing a retrospective measure — percentage of cap attainment at the end of the cap year — we used the hospice-level monthly average LOS as a proxy for cap risk, as suggested by an industry workbook for hospice management (2010). We modeled the relationship between a hospice's monthly risk of exceeding the cap and a given patient's discharge status as one of competing risk, in which each patient faced a "hazard" of being discharged alive, dying, or remaining continuously enrolled each month. We hypothesized that as a hospice comes closer to exceeding its aggregate cap as the cap year progresses, a

patient's likelihood of being discharged alive will increase, relative to dying or remaining continuously enrolled in hospice.

Ultimately, this study seeks to build the evidence base around the relationship between the aggregate cap and live discharge rates and further explore the possibility that this longstanding mechanism of the Medicare hospice payment system may be inadvertently encouraging live discharges.

Study data and methods

Conceptual model

We adapted Donabedian's structure-process-outcome framework for this study (see Appendix 1, Figure 5), drilling down on the constellation of system/market factors that might influence patient care processes and which may ultimately affect the outcome of interest: live discharges from hospice (Donabedian 1966). We specifically focused our work on the hospice financial factor — risk of exceeding the cap — and its relationship with live discharges, controlling for a number of the structural elements in the diagram through our adjusted analyses.

Data

Data for this study came from 2012-2013 100 percent Medicare claims (Provider of Services file, the Hospice Research Identifiable File, and the Master Beneficiary Summary File). We merged the datasets to create a beneficiary-month analytic file for the years 2012-13. Beneficiaries with more than one death date (n=894), duplicate claim from (first day of the claim) and thru (last day of the claim) dates (n=26), overlapping stays in hospice (n=544), and claim utilization day count of 0 (n=19,755) were dropped from the claims file. For patients with a discharge code of 30 - "still a patient" — we stitched together their claims if they had a gap between stays of one day, under the assumption that the status code was reliable and a billing

error resulted in the gap between claims. Beneficiaries with stays ending in a discharge code of 00 were also subsequently deleted from the file (n=584) because this discharge status is a data error. We deleted two facilities (n=1690 beneficiaries) from the file that appeared to be miscoding claims, which yielded a disproportionate share of beneficiaries coded as "transferring" hospices, when these patients appeared to remain continuously enrolled in that hospice.

We created two separate analytic files to test the sensitivity of our analyses — one that incorporated a washout period of the first 90 days of 2012 (used as a sensitivity analysis) and one without a washout period. The purpose of the washout period was to ensure that the beneficiaries in the file represented those experiencing a new stay as of April 1, 2012, which allowed us to better track prior use of hospice, as many beneficiaries in the raw claims had missing hospice start dates. Although it is possible these individuals had a previous stay in hospice, the washout period limited prior stays to only those that are non-continuous, as beneficiaries enrolled in hospice between January and March 2012 were deleted from the file. Because the washout period inherently eliminated beneficiaries with extremely long LOS — likely yielding particularly conservative estimates, as long-stay beneficiaries experience live discharges at greater rates than shorter stay patients — analyses conducted with this file allowed us to test the sensitivity of our main results (Johnson, Elbert-Avila et al. 2012, Teno, Plotzke et al. 2014).

Key variables

The key outcome was constructed using the patient discharge status code, with the patient experiencing one of three outcomes each month — discharged alive, discharged dead, or still a patient. Secondarily, we created an outcome variable with four options each month, where discharged alive was broken into two sub-groups: beneficiary revocation and provider-initiated live discharge. We excluded beneficiaries who moved out of the hospice's service area from the

provider-initiated discharge totals, as this outcome is outside the control of the provider; still, these beneficiaries were retained in the analysis file, since they could theoretically enroll in another hospice and experience a live discharge for another reason at a later date.

The main explanatory variable was a hospice's monthly risk of exceeding the aggregate cap, approximated through the hospice-level monthly median LOS, aggregated with each successive month in the cap year (i.e., beginning November 2012) and calculated using the claim utilization day count variable in the Medicare claims. We excluded beneficiaries whose month on the first day of the claim (claim from date) was not the same as the month on the last day of the claim (claim thru date) from the monthly LOS calculations (n=9,982); we retained these beneficiaries in the analysis file, however. Though not calculated as a true "risk," this approach serves as a proxy for the way in which a given hospice might consider the aggregate cap throughout the year. To test the sensitivity of our results, we also calculated the risk at the monthly *mean* hospice-level LOS, a measure more influenced by extreme outlier stays at a given hospice.

Analysis

Using a difference-in-difference-type analysis that leveraged within-hospice variation over time and between-hospice variation during a given month, we estimated discrete time hazard multinomial logit models. The models corrected the standard errors for clustering at the beneficiary level to account for shared unobserved risk factors. In this model, the "hazard" refers to the probability that a live discharge will occur for a particular individual during a given month, relative to the other two or three possible outcomes. We modeled this relationship using a variable with three choices (i.e., discharged dead, discharged alive, and still a patient) and, secondarily, with an outcome encompassing four choices (i.e., discharged dead, beneficiary

revocation, provider-initiated live discharge, and still a patient). For each outcome variable, we also modeled the relationship twice using the cap risk calculated as the monthly *median* LOS and — as a sensitivity analysis — as the *mean* LOS in the cap year to date. For all coefficients, we calculated average marginal effects.

