Impact of Financial and Operational Interventions Funded by the Flex Program

Rebecca Garr Whitaker, MSPH; George H. Pink, PhD; G. Mark Holmes, PhD

University of North Carolina at Chapel Hill

KEY FINDINGS

- Prior to state Flex grantee finance and operations interventions (Flex interventions), participating critical access hospitals (CAHs) were generally in poorer initial financial condition compared to CAHs that did not participate. At baseline, the average current ratio, days cash on hand, and Medicare inpatient cost per day (i.e., Medicare inpatient revenue per day) of CAHs that participated in Flex interventions were significantly lower than CAHs that did not participate.

- Participation in Flex interventions was associated with reduced CAH reliance on Medicare. Medicare outpatient payer mix (the percentage of total outpatient charges that is for Medicare beneficiaries) was lower after Flex interventions, possibly because of improved billing and coding for privately insured or Medicaid patients.

- Participation in Flex interventions was associated with improved revenue cycle performance. On average, days revenue in accounts receivable was two days lower after participation in Flex interventions.

- Significant data quality and availability problems, lack of control for market and state factors, and unobserved institution-specific factors limited the analysis. Collection of fewer but more precisely defined data may increase data reporting by state Flex coordinators as well as improve the accuracy and reliability of data reporting.

BACKGROUND

Since the Balanced Budget Act of 1997, Congress has appropriated funds for the Medicare Rural Hospital Flexibility (Flex) Program. The Flex Program helps states support hospitals interested in transitioning to critical access hospital (CAH) status and provide training and technical assistance to improve CAH performance and sustainability.[1] The goal of the Flex program is to increase the capacity of rural hospitals to provide high-quality, cost-effective health care in their communities.

As of March 2015, there were approximately 1,300 critical access hospitals located in 45 states. These 45 states receive a combined $22 million annually to support their CAHs through annual grants from the Federal Office of Rural Health Policy (FORHP).[2] States support CAHs by sponsoring training or interventions in five areas: quality improvement, financial and operational improvement, population health and emergency medical services, CAH conversion, and integration of innovative care models. States select activities based on the needs of their hospitals, and not all states fund activities in all areas. The FORHP collects data about the number and type of interventions offered from participating Flex states through the Performance Improvement Monitoring System (PIMS). The purpose of this study is to assess whether participation in Flex-sponsored financial and operational interventions (Flex interventions) influences CAHs' financial performance.

Flex Monitoring Team

University of Minnesota
University of North Carolina at Chapel Hill
University of Southern Maine

www.flexmonitoring.org
A Performance Monitoring Resource for
Critical Access Hospitals, States, and Communities

METHODS

Data

Information from the Flex 2013 PIMS were merged with CAHs' 2012-2014 Medicare cost reports in order to assess whether participation in a 2013 Flex intervention influenced hospitals' financial performance in 2014. These interventions included financial assessment, revenue cycle management, charge master review, emergency department wait time improvement, Lean management initiatives, and billing and coding training. The 2013 PIMS data were submitted to FORHP by participating Flex states. The PIMS data collection process recognizes the diversity of foci across Flex programs, and therefore was not designed to collect comprehensive data across all possible Flex program priorities. Of the 45 states that received Flex funds, 27 submitted data including hospital names, organized according to participation in the six finance and operations interventions.

Variables

The dependent variables were 12 profitability, liquidity and revenue ratios from the CAH Financial Indicators Report for each hospital. To account for the influence of potentially inaccurate data and outliers, the profitability, liquidity and revenue ratios were winsorized: the highest and lowest 2.5% of the data distribution were excluded from the analysis. Hospitals without 2014 cost reports[a] were excluded from the analysis because we could not assess financial performance during the year following the 2013 intervention.

The primary independent variable of interest, participation in at least one Flex intervention, was included as a dichotomous (yes/no) variable to indicate whether the CAH participated in any financial or operational intervention in 2013. Participation in Flex interventions was also defined using the number of Flex interventions (range: 0-3), but the results were not substantively different.

