


The Cost of Medically Unnecessary Days Due to Waiting for Guardianship in a State Acute Hospital System

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Abstract

Hospitals must do more with less, making efficiency a priority. Discharge delays create challenges for acute care hospitals. Some delays are due to patients waiting for a guardian—a person appointed to assist an adult who lacks decision-making capacity. Previous studies examine the burden of excess days in a single academic medical center (AMC); however, these institutions do not represent the entire hospital system. This descriptive study expands upon previous analyses by calculating the financial implications of medically unnecessary days in a state's hospitals to payers. Two models are presented: one calculates the gross patient service revenues required to support excess days; the other calculates the expense to hospitals. Results suggest that substantial funds are required to support excess days. Funds may be better allocated to support the health and well-being of people needing medical care or to address the cause of delays due to waiting for guardianship.

Keywords

incapacitated adults, guardianship, acute hospital, medically unnecessary days, medicaid, medicare, public payer, commercial insurance

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What do we already know about this topic?

- Medically unnecessary days due to waiting for guardianship increases the cost of care in academic medical centers.
- In 2014, the national average cost for a hospital “hotel” day was calculated to be \$1093.51 by Stenberg, Lauer, Gkountouras, Fitzpatrick & Stanciole (2018).
- The onus of finding a guardian is frequently placed upon the hospital and is a challenging process.

How does your research contribute to the field?

- The study advances 2 previous studies conducted in single, academic medical centers (Ricotta, Parris, Parris, Sontag, & Mukamal, 2018; Chen, et al 2014).
- It expands the financial analysis to different hospital types and across a state’s acute hospital system.
- This study provides insight into the number of guardianships sought by different hospital types and the excess days due to waiting for a guardian.
- The study provides a means to calculate the daily cost of a hospital hotel day for an individual hospital which may be used to assess the impact of a variety of causes for medically unnecessary days

What are your research’s implications towards theory, practice, or policy?

- The study provides one source of potential cost savings for acute hospitals and payers.
- It highlights the need to address medically unnecessary days in order to increase efficiency as well as improve patient outcomes

Introduction

All adults are assumed to have the capacity to make decisions about their life, including whether to accept or decline medical treatment. When an individual’s decision-making ability is impaired the person may be unable to access necessary services. To protect these individuals, a substitute may be given authority to make decisions on their behalf.

Some people plan for potential incapacity by completing advance directives, including a Health Care Proxy (also known as a Power of Attorney for Health Care) which allows a person to choose a decision maker in advance. However, they require advance planning and completion rates remain low.¹ Tompkins² found differences in age, race, wealth and educational status associated with completion rates. Additionally, some people may not have a person to nominate as a healthcare agent. These people, sometimes referred to as “unbefriended”³ lack family or friends to call upon in the case of incapacity.

To address low completion rates for advance directives, many states allow for a default surrogate process in which a person is selected as decision-maker based on their relationship to the individual. DeMartino et al⁴ explain that a state law may dictate a “surrogacy ladder” consisting of spouses, other family members and in some cases friends or even hospital staff. State laws differ on the conditions for which a default surrogate may be appointed, the powers delegated to a default surrogate, the standard to use when making a decision and the process for resolving disputes between potential decision makers.^{5,6} While the default surrogacy mechanism can be of value to individuals who have not completed an advance directive, as of 2017, there were 4 states without this legal mechanism.⁷

When there is no surrogate decision-maker, the Court may appoint a guardian. A guardian is given authority to make decisions in many areas of an individual’s life, including, health, housing, and educational or vocational services. In the hospital setting, a guardian is required to provide consent for medical treatment, discharge from the hospital or completion of benefit applications, such as Medicaid. However, a recent qualitative study found that on average it took 17 days and 6 attempts before a guardian was found.⁷

When the person is both unbefriended and cannot pay privately for a guardian, public guardianship must be considered. Most states lack an adequately funded public guardian program to serve as a safety net.⁸ To address funding deficiencies, state guardianship programs rely on eligibility categories, including age, disability status, income/assets, and eligibility for a program such as the Department of Mental Health or the Department of Disabilities.⁹ In lieu of other options, judges may revert to what Moye et al⁹ refer to as an “informal *pro bono*” process in which attorneys serve at the behest of a judge.

Once identified, an entity must petition the Court to appoint a guardian. In some cases, the petitioner is the hospital, while in others a family member. Once a guardian is appointed by the Court, they must determine a discharge plan for the individual, including identifying a setting and completing eligibility paperwork, such as a Medicaid application. Each of these steps may cause hospital discharge delays.

