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Differences in Measurement of Operating Margin

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The Flex Monitoring Team is a consortium of the Rural Health Research Centers located at the Universities of Minnesota, North Carolina at Chapel Hill, and Southern Maine. Under contract with the federal Office of Rural health Policy (PHS Grant No. U27RH01080), the Flex Monitoring team is cooperatively conducting a performance monitoring project for the Medicare Rural Hospital Flexibility Program (Flex Program). The monitoring project is assessing the impact of the Flex Program on rural hospitals and communities and the role of states in achieving overall program objectives, including improving access to and the quality of health care services; improving the financial performance of Critical Access Hospitals; and engaging rural communities in health care system development.

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The Medicare Rural Hospital Flexibility Program

The Medicare Rural Hospital Flexibility Program (Flex Program), created by Congress in 1997, allows small hospitals to be licensed as Critical Access Hospitals (CAHs) and offers grants to States to help implement initiatives to strengthen the rural health care infrastructure. To participate in the Flex Grant Program, States are required to develop a rural health care plan that provides for the creation of one or more rural health networks; promotes regionalization of rural health services in the State; and improves the quality of and access to hospital and other health services for rural residents of the State. Consistent with their rural health care plans, states may designate eligible rural hospitals as CAHs.

CAHs must be located in a rural area (or an area treated as rural); be more than 35 miles (or 15 miles in areas with mountainous terrain or only secondary roads available) from another hospital or be certified before January 1, 2006 by the State as being a necessary provider of health care services. CAHs are required to make available 24-hour emergency care services that a State determines are necessary. CAHs may have a maximum of 25 acute care and swing beds, and must maintain an annual average length of stay of 96 hours or less for their acute care patients. CAHs are reimbursed by Medicare on a cost basis (i.e., for the reasonable costs of providing inpatient, outpatient and swing bed services).

The legislative authority for the Flex Program and cost-based reimbursement for CAHs are described in the Social Security Act, Title XVIII, Sections 1814 and 1820, available at http://www.ssa.gov/OP_Home/ssact/title18/1800.htm

Introduction

Recently, Modern Healthcare published a list of the 25 most profitable critical access hospitals, based on operating margin, as calculated by Thomson Healthcare.[1] However, the operating margins reported in Modern Healthcare differed from the operating margins for the same hospitals calculated by the North Carolina Rural Health Research and Policy Analysis Center (NCRHRPAC), although both use 2005 Medicare cost report data. This briefing paper considers how differences in measurement of operating margin can affect the reported values. Findings include the following:

- ***The definition of operating margin used by Thomson Healthcare to produce the list of the 25 most profitable CAHs reported in Modern Healthcare differs from the definition used by the NCRHRPAC and Cost Report Data Resources (a company that provides comparative financial ratios based on Medicare cost reports.)***

- ***Although there is agreement that operating margin is defined as operating revenues minus operating expenses (operating income) over operating revenue, there is not agreement on the specific components that should be included in the numerator and denominator.***

- ***There are three schools of thought regarding which components to include in the revenue and expenses used to calculate operating margin: only patient care (PC), patient care and other operations (PCO), and patient care, other operations and government appropriations (PCOG).***

- ***The PC operating margin is less than the PCO operating margin which is less than the PCOG operating margin. Inclusion of income from other operations and government appropriations can have a large effect on calculated values of operating margin.***

- ***The PCO operating margin is probably the best operating margin measure of a hospital's performance because there is good matching of operating revenues to operating expenses; however, other definitions may be more appropriate for specific questions***

Profitability ratios

Operating margin is one of the most common measures of profitability. Among the five leading textbooks of healthcare financial management, there is a high degree of consistency in the definition and interpretation of operating margin:

