

Illinois Critical Access Hospital Hospitalist Study

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Executive Summary

Illinois Critical Access Hospital Hospitalist Study, Dec. 2014

The purpose of this study is to review available financial and survey data for Illinois Critical Access Hospitals (CAHs) with hospitalist programs. For comparison purposes, Illinois CAHs without a hospitalist program were also surveyed. About 53% (28/53) of Illinois CAHs reported having a hospitalist program. Although the overall number of hospitals surveyed was low, the response rates were high, 86% (24/28) from hospitals that did have a hospitalist program and 68% (17/25) from hospitals that did not have a hospitalist program. Given these response rates, the findings should accurately reflect the views of Illinois CAH CEOs about hospitalist programs.

Financial indicators were compared for Illinois CAHs before and after starting a hospitalist program seeking to assess the impact of starting a hospitalist program. Only three financial indicators showed evidence of consistency among the 15 CAHs hospitals which could be compared: 1) Medicare costs per day increased by an average of \$550 per day, 2) the average daily census dropped slightly by 1.17 days after starting a hospitalist program, and 3) salary cost per FTE increased by \$3,424 after starting a hospitalist program. A longer observation time is needed to provide more conclusive results about financial indicators before and after the implementation of a hospitalist program in Illinois CAHs.

The survey results were generally consistent with previous literature. Hospitals that had started hospitalist programs to improve physician recruitment and retention generally reported observing those benefits based on open-ended comments and survey question responses. Many also reported improvements in communication related to clinical care/coordination and the morale of

the medical staff after starting a hospitalist program. Hospitals which had not started hospitalist programs indicated a major reason was physician preference to continue following their patients when admitted to the in-patient hospital setting. In general, the ratings of clinical care communication indicators by CEOs not starting a hospitalist program did not show as much improvement in clinical communication indicators over the five year period compared to CAHs where hospitalist programs had started. This pattern also held true for indicators related to the medical staff interaction with the hospital and medical staff support of the hospital.

There are many factors influencing the financial, operational, and communication measures used in this study, and it is acknowledged that whether or not a hospital started a hospitalist program is only one of many influences. It does appear that among hospitals that chose to start a hospitalist program there has been improvement in physician relationships and improvement in clinical care continuity for inpatients. For other ICHAN hospitals not starting a hospitalist program, it was perhaps wise to listen to the views of their local medical staffs who preferred to continue to see inpatients, especially in view of the challenges related to recruiting rural physicians. While they do not report many of the positive changes indicated from starting a hospitalist program, they do not incur the costs of a hospitalist program. In summary, it is well known “all health care is local” and customizing the assessment of what is best for a given community related to use of hospitalist will need to remain a local decision that takes into account geographic location and local market forces.

Introduction

Hospitalist medicine is a fast growing specialty that has changed the delivery of medical care to hospitalized patients in the past two decades. Hospitalists specialize in the delivery of medical care to inpatients. Originally, physicians filled that role, but especially in the last decade providers of hospitalist care have expanded to include nurse practitioners (NPs) and physician assistants (PAs). The increasing trend in medicine of using hospitalist for inpatient care has been steadily replacing the old model of primary care providers (PCPs) overseeing care for their patients while they are in the hospital. While much of the research that has occurred supports the use of hospitalists to modestly decrease length of stay and costs for patient care, the financial sustainability of hospitalist models in rural areas is questionable. The use of hospitalists often comes with a hefty price tag for the hospital, which the smaller patient volume in rural settings may not be able to offset financially. The purpose of this report is to describe Illinois CAHs leaderships' perspectives of the choice to implement or not to implement a hospitalist program.

With this potential to increase costs at rural hospitals, what is the driving force for implementing these programs? Often the answer is physician demand. A recent study by Casey, Hung, Moscovice, & Prasad (2014) found that the most common reason for implementing a hospitalist program in rural hospitals was either provider request or requirement (primary care physicians (PCP) choosing not to provide inpatient care). It is also increasingly the expectation among newer generations of doctors to have a work-life balance. In the Casey et al. (2014) rural study, 73.6% of respondents reported that the use of hospitalist programs made it easier to recruit and retain PCPs.

It also appears that medical team members are satisfied with the performance of hospitalist medicine. A qualitative case study of the implementation of a hospitalist at a specialized orthopedic facility demonstrated that overall, the medical staff found the addition of a hospitalist to be beneficial to both the facility and their patients. Some of the benefits mentioned during staff interviews included expedited patient transfers and improved communication with both PCPs and patient families (Webster, Bremmer, Jackson, Bansal, & Sale, 2012). Similarly, those practicing hospitalist medicine appear to be satisfied with their choice of specialty; one study found that 62% of hospitalists reported high global job satisfaction (Hinami, Whelan, Miller, Wobsin, & Wetterneck, 2012).

In rural areas, the role of hospitalist practice must often expand beyond what is traditionally considered hospitalist medicine. In the Casey et al. (2014) study of rural hospitals, 41% of respondents reported using hospitalists to provide around-the-clock inpatient care exclusively. About 14% of respondents (3/22) reported using hospitalists not only for hospitalized patients, but also to provide care in the emergency department, outpatient departments, and/or clinics (often called a hybrid hospitalist program). The size of the hospital affects not only the role of the provider, but also the variety of patients cared for by the hospitalists. CAHs, facilities which by definition cannot have more than 25 inpatient beds, were compared with other rural institutions by Casey et al. (2014) and found that hospitalists practicing in CAHs were much less likely to care for surgical patients and much more likely to care for pediatric patients than hospitalists practicing in larger rural hospitals.

A suggested disadvantage of providing inpatient care using hospitalists is less continuity of care. It is reasonable to think that this drawback would be present more in rural areas where patients are

used to their hospital care being provided by their primary care provider; a doctor who has detailed knowledge of their medical history and lifestyle. However, it is still not clear how the use of hospitalists affects patient satisfaction in rural hospitals. There is evidence that patient satisfaction in rural hospitals does not necessarily suffer if a hospitalist program is implemented. Fulton, Dreves, Ayala, & Malott (2011) found no difference in the overall satisfaction score of Press Ganey inpatient surveys between critical access facilities that had hospitalist programs and those that did not have hospitalist programs. A study by Casey et al. (2014) demonstrated that 87.8% of respondents who employed hospitalists living in or near the community reported patients were happy with care; whereas only 12.2% of respondents who employed hospitalists that lived elsewhere reported patients were happy with the care provided. It is likely that in rural areas a personal relationship with the provider plays a significant role in a patient's perception of the physician and satisfaction with care, regardless of the role of the provider.

The rapid growth in hospitalist medicine is due in part to claims made regarding hospitalist medicine's ability to increase physician efficiency while decreasing the cost of care and length of stay. However, the ability of hospitalist to deliver on these claims remains contentious. A systematic review found that 69% of the articles reviewed reported decreased length of stay and 70% of the articles reported decreased hospital costs (White, & Glazier, 2011). Another systematic review that sought to quantify the effect of hospitalist programs found that hospitals with hospitalists had an average length of stay that was about a half a day (0.4 day) shorter than hospitals that did not have hospitalists. The same review found no significant difference in cost of care (Rachoin, Skaf, Cerceo, Fitzpatrick, Milcarek, Kupersmith, & Scheurer, 2012).

Much of the research regarding hospitalist programs and their potential cost-saving rewards has been conducted in larger, urban hospitals. These institutions have a fundamentally different financial situation than their rural counterparts. One case-control study done in a rural community found that patients managed by hospitalists had a shorter mean length of stay (4.1 days compared to 5.5 days for non-hospitalists' patients) and lower costs of care (\$4,098 versus \$4,658). These results were only significant among the subset of patients categorized as most severely ill; however the trend was seen across all 4 categories of illness severity (Davis, Koch, Harvey, & Gerard, 2000). More recently, a study of small rural hospitals found that those with hospitalist programs had a significantly higher inpatient volume than those without the programs. The same study found that while only 44.6% of the hospitals surveyed reported an overall positive financial impact, 76.3% (n = 251) reported at least one positive financial benefit of the program on their institution. The most commonly cited benefits were increased number of patient admissions, ability to treat higher acuity patients and reduced length of stay, better resource use, and improved efficiency. Many hospitals (n =160) also reported financial drawbacks to having a hospitalist program, such as the high cost of hospitalist salaries/contracts, expense of program, and insufficient patient volume to cover hospitalist costs. Of those surveyed 16.9% had reported an overall negative financial impact to their hospital, with 32.6% reporting both positive and negative overall impacts and 5.8% reporting no change (Casey et al., 2014).

Many of the studies reviewed relied on self-report surveys. This type of data is subject to the inherent possibility of a potential difference between respondents and non-respondents. One study attempted to account for this by using a large, randomized sample, which would help to eliminate some of the bias (Fulton et al., 2011). One study did note that respondents differed significantly from non-respondents, in that they were more likely to have less than 25 beds, have

private nonprofit ownership, be non-system members and from a Midwest location (Casey et al., 2014). Similarly, the case-control studies attempted to adjust for possible confounders; however it is impossible to truly account for all variables that could possibly bias the results. Nevertheless the authors sought to take into account other important factors (Davis et al., 2000; Hinami et al., 2012). In the Rachoin, et al. (2012) systematic review a major limitation was the small sample size of articles that met their criteria ($n = 17$). The White & Glazier (2011) systematic review noted that there were many flaws in the designs of the original surveys, which would mean the data analyzed was also inherently flawed.

As of 2014, it appears that inpatient care in rural areas continues to progress toward hospitalist medicine due to increasing physician demand for this approach to inpatient care. These models of practice also appear to be supported by ancillary medical staff. In rural areas, it is likely that the practice of hospitalist medicine will involve more than the urban hospitalist role of seeing only inpatients, as lower patient volumes make such care extravagant. There is still some conflicting data regarding the rural patients' reception to hospitalist care; however, it appears that when the physician working as a hospitalist lives in the service area patient satisfaction is unaffected.