Much guardianship literature focuses on the impact to the individual when a decision-maker is necessary but not available,¹⁰ less literature focuses on the financial impact.^{11,12} Every medically unnecessary day poses risks to the individual, such as secondary infection and delay of rehabilitation, and costs to the hospital system. This study advances 2 previous

studies conducted in single, academic medical centers^{13,14} by expanding the analysis of medically unnecessary hospital days due to waiting for a guardian to different hospital types and across a state's acute hospital system.

Methods

In order to explore the financial burden to hospitals and the revenues required to support excess days in 1 state's hospital system, 2 models are built. The first calculates the revenues required to support excess days. The second calculates the expense to hospitals for medically unnecessary days while waiting for a guardian.

Data

Two data sources are used. One is publicly available, secondary data on Massachusetts hospitals maintained by the Center for Health Information and Analysis (CHIA). CHIA publishes periodic Massachusetts hospital profiles from which its databook is publicly available. The CHIA dataset includes self-reported hospital revenues, occupancy rates, payer sources and expenses, among other information. The other source is an unpublished hospital survey by the University of Massachusetts Donahue Institute¹⁵ that includes information regarding annual guardianship petitions.

Guardianship Survey

In order to calculate the financial impact to hospitals, it is necessary to know the number of individuals who experience discharge delays due to a petition. Currently, there is no public dataset on guardianship petitions or guardians, despite the 2018 United States Senate Special Committee on Aging report recommendation.¹⁶ Therefore, a Massachusetts hospital survey administered between December 2017 and March 2018 is used. The survey includes all acute and non-acute hospitals, hospital inpatient satellites, and 1 satellite emergency facility with inpatient beds. Respondents report how many adult guardianship petitions were filed and granted during the most recent 12 months, whether the numbers provided are exact or estimates, and on what 12-month period the numbers are based.

Study Sample

The sample is comprised of the survey respondents. The survey was sent to 67 hospitals in Massachusetts with a 66% response rate. For the purposes of this study, it is further cleansed to be representative of only acute inpatient hospitals who provide primarily medical services, thus eliminating 13 of the respondents, resulting in 31 cases; 5 academic medical centers (AMC), 2 teaching hospitals, 10 community hospitals, and 14 high public payer community hospitals (HPP community). Each type of hospital provides a different type and intensity of services and has a different rate structure.

Therefore, in this study we calculate cost by hospital type. Of the 31 sampled acute hospitals, 17 (55%) estimated the number of petitions granted and 14 (45%) provided an exact count.

Model 1: Revenues Supporting Medically Unnecessary Days

The following model estimates the government gross patient service revenues (GPSR) associated with excess days while waiting for guardianship. GPSR is used since net patient service revenues is not available through publicly available sources.

1. Calculate the percentage of total revenue provided by government to each hospital via Gross Patient Service Revenues (GPSR). Government GPSR included Medicare, Medicaid, Health Safety Net, ConnectCare, and Other Government Revenues. The Health Safety Net revenues are included as government funds but not state funds. The safety net pool is comprised of Disproportionate Share Hospital (DSH) funds, hospital contributions and insurance contributions. While Massachusetts is supposed to contribute each year, the state had not done so since 2015. (Referred to in formulas as *percent government funded* or %GF).

This step provides the total revenues each hospital received in FY17 associated with patient services from government sources.

2. Calculate the government GPSR associated with the excess *occupied bed days* (OBDS) while waiting for a guardianship petition being granted for each hospital

This step provides the government GPSR that each hospital requires to support the days an individual remains in the hospital after medical clearance. To do this the following calculations were completed for each hospital:

- a. Calculate the total staffed bed days per year (BDS) (*total staffed beds X number of days per year*)
- b. Calculate the total *occupied* staffed bed days for each hospital in the sample (OBDS) (*BDS X hospital occupancy rate*)
- c. Calculate the number of occupied staffed bed days supported by government GPSR (OBDS GF) (*OBDS X %GF (%GF was determined in step 1)*).

This provides an estimate of the number of days paid through government GPSR.

- d. Calculate the government GPSR required for one OBDS GF (*total government funding X OBDS GF*)

This provides a daily rate supported through government GPSR for one bed day.

- e. Calculate the number of excess bed days associated with waiting for guardianship (OBDS PG) (*number of annualized petitions granted for each hospital X 12 days*)

In this step, excess days (12) are derived from the Ricotta et al study completed at an AMC in Massachusetts.¹⁴ It is a retrospective study which conducted a case review of all instances of delayed discharge secondary to waiting for a guardian. The study calculated the average length of excess days while waiting for guardianship to be 12 days: ranging of 2 to 20 days. Other studies found more excess days including Moye, Caitlin, Connors, Wood & Teaser 17 days, and Chen et al,¹⁵ 27.8 days. The Ricotta et al¹⁴ estimate is the lowest, offering confidence that the final results are a conservative estimate.