We adjusted models for a number of beneficiary-level covariates: age, race, primary diagnosis (based on the beneficiary's first claim and grouped using the Clinical Classification software categories for diagnosis codes), and Rural-Urban Commuting Area (RUCA) group (collapsed into four groups: urban, large rural, small rural, and isolated). We also adjusted for facility-level characteristics: profit status, type (i.e., freestanding, hospital-based, home health-based, and skilled nursing facility-based), chain status, rural status, census division, size, and market competition (based on the Herfindahl-Hirschman index (HHI)). Models also included an interaction effect between hospice rural location and census division to further account for geographic differences.

Study results

Our sample included a total of 2,026,456 discharged beneficiaries in 2012-13, 273,665 of whom were discharged alive for a rate of 13.5 percent across those two years. According to our analyses, 145,475 beneficiaries revoked hospice and the remaining 116,963 experienced some type of provider-initiated live discharge.

Descriptive statistics (using the dataset without a washout period) are presented in Table 5 by patient discharge status, either alive or dead. Across all variables, these outcomes (i.e., discharged dead and discharged alive) were statistically different (p<0.05). In total, hospice enrollees in 2012 and 2013 were most likely to be female, White, have a non-cancer diagnosis, and live in urban areas. These enrollees were also most likely to be served by non-profit,

freestanding, non-chain, large (average daily census of between 100 and 500 patients), and urban

hospices.

Table 5. Descriptive statistics, 2012-13, distribution of hospice characteristics by patient
monthly discharge status code

	Died	Live discharge	Total
n	1,752,791	273,665	2,026,456
Mean beneficiary age	84	85	84
Median facility years in operation	20.5	17.8	20.1
Median facility HHI	0.008	0.007	0.008
Median facility LOS (days), 25th percentile	19	22	19
Median facility LOS (days), 50th percentile	27	30	27
Median facility LOS (days), 75h percentile	35	44	36
Mean facility LOS (days), 25th percentile	31	35	32
Mean facility LOS (days), 50th percentile	43	49	44
Mean facility LOS (days), 75h percentile	58	67	59
Median beneficiary LOS (days), 25th percentile	3	7	4
Median beneficiary LOS (days), 50th percentile	7	14	8
Median beneficiary LOS (days), 75h percentile	15	22	16
Sex			
Male	42.3%	35.7%	41.4%
Female	57.7%	64.3%	58.6%
Beneficiary Race Code			
White	88.8%	83.5%	88.1%
Black	7.1%	10.9%	7.6%
Other	0.8%	0.9%	0.9%
Asian	1.0%	1.3%	1.0%
Hispanic	1.7%	2.8%	1.9%
North American Native	0.3%	0.4%	0.3%
Unknown	0.2%	0.2%	0.2%
Primary diagnosis, collapsed			
Cancer	31.5%	15.9%	29.4%
Dementia/Alzheimer's	16.2%	20.7%	16.8%
Failure to thrive	4.6%	8.3%	5.1%
Debility, non-specified	8.3%	16.6%	9.4%
CVA/Stroke	5.8%	4.4%	5.6%
CHF	8.0%	9.0%	8.1%
ESRD	0.9%	0.5%	0.8%
Pneumonia	3.2%	1.4%	3.0%
Parkinson's	1.9%	2.5%	2.0%
Liver disease	1.0%	0.7%	1.0%
Heart disease	5.4%	7.4%	5.7%

	Died	Live discharge	Total
Other	13.0%	12.7%	13.0%
RUCA group			
Isolated	2.5%	2.5%	2.5%
Small rural	3.4%	3.8%	3.4%
Large rural	6.5%	6.9%	6.6%
Urban	87.0%	84.7%	86.7%
No matching zip	0.7%	2.0%	0.9%
Facility ownership type			
For-profit	41.8%	51.9%	43.2%
Non-profit/Gov.	47.8%	39.1%	46.6%
Other	10.4%	9.0%	10.2%
Type of Facility			
Freestanding	76.6%	79.1%	76.9%
HHA	13.5%	13.0%	13.4%
Hospital	9.6%	7.6%	9.3%
SNF	0.3%	0.3%	0.3%
Chain status			
Chain	45.6%	48.5%	45.9%
Non-chain	54.4%	51.5%	54.1%
Hospice size			
X-large	12.3%	11.4%	12.2%
Large	47.2%	42.3%	46.5%
Medium	27.7%	30.3%	28.1%
Small	11.1%	13.8%	11.5%
X-small	1.6%	2.2%	1.7%
Rural/urban status			
Rural	12.0%	14.0%	12.2%
Urban	88.0%	86.0%	87.8%
Census division			
New England	4.8%	4.4%	4.8%
Middle Atlantic	11.7%	11.4%	11.6%
East North Central	17.3%	13.0%	16.8%
West North Central	7.6%	6.7%	7.5%
South Atlantic	21.4%	23.0%	21.6%
East South Central	6.1%	7.8%	6.3%
West South Central	11.2%	11.7%	11.3%
Mountain	7.1%	8.8%	7.3%
Pacific	12.8%	13.3%	12.9%

All chi-square tests for comparisons between died and discharged alive were statistically significant.