Two types of control variables were included in the analysis. The first type was the peer groups used in the CAH Financial Indicators Report which have been shown to have important influences on hospital financial performance. Peer groups were based on net patient revenue and whether the hospital was government-owned, provided long-term care, or operated a rural health clinic.[3] Each of these peer group variables was included in the analysis. The second type of control variable was geographic location because there is known variation in both hospital markets and health policies across states and regions. This control variable was defined by the four Census regions.

Analysis

Bivariate analyses (t-test and chi-square) explored whether baseline 2012 CAH characteristics differed according to whether the hospital participated in a Flex intervention (hospitals' 2012 characteristics were considered baseline because CAHs could have participated in an intervention early in 2013, thereby influencing their 2013 data). A series of multivariate regression models assessed whether participation in a Flex intervention predicted changes in financial performance. A one-year difference (2013-2014) may not have been long enough to detect a change following an intervention, particularly if the intervention occurred toward the end of a fiscal year. For this reason, the models also tested for a two-year difference in financial performance from 2012-2014.

RESULTS

Table 1 (next page) depicts baseline 2012 hospital characteristics according to whether the CAHs participated in Flex interventions in 2013. Hospitals that chose to participate in Flex interventions had a significantly lower current ratio, fewer days cash on hand, greater proportion of Medicare inpatients and lower Medicare inpatient cost per day in 2012 compared to hospitals that did not participate in Flex interventions. Additionally, a significantly higher percentage of CAHs participating in Flex interventions provided long-term care compared to CAHs that did not participate in Flex interventions, which may reflect the additional financial pressure that facilities with long-term care face.[3]

a. 2014 Medicare Cost Reports may not have been available because of late submission by hospitals, reporting periods of less than 360 days, and hospital closures.

Table 1. Baseline 2012 Hospital Characteristics by Participation in 2013 Flex Interventions

	Total	No Intervention	Any Intervention	p-value*
Observations	776	536	240	
Dependent variables	Mean (sd)	Mean (sd)	Mean (sd)	
Total margin	2.2% (6.8%)	2.3% (6.8%)	1.9% (6.8%)	NS
Operating margin	0.7% (8.4%)	0.7% (8.3%)	0.7% (8.5%)	NS
Cash flow margin	6.0% (8.1%)	6.2% (8.3%)	5.7% (7.8%)	NS
Current ratio	2.81 (1.99)	2.93 (2.10)	2.54 (1.68)	0.016
Days revenue in accounts receivable (A/R)	57.0 (16.8)	56.3 (17.2)	58.3 (15.9)	NS
Days cash on hand	91.3 (94.3)	96.3 (100)	80.3 (79.7)	0.034
Outpatient revenues to total revenues	72.2% (10.8%)	72.3% (10.8%)	72.1% (10.9%)	NS
Patient deductions	39.2% (16.1%)	39.1% (15.7%)	39.5% (16.9%)	NS
Medicare inpatient payer mix	72.8% (13.3%)	72.1% (13.3%)	74.2% (13.2%)	0.052
Medicare outpatient payer mix	38.1% (8.3%)	38.2% (8.4%)	37.9% (8.2%)	NS
Medicare outpatient cost to charge	47.9% (15.9%)	48.3% (15.8%)	47.0% (16.0%)	NS
Medicare inpatient cost per day	$2,309.37 (883)	$2,391.44 (888)	$2,134.71 (849)	0.000
Control variables	Mean (n)	Mean (n)	Mean (n)	
Not government-owned	64.6% (501)	62.9% (337)	68.3% (164)	NS
Government-owned	35.4% (275)	37.1% (199)	31.7% (76)	NS
Does not provide long-term care	71.1% (552)	73.3% (393)	66.2% (159)	0.045
Provides long-term care	28.9% (224)	26.7% (143)	33.8% (81)	0.045
Does not operate rural health clinic	45.6% (354)	46.3% (248)	44.2% (106)	NS
Operates rural health clinic	54.4% (422)	53.7% (288)	55.8% (134)	NS
< $10 million net patient revenue	28.2% (219)	29.3% (157)	25.8% (62)	NS
$10-$20 million net patient revenue	34.9% (271)	34.0% (182)	37.1% (89)	NS
≥ $20 million net patient revenue	36.9% (286)	36.8% (197)	37.1% (89)	NS
Northeast census region	3.1% (24)	3.4% (18)	2.5% (6)	NS
Midwest census region	47.2% (366)	49.4% (265)	42.1% (101)	NS
South census region	32.7% (254)	30.4% (163)	37.9% (91)	NS
West census region	17.0% (132)	16.8% (90)	17.5% (42)	NS