Finally, while hospitalist medicine is often touted as being more efficient, in rural areas its ability to reduce costs to a point where the increased cost incurred by hiring hospitalists is offset is questionable. In addition, since CAHs are currently paid for Medicare patients' care on a cost basis, the improved efficiency of providing inpatient care using hospitalists may be in conflict with the hospital obtaining adequate revenue from inpatient care to cover the cost of a hospitalist program. Overall, the literature suggests further research is needed regarding the factors that affect rural patient satisfaction with hospitalist care as well as whether these models of care are able to improve the financial situation of rural hospitals, especially CAHs.

The major objectives of the current study are to assess the impact of the decision to have or not have a hospitalist program based on Illinois CAHs' CEO survey responses regarding:

- 1) continuity of medical care provided because an additional provider is involved in care,
- 2) efficiency and cost of care provision,
- 3) description of provider staffing patterns used to provide hospitalist care,
- 4) impact of the cost of paying hospitalists on the hospital's financial indicators,
- 5) patient satisfaction with their medical care if hospitalists provide inpatient care, and
- 6) gain other insights about the decision of whether or not to have a hospitalist program.

In addition, comparison of changes in key financial indicators consequent to starting a hospitalist program will be reported for hospitals when such comparison is possible.

Methods

This report is based on two sources of information: 1) CAH financial reports (and financial indicator definitions) which are provided on the University of North Carolina Sheps Center web site provide 2007-13 data for 51 Illinois CAHs and 2) Illinois CAHs CEOs who have or did not have a hospitalist program as of June 2014 and responded to a written survey.

A comparison of variation in responses between Illinois CAHs' CEOs who have a hospitalist program to those who do not have a hospitalist program on questions related to patient and physician measures, hospital financial indicators, and operational characteristics are reported. It should be noted that this is an observational study and therefore it is possible (perhaps somewhat likely) that factors other than whether or not a hospitalist program was implemented may affect any differences reported in the results.

If a hospitalist program was implemented between 2007 and 2012, the financial indicators used a pre/post quasi-experimental time series design to compare, when possible, the average differences of available 2006 to 2013 financial indicators before and after implementing a hospitalist program. Some hospitals only started a hospitalist program in 2013 so a pre/post comparison is not possible. The start year of hospitalist program implementation varied between hospitals. Therefore the number of years of financial indicator data varied between hospitals in calculating the pre and post values for each financial indicator. Differences in the mean (average) indicators for pre/post hospitalist program implementation were calculated and summarized. Because after versus before comparison of financial indicators allows for more intuitive interpretation of results that approach will be used below when the effect of change after implementing a hospitalist

program is reported. For example, if average daily census increased after starting a hospitalist program in comparison to before the hospitalist program implementation, the difference (increase) would be a positive number which is more intuitive for the reader to interpret.

The specific financial indicators that were assessed for after versus before hospitalist program implementation comparison are:

1. Total Margin
2. Operating Margin
3. Liquidity Indicators
4. Days Cash on Hand
5. Medicare Inpatient Payer Mix
6. Medicare Acute Inpatient Cost per Day
7. Salaries to Net Patient Revenue
8. Average Salary per FTE
9. Average Daily Census Acute Beds

Definitions:

Total Margin (Net Income/Total Revenues) measures the control of expenses relative to revenues. A positive value indicates total expenses are less than total revenues (a profit). Very high positive values may indicate higher patient volumes, which drive down the cost per unit of service. A negative value indicates total expenses are greater than total revenues (a loss). Very high negative values may indicate financial difficulty.

Operating Margin $[(\text{Net patient revenue} + \text{other revenue} - \text{total operating expense}) / (\text{Net patient revenue} + \text{other revenue})]$ measures the control of operating expenses relative to operating revenue (net patient and other revenue). A positive value indicates operating expenses are less than operating revenue (an operating profit). Very high positive values may indicate higher patient volumes, which drive down the cost per unit of service. A negative value indicates operating expenses are greater than operating revenues (an operating loss). Very high negative values may indicate financial difficulty.

Medicare Inpatient Payer Mix $[(\text{Medicare Inpatient Days}) / (\text{Total Inpatient Days}-\text{Nursery Bed Days}-\text{Nursing Facility Swing Bed Days})]$ measures the percentage of total inpatient days that is provided to Medicare patients. A value greater than 50 percent indicates that the majority of inpatient days are for Medicare patients. Very high values may indicate lack of financial diversification due to high dependence on Medicare reimbursement. A value less than 50 percent indicates that the majority of inpatient days are for Medicaid, privately insured, and other patients.

Days Cash on Hand $[(\text{Cash} + \text{temporary investments} + \text{investments}) / ((\text{Total Expenses} - \text{Depreciation}) / \text{Days in Period})]$ measures the number of days an organization could operate if no cash was collected or received. A low value indicates only a few days of cash on hand. Very low values may indicate financial difficulty. A high value indicates many days of cash on hand. Very high values may indicate under-investment in longer-term assets that usually yield higher returns. Days Cash on Hand is calculated at fiscal year end, which does not reflect uneven cash flows throughout the year.

Salaries to Net Patient Revenue $[\text{Salary Expense} / \text{Net Patient Revenue}]$ measures the percentage of net patient revenue that is labor costs. A value greater than 50 percent indicates that the majority of net patient revenue is for salaries. Very high values may indicate labor intensive organizations, employment of medical staff, or old plant and equipment. A value less than 50 percent indicates that the majority of net patient revenue is for supplies, equipment, and other expenses. Very low values may indicate capital-intensive organizations or new plant and equipment.

Medicare Acute Inpatient Cost per Day $[(\text{Medicare acute inpatient cost}) / (\text{Medicare Inpatient Days (excl. HMO)})]$ measures the average daily cost of a Medicare acute inpatient. Skilled nursing facility (SNF) days are excluded. A high value indicates a high acute inpatient cost per day for Medicare patients. A low value indicates a low acute inpatient cost per day for Medicare patients. Medicare Acute Inpatient Cost per Day is influenced by facility occupancy rates, utilization of services, and the ability to manage costs.

Average Salary per FTE $[\text{Salary Expense} / \text{Number of FTEs}]$ measures the price and mix of labor. A high value indicates that a hospital pays above average wages / salaries and/or employs relatively more high-skill occupations and/or experienced staff. A low value indicates that a hospital pays below average wages / salaries and / or employs relatively fewer less high skill occupations and/or experienced staff.

Average Daily Census Acute Beds $[\text{Inpatient Acute Care Bed Days} / \text{Days in Period}]$ measures the average number of acute care beds occupied per day. A high value indicates high use of acute care beds. A low value indicates low use of acute care beds. Average Daily Census Acute Beds will be influenced by the number of acute care beds available.

Study Population

There are 53 Illinois rural hospitals that have 25 inpatient beds or less. Of these 53 hospitals, 51 were officially classified by the Illinois Department of Public Health as CAHs as of June 2014. The other two hospitals have applied for CAH status. The phrase “implementation of a hospitalist program” is defined as “at least some care provided during inpatient stays is provided by a provider who is not the patient’s physician for regular outpatient care/primary care. As of

June 2014, 28 Illinois CAHs had a hospitalist program and 25 did not have a hospitalist program. Thus about 53% (28/53) of Illinois CAHs (including two pending CAHs) reported having a hospitalist program. The survey response rate was 86% (24/28) from hospitals that did have a hospitalist program and 68% (17/25) from hospitals that did not have a hospitalist program.

Results

Changes in Key Financial Indicators Following the Implementation of a Hospitalist Program among CAH Hospitals with a Hospitalist Program Prior to June 2014 (n = 15)

In seeking to examine the financial effects of starting a hospitalist program, averages of key financial indicators were compared after versus before the year a hospitalist program was implemented. Among the 51 hospitals that have official CAH status, 53% (27/51) had started a hospitalist program prior to June 2014. Comparison of financial data before and after implementation was possible with 15 CAHs that started a hospitalist program between 2007-12. Comparison of financial indicators after versus before implementing a hospitalist program was not possible for the other 12 CAHs with a hospitalist program because eight CAHs had started a hospitalist program outside time period and four CAHs did not provide the year the hospitalist program was implemented after numerous inquiries using several approaches.