3. Calculate the government GPSR that are required to support staffed occupied bed days associated with waiting for guardianship (OBDS PG) for each hospital (OBDS PG GF) (*OBDS PG X GPSR for 1 OBDS GF*)

This provides the government GPSR required to support one excess bed day while waiting for guardianship if all services were being provided. Since the excess bed days are after medical clearance it is assumed that there is a reduction in expense associated with reduced health care services and only room and board is required.

- a. Calculate the cost of room and board only for government funded staffed occupied bed days associated with waiting for guardianship (OBDS PG GF (OBDS PG GF X .1))

The revenues to support room and board costs for each hospital are assumed to be approximately 10% of the total. This assumption is supported by the World Health Organization's 2013¹⁷ calculation of national hospital hoteling rates. The authors found that acute inpatient hospital hoteling rates in the United States were on average \$1,093.51 a day. This rate was adjusted for inflation and the Massachusetts cost-of-living index (127.2) to derive an estimated FY17 rate. This number was used as a check on our calculations of the room and board rate derived from this model and data set. This is further explored in the discussion.

- b. Sum each hospital's room and board rates to find an estimate of total government GPSR required to support the excess bed days while waiting for guardianship.
4. Determine the state vs other government contributions to the required GPSR. (% total government GPSR X proportion of total state GPSR)

The result of this model is an estimation of the revenues required from government to support the days waiting for

guardianship after medical clearance. It assumes that all days are supported through government funds. Since government rates are the lowest, an additional model is built to explore the revenues required from commercial payers. The same calculations are made with one exception. After calculating the revenues required from commercial payers for 1 day, the rate is adjusted by applying the FY17 statewide relative price index (SRP).¹⁸

The SRP is a metric developed by the CHIA to reflect each hospital's commercial rates in comparison to the statewide average rates.¹⁹ Therefore, a hospital with a SRP of .90 has rates which are 10% lower than the average statewide rates. This difference is applied to the daily revenue required for an occupied staffed bed day for each hospital before calculating the total cost of the excess days associated with waiting for guardianship.

Model 2: Hospital Expense for Medically Unnecessary Days

The following model estimates the hospital expense associated with excess days while waiting for guardianship.

1. Calculating the cost of excess bed days to each hospital
 - a. Calculate the total staffed bed days per year for each hospital in the sample (BDS) (*total staffed beds X number of days per year*)
 - b. Calculate the total *occupied* staffed BDS for each hospital in the sample (OBDS) (*BDS X hospital occupancy rate*)
 - c. Calculate the *daily cost* of occupied staffed bed days (OBDS) to the hospital (*OBDS divided by the hospital's total expenses*)

The reduction in expenses reflects Stenberg et al finding hotel costs include factors such as personnel, operational and administrative costs, food and infrastructure.

- d. Calculate the total number of occupied staffed bed days (OBDS) that are excess days due to petitioning for guardianship (OBDS PG) (*number of annualized petitions granted for each hospital X 12*)
- e. Calculate the cost to the hospital for OBDS PG (CHED) (OBDS PG * the daily cost of OBDS to the hospital)
2. Determine room and board costs for each hospital to accommodate the reduction in expense associated with reduced health care services (CHED*0.1)

The reduction of 10% reflects the assumptions made in Model 1.

3. Calculate the total cost of excess bed days due to delays secondary to guardianship petitions for the sample (*sum all hospitals room and board costs*)