*p-values calculated from t-test and chi-square bivariate analyses.
NS: Not Significant at 10% level.

Table 2 shows the results for the one-year (2013-2014) and two-year difference (2012-2014) regression models (also adjusted for CAH peer groups and region; full results are available upon request). Results show that for CAHs participating in at least one Flex intervention, the share of inpatient days paid by Medicare fell by 1.9 percentage points from 2013-2014. Similarly, hospitals' Medicare outpatient payer mix—the percent of total outpatient charges attributed to Medicare patients—fell about one percentage point from 2013-2014 for hospitals participating in a Flex intervention, a slightly larger difference than that due to being government-owned or having more than $20m in net patient revenue (relative to less than $10m in revenue).

Results for the two-year difference (2012-2014) regression models differed slightly. Days revenue in accounts receivable and Medicare inpatient payer mix were significantly related to participating in a Flex intervention. For CAHs participating in finance/operations interventions, days revenue in accounts receivable

improved by 3.25 days from 2012-2014. Participating in a Flex intervention was associated with a 1.7 percentage-point decline in Medicare inpatient payer mix from 2012-2014. Considering the results of both regression models, there was evidence that Flex interventions decreased the percent of total inpatient charges from Medicare, and some evidence of improvement in outpatient payer mix and days revenue in accounts receivable.

CONCLUSION

The purpose of this study was to assess whether participation in Flex-sponsored financial and operational improvement training influences CAHs' financial performance. There are three main findings:

1) CAHs that elected to participate in Flex interventions were in poorer initial financial condition than CAHs that did not participate, suggesting that lower-performing hospitals had greater need and were more

Table 2. Change in Financial Indicators Associated with Flex Intervention

Financial Indicator	2013-2014		2012-2014	
	Change	95% Confidence Interval	Change	95% Confidence Interval
Total margin	-0.5%	(-1.8%, 0.7%)	-0.4%	(-1.9%, 1.0%)
Operating margin	-0.4%	(-2.0%, 1.1%)	-1.0%	(-2.7%, 0.6%)
Cash flow margin	-0.3%	(-1.7%, 1.1%)	-0.7%	(-2.2%, 0.8%)
Current ratio	-0.07	(-0.36, 0.22)	0.08	(-0.22, 0.39)
Days revenue in AR	-1.92	(-4.59, 0.75)	-3.25*	(-6.28, -0.22)
Days cash on hand	-3.80	(-12.01, 4.41)	-3.28	(-14.10, 7.55)
Outpatient revenue to total revenue	-0.5%	(-1.0%, 0.0%)	-0.1%	(-1.0%, 0.8%)
Patient deductions	0.01%	(-1.0%, 1.0%)	0.76%	(-0.5%, 2.0%)
Inpatient payer mix	-1.9%**	(-3.3%, -0.6%)	-1.7%*	(-3.1%, -0.2%)
Outpatient payer mix	-1.0%***	(-1.5%, -0.5%)	-0.2%	(-0.9%, 0.4%)
Medicare outpatient cost to charge	0.4%	(-0.6%, 1.4%)	-0.6%	(-2.2%, 0.9%)
Medicare inpatient cost per day	-$14.33	(-$102.41, $73.75)	-$23.48	(-$118.09, $71.13)

*p<0.05, **p<.01, ***p<.001

Each cell contains the estimated association between Flex intervention participation and the change in the financial indicator, adjusting for peer group (net patient revenue and whether the CAH is government-owned, provides long-term care services and operates a rural health clinic) and Census region.