> "When data are available, another useful margin ratio is the operating margin, defined as operating income divided by operating revenues. (Operating revenues

are defined here as patient service revenue plus premium revenue.) The advantage of this margin measure is that it focuses on core business operations and hence removes the influence of non-operating gains and losses, which are often transitory and unrelated to core operations. However, the format of many healthcare organizations' financial statements makes this ratio difficult to determine without additional information". [2]

"Understanding financial performance in any business requires some global summary measure of financial success. For many health care organization executives, this measure is often the operating margin (operating income divided by revenues.) We believe that this measure is wrong and can be misleading in many situations. For example, low operating margins may not always be bad and high operating margins may not always be good". [3]

"The operating margin, which is generally expressed as a percentage, is represented as operating income (loss) divided by total operating revenues…This ratio is used for a number of managerial purposes and also sometimes enters into credit analysis. It is therefore a multipurpose measure. It is so universal that many outside sources are available for comparative purposes". [4]

"Margin ratios are one common class of profitability ratios. Health care organizations commonly compute their total margin and their operating margin as a percentage of revenues…These margins are often watched closely, as changes can be early warning signals of serious problems". [5]

"The operating margin ratio (operating income/total operating revenues) measures profits earned from the organization's main line of business. The margin indicates the proportion of profit earned for each dollar of operating revenue; that is, the proportion of profit remaining after subtracting total operating expenses from operating revenues". [6]

In all of these textbooks, operating margin is defined as operating revenues minus operating expenses (operating income) over operating revenues. Thus any differences in calculated values of operating margin derive from differences in the definitions of the formula components (operating revenues and expenses), and not the formula itself. With the exception of Cleverley and Cameron, there is also agreement that operating margin is a common and important measure of profitability.

Finally, it is important to contrast operating margin and total margin. Operating margin focuses on the income from patient care operations while total margin (defined as net income / total revenues) focuses on the income from all sources – operations, investments, and so on.

Approach

The 2005 operating margins of the 25 most profitable CAHs reported in Modern Healthcare were compared with three alternative definitions of Operating Margin using slightly different accounts. Table 1 shows the different definitions of operating margin and their associated Medicare cost report accounts. Note that in all three definitions, the values for expenses is the same; the differences among the definitions pertain to revenue differences only.

Modern Healthcare operating margin (abbreviated MH). The operating margins of the 25 most profitable critical-access hospitals reported in Modern Healthcare were produced by Thomson Healthcare, but attempts to obtain the definition and accounts used by Thomson were unsuccessful. The only information provided in the article is:

> "Thomson Healthcare identified the 25 most profitable critical-access hospitals based on patient revenue. Figures are adjusted for related organizational expenses. Hospitals were excluded from the study if their revenue or expense data were incomplete or if they reported substantial nonpatient operating revenue, substantial nonoperating expense, or an operating margin calculated from gross patient revenue instead of net patient revenue[1]."

Although the sample selection rules used by Thomson (e.g., "substantial" nonpatient operating revenue) were unknown, this should have only affected which hospitals were in the top 25. Replication of the Operating Margins for the 25 hospitals listed in Modern Healthcare was expected.

Only patient care operating margin (PC) measures the margin from patient care only. The premise is that patient care is the main line of business of the organization and, as such, only the revenue and expenses of providing patient care should be included in operating margin. This is the operating margin currently reported by the NCRHRPAC and by Cost Report Data Resources (a company that provides comparative financial ratios based on Medicare cost reports.)[7]

Patient care and other operations operating margin (PCO) measures the margin from patient care and other operations, such as pharmacy. The premise is that income from pharmacy, for example, would not be received in the absence of patient care and therefore should be included in operating margin.

Patient care, other operations, and government appropriations operating margin (PCOG) measures the margin from patient care, other operations, and government appropriations, such as county tax revenue. The premise is that income from other operations and county taxes, for example, would not be received in the absence of patient care and therefore should be included in operating margin.

Results

Table 2 compares the operating margins reported in Modern Healthcare to the other three operating margins. Several interesting findings are apparent.