Compared to enrollees discharged dead, those discharged alive were more likely to be female (64.3 percent v. 57.7 percent), non-White (16.5 percent v. 11.2 percent), have a non-cancer diagnosis (84.1 percent vs. 68.5 percent), and live in a large rural areas (6.9 percent v. 6.5 percent). In terms of facility characteristics, those discharged alive were more likely to be served by a for-profit (51.9 percent vs. 41.8 percent), freestanding (79.1 percent v. 76.6 percent), chain-owned (48.5 percent vs. 45.6 percent), and medium (30.3 percent vs. 27.7 percent), small (13.8 percent vs. 11.1 percent) or X-small (2.2 percent v. 1.6 percent) hospice, operating for fewer years, on average (17.8 years v. 20.5 years) and in slightly less competitive markets (0.007 v. 0.008 HHI). Figure 3 provides an overview of these two outcomes — total discharged dead and discharged alive — by month during the 2013 cap year.





No. hospice enrollees died, by month



In terms of the explanatory variables of interest, beneficiaries discharged dead were served by facilities with shorter average LOS — facility-level median and mean LOS at the 25th, 50th, and 75th percentiles — compared to those discharged alive. Similarly, at the beneficiary level, average LOS at the 25th, 50th, and 75th percentiles were consistently lower for those who died compared to those discharged alive. Figure 4 shows trends in the cap-risk variable (calculated as the monthly median facility-level LOS) across the cap year, which began November 1, 2012, and ended October 31, 2013. As the figure shows, hospices' risks of exceeding the cap inherently increases at the year progresses and then immediately decreases at the start of the new cap year; see Appendix 6, Figure 8, for a graphical depiction of hospice monthly cap risk at the mean.



Figure 4. Monthly facility-level cap risk, 2013 cap year²⁴

Adjusted analyses, presented in Table 6 and run on the main dataset without a 90-day washout period, show the average marginal effects of cap risk on the three-outcome discharge variable (i.e., discharged dead, discharged alive, and still a patient). As Table 6 shows, the coefficients on cap risk were statistically significant (p<0.05). The marginal effect of died was negatively associated with cap risk, while live discharge and "still a patient" were positively associated with cap risk. In other words, as a hospice's cap-risk increased, a given beneficiary's likelihood of being discharged alive, relative to dying or remaining a patient, increased during the cap year, holding all else constant. Notably, the magnitude of the positive association between cap risk and the average marginal effect of "still a patient" was *greater* than between

²⁴Facility-level cap risk was calculated as the median LOS, aggregated with each successive month in the cap year. (i.e., beginning November 2012).

cap risk and live discharge. Sensitivity analyses conducted using monthly cap risk at the mean,

rather than the median, produced similar results (see Appendix 6, Table 10).

	Average marginal effect	p-value on coefficient	
Died	-0.0031888	0.000	
Live discharge	0.0001196	0.000	
Still a patient	0.0030692	Base outcome	
n	4,217,734		

 Table 6. Marginal effects on cap risk, multinomial logit model

All models were clustered at the beneficiary level and controlled for: beneficiary age, beneficiary sex, beneficiary primary diagnosis, beneficiary RUCA group, facility type, facility profit status, facility years in operation, facility census division, facility rural/urban status, facility size, HHI, month in the cap year, and an interaction between facility census division and rural/urban status.

Analyses on the four-outcome variable (i.e., discharged dead, patient revocation, provider-initiated live discharge, and still a patient) showed a negative average marginal effect for provider-initiated live discharge and a positive average marginal effect for patient revocation, holding all else constant (see Appendix 6, Table 11). The sensitivity analysis, using cap-risk at the mean, revealed similar associations (see Appendix 6, Table 12). Adjusted analyses run on the dataset with a washout period appeared comparable with results produced from the non-washout dataset and are not presented here.

Discussion

Results from this study show a positive and statistically significant relationship between a hospice's risk of exceeding its respective aggregate cap and the likelihood that an enrolled patient will experience a live discharge (relative to dying or remaining continuously enrolled). These findings build on the evidence in the literature pointing to a relationship between hospice aggregate cap attainment and rates of live discharge, providing a more nuanced picture of the monthly trends in live discharge patterns and corroborating the concern MedPAC expressed in

its 2015 Report to Congress that suggested the aggregate cap may be encouraging live discharges.