Table 1- Differences in Key Financial Indicator Means After versus before Implementation of a Hospitalist Program for the 15 Illinois CAHs for Which Comparison was Possible

Statistical Indicator	Total Margin Difference after started hospitalist vs before (n = 15) ¹ (%)	Operating Margin Difference after started hospitalist vs before (n = 15) (%)	Payer Mix Difference after started hospitalist vs before (n = 15) (%)	Days Cash Difference after started hospitalist vs before (n = 15) (days)	Salaries to Patient Revenue Difference after started hospitalist vs before (n = 15) (%)	Medicare Cost Per Day Difference after started hospitalist vs before (n = 15) (\$)	Salary per FTE Difference after started hospitalist vs before (n = 15) (\$)	Avg. Daily Inpatient Census Difference after started hospitalist vs. before (n = 15) (patients)
Mean of Differences	0.35	1.11	-1.71	6.26	-1.12	550	3,424	-1.17
Median of Differences	-0.62	.72	0.38	-.10	-.48	450	5,472	-1.09
Minimum Difference ²	-8.67	-8.23	-21.73	-65.4	-7.93	-22	-\$23,185	-3.38
Maximum Difference	13.35	11.77	8.22	109.3	3.62	1652	10,302	0.47
Range of Differences (Max. – Min)	22.01	19.99	29.95	174.7	11.55	1674	33,486	3.86

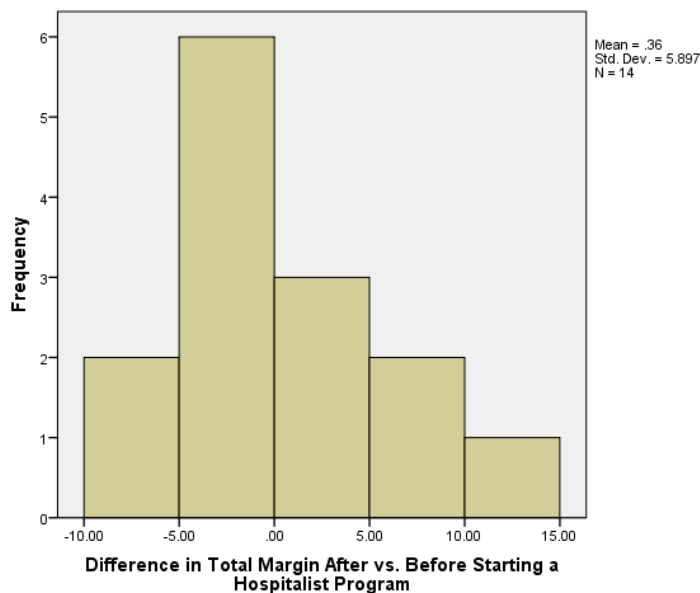
Notes:

- 1) There were 15 Illinois CAHs that provided a year for starting their hospitalist program which could be compared after versus before. Some hospitals started in 2013 the last year for which financial indicators were available so comparison is not possible. Comparison was done if the hospital started a hospitalist program between 2007 to 2012. The number of years used in making the comparison after versus before varies depending on when the hospitalist program started.
- 2) Regarding the minimum, a negative value indicates the average value before the hospitalist program started was higher than after starting a hospitalist program
- 3) Because the number of pre/post hospitalist program hospitals is low (n = 15) the median is a better indicator than the mean (average) to assess any evidence of impact on hospital financial indicators. Other factors than adoption of a hospitalist program could cause changes in a financial indicators after the hospitalist programs were started.

Total Margin Differences

Across the 15 hospitals comparing total margin after versus before implementing a hospitalist program, the median of the differences in the total margin after adoption of a hospitalist program was -0.62 % evidence of a slight drop in total margin. There was considerable variation in the change in the total margin after versus before adoption of a hospitalist program. A negative value indicates the total margin was higher (better) before starting than after starting a hospitalist program. Thus the largest difference in total margin by an individual hospital was a decrease of 8.67% after versus before starting a hospitalist program and the largest gain in total margin by another individual hospital was 13.35%. The range of 22.01 indicates considerable variation between hospitals in the differences in total margin after versus before starting a hospitalist program.

Graph 1 - Distribution of Total Margin Differences After versus Before Starting a Hospitalist Program

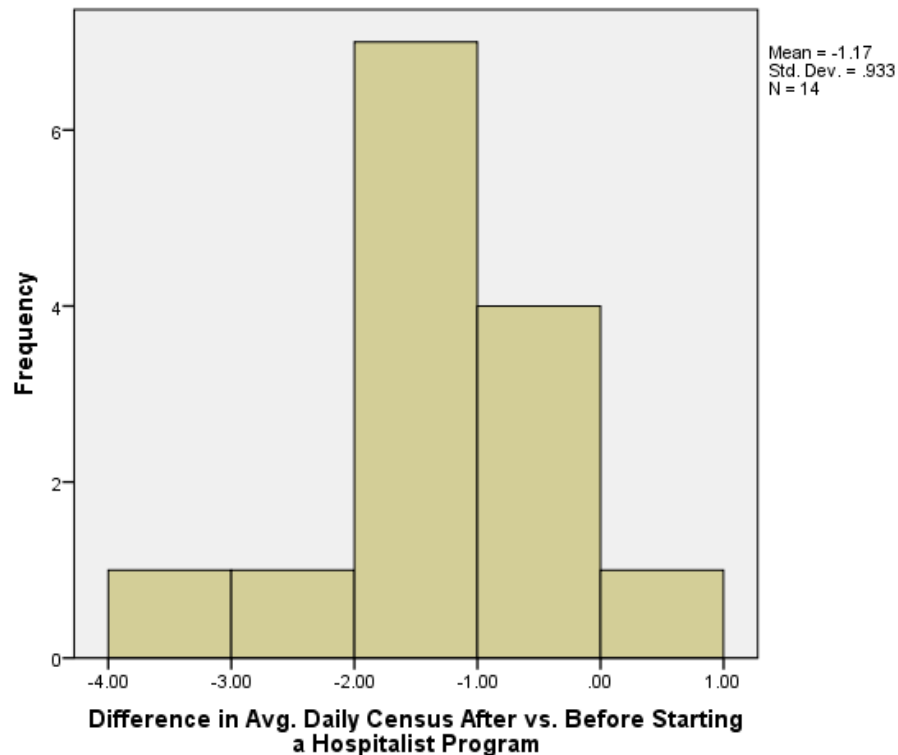


Comment: Total margin includes all sources of revenue and thus can be impacted by investment returns on reserve accounts in addition to patient revenue sources.

Average Daily Census Differences

The median of the average daily census difference across the 15 hospitals after versus before adoption of a hospitalist program indicates a decrease of 1.09 days. Differences in average daily census after versus before varied considerably having a range of 3.86 days with a decrease in average daily census of 3.38 for one hospital versus an increase of 0.47 for another hospital.

Graph 2 - Distribution of Average Daily Census Differences After versus Before Starting a Hospitalist Program

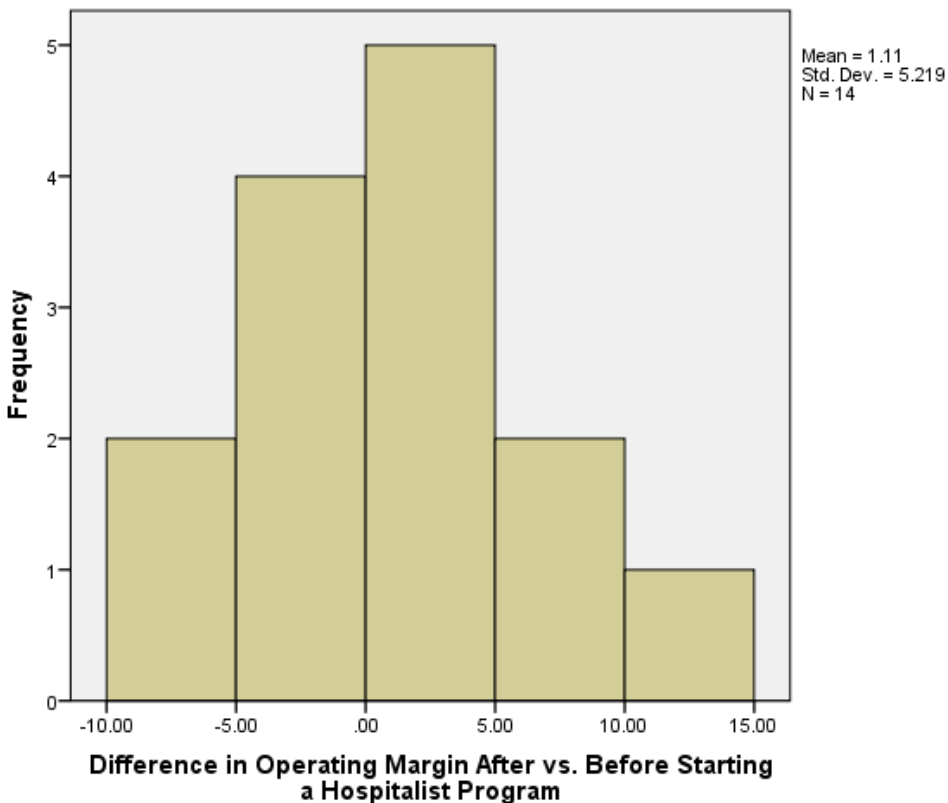


Comments: Quite consistently the average daily census dropped somewhat following the start of a hospitalist program. This is not necessarily due to implementation of a hospitalist program since all hospitals (also in urban areas) have observed a drop in inpatient use during the 2007-2013 time period for reasons that would include more care is provided in outpatient settings and/or implementation of readmission penalties as well as other possible reasons.

Operating Margin Differences

The median of the differences in operating margin showed a slight improvement of 0.72% across the 15 hospitals after versus before adoption of a hospitalist program. Operating margin differences varied considerably having a range of 19.99 with the most negative change being an 8.23% decrease for one hospital versus an 11.77% improvement for another hospital.