First, the definition of operating margin used by Thomson Healthcare to produce the list of the 25 most profitable CAHs reported in Modern Healthcare differs from the definition used by the NCRHRPAC and Cost Report Data Resources. The operating margins reported in Modern Healthcare could not be fully replicated using the three definitions and formulae. The closest match was PCOG, where 12 were the same as the operating margins reported in Modern Healthcare. In some cases, the Modern Healthcare operating margin was substantially different from any of the other three operating margins, most notably the most profitable CAH on the list. For Union County Hospital District, Modern Healthcare reported an operating margin of 23.13%, far above the other three operating margins that were all negative. Alternate reporting periods within 2005 were tried but 12 matches was the highest number obtained. Presumably Thomson Healthcare is using some variation of the definition and formula for PCOG.

Second, PC < PCO < PCOG. PC is the lowest value because this definition has the lowest value for revenue. For example, "revenue from sale of drugs to other than patients" (line 17) is excluded from "net patient revenues" (line 3) but the operating expenses of sale of drugs to other than patients would be included in "total operating expenses" (line 4). Including other operating expenses but excluding other operating revenues produces the lowest operating margin value. Unfortunately, Medicare cost reports do not allow disaggregation of expenses into "patient care" and "other."

PCO is the middle value because there is good matching of operating revenues to operating expenses. For example, "revenue from sale of drugs to other than patients" (line 17) is added to net patient revenues" (line 3) and the operating expenses of sale of drugs to other than patients is included in "total operating expenses" (line 4). Including income from other operations but excluding government appropriations produces the middle operating margin value.

PCOG is the highest value because there is good matching of operating revenues to operating expenses but revenues are also increased by government appropriations. Including income from other operations and government appropriations produces the highest operating margin value.

Third, inclusion of revenue from other operations and government appropriations can have a large effect on calculated values of operating margin. Comparison of PC (no revenues from other operations included) to PCO (revenues from other operations included) to PCOG (revenues from other operations and government appropriations included) shows large differences for many hospitals, including several hospitals that switched from negative to positive operating margins.

Conclusion

There is no one right way to define operating margin because the decision needs vary among situations and organizations. However, given the account structure in the Medicare Cost Report, the *PCO operating margin* is probably the best measure because there is good matching of operating revenues to operating expenses. The *PC operating margin* is conceptually strong but is likely understated because revenues from other operations are excluded, although associated expenses are included. The *PCOG operating margin* has good matching of operating revenues to expenses, but government appropriations are not directly related to patient care and may be transitory. Likewise, a hospital that receives a considerable source of revenue from government sources may not be sufficiently financially healthy to operate in the absence of such funding; that is, the *PCOG operating margin* may be overstated because it includes tax revenues provided to the hospital due to its importance in the community.

References

1. By the numbers, most profitable critical-access hospitals. *Modern Healthcare*. 2007, 28.
2. Gapenski, LC. *Healthcare Finance*. 4th ed. AUPHA Press / Health Administration Press; 2008.
3. Cleverley, WO, Cameron, AE. *Essentials of Health Care Finance.* 6th ed. Sudbury, Ma: Jones and Bartlett; 2006.
4. Baker, JJ, Baker RW. *Health Care Finance*, 2nd ed. Sudbury, Ma: Jones and Bartlett; 2006.
5. Finkler, SA, Ward, DM. *Accounting Fundamentals for Health Care Management*. Sudbury, Ma:Jones and Bartlett; 2006.
6. Zelman,WN, McCue, MJ, Millikan, AR, Glick, ND. *Financial Management of Health Care Organizations*. 2nd ed. Boston, Ma: Blackwell Publishing; 2003.
7. Schuhmann, TM. Medicare margins trending downward, *Healthcare Financial Management.* 2007; 61(12):30-32.