While the average marginal effect of cap risk on live discharges was positive and statistically significant across models, the effect size was small — nearly zero — possibly indicating the absence of a true effect. More likely, though, this small effect size reflects the fact that the analytic file incorporated all hospices, and the facilities motivated to live discharge patients in response to the cap represent a small proportion of all providers. In 2014, only 10.6 percent of all hospices exceeded their respective aggregate caps (Plotzke, Christian et al. 2015). Therefore, the large proportion of hospices not influenced by the cap may be masking the true — and likely much larger — effect size for the segment of hospices discharging patients in response to the cap ceiling.

Similarly, the fact that the magnitude of the average marginal effect of cap risk on patient revocation was positive and the average marginal effect on provider-initiated live discharge was negative raises questions (see Appendix 6, Table 11). Theoretically, if providers make live discharge decisions based, at least in part, on their risk of exceeding the aggregate cap, we would expect these decisions to affect only the likelihood that a patient experiences a provider-initiated live discharge — not the likelihood that a patient revokes the benefit. Thus, this finding may indicate that the coding differentiating between patient revocation and provider-initiated live discharges in the Medicare claims is unreliable. This relationship between cap risk and revocation may also suggest that another phenomenon unaccounted for in the models presented in this study is driving this association or that, perhaps, more ominously, hospices are in some instances encouraging patients to revoke their hospice benefit as the year progresses to avoid reaching their cap and facing a Medicare repayment penalty

Furthermore, the fact that adjusted analyses were statistically significant across models when using the dataset with a washout period, which eliminated some of the patients potentially most likely to experience a live discharge, suggests that the relationship between the cap and live discharges affects all hospice enrollees — not just longer stay patients with a plausibly more ambiguous prognosis (Johnson, Elbert-Avila et al. 2012, Teno, Plotzke et al. 2014).

Although Medicare initially implemented the aggregate cap as a way to ensure hospice remained an end-of-life benefit (i.e., to provide disincentives for initiating hospice services too early), these results suggest that policymakers ought to seriously consider the unintended consequences this longstanding aspect of the payment system may now be having on patient outcomes of care. Other than increasing the cap amount on an annual basis and aligning the cap year with the federal fiscal year (FY) starting in FY 2017, CMS has not directly implemented major reforms of the aggregate cap since the cap's implementation with the larger Medicare hospice program in 1983. The cap may be a microcosm of the broader challenges a 30-plus-yearold payment system is facing in the context of an industry that has experienced significant changes, particularly over the last decade-and-a-half, with expenditures inflating from \$2.9 billion in 2000 to \$15.1 billion in 2012, the number of hospice providers increasing by 65 percent during that time, and average LOS swelling from an average of between 55 and 75 days in the early years of the hospice program to 88 days in 2014 (MedPAC March 2016, May 2015). With all these changes, the aggregate cap has become more visible with an increasing number of hospices either exceeding (9.8 percent in 2011, 11.0 percent in 2012, 10.7 percent in 2013, and 10.6 percent in 2014) or nearly exceeding the cap (Plotzke, Christian et al. 2015, MedPAC March 2016). And federal policymakers ought to continue to monitor its place in the hospice

payment system in an environment in which the proportion of longer stay non-cancer hospice enrollees continues to grow.

The recent FY 2016 Hospice Wage Index and Payment Rate Update — which implemented a u-shaped payment curve through which providers are reimbursed a higher rate at the beginning and end of the hospices stay — may ultimately have implications for the relationship between the cap and live discharges, possibly reducing the incentive for enrolling patients for particularly long stays. Given the associations between cap risk and live discharges presented here in the context of the pre-reform payment system, policymakers and researchers will need to continue to monitor this trend to determine whether such relationships persist — or, perhaps, new mechanisms for cap-based "gaming" have formed.

Limitations

This study had several limitations. First, though our key exploratory variable was meant to represent a "risk" of exceeding the aggregate cap, it was not calculated as a true risk. Although we opted for an approach that attempted to model this "risk" from the individual hospice perspective, it is impossible to know if this approach accurately captures the way the majority of hospices conceptualize and respond to changes in their respective cap status. Furthermore, it is likely that hospices vary in their approach to monitoring the cap, which is impossible to capture with a single measure. Still, an industry document discussing ways for hospices to manage the cap suggests our approach may be a reasonable proxy (2010).

Second, the analysis run for this study relies on beneficiary-month observations and therefore does not account for the possibility that individuals are discharged and readmitted within the month timespan. In effect, all days enrolled in hospice during a month are treated as a

single stay for the purposes of determining beneficiaries' outcomes and calculating monthly hospice-level cap risk.