Sample size (N) ranged from 474-502 hospitals in each model.

likely to participate in interventions.

2) Participation in Flex interventions was associated with reduced reliance on Medicare. While the reasons for the decline in Medicare inpatient payer mix are not clear, improved billing and coding for privately insured or Medicaid patients utilizing outpatient services may have reduced the proportion of Medicare patients in the payer mix.

3) Participation in Flex interventions was associated with improved revenue cycle performance. The ability of CAHs to convert services rendered into cash is critical to their financial performance. Problems in the revenue cycle lead to lost and late payments, which degrade hospital revenues and hence financial condition.

Despite these findings, it cannot be inferred that CAH participation in a Flex intervention will lead to improved financial performance. Institutional, market, or state-based factors can also influence financial performance as well as the fact that CAH administrators decide whether to participate (and may do so based on their estimates of future financial performance). Overall conclusions are limited because of incomplete, missing, and otherwise problematic data. To facilitate future evaluations of Flex interventions, state Flex grantees could be asked to report on a more narrowly defined array of indicators. This may increase participation in (and the accuracy and reliability of) data reporting by the state Flex programs.

LIMITATIONS

There are three important limitations to the study. First, there were significant data quality and availability problems in the PIMS data. The PIMS data collection process was not designed to collect comprehensive data across all possible Flex program priorities in order to allow state grantees to be responsive to their hospitals' needs. Eighteen of 45 Flex states did not report data for their finance and operations interventions. Hospitals from these states had to be excluded from the analysis, potentially biasing the results. Furthermore, many individual data fields in the PIMS dataset were missing; a hospital could be listed as participating in an intervention but not report any data associated with

the intervention. If the hospital appeared in the PIMS dataset, it was assumed the hospital participated in the specified intervention even if no data were reported for the hospital. In addition, the PIMS had limited information about the interventions—what the intervention involved, when and how often the intervention occurred, how the interventions differed across hospitals and across states—thereby restricting opportunities for evaluation (states were not required to provide the same training: as a consequence, there was variation in the number of interventions provided and in the focus of the interventions across states and hospitals). These data limitations made measurement of the intervention variable difficult. Of course, if hospitals undertook a non-Flex-funded intervention, this would not be captured in the PIMS data and might bias the estimated effect toward zero.

Second, a causal relationship between participation in an intervention and financial performance cannot be inferred from this analysis given the lack of control for market or state (systematic) factors influencing hospital financial performance. Further, we only had cost report data through 2014 so we could not infer whether the interventions would have a long-term effect on financial performance.

Third, the results may be attributable to unobserved institution-specific (non-systematic) factors rather than the interventions themselves. The effect of Flex interventions on financial performance may be much smaller than other changes at a hospital, such as recruitment of a surgeon or opening a new clinic. In addition, previous research has indicated a large degree of uncertainty in identifying effective financial improvement strategies in CAHs.[4]

The analysis in this report uses data from the first years of the new measures collected by the Flex program. Improvements to these data have been made through better reporting by grantees as well as FORHP changes to the PIMS system. ■

For more information on this study,
please contact George Pink at
gpink@email.unc.edu

REFERENCES

1. Medicare Rural Hospital Flexibility Program. Health Resources and Services Administration. Washington, DC. Available: http://1.usa.gov/1Oe4Imd . Accessed November 17, 2015.
2. Active grants for HRSA program(s): Medicare Rural Hospital Flexibility (H54). Health Resources and Services Administration Data Warehouse. Washington, DC. Available: http://1.usa.gov/1QKTSqk. Accessed November 17, 2015.
3. Pink GH, Holmes GM, Thompson RE, & Slifkin RT. Variations in financial performance among peer groups of critical access hospitals. J Rural Health. 2007; 23(4): 299-305.
4. Holmes, GM & Pink, GH. Adoption and Perceived Effectiveness of Financial Improvement Strategies in Critical Access Hospitals. J Rural Health. 2012 Jan;28(1):92-100.

Flex Monitoring Team

University of Minnesota
University of North Carolina at Chapel Hill
University of Southern Maine