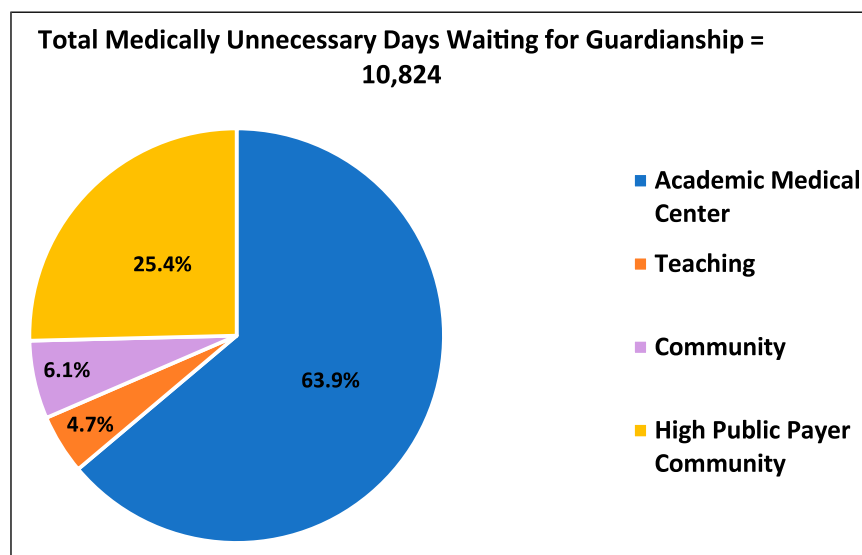


Figure 1. Percentage of total medically unnecessary days while waiting for guardianship by hospital type.

This reflects the relative expenses associated with characteristics unique to different hospital types, such as occupancy rate, CMI, services.

Results

This study focuses upon FY17 Massachusetts acute hospitals to understand the financial impact of people waiting for guardianship after medical clearance. Two financial models provide insight into the revenues required and the expense of supporting those individuals.

Sampled Hospitals

Of the 56 acute hospitals in Massachusetts, the sample comprises 31 or 55%. The proportion of hospitals in the sample includes 16% AMC, 6% teaching hospitals, 32% community hospitals, and 45% HPP community hospitals, contrasted to the proportion of each hospital type in the state population which is 11% AMC, 13% teaching, 25% community, and 52% HPP community. This suggests that our sample is representative of the population and increases our confidence in the generalizability of our estimates.

The survey found 994 annualized petitions for the sampled hospitals. Of those, 902 were granted (91%). Of those granted, AMC's report 576 (64% of the sample), HPP community hospitals 229 (25%), community hospital 55 (6%) and teaching hospitals report 42 (4%). The percentage of petitions filed to granted, 91%, is consistent with the findings of Ricotta et al¹⁴ who found a 90% conversion rate. Additionally, there are some small variations in conversion rates between hospitals, with teaching hospitals having the highest at 98% and AMC's having the lowest at 89.8%.

There are 2,405,587 occupied staffed bed days in a year, when adjusting for individual hospital occupancy rates and their staffed bed days. This number is further refined to calculate the number of excess days while waiting for guardianship at each hospital. Using the conservative estimated number of excess days reported in Ricotta et al,¹⁴ 12 days, the sample hospitals provided 10,824 staffed bed days for individuals waiting for guardianship after medical clearance (0.45% of all occupied staffed bed days in the sample). The majority of these days are reported in AMCs (6,912, 63%) with HPP community hospitals reporting the second most (3,096, 29%). See Figure 1.

Model 1: Revenues Required

The total FY17 GPSR across all sample hospitals is \$42,882,789,758. Of those revenues, \$26,684,830,590 come from public payer sources such as Medicaid and Medicare. These public payer revenues represent 63% of the total sample GPSR. Another \$14,771,399,819 in GPSR is generated from commercial payers or 33% of the total sample GPSR. The remaining 4% of revenues are self-payment and other sources.

The model calculates \$1,860.61 in public payer GPSR must be generated to support 1 medically unnecessary day while waiting for a guardian, or a total of \$20,139,189 in public payer GPSR across all sampled hospitals. Closer inspection shows that 16% or \$3,201,970 of public payer revenues are state funds. The remaining 84% or \$16,937,219 is other governmental funding such as federal funds or special funds such as the Health Safety Net.

Additionally, the model calculates \$2,221.66 in commercial GPSR must be generated to support 1 medically unnecessary day waiting for a guardian. Therefore, a total of \$24,047,250 in commercial revenues must be generated.

However, it is not likely that the payer-mix for people waiting for guardianship is either all public or all commercial. Ricotta et al¹⁴ reported that in their 1-year sample, at one AMC, 16% of the cases had commercial insurance, 44% Medicare, 21% Medicaid, and 8% other. However, payer-mix is likely hospital and time bound. Therefore, a range of \$20M to \$24M in GPSR is suggested. See Table 1 below for summary of results.

Model 2: Hospital Expense

Another way to approach the burden to the hospital system is through calculating the expense associated with excess days due to waiting for guardianship. The total FY17 expenses reported across the acute hospital sample is \$18,572,444,400. This results in an average cost per occupied staffed bed day of \$7,587. This is an average daily expense for all services and supports required across all services and hospital types. The total expense to the sampled hospitals to support excess days is \$18,079,212 or an average of \$1,670.29 a day for hoteling.