Graph 3 - Distribution of Operating Margin Differences After versus Before Starting a Hospitalist Program

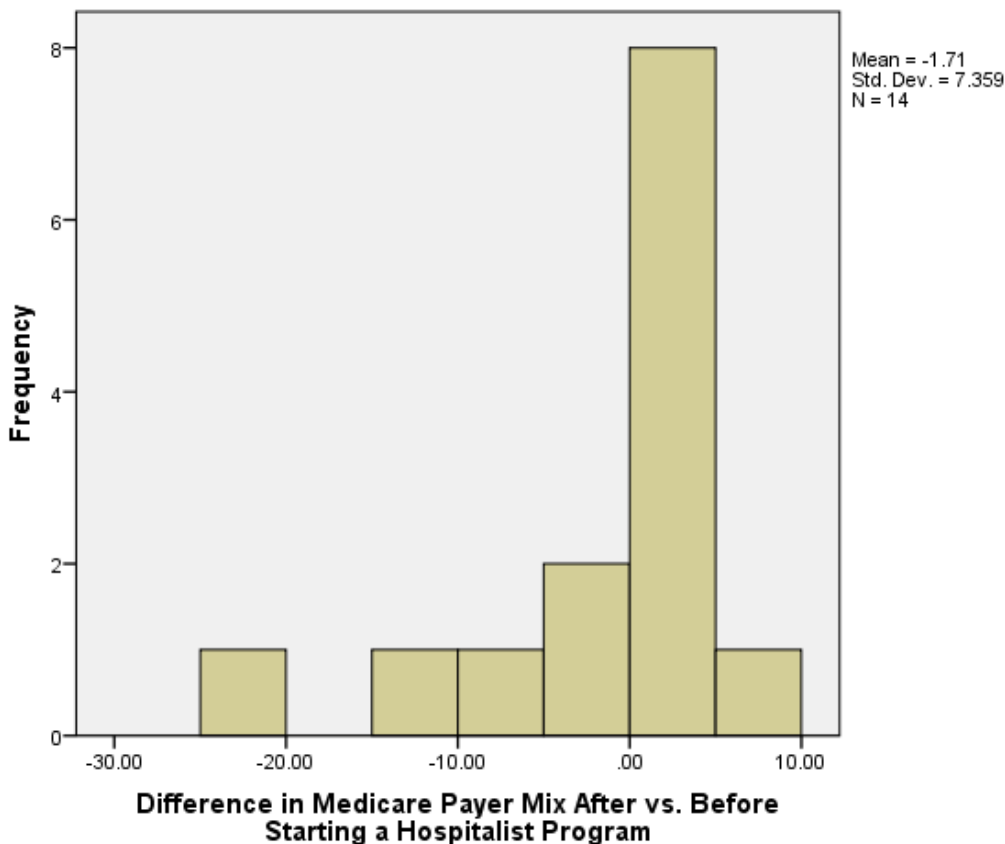


Comment: It is possible that the presence of a hospitalist resulted in greater clinical intensity regarding use of imaging or testing services that slightly increased operating margin. Across all hospitals it does not appear to be due to an increase in inpatient census as discussed below.

Medicare Inpatient Payer Mix Differences

The median of the differences in Medicare inpatient payer mix showed a very slight increase of 0.38% across the 15 hospitals after versus before adoption of a hospitalist program. Medicare inpatient payer-mix changes varied considerable having a range of 29.95 with a decrease of 21.73% for one hospital versus an 8.22% increase in inpatient Medicare payer mix for another hospital.

Graph 4 - Distribution of Medicare Inpatient Payer Differences After versus Before Starting a Hospitalist Program

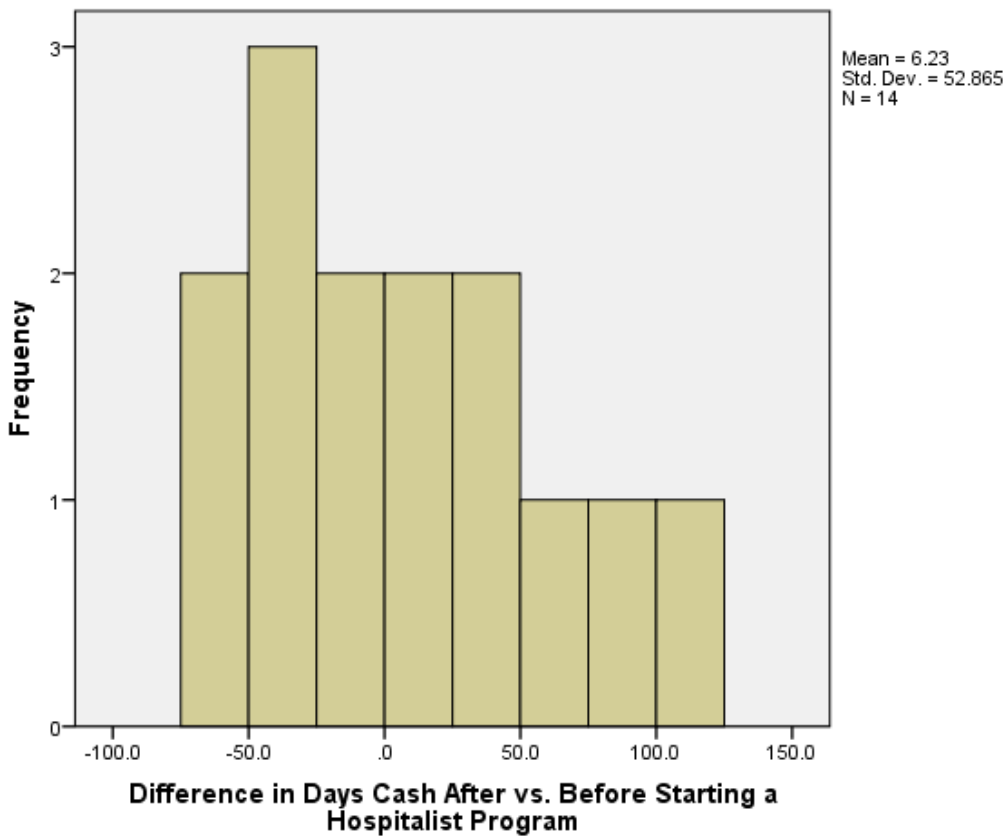


Comment: Use of a hospitalist does not appear to have caused major changes in Medicare inpatient mix across all hospitals that started hospitalist programs. One hospital showed a considerable downward shift in Medicare inpatients beginning in the year the hospitalist program started. Perhaps this is due to the particular hospitalists employed and consequently Medicare covered patients choosing to go to another hospital, patients not liking the change to a hospitalist program, or yet some other reason might explain the 20% reduction in Medicare payer mix after starting a hospitalist program at that hospital.

Days Cash Differences

The median of the differences in days cash on hand showed a very slight decrease of 0.10 days across the 15 hospitals after versus before adoption of a hospitalist program. Days cash on hand changes pre and post hospitalist program varied considerable having a range of 174.7 with a decrease in days cash on hand of 65.4 days for one hospital versus a 109.3 days increase in days cash on hand for another hospital.

Graph 5 - Distribution of Days Cash Differences After versus Before Starting a Hospitalist Program



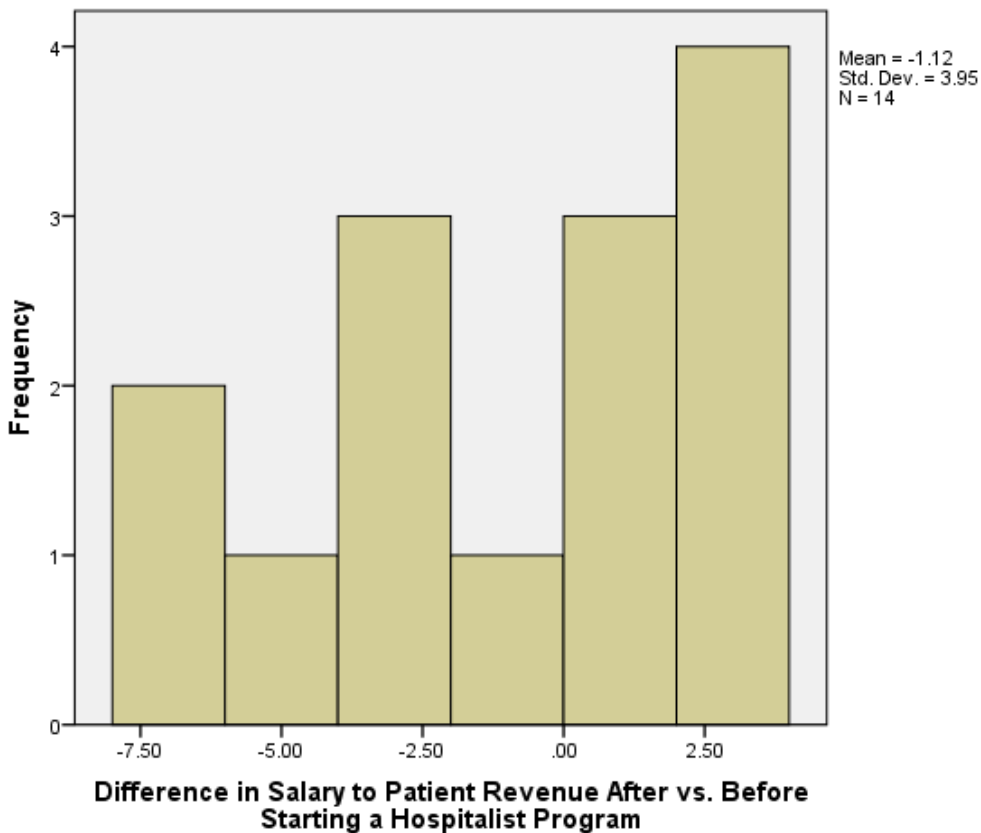
Comment: Across all 15 hospitals, starting a hospitalist program did not cause a major impact in days cash. Perhaps hospitals had done anticipatory financial planning and were ready to cover the cost of starting a hospitalist program without causing a major impact on their cash balances. However, a few hospitals showed substantial declines in days cash after starting a hospitalist program.

Salaries as a Percent of Patient Revenue Differences

The median of the differences in salaries as a percent of patient revenue shows a slight decrease of 0.47% across the 15 hospitals after versus before adoption of a hospitalist program.

Differences in salaries as a percent of patient revenues after versus before starting a hospitalist program varied somewhat having a range of 11.55 with a decrease in salaries as a percent of patient revenues of 7.93% for one hospital versus a 3.62% increase for another hospital.