Third, we calculated the cap risk variables using the claim utilization day count variable in the Medicare claims, which is based on the number of days for which the provider would like to be reimbursed by Medicare, rather than the number of actual days for which Medicare reimburses. We used this variable rather than calculating the number of days each beneficiary was enrolled in hospice because the cap-focused analysis was concerned with Medicare-paid days only. Furthermore, due to data use agreement restrictions, we suppressed median and mean LOS less than 10, which may have overstated facility-level LOS calculations.

Finally, this study only included data from a single cap year (i.e., from November 2012 to October 2013), which limited our ability to explore cap trends related to discharge rates across time. Without the context of additional years of data, it is impossible to know whether the 2013 cap year reflected broader trends or whether it was an aberration.

Conclusion

Although the results from this study show a positive association between hospice cap risk and the likelihood of live discharge, a number of questions remain about the relationship between the aggregate cap and live discharges. In particular, because this work uses data from 2012 and 2013, the effect of FY 2016 Hospice Wage Index and Payment Rate Update is not incorporated in this analysis. It is possible that the trends documented here could be different in this new payment environment. As such, future research ought to explore this question regarding the relationship between hospice cap risk and live discharges using data from 2016 and later to determine how, if at all, the payment reform has mediated the relationship between these two factors. Furthermore, future research could more fully explore different ways of measuring "risk"
with regard to the aggregate cap to possibly capture the implications of this phenomenon. As part of this exploration, researchers could also explore the possibility that hospices are admitting rather than discharging — patients in response to concerns about their respective cap ceilings. In particular, qualitative research could lend insight into the different ways hospices operationally consider the aggregate cap. Finally, further work is needed to explore the relationship between patient revocation and cap risk.

CHAPTER FIVE: IMPLICATIONS

What factors drive live discharge from hospice?

The three studies presented here together sought to answer the overarching question,

"What factors drive live discharge from hospice?" Although synthesis of prior literature

responded to some aspects of this inquiry, many pieces remained unanswered, particularly

regarding the factors that have propelled the rate steadily upward over the last decade and

contributed to significant geographic variations nationwide. To answer this question, we

conducted three related studies; Table 7 provides an overview of each.

Table 7. Overview of three study objectives and results

Study 1 (Chapter 2): Qualitatively explored provider perspectives regarding the factors driving live discharge from hospice. Providers described four key themes contributing to the rising national rate of live discharge in the last decade-and-a-half: 1) difficulty estimating patient prognosis, particularly among non-cancer patients; 2) increased CMS oversight that has created a culture of fear and encouraged live discharges as a result; 3) rising market competition resulting in admission of inappropriate long-stay patients and aggressive marketing practices; and 4) difficulties contracting with local inpatient facilities. Participants emphasized challenges underlying each decision to live discharge, stressing that there often exists a grey line between "appropriate" and "inappropriate" discharges. Discussions also focused on certain scenarios in which financial motivations drive enrollment and disenrollment practices. Results suggested that live discharge patterns are often susceptible to market and regulatory forces, which may have contributed to the rising national rate.

Study 2 (Chapter 3): Empirically estimated the relationship between hospice margins (total and operating) and facility-level live discharge rates. Adjusted analyses showed a positive and statistically significant association between operating and total margin and hospice-level rates of live discharge. The finding that hospices with higher rates of live discharges have higher financial margins supported concerns other investigators raised regarding live discharges occurring for financially motivated — rather than patient-based — factors and contributes to the discussion of Medicare hospice payment reform.

Study 3 (Chapter 4): Quantitatively investigated monthly trends in live discharge patterns to determine if hospices were more likely to discharge patients as they got closer to exceeding their respective aggregate caps during a 12-month period. Adjusted analyses showed a positive and statistically significant relationship between cap risk and live discharges. Results suggested policymakers ought to consider the unintended consequences the aggregate cap may be having on patient outcomes of care.

Overall, the results from these three studies together paint a complicated picture in which live discharges stem from not one primary driver but the confluence of many, arrayed in a variety of ways, to produce each individual patient-level outcome. Each live discharge reflects a complex assortment of interpersonal, intrapersonal, organizational, and environmental factors that ultimately result in the decision to live discharge — either by the patient and his/her family or by the provider. As such, it is impossible for researchers to accurately characterize the nature of each individual discharge, as the precise reasons propelling such outcomes frequently lay outside of the Medicare claims or the data collected through qualitative work.

Still, these three studies fill in significant gaps in the literature and aid our understanding of the overarching trends in the industry with regard to admission and live discharge practices. While previous literature clearly documented the relationship between particular patient- and provider-level factors associated with higher rates of live discharge — speculating that such patterns stemmed from factors beyond differences in patient preferences and prognoses/health statuses — this study took the evidence a step further. To our knowledge, these are the first studies that explore 1) the relationship between CMS pre- and post-payment auditing/review practices and rates of live discharge; 2) challenges hospices have experienced contracting with local area inpatient facilities that, in essence, force live discharges for patients in need of inpatient services; 3) the role of market saturation and competition on live discharge patterns; and 4) the association between hospice profit margins (total and operating) and facility-level live discharge rates. Furthermore, we provide evidence to reinforce concerns that the aggregate cap may be inadvertently encouraging higher rates of live discharge on an annual basis. All such contributions to the literature suggest that the hospice delivery system does not always work as it

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should — that there are factors that might be encouraging patient live discharges beyond changes in patient preferences and prognoses/health statuses.