Further inquiry shows that the cost is variable by hospital type. AMCs, who have the most petitions granted, have an expense of \$13,681,112 or an average of \$1,979.33 per hoteling day. The next most costly are the community hospitals whose expense is \$1,126,068 or an average of \$1,706.16 per hotel day. Teaching hospitals' expense is \$175,531 or an average of \$1,125.20 per excess day. Lastly, HPP community hospitals report an expense of \$3,096,501 or an average of \$1,000.16 per day. The hospital type with the lowest daily rate, HPP community, is also the hospital type most struggling to meet financial margins and has the second largest number of petitions granted in our sample. See Table 2 for summary of results.

Discussion

While the United States has one of the most expensive health care systems in the world, acute hospitals often struggle financially.²⁰ Over the years, hospitals have met this challenge through finding efficiencies, including limiting services provided and merging with other hospitals. One potential cost savings is to reduce the number of excess days due to waiting for a guardian. Previous studies explore the burden of excess days in a single AMC.^{20,21} These studies find that the burden to the hospital is significant and that the individual is at a heightened risk for secondary infections. However, AMC's are not representative of the entire hospital system. AMC's frequently enjoy a higher occupancy rate, increased negotiated rates, and treat higher severity cases. Therefore, this study expands upon these studies to better understand the burden to a state hospital system and in particular to different hospital types and payers.

Impact

The models demonstrate that in order to support medically unnecessary days while waiting for a guardian, sampled hospitals require a GPSR of between \$20 and \$24 million to support an expense of approximately \$18 million annually. The difference between GPSR required and expense is partially accounted for by revenues being captured before bad debt and discounts are taken into account.

AMC's and HPP community hospitals support the most guardianship petitions, with expenses of approximately \$16 million in FY17. Additionally, HPP community hospitals are more likely than other hospital types to report a loss. In some cases, not incurring the expense of supporting excess days may have eased that burden. For example, one HPP

Table 1. Summary of Model 1 Results: Gross Patient Service Revenues Required.

	Public Payers	Commercial Payers
Revenue required for 1 medically unnecessary day waiting for guardianship	\$1,861	\$2,222
Total revenue required for hotel medically unnecessary day	\$20,139,189	\$24,047,250
Amount and percent from state funds	\$3,201,970 (15.9%)	-
Amount and percent from other gov't sources	\$16,937,219 (84.1%)	-
By hospital type		
Academic Medical Center	\$14,759,596	\$18,584,142
Teaching	\$217,108	\$206,193
Community	\$1,167,698	\$1,506,408
High Public Payer Community	\$3,994,787	\$3,750,507
Percent of total GPSR by hospital type		
Academic Medical Center	35.2%	21.0%
Teaching	4.4%	2.5%
Community	5.4%	4.6%
High Public Payer Community	17.2%	6.3%
Total GPSR	\$26,684,830,590	\$14,771,399,819
Percent of all GPSR	62.2%	34.4%

Table 2. Summary of Model 2 Results: Expense to Hospitals.

Average Daily Hotel Expense for Medically Unnecessary days while Waiting for a Guardian	
All hospitals	\$1,670
Academic Medical Center	\$1,979
Teaching	\$1,125
Community	\$1,706
High Public Payer Community	\$1,000
Total expense for medically unnecessary days while waiting for a guardian	
All hospitals	\$18,079,212
Academic Medical Center	\$13,681,112
Teaching	\$175,531
Community	\$1,126,068
High Public Payer Community	\$3,096,501

community hospital reports a \$332,050 loss in FY17. It also reports 17 excess days which through the study's model results in a \$17,616 expense or 5% of the financial loss. Another example is a community hospital which reports a \$9,035,000 loss in FY17. It reports 60 excess days due to waiting for guardianship, which through the study's model results in a \$270,345 expense or 3% of the FY17 loss. In FY18, more hospitals report a loss and the margins are tighter, for example, a loss of \$159,000 is reported by a community hospital. Using FY17 annualized petitions granted, the hospital may recover 55% of that loss.

This lost opportunity is compounded by impacts upon quality measures and ultimately rate setting. People who remain in the hospital after medical clearance are more susceptible to secondary infections, experience delays in rehabilitation services which may have a deleterious impact upon recovery, and suffer the impacts of separation from family and home, all of which impact quality measures.

Other studies have written about the lost opportunity to fill beds²² however, since hospital occupancy rates typically range from 63% to 84%, this is most likely not a driving factor. For this to be true, occupancy rates must vary by service, and individuals in need of guardianship must be uniquely maintained in those beds, and are unable to be moved to beds under less demand. Unfortunately, this study does not provide insight into such person specific and hospital specific factors.