Graph 6 - Distribution of Salaries as a Percent of Patient Revenue Differences After versus Before Starting a Hospitalist Program

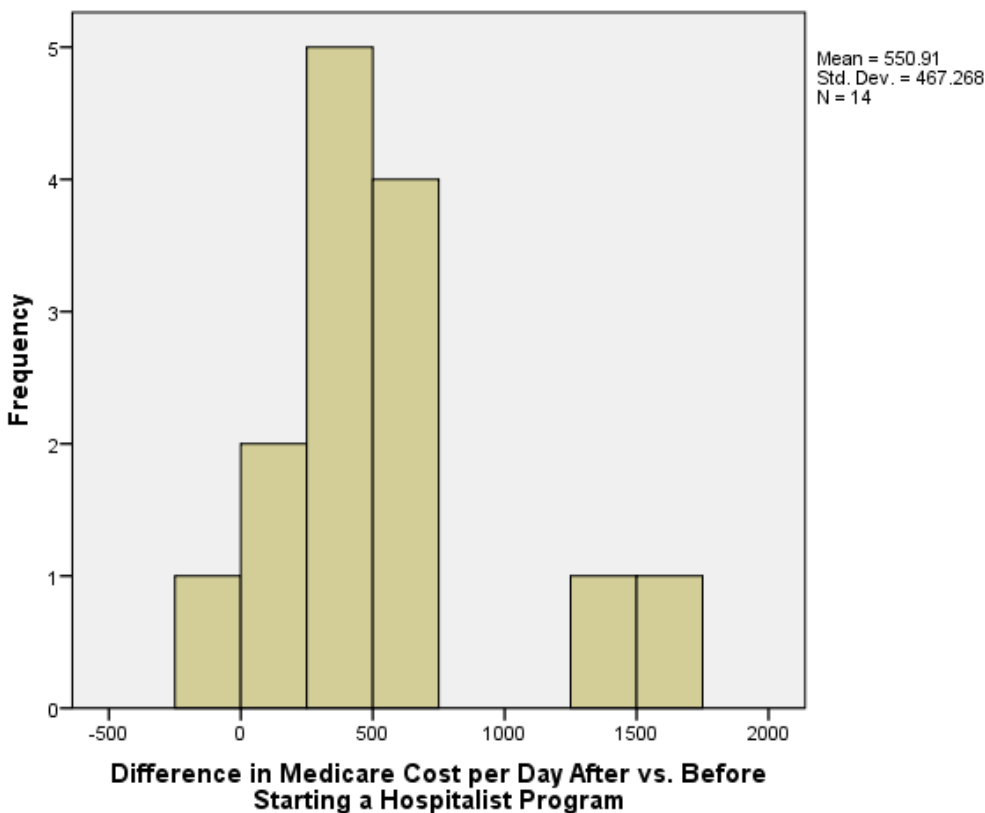


Comment: Some hospitals showed more change in salaries as a percent of patient revenue than others. If a hospital started a hospitalist program and potential inpatients' decided to use of another hospital, the salaries as percent of patient revenues indicator would be expected to increase since salaries went up due to paying hospitalist without a corresponding/offsetting inpatient revenue increase.

Medicare Cost per Day Differences

The median of Medicare cost per day differences is a \$450 increase across the 15 hospitals after versus before adoption of a hospitalist program. Differences in Medicare cost per day pre and post varied considerably having a range of \$1,674 with a decrease in Medicare cost per day of \$22 for one hospital versus an increase of \$1,652 for another hospital.

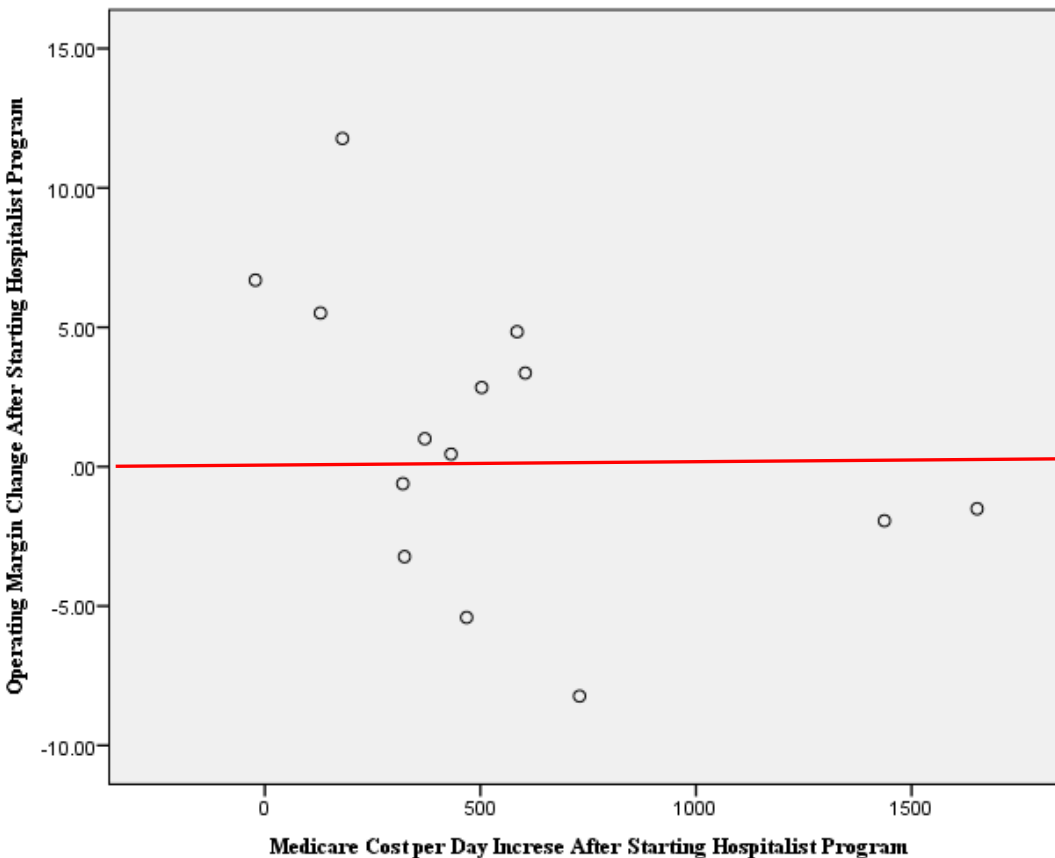
Graph 7 - Distribution of Medicare Cost per Day Differences After versus Before Starting a Hospitalist Program



Comment: As might be expected rather uniformly the Medicare cost per day increased following hospitals starting a hospitalists programs since hospitalist were a hospital cost that had not been incurred previously when community physicians were providing inpatient care.

Although most financial indicators did not show a pattern in relation to each other, there was some evidence of a relationship between the level of the Medicare cost per day increase and operating margin change following starting a hospitalist program (Graph 8). With only 15 hospitals included in the comparison, the stability of the pattern is not established, but there does seem to be some evidence of a less increase in the Medicare cost per day being related to an increase in the operating margin after starting a hospitalist program for the three hospitals in the upper left of Graph 8. As might be expected, hospitals who were better able to control cost even after starting a hospitalist program showed some evidence of being more likely to have a larger increase in operating margin, especially the hospitals in the upper left corner of the graph.

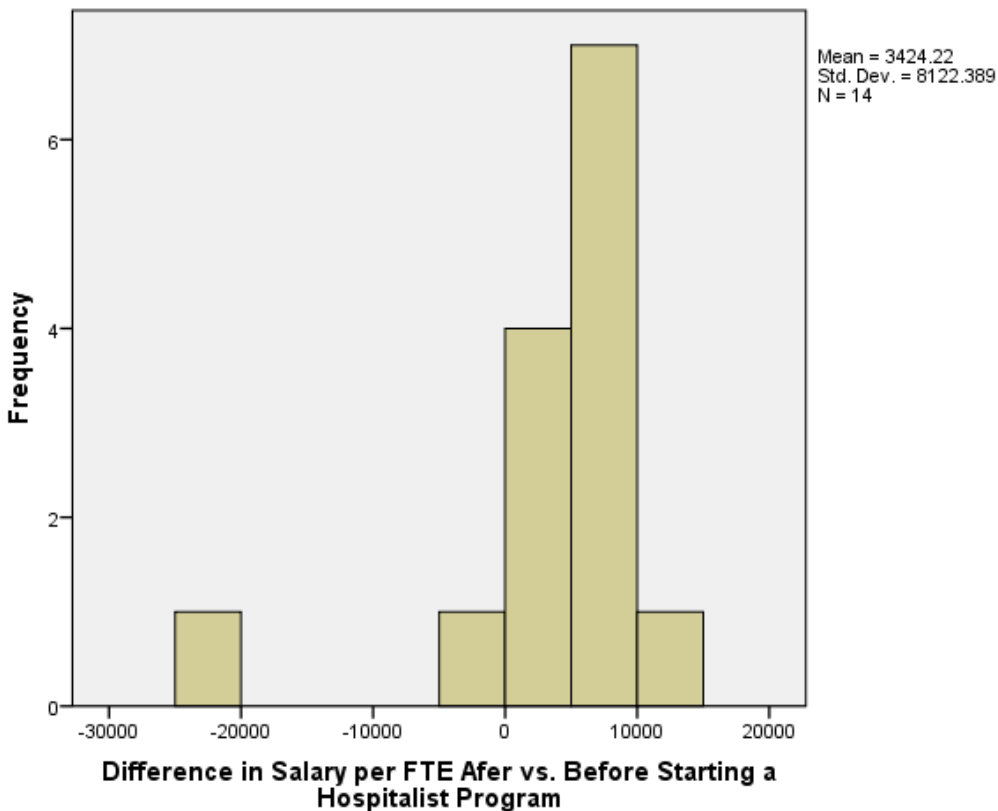
Graph 8 – Scatter plot Pattern of Medicare Cost per Day Increase Versus the Operating Margin Change after Starting a Hospitalist Program, Illinois CAHs from 2007-2012, n= 15



Salary per FTE Differences

The median of the differences in salary per FTE across the 15 hospitals after versus before adoption of a hospitalist program was \$472 higher. Differences in salary per FTE pre and post varied considerably having a range of \$33,486 with a decrease in salary per FTE of \$23,185 for one hospital versus an increase of \$10,302 for another hospital.