Live discharge rates: A quality indicator?

Although these three studies together provide evidence for "gaming" in the hospice delivery system, such trends do not suggest that higher live discharge rates are automatically reflective of poor quality — and vice versa. Indeed, it would be easy to take the findings from this work and point to them as evidence for the implementation of a national claims-based quality indicator, in which hospices with high rates of live discharge are considered low-quality providers, and hospices with low rates of live discharge are considered high-quality providers. In some instances, this black-and-white interpretation may be accurate. But in others, it may be lacking in nuance at best — downright inaccurate at worst.

Certainly, these studies reinforce the evidence that many live discharges, particularly in recent years, have occurred for financially motivated reasons. But as a number of the providers interviewed for the qualitative portion of this work pointed out, provider-initiated live discharges also often occur for reasons that are, in fact, beyond the control of the provider. For patients experiencing a live discharge because their hospice was previously unable to contract with a local inpatient facility or because that patient is declining so rapidly that the prospect of SNF room and board is preferable to intermittent hospice services at home (see Chapter 2 for more information), it is the hospice *system* that has failed the patient — not the hospice itself. Likewise, when patients who would otherwise benefit from continued hospice care experience a live discharge because their prognosis may raise red flags with CMS auditors, in many instances, the *system* has failed the patient. Furthermore, the fact that the hospice program relies on the judgment of a provider to accurately forecast patient prognoses and applies a rigid system of

oversight to second-guess those judgments presents a paradox of sorts for providers. When patients experience a live discharge as a result of this dichotomy, again, that patient is oftentimes a victim of the *system*'s failings rather than the provider's.

The introduction of a claims-based quality indicator that does not account for these factors is no quality indicator at all. Based on the evidence presented here, CMS ought to explore this measure in greater depth before proceeding with the adoption of a live discharge-based quality metric. As conversations with providers about the implications of CMS auditing around the country emphasized, the potential for unintended consequences is always high when altering federal rules and oversight practices. In particular, additional research attempting to model the "expected" range of live discharges for a given hospice based on distinct patient characteristics may assist CMS in the development of a more accurate measure that reflects the complicated reality surrounding live discharges and the decision-making processes that lead to them.

Hospice payment system: Time for widespread reforms?

Such discussions about financially motivated live discharges and failings of the hospice system that result in a live discharge automatically raise larger questions about the adequacy of the hospice payment system. Although momentous in the context of a payment system that remained virtually unchanged for 30 years, the newly implemented FY 2016 Hospice Wage Index and Payment Rate Update likely did not go far enough in discouraging patient selection and encouraging high-quality care. Although the u-shaped curve, suggested by MedPAC in 2009, may discourage some particularly long stays, as this payment change more appropriately reimburses hospices for the most expensive portions of stays, there are still larger issues in the payment system. As this work pointed out, the aggregate cap may be encouraging live discharges (see Chapter 4 for more information) — and its reform, though considered, was omitted entirely from the FY 2016 Hospice Wage Index and Payment Rate Update Final Rule. Furthermore, the per diem-based payment system will likely continue to encourage the cherry-picking of certain lower cost, longer stay patients, who are discharged from hospice at higher rates.

Instead of reforming the entire payment system, the solution may still lay in more targeted CMS oversight. But the experiences of providers presented in this study ought to serve as a cautionary tale for the effects that indiscriminate auditing can have on patient outcomes of care. The fact that providers admitted to discharging patients for fear of repercussions from CMS audits — in spite of the potential negative ramifications those discharges could have on patient lives —underscores a need for a revised approach to oversight. Such an approach ought to more effectively target the "bad actors" and allow seasoned, good-intentioned providers to continue to deliver high-quality care to patients in need of such end-of-life services and supports.

The Medicare hospice program in the context of the larger delivery system

Beyond the payment system, these studies raised questions about the structure of the Medicare hospice benefit in the context of a constantly changing health delivery system. Currents of change swept through the hospice industry during the last decade-and-a-half, increasing enrollment, and expanding the number of providers by 65 percent. With those changes emerged questions about whether the hospice benefit continues to meet the needs of the patient population it currently serves. Although this work does not provide concrete support for a change in the benefit structure, the qualitative study raised questions about the benefit design, particularly the sufficiency of the six-month prognostication criterion to meet the needs of an increasingly non-cancer patient population. Indeed, while the question was not answered through these studies, the fact that it was raised emphasizes the need for continued reevaluation of the benefit design. As the U.S. population continues to age, the role of hospice in delivering end-of-life services and supports will become increasingly important. A related implication, these studies suggest that there exist a number of community-dwelling elderly individuals nearing the end of life who are marginally eligible for hospice and who are not being served elsewhere. The presence of such individuals across markets — available for hospice enrollment and subsequent disenrollment — underscores the virtual absence of a long-term-services-and-supports system as well as the limited availability of home- and community-based services. While increasing lengths of stay suggest that many of these patients are inappropriately enrolled in hospice, at the individual patient level, their receipt of palliative and hospice services may not always be a bad thing.