One way to reduce the burden is to address the underlying cause of the delays to guardianship. Most hospitals initiate guardianship petitions as soon as possible, even upon admission. Massachusetts does not have default surrogate decision-making, causing guardianship or health care proxies to be a necessity for comprehensive, quality care. In this study, 90% of the petitions filed are granted, suggesting that once a petition is filed, most likely a guardian is appointed. This study does not provide insight into why some petitions are not granted. It is possible that some are withdrawn when the person's capacity improves or other medical or social

factors intervene (poor medical outcome, health care proxy found, etc). Also, some petitions may have been initiated prematurely and then withdrawn. It is not known when in the process petitions are withdrawn, thus, limiting insight into the impact non-converted petitions have upon the individual, hospitals, Courts and families. Further exploration into the causes of delays will offer insight into how to best reduce the burden to the people and the system.

The study's results reflect the impact to a hospital system supported by a robust public payer system and in a state with one of the highest insured rates. The 2017 uninsured rate in Massachusetts is 2.8% compared to a national average of 8.8%. Of those insured in Massachusetts, 36.1% are beneficiaries of government insurance programs such as Medicare and Medicaid.¹⁷ Therefore, the Massachusetts hospital system is more protected from bad debt than a state system that must accommodate larger numbers of uninsured. States that did not expand Medicaid are particularly vulnerable to this issue as the DSH funds are systematically reduced. Tightening margins due to such challenges, leave hospitals more vulnerable to the impact of excess days.

The models are built upon typical hospital services and occupancy rates. The COVID-19 pandemic has altered how hospitals must function and their ability to meet margins. A recent CHIA²³ analysis shows that during the first quarter of the pandemic all reporting Massachusetts hospitals had a loss. With government support, they have been able to close much of that gap.²³ However, the pandemic has also impacted uninsured rates. One report by the National Center of Coverage Innovation²⁴ found that the percent of Massachusetts residents uninsured has increased by 93% bringing it to 8% as of May. Indeed, most states are experiencing a similar rise in uninsured. As the pandemic subsides, hospitals will be left to determine how to recover.²⁵ Therefore, hospitals will need to capitalize on all efficiencies, including reducing medically unnecessary days.

Limitations

There are a few factors that may increase the precision of the results. One factor is the number of days used to calculate the excess days due to waiting for a guardian. Ricotta et al¹⁴ average is applied, which was derived from a Massachusetts AMC. As discussed earlier, AMCs are not necessarily a good representative of all hospitals in an entire state system. In this study, the majority of petitions granted are from AMC's, the second largest is HPP community hospitals. Given the differences in financial performance, types of services, occupancy rates and other very pertinent factors there may be significant differences in the number of excess days between hospital types.

Another factor is that the number of annualized petitions granted is based on a survey that requests respondents to provide estimates or exact numbers. Of the respondents used in this study a small majority (55%) estimated the number of petitions granted. Since the number of excess days is an

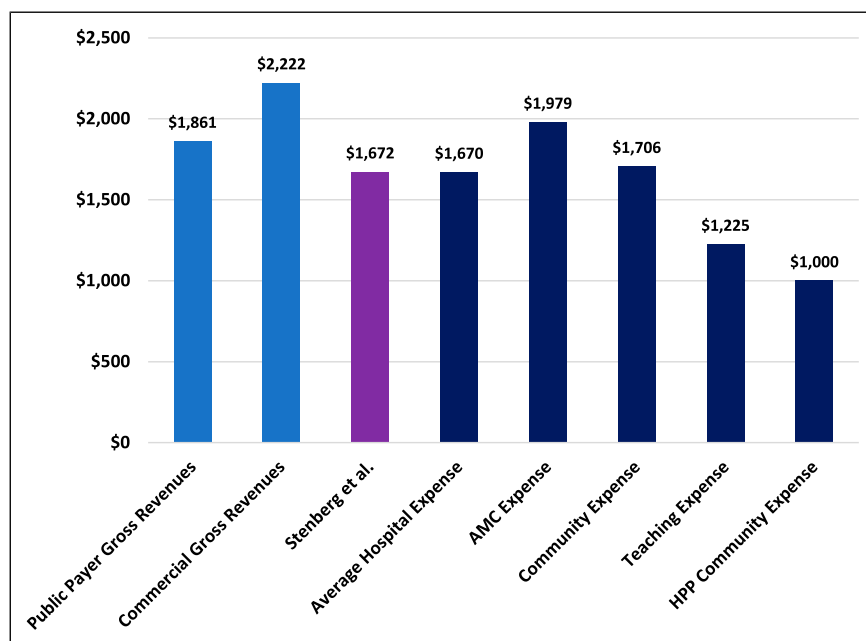


Figure 2. Daily cost by hospital type, adjusted Stenberg hospitaling cost, and revenues required for medically unnecessary days.

estimate, the final financial burden must also be considered an estimate. This is taken into account by offering a range for both required revenue generation and the expense to the hospitals.