Graph 9 - Distribution of Salary per FTE Differences After versus Before Starting a Hospitalist Program



Comment: As expected due to the high cost of adding a hospitalist relative to the cost of other hospital staff, the salary per FTE generally increased after starting a hospitalist program. One hospital seems to have done substantial downsizing of other staff or taken some other personnel actions because their values for this indicator were substantially lower after starting a hospitalist program unlike the impact at most other hospitals starting a hospitalist program during this time period.

Table 2- Characteristics of 2007-13 Averages for Key Financial Indicators for All 23 ICHAN Critical Access Hospitals That Had Started a Hospitalist Program Prior to June 2014

Statistical Indicator	All IL CAHs with Hospitalist <u>Total Margin</u> Means 2007-13 (%)	All IL CAHs with Hospitalist <u>Operating Margin</u> Means 2007-13 (%)	All IL CAHs with Hospitalist <u>Payer Mix</u> Means 2007-13 (%)	All IL CAHs with Hospitalist <u>Days Cash</u> Means 2007-13 (days)	All IL CAHs with Hospitalist <u>Salaries to Patient Revenue</u> Means 2007-13 (\$)	All IL CAHs with Hospitalist Medicare <u>Cost per Day</u> Means 2007-13 (\$)	All IL CAHs with Hospitalist <u>Salary per FTE</u> Means 2007-13 (\$)	All IL CAHs with Hospitalist <u>Avg. Daily Census</u> Means 2007-13 (days)
Median of the Means	2.90	3.42	81.0	91.5	38.63	1,570	44,149	5.41
Minimum of Means	-2.53	-5.19	45.16	3.7	21.99	1,006	33,946	.86
Maximum of Means	11.57	13.04	89.97	224.8	60.83	3,185	63,431	10.45
Range of Means (Max. – Min)	14.09	18.23	44.81	221.1	38.84	2,178	29,485	9.58

Note: This table provides information about the distribution of means (averages) for various financial indicators for all Illinois CAHs who reported having a hospitalist program before June 2014 and who responded to the survey, n= 23. Indicators for only those hospitals who responded to the survey are given to maintain consistency between hospitals who were survey respondents and financial indicator data in Table 2. The average is not reported because it is not statistically appropriate to calculate an average of an average.

Comments: Review of the financial indicators for all Illinois CAHs who implemented a hospitalist program (n= 23) are shown in Table 2 leads to a few observations. First, both total and operating margins are low and the margins for these hospitals could be described as “thin” in comparison to margins for many other sectors of the American economy (http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/margin.html)

Many Medicare recipients use CAHs because of transportation or other reasons (familiarity, close for family to visit, know the providers, etc.) resulting in a high Medicare inpatient mix. With regard to other financial indicators, there is considerable variation between the hospitals and review of all indicators for a particular hospital suggests that some hospitals are clearly stronger financially than others regarding patient occupancy and financial status.

Findings from Hospitalist Survey of Illinois CAHs CEOs

The survey was sent to 53 Illinois CAHs' CEOs. The survey response rate was 86% (24/28) from hospitals that did have a hospitalist program and 68% (17/25) from hospitals that did not have a hospitalist program. The findings from each group are discussed below. If a question was asked to both groups, the responses are presented together for comparison. There is some variation in the number of responses to each question depending on how many responded to a particular question.

Findings from Hospitals With and Without a Hospitalist Program

Of the hospitals that did have a hospitalist program, 87.5% (21/24) were the CEO with the three other three responses from chief operating officers. The year the responding hospitals began a hospitalist program ranged from 1994 to 2014, average year was 2010.6 and median year was 2012. The average number of hospitalist staff was 5.83 for all types of hospitalists (MD and non-MD). Average types of providers were: 2.72 family medicine, .80 internal medicine, 2.25 emergency medicine, .15 other type of physicians and 2.20 non physician providers (PA or NP). Responses about use of NPs/PAs were given by 23 CEOs. 30.4% (7/23) indicated they used PAs or NPs in the hospitalist role. Of the five hospitals that provided details, three hospitals used 1 NP or PA, two hospitals used 2 NPs or PAs, and one hospital used 6 NPs or PAs as hospitalists.

In all hospitals providing responses, 100% (23/23) of the hospitalists cared for medical inpatients, 59% (13/22) cared for surgical inpatients, 55% (12/22) cared for pediatric inpatients, and in one hospital 4% (1/22) newborns were cared for by a hospitalist. Related to overall use of hospitalists for inpatient care, 2 hospitals 8.7% (2/23) indicated the hospitalists cared for less than 25% of all inpatients, 13% (3/23) reported the hospitalists cared for between 25% and 50% of all inpatients, 57% (13/23) reported between 50% but less than 100% were cared for by the hospitalists, and 22% (5/23) reported hospitalists cared for 100% of all inpatients. There is substantial use of hospitalists, but they are not the only providers of inpatient care in many communities depending on the preferences of the primary care physicians in the community.

The number of physicians routinely admitting patients to the Illinois CAHs hospitals varied greatly ranging from 1 to 20 with a mean of 5.87 and a median of 5 admitting physicians. Details related to type of admitting physicians are shown in Table 3 which indicates that family medicine physicians are the major type of physician admitting patients. Other specialties were mainly surgeons. Only about 22% (5/23) of CAHs required admitting physicians to use hospitalists. At hospitals where use of a hospitalist was not required more than half of the admitting physicians 67% (12/18) used hospitalists to care for their hospitalized patients.

Table 3 – Characteristics of Admitting Physicians

	Family Medicine	Internists	Pediatricians	Other specialties
# Responded	18	16	9	10
Mean	4.6	1.4	0.7	1.3
Median	4.0	1.0	0.0	0.0

There were several different arrangements used to provide hospitalist services as shown in Table 4. The two major arrangements used were contracting with a physician group to provide hospitalist services (50%) or employing hospitalist staff (31.8%)

Table 4 – Arrangements used to Provide Hospitalist Services

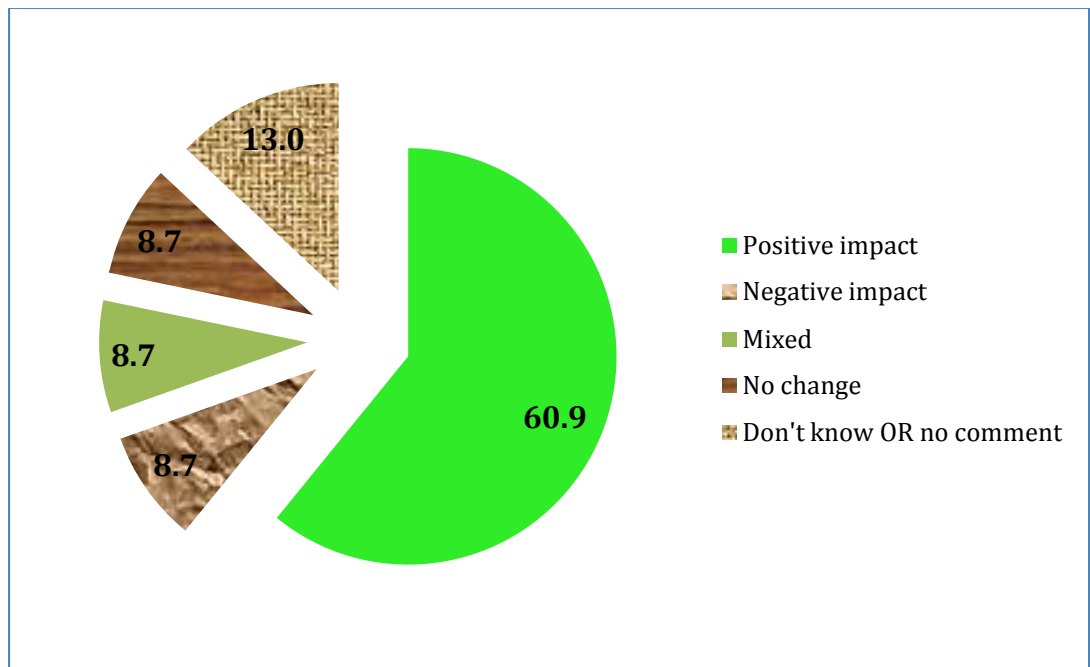
Type of arrangement used	#	Percent
The hospital contracts with an ER physician group or employed physicians that also covers inpatient care	3	13.6
The hospital employs the physician hospitalists or mid-level	7	31.8
The hospital contracts with a physician group that provides hospitalists	11	50.0
The hospital contracts with independent physicians that provides hospitalist	1	4.5
Total responses	22	100.0

Of the reporting hospitals, 30.4% (7/23) said the hospitalist lived in the hospital's service area, 34.8% (8/23) said they did not live in the service area, and for another 34.8% (8/23) residence location of the hospitalist was mixed. The cost of hospitalist coverage varied with the details of how they were utilized and scheduled with estimates of costs ranging from \$25,000 for part-time coverage by an emergency room physician to \$800,000 for full time 24 x 7 hospitalists coverage. Likewise the number of hours inpatient care was covered by hospitalists ranged from 28 to 168 (24 x 7).

Hospitalists were used by 100% (23/23) of hospitals during the daytime, 77.3% (17/22) during the evening and 100% (21/21) on weekends. The use of the hospitalists was not always for inpatient care only. 59% (13/22) of the hospitalists also provided care in the emergency department, 30% (6/20) provided outpatient care and 38% (8/21) provided primary care office visits.