Political realities aside, policymakers ought to continue having serious conversations about the mission of hospice and its place in the larger health care delivery system. At a minimum, the totality of this work suggests that the Medicare hospice program has serious issues that must be resolved through payment system reform, increased oversight, benefit redesign, or some combination thereof. In 1992, when just 197,400 beneficiaries enrolled in hospice, it was easy to dismiss the benefit as a small and insignificant portion of the larger health system pie. But today, with 1.3 million beneficiaries, 4,000 providers, and spending equaling \$15.1 billion, hospice can no longer be viewed as the stepchild of the Medicare program. It is — and will continue to be — a vital source of care for some of our nation's most vulnerable patients.

APPENDIX 1: CONCEPTUAL MODEL

Figure 5. Conceptual model



APPENDIX 2: AIM 2 STUDY COST REPORT FISCAL YEAR ASSIGNMENT



Figure 6. Fiscal year assignment, 2012 and 2013 cost report data²⁵

Figure 7. Fiscal year assignment, 2011 and 2012 cost report data²⁴



²⁵Figure does not include all hospice observations from the Cost Report files. Only the most common fiscal years are included here.

APPENDIX 3: AIM 2 STUDY SENSITIVITY ANALYSES

	Live discharge rate	
	Total discharges >=100, state clusters (1)	With failure to thrive & debility, state clusters (2)
Hospice total margins	0.0351** (0.009)	0.00915 (0.539)
Log total discharges	-0.0245*** (0.000)	-0.0210*** (0.000)
Proportion of White patients	-0.0787** (0.002)	-0.0647* (0.015)
Proportion of female patients	0.0372 (0.318)	-0.0741 (0.108)
Hospice mean age	-0.00210 (0.110)	-0.00654*** (0.001)
Hospice years in operation	-0.00122** (0.002)	-0.00196** (0.002)
Northeast	0.0114* (0.023)	0.0248*** (0.000)
South	0.00641 (0.454)	0.00503 (0.574)
West	0.0113 (0.284)	0.00384 (0.561)
Rural	0.00371 (0.446)	0.0106 (0.266)
Non-profit/Gov.	-0.00757 (0.127)	-0.00539 (0.422)
Other	-0.0111* (0.018)	-0.0156** (0.006)
Chain	-0.00366 (0.374)	-0.00657 (0.225)
Analysis year, 2013	0.0307*** (0.000)	0.0447*** (0.000)

Table 8. Sensitivity analyses, Total margins

Percentage failure to thrive		0.00163** (0.002)
Percentage debility, non-specified		0.000939** (0.001)
Constant	0.454*** (0.000)	0.843*** (0.000)
n	1821	662

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p-values in parentheses p < 0.05, ** p < 0.01, *** p < 0.001

	Live discharge rate	
	Total discharges >=100, state clusters	With failure to thrive & debility, state clusters
	(1)	(2)
Hospice operating margins	0.0231** (0.003)	0.0113 (0.423)
Log total discharges	-0.0247*** (0.000)	-0.0223*** (0.000)
Proportion of White patients	-0.0810** (0.001)	-0.0710* (0.013)
Proportion of female patients	0.0406 (0.283)	-0.0660 (0.150)
Hospice mean age	-0.00210 (0.097)	-0.00618** (0.002)
Hospice years in operation	-0.00121** (0.003)	-0.00193** (0.003)
Northeast	0.0102* (0.048)	0.0258*** (0.000)
South	0.00527 (0.542)	0.00481 (0.602)
West	0.0109 (0.284)	0.00419 (0.554)
Rural	0.00529 (0.311)	0.0116 (0.232)
Non-profit/Gov.	-0.00549 (0.264)	-0.00437 (0.543)
Other	-0.00998 (0.053)	-0.0123 (0.068)
Chain	-0.00373 (0.420)	-0.00752 (0.238)
Analysis year, 2013	0.0306*** (0.000)	0.0444*** (0.000)
Percentage failure to thrive		0.00155** (0.005)
Percentage debility, non-specified		0.000844**

Table 9. Sensitivity analyses, Operating margins

n	1862	668
Constant	0.458*** (0.000)	0.824*** (0.000)
		(0.005)

p-values in parentheses *p < 0.05, **p < 0.01, ***p < 0.001

APPENDIX 4: AIM 2 STUDY MARGIN EQUATIONS

Exhibit 1. Margin equations

Operating and total margins variables were both calculated from information on hospice

cost report form CMS-1984-99 from 2011-13, Worksheet G2, Parts I and II.