Finally, the estimation of deductions for hoteling impacts precision. The first model estimates revenues required for hoteling to be 10% of service cost. The majority of the revenues are directly tied to services rendered which vary by service type and negotiated rate. In the expense model the expense of hoteling is calculated to be 20% of the service cost. This includes personnel, food, administrative costs, room maintenance/housekeeping, and other fixed costs such as utilities. As a check on the validity of these calculations the models' daily rates are compared with those calculated with 2010 data and published in 2018 in a study conducted by Stenberg et al.¹⁷ They calculate national averages for hospital hotel costs based on internationally uniform hospital types. For the United States one Level 5 hospital hotel day is calculated to cost on average \$1,093.51 with a range of \$415.16 to \$2,426.98. To compare this with our findings, this hospital hotel rate is adjusted for inflation and Massachusetts' cost-of-living index resulting in the adjusted average of \$1,672.02 with a range of \$634.79 to \$3,710.95. Since healthcare costs have outstripped inflation, these adjusted rates are a conservative figure. The models find that required daily hoteling revenues from commercial payers is \$2,221.66 and from public payer sources is \$1,860.61, and the expense by hospital type ranges from \$1,000.16 to \$1,979.33. The average expense across all hospital types is \$1,670.29. Therefore, the calculated daily revenues and expenses associated with medically unnecessary days waiting for guardianship conform to Stenberg et al.¹⁷ hotel

rate, lending validity to the study results. See [Figure 2](#) below.

Conclusion

This study contributes to literature by offering a model for calculating the cost of medically unnecessary days that may be applied a plethora of causes for those excess days, waiting for guardianship is only one. It is validated against the Stenberg et al.¹⁷ study which provided a national average.

The study found that for a sample of acute hospitals an estimated \$20M to \$24M in GPSR must be generated, dependent upon payer mix, to support an estimated expense of \$18M in medically unnecessary days while waiting for a guardian. AMCs and HPP community hospitals had the majority of guardianship petitions granted. For hospitals struggling to survive, the expense of excess days could have an important impact, especially in states with a high number of uninsured. As hospitals recover from the pandemic, hospitals will need to find efficiencies such as reducing excess days after medical clearance. It is unlikely that by eliminating these days there will be newfound funds. It is an allocation of funds that could be used more productively within the hospital and the hospital system to support the health and well-being of people in need of medical care or to address the cause of delays due to waiting for guardianship.

Declaration of Conflicting Interests

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Note

Farrell TW, Widera E, Rosenberg L, Rubin CD, Naik AD, Braun U, Torke A, Li I, Vitale C, Shega J, Ethics, Clinical Practice and Models of Care, and Public Policy Committees of the American Geriatrics Society. AGS position statement: making medical treatment decisions for unbefriended older adults. *Journal of the American Geriatrics Society*. 2017 Jan; 65(1):14-5.