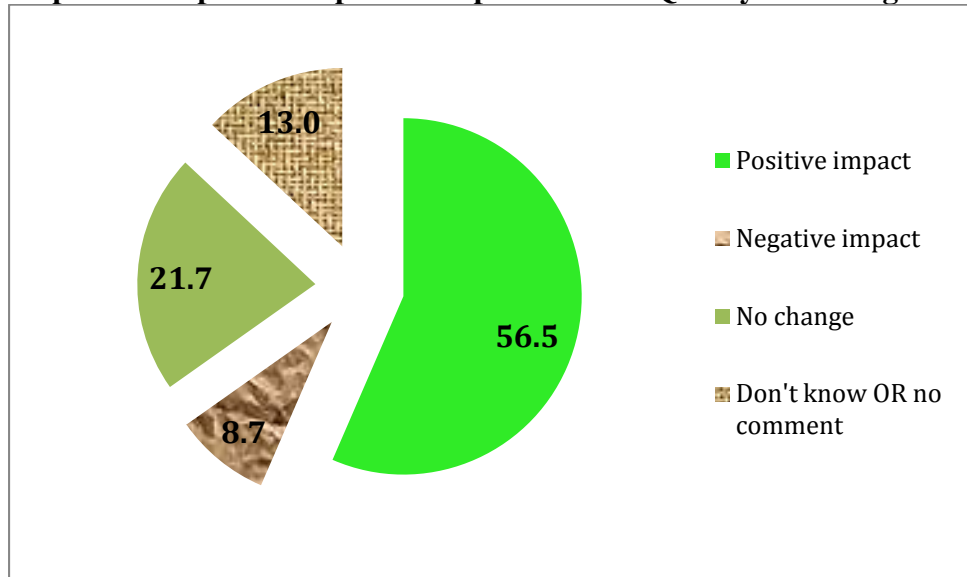
Reported financial impact is shown in Graph 10 with a majority of 61% (14/23) reporting a positive financial impact from use of hospitalists.

Graph 10 – Reported Financial Impact of Having a Hospitalist Program



Reported impact on the quality of inpatient care is shown in Graph 11 with a majority of about 56% (13/23) reporting a positive financial impact from use of hospitalists.

Graph 11 – Reported Impact on Inpatient Care Quality of Having a Hospitalist Program



Responses to the use of hospitalists indicates that CEOs report most patients (63.7%) seem satisfied or very satisfied with hospitalists providing inpatient care and likewise 85.2% of admitting physicians seem satisfied or very satisfied with hospitalists providing inpatient care as detailed in Table 5 below.

Table 5 - Responses to the Use of Hospitalists

Rating	Patient response to hospitalists providing inpatient care (n = 22)	Admitting Physician response to hospitalists providing care (n = 21)
Dissatisfied	9.1%	0.0%
Ambivalent	27.3%	4.8%
Satisfied	36.4%	47.6%
Very satisfied	27.3%	47.6%
Total	100.0%	100.0%

Physician recruitment is reported to be slightly or much easier by 42.8% of the CEOs after starting a hospitalist program. Impact on NP and PA recruitment was quite low with 10% reporting rating midlevel recruitment much easier and 90% reporting no difference after starting a hospitalist program.

When responses about physician and non-physician provider recruitment in the last 5 years are compared between hospitals with a hospitalist program and those without, two differences are observed. A somewhat higher percentage reported that recruiting was slightly easier or much easier, 42.8% for those with a hospitalist program versus 38.5% of those without a hospitalist program. For non-physicians the percentages 10% reported that recruiting was slightly easier and 30.8% reported recruiting was much easier. Because of a low number of respondents in a category, results are easily influenced by only a few respondents. Details are provided in Table 7.

Table 7 – Reported Impact on Recruiting after Starting a Hospitalist Program

Rating	Among Illinois CAHs <u>with</u> <u>a Hospitalist Program</u>		Among Illinois CAHs <u>without</u> a hospitalist program rating of change <u>in the last 5 years</u>	
	Physician Recruitment (n = 21) %	NP and PA Recruitment (n = 20) %	Physician Recruitment (n = 13) %	NP and PA Recruitment (n = 13) %
Much harder	0	0	30.8	0
Slightly harder	0	0	15.4	23.1
No different	57.1	90.0	15.4	46.2
Slightly easier	23.8	0	30.8	15.4
Much easier	19.0	10.0	7.7	15.4
Total	100.0	100.0	100.0	100.0

Among hospitals with a hospitalist program, only 14% of CEO (3/22) indicated that a hospitalist program was only slightly essential or had no impact on physician recruitment. In contrast, 41% (9/22) indicated it was somewhat essential and **46%** (10/22) indicated it was very essential for physician recruitment.

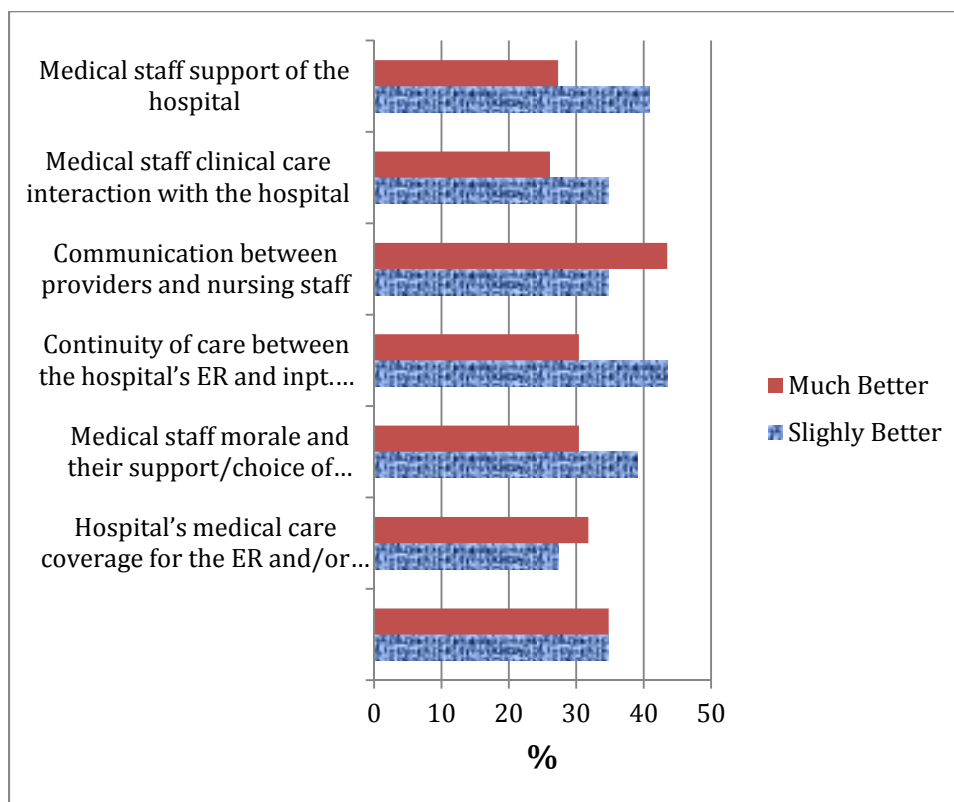
Related to completion of operational or quality standards, only a few differences are reported by CEOs who started a hospitalist program versus those who did not start a hospitalist program. If the hospital had started a hospitalist program, 70% of CEOs rated medical staff morale slightly or much better in substantially higher comparison to 40% in hospitals not starting a hospitalist program. A similar pattern was observed for continuity of care between emergency department and inpatient care being slightly or much better, 74% versus 33%. No major differences were reported related to medical records and admission documentation completion or onsite medical care coverage for the emergency department and/or inpatients.

A higher percentage of CEOs that started a hospitalist program, rated three attributes as slightly or much better compared to CEOs that had not started a hospitalist program: communication between providers and nursing staff (78% versus 40%), medical staff clinical care interaction with the hospital (61 % versus 27%), and medical staff support for the hospital (68% versus 40%). Details are shown in Table 8 and Graph 12.

Table 8 - CEOs' Perceived Impact on Hospital Standards and Quality Indicators after Starting a Hospitalist Program or Rating of Indicator in Hospitals without a Hospitalist Program

Indicator	Among hospitals <u>with a hospitalist program</u> indicator was slightly better / much better after starting hospitalist program (n = 23)		Among hospitals without a hospitalist program indicator was slightly better / much better <u>in the last 5 years</u> (n = 15)	
	% rating slightly better	% rating much better	% rating slightly better	% rating much better
Change in providers (MD or non-MD compliance with medical records and admission documentation requirements	34.8	34.8	33.3	26.7
Change in the hospital's onsite medical care coverage for the emergency department and/or inpatients	27.3	31.8	26.7	40.0
Change in the medical staff morale and their support/choice of our hospital	39.1	30.4	33.3	6.7
Change in the continuity of care between the hospital's emergency department and any needed inpatient care	43.5	30.4	26.7	6.7
Change in communication between providers and nursing staff to quickly respond to patient care issues	34.8	43.5	20.0	20.0
Change in medical staff clinical care interaction with the hospital	34.8	26.1	20.0	6.7
Change in medical staff support of the hospital	40.9	27.3	33.3	6.7

Graph 12 – CEOs Perceptions about Impact on Hospital Standards and Quality Indicators after Starting Hospitalist Program (n = 23)



Summary of Comments Regarding Hospitalist Programs

When CEOs without a hospitalist program were asked to comment on why they did not have a hospitalist program, the majority indicated there was a lack of interest by the local medical staff with two others indicating a lack of inpatient volume to justify a program. However, three were planning to start a hospitalist program soon. In terms of the effects of a hospitalist program, results were mixed. The most frequent negative comment related to having a hospitalist program was lack of continuity of care with the patient's regular doctor. The most frequent positive comment was the positive effect on physician satisfaction and physician recruitment. Two CEOs mentioned that number of inpatient admissions would increase.