Table 1: Different Definitions of Operating Margin

	Modern Healthcare (MH)	**Only patient care (PC)**	**Patient care and other operations (PCO)**	**Patient care, other operations, and govt appropriations (PCOG)**
Numerator definition	Unknown	Net patient revenues – Total operating expenses	Net patient revenues + other revenues* – Total operating expenses	Net patient revenues + other revenues* + govt appropriations – Total operating expenses
Numerator accounts**	Unknown	Line 3 – Line 4	(Line 3 + Lines 8 to 22 + Line 24) – (Line 4)	(Line 3 + Lines 8 to22 + Line 24 + Line 23) – (Line 4)
Denominator definition	Unknown	Net patient revenues	Net patient revenues + other revenues	Net patient revenues + other revenues + govt appropriations
Denominator accounts**	Unknown	Line 3	Line 3 + Lines 8 to 22 + Line 24	Line 3 + Lines 8 to 22 + Line 24 + Line 23
*Other revenues include: revenues from telephone and telegraph service; revenues from television and radio service; purchase discounts; rebates and refunds of expenses; parking lot receipts; revenue from laundry and linen service; revenue from meals sold to employees and guests; revenue from rental of living quarters; revenue from sale of medical and surgical supplies to other than patients; revenue from sale of drugs to other than patients; revenue from sale of medical records and abstracts; tuition (fees, sale of textbooks, uniforms, etc); revenue from gifts, flowers, coffee shops, and canteen; rental of vending machines; rental of hospital space; & other.				
**Worksheet G-3, Statement of Revenue and Expenses, CMS Form 2552-96				

Table 2: A Comparison of Operating Margins

Rank	Name	City	Modern Healthcare (MH)	Patient care only (PC)	Patient care and other operations (PCO)	Patient care, other operations and government appropriations) (PCOG)
1	Union County Hospital District	Anna, Il	23.13	-1.27	-0.84	-0.84
2	Nor Lea General Hospital	Lovington, NM	21.34	1.09	21.34	21.34
3	Bayside Community Hospital	Anahuac, TX	21.14	-2.06	24.81	26.71
4	Mason General Hospital	Shelton, WA	20.04	14.42	20.30	20.3
5	Black River Mem Hsptl	Black River Falls, WI	19.61	7.90	11.29	11.29
6	Defiance Regional Medical Center	Defiance, OH	18.90	2.70	19.57	19.57
7	Murray County Memorial Hospital	Slayton, MN	18.56	15.33	18.61	18.85
8	Memorial Community Hospital	Blair, NE	17.35	21.82	22.60	22.60
9	St Andrews Hospital	Boothbay Harbor, ME	16.81	-3.6	6.89	6.89
10	Pipestone County Medical Center Ashton Cc	Pipestone, MN	16.74	11.61	15.18	16.74
11	Melrose Area Hospital Centracare	Melrose, MN	16.39	8.44	16.48	16.48
12	St Anthony Hospital	Pendleton, OR	16.29	5.13	12.00	12.00
13	Monadnock Community Hospital	Peterborough, NH	16.18	-2.20	16.18	16.18
14	Coquille Valley Hospital	Coquille, OR	15.94	10.05	15.94	15.94
15	United Hospital District	Blue Earth, MN	15.73	8.21	12.79	12.79
16	Doctor's Memorial Hospital	Bonifay, FL	15.47	15.12	15.47	15.47
17	Richland Hsptl	Richland Center, WI	15.39	14.86	19.63	19.63
18	Grand River Medical Center - Cah	Rifle, CO	15.38	-5.78	-4.74	15.38
19	Southwestern Memorial Hospital	Weatherford, OK	15.17	14.29	15.17	15.17
20	Hayward Area Mem Hsptl	Hayward, WI	15.09	14.17	15.09	15.09
21	Ruby Valley Hospital - Cah	Sheridan, MT	15.05	5.88	15.05	15.05
22	Swisher Memorial Hospital	Tulia, TX	14.97	-6.94	5.56	14.97
23	Ochiltree General