References

1. Yadav KN, Gabler NB, Cooney E, et al. Approximately one in three US adults completes any type of advance directive for end-of-life care. *Health Aff*. 2017;36(7):1244-1251.
2. Tompkins J. *Exploring Ethnoracial Disparities in Planning for End-Of-Life Care*. (Doctoral dissertation), State University of New York at Buffalo.
3. Farrell TW, Widera E, Rosenberg L, Ethics, et al. Clinical Practice and Models of Care, and Public Policy Committees of the American Geriatrics Society. AGS position statement: making medical treatment decisions for unbefriended older adults. *Journal of the American Geriatrics Society* 2017;65(1):14-15.
4. DeMartino ES, Dudzinski DM, Doyle CK, et al. Who decides when a patient can't? Statutes on alternate decision makers. *N Engl J Med*. 2017;376(15):1478.
5. Doyle CK, DeMartino ES, Sperry BP, et al. Statutes governing default surrogate decision making for mental health treatment. *Psychiatr Serv*. 2021;72(1):81-84.
6. Wynn S. Decisions by surrogates: an overview of surrogate consent laws in the United States. *Bifocal*. 2014;36(1):10-14.
7. Catlin CC, Connors HL, Teaster PB, Wood E, Sager ZS, Moye J. Unrepresented adults face adverse healthcare consequences: the role of guardians, public guardianship reform, and alternative policy solutions. *J Aging Soc Pol*. 2021:1-20.
8. Teaster PB, Schmidt WC, Lawrence SA, Mendiondo MS, Wood EF. *Public Guardianship: In the Best Interests of Incapacitated People?* ABC-CLIO; 2010.
9. Moye J, Catlin C, Kwak J, Wood E, Teaster PB. Ethical concerns and procedural pathways for patients who are incapacitated and alone: implications from a qualitative study for advancing ethical practice. *InHEC Forum*. 2017;29(2):171-189.
10. Farrell TW, Catlin C, Chodos AH, Naik AD, Widera E, Moye J. Caring for unbefriended older adults and adult orphans: A clinician survey. *Clin Gerontol*. 2019:1-0.
11. Burley M. *Public Guardianship in Washington State: Costs and Benefits (Document No. 11-12- 3902)*. : Washington State Institute for Public Policy; 2011.
12. Levine E, Jett C, Johnson J, Connors H. Outcomes of a care coordination guardianship intervention for adults with severe mental illness: An interrupted time series analysis. *Adm Pol Ment Health*. 2020;47(3):468-474.
13. Ricotta DN, Parris JJ, Parris RS, Sontag DN, Mukamal KJ. The burden of guardianship: A matched cohort study. *J Hosp Med*. 2018;13(9):595-601.
14. Chen JJ, Blanchard MA, Finn CT, et al. A clinical pathway for guardianship at Dartmouth-Hitchcock medical center. *Joint Comm J Qual Patient Saf*. 2014;40(9):389-AP6.
15. Levine EB, Capitani JC, Jett CA. University of Massachusetts Donahue Institute, Hadley, Massachusetts. Costs of Guardianship-Related Discharge Delays: Survey data. Unpublished.
16. United States Senate Special Committee on Aging. Ensuring trust: Strengthening state efforts to overhaul the guardianship process and protect older Americans. 2018, Nov. Available from: https://www.aging.senate.gov/imo/media/doc/Guardianship_Report_2018_gloss_compress.pdf. Accessed December 12, 2020.
17. Kaiser Family Foundation. Health insurance of total population. 2017. Available from: <https://www.kff.org/other/state-indicator/total-population/?currentTimeframe=2&selectedRows=%7B%22wrapups%22:%7B%22united-states%22:%7B%7D%7D,%22states%22:%7B%22all%22:%7B%7D%7D%7D&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D>. Accessed January 5, 2021.
18. Center for Health Information and Analysis. Massachusetts acute hospital and health system financial performance: Monthly financial performance update: June and July 2020; 2020, Oct. Available from: <https://www.chiamass.gov/assets/Uploads/mass-hospital-financials/data-for-june-and-july-2020/MA-Acute-Hospitals-and-Health-System-June-and-July-2020-Report.pdf>. Accessed December 15, 2020.
19. Center for Health Information and Analysis. Relative price: Provider price variation in the Massachusetts commercial market; 2019. Available from: <https://www.chiamass.gov/relative-price-and-provider-price-variation/> Accessed December 15, 2020.
20. Himmelstein DU, Jun M, Busse R, et al. A comparison of hospital administrative costs in eight nations: US costs exceed all others by far. *Health Aff*. 2014;33(9):1586-1594.
21. Chen JJ, Finn CT, Homa K, Onge KP, Caller TA. Discharge delays for patients requiring in-hospital guardianship: a cohort analysis. *J Healthc Qual*. 2016;38(4):235-242.
22. Kaiser Family Foundation: *Health Insurance of Total Population*; 2017. Available from: <https://www.kff.org/other/state-indicator/total-population/?currentTimeframe=2&selectedRows=%7B%22wrapups%22:%7B%22united-states%22:%7B%7D%7D,%22states%22:%7B%22all%22:%7B%7D%7D%7D&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D> Accessed January 5, 2021.

-
23. Center for Health *Information and Analysis*. *Report on the Performance of the Massachusetts Health Care System*; 2021. Available from: <https://www.chiamass.gov/annual-report/> Accessed March 15, 2021.
 24. National Center for Coverage Innovation at Families USA. *The COVID-19 Pandemic and Resulting Economic Crash*; 2020. July Available from: https://familiesusa.org/wp-content/uploads/2020/07/COV-254_Coverage-Loss_Report_7-17-20.pdf. Accessed January 5, 2021.
 25. Blumenthal D, Fowler EJ, Abrams M, Collins SR. Covid-19—implications for the health care system. *N Engl J Med*. 2020: 1443-1488. doi:[10.1056/NEJMs2021088](https://doi.org/10.1056/NEJMs2021088).