Discussion

Findings from this assessment in regarding reasons for having or not having a hospitalist program are consistent with a prior interview-based assessment of Illinois CAHs' CEOs (Spitler, 2009).

Physician recruitment and medical staff retention were mentioned as major reasons for starting a hospitalist program, similar to the current study. The findings of the current Illinois CAH study are also consistent with a recent national study (Casey et al., 2014) of the impact of hospitalists in small rural hospitals summarized by this quote:

Respondents report positive impacts of hospitalist programs on quality of care and primary care physician recruitment and retention, but mixed financial impacts. Assessments of the impact of hospitalists in rural hospitals need to take into account the variety of practitioner specialties functioning as hospitalists, the amount of time they spend as hospitalists, and the multiple roles they play in the rural hospital and community.

Most hospitals that have started hospitalist programs reported positive inpatient care effects related to clinical communication and coordination of clinical care. Illinois CAHs which have not started a hospitalist program as of December 2014 report medical staff preference to manage the inpatient care of their patients as the major reason for not starting a program along with some mention of lack of volume or cost justification.

Key financial indicators were compared for Illinois CAHs before and after starting a hospitalist program between 2007 and 2012 in an effort to assess the financial impact of starting a hospitalist program. A variety of factors can influence financial indicators and there was considerable variation found related to changes in financial indicators between individual hospitals. Only three financial indicators showed evidence of consistency among the 15 hospitals which could be compared: Medicare cost per day with the average increase being \$550 per day (median \$450)

and the average census per day which dropped slightly with a mean drop of 1.17 patients (median 1.09) after starting a hospitalist program. As would be expected, the salary per FTE also increased consistently after starting a hospitalist program. A longer time period of observation is needed to provide more firm assessment of changes in financial indicators and to be able to include hospitals starting hospitalist programs in 2013 and 2014 in the after versus before comparison of financial indicators.

The CEO survey results were generally consistent with prior literature. Hospitals that had started hospitalist programs to improve physician recruitment and retention generally reported they observed those benefits in both their open ended comments and survey question responses. Many CEOs also reported improvements in communication related to clinical care/coordination and the morale of the medical staff.

Hospitals which had not started hospitalist programs indicated that a major reason was medical staff preference to follow patients for care as inpatients who were the physician's patients in their primary care office. In general, the CEOs ratings of clinical care communication indicators not starting a hospitalist program were not reported to show as much improvement over the last five years in comparison to the patterns among hospitals that had started a hospitalist program. A stronger pattern of improvement if a hospitalist program had started was also found related to the medical staff interaction with the hospital and support of the hospital after starting a hospitalist programs in comparison to the level of improvement during the last five years among hospitals not starting a hospitalist program.

There are many factors that can influence the financial, operational, and communication measures used in this study and it is acknowledged that whether or not a hospital started a hospitalist program is only one of many influences. It does appear that among hospitals that chose to start a hospitalist program these programs have assisted them in recruiting physicians, improving physician relationships, and improving clinical care continuity for inpatients. It is possible other factors can influence recruiting since the physician workforce supply is influenced by many factors including focused medical education programs such as the University of Illinois Rural Medical Education Program (RMED) program which selects rural young people for entry into medical school and encourages them to return to practice in rural Illinois (<http://ncrhp.uic.edu/>). Illinois RMED graduates are in practice in about 36 Illinois CAH hospital communities (see listing in the appendix). The increasing supply of RMEDs may also have made recruiting easier if the CAH was located in or near their hometown since many RMED graduates seek to practice in the area where they grew up.

Among hospitals choosing not to start a hospitalist program it may have been a sound choice for them to listen to the views of their local medical staff, especially in view of the challenges related to recruiting rural physicians. Those CAHs not starting a hospitalist program do not report most of the positive changes indicated by CAHs who did start a hospitalist program, but neither do those not starting a hospitalist program face the consequent financial costs. In summary, as is well known “all health care is local” and customizing the assessment of what is best for a given community will need to remain a local decision that takes into account geographic location and local market forces.

Limitations

Limitations of this study include the time period available to assess financial impact and survey responses being based on the opinions of current CEO respondents who may have changed since 2007. Interpretation of the meaning of a question's intent by survey respondents is also a possible source of variation in response validity.

Future Research

Future studies could examine implementation of hospitalist programs in larger rural hospitals in Illinois or rural hospitals in other states. If detailed inpatient quality metrics could be obtained over time before and after starting hospitalist programs, those metrics could also be used to assess the impact of starting hospitalist programs in addition to CEO opinions about quality indicators as was done the current study. Examination of variation in clinical outcome metrics between emergency medicine specialists or other specialists providing hospitalist care could also be assessed. A review of the literature indicated there is evidence that hospitalists can provide care at a lower cost with similar ratings in quality and patient satisfaction, but further study is needed due to methodological limitations of studies to date as summarized by Coffman (2005):

There is substantial disagreement regarding the impact of hospitalists on costs, quality, and satisfaction with inpatient care. The authors reviewed 21 evaluations of the use of hospitalists in U.S. hospitals. Most evaluations found that patients managed by hospitalists had lower total costs or charges than patients in comparison groups and that these savings were achieved primarily by reducing length of stay. Most evaluations found no statistically significant differences in quality of care or satisfaction. However, lack of random assignment limits the ability to draw causal inferences from many of the evaluations.

Detailed accounting information could also provide more precise measurement of the cost of operating a hospitalist program; however, the variation in the scope and structure of hospitalist programs would need to be considered when assessing hospitalist program costs with a uniform measure such as "total cost per hour of hospitalist coverage" for a particular hospital.

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Appendix

36 RMED Alumni Are Practicing in ICAHN Communities					
	RMED Year	Practice Specialty	Practice Medical Group	RMED's Practice Town	Practice_County
John Van Earnhart	1999	Family Medicine		Anna	Union
Ralph I Latta	2003	Family Medicine	St. Mary's Good Samaritan Med Group	Benton	Franklin
Stephen F Israel	2000	Internal Medicine/Pediatrics	Southern Illinois Primary Care	Carmi	White
Nathanael James Dolan	2006	Family Medicine	Southern IL Primary Care Associates	Carmi	White
Jennifer Lorraine Sharp	2003	Diagnostic Radiology	Clinical Radiologists SC	Carrollton	Greene
Kurtis William Davis	2008	Family Medicine	Midwest Family Medical Care	Carthage	Hancock
Jennifer Stevens	2007	Family Medicine	OSF Medical Group	Chatsworth	Livingston
Daren J. Rauch	2004	Family Medicine	OSF Medical Group	Clinton	DeWitt
Rachel Marie Wenger	2007	Family Medicine	Prairie Family Medicine & Obstetrics	Fairbury	Livingston
Kyle D Kakac	2001	Family Medicine	Horizon Healthcare	Fairfield	Wayne
Nicole Fyie	2010	Family Medicine	Horizon Healthcare	Fairfield	Wayne
Rachel T Barnhart	2001	Pediatrics	Fairfield Community Health Ctr	Fairfield	Wayne
Wesley D Thompson	2000	Family Medicine	Horizon Healthcare	Fairfield	Wayne
Darrin Ray	2006	Family Medicine	Family Health Clinic of Farmer	Farmer City	DeWitt
Katherine M Austman	2001	Family Medicine	Prairie Family Medicine	Forrest	Livingston
Elizabeth Ann Gullone	2006	Family Medicine	Midwest Health Clinic	Galena	Jo Daviess
Matthew Paul Gullone	2006	Family Medicine	Midwest Health Clinic	Galena	Jo Daviess
Michael J Wells	1998	Family Medicine	Midwest Health Clinic	Galena	Jo Daviess
Bethany L Bitner	2009	Family Medicine	Havana Medical Associates	Havana	Mason
Michael Markley	2002	Family Medicine	Havana Medical Associates	Havana	Mason
Crystal Snider	2006	Family Medicine	Regional Health Partners	Kewanee	Henry
Richard E. Bivin,	1998	Family Medicine	Family Medical Center	Lincoln	Logan
Daniel A Wujek	2001	Family Medicine	Litchfield Family Practice Center	Litchfield	Montgomery
Daniel Eric O'Brien	2006	Internal Medicine/Pediatrics	OSF Medical Group	Metamora	Woodford
Jessica Lynn White	2009	Internal Medicine	OSF Medical Group	Minok	Woodford
Brandy Nicole Beard	2010	Family Medicine	Carle in Monticello	Monticello	Piatt
Jeffrey Ripperda	2004	Family Medicine	Mursphyboro Health Center	Mursphysboro	Jackson
Brian Lee Atwood	2001	Family Medicine	Atwood Medical	Olney	Richland
Bernadette Ray	2005	Family Medicine	The Paxton Clinic	Paxton	Ford
Douglas Andrew Lanoue	2008	Family Medicine	The Paxton Clinic	Paxton	Ford
Christopher S. Wagoner,	2007	Family Medicine		Pittsfield	Pike
Paul Anthony Hibbert	2006	Family Medicine	Quincy Medical Group	Pittsfield	Pike
Jason C Popp	1998	Family Medicine	Family Health Care Center	Rochelle	Ogle
Erik David Englehart	2000	Family Medicine	KishHealth Physician Group	Sandwich	De Kalb
Joshua David Poos	2001	Family Medicine	Community Memorial Hospital	Staunton	Macoupin
Diane C. Krall	2002	Family Medicine	Tremont Medical Clinic	Tremont	Tazewell