More specifically, operating margin was calculated as:

 $Operating \ margin = \frac{(\text{Total general inpatient revenues} - \text{Operating expenses})}{\text{Total general inpatient revenues}}$

And total margin was calculated as:

Total margin = $\frac{(\text{Operating revenue} + \text{nonoperating revenue}) - (\text{Operating expenses} + \text{nonoperating expenses})}{(\text{Operating revenue} + \text{nonoperating revenue})}$

More specifically, using the cost reports, this was calculated as:

Total margin

= $\frac{(\text{Total general inpatient Revenues + Total deductions + State Medicaid room & board)- (Operating expenses + Total additions)}{(\text{State Medicaid room & board + Total general inpatient Revenues + Total deductions})}$

Where the sum of total deductions and state Medicaid room & board equal non-operating revenue, and total additions equal non-operating expenses. These assumptions were made based on a thorough review of instructions for hospice cost report form CMS-1984-99, supplemented with the instructions for the newer form, CMS-1984-14, which provide more detailed information for cost report submissions made on or after Oct. 1, 2014. Due to these necessary assumptions, we are more confident in the reliability of the operating margin measure.

APPENDIX 5: AIM 2 STUDY ANALYTIC APPROACH

Exhibit 2. Fixed effects vs. random effects

In theory, fixed effects models are preferable in a panel dataset, controlling for timeinvariant characteristics that may bias the outcome variable. Hausman tests support the use of fixed effects over both pooled ordinary least squares and random effects in this dataset; however, we found the fixed effects estimates to be highly variable and inefficient, as shown in the table below. This is because fixed effects models are consistent as the number of time periods reaches infinity. With T=2 in this instance, standard errors in the fixed effects model increased dramatically relative to other models. Thus, we chose to use random effects with clustering at the state level because these models are less sensitive to the number of observations per unit and are ultimately more consistent.

	Live discharge rate				
	(1) Total margins State-I	, Clustered, evel	(2) Operating Clustered, S) margins, State-level	
	Coefficient	p-value	Coefficient	p-value	
Hospice total margins	0.0174	0.627			
Hospice operating margins			-0.00323	0.900	
Log total discharges	-0.0271	0.073	-0.0298*	0.050	
Proportion of White patients	-0.153	0.125	-0.138	0.154	
Proportion of female patients	-0.0640	0.390	-0.0563	0.437	
Hospice mean age	-0.00127	0.720	-0.00194	0.605	
Hospice years in operation	0.0277**	0.002	0.0291**	0.001	
Non-profit/Gov.	-0.0254***	0.000	-0.0247***	0.000	
Other	-0.0261***	0.000	-0.00351	0.331	
Constant	0.189	0.434	0.222	0.380	

Fixed effects models

n * p < 0.05, ** p < 0.01, *** p < 0.001Model run with region, rural, facility ownership type, chain status, and analysis year fixed effects.



APPENDIX 6: AIM 3 STUDY SENSITIVITY ANALYSES

Table 10. Sensitivity analysis, marginal effects on mean length of stay, multinomial logit model with three-outcome discharge status variable

	Average marginal effect	p-value on coefficient
Died	-0.0034521	0.000
Live discharge	0.0000464	0.000
Still a patient	0.0034057	Base outcome
n	4,369,356	

All models were clustered at the beneficiary level and controlled for: beneficiary age, beneficiary sex, beneficiary primary diagnosis, beneficiary RUCA group, facility type, facility profit status, facility years in operation, facility census division, facility rural/urban status, facility size, HHI, month in the cap year, and an interaction between facility census division and rural/urban status.

	Average marginal effect	p-value on coefficient
Died	-0.0031935	0.000
Provider-initiated	-0.00000332	0.000
Patient revocation	0.0000889	0.000
Still a patient	0.003108	Base outcome
n	4,203,274	

Table 11. Marginal effects on median length of stay, multinomial logit model with fouroutcome discharge status variable

All models were clustered at the beneficiary level and controlled for: beneficiary age, beneficiary sex, beneficiary primary diagnosis, beneficiary RUCA group, facility type, facility profit status, facility years in operation, facility census division, facility rural/urban status, facility size, HHI, month in the cap year, and an interaction between facility census division and rural/urban status.

Table 12. Sensitivity analysis, marginal effects on mean length of stay, multinomial logit model with four-outcome discharge status variable

	Average marginal effect	p-value on coefficient
Died	-0.0034601	0.000
Provider-initiated	-0.0000417	0.000
Patient revocation	0.0000621	0.040
Still a patient	0.0034397	Base outcome
n	4,354,425	

All models were clustered at the beneficiary level and controlled for: beneficiary age, beneficiary sex, beneficiary primary diagnosis, beneficiary RUCA group, facility type, facility profit status, facility years in operation, facility census division, facility rural/urban status, facility size, HHI, month in the cap year, and an interaction between facility census division and rural/urban status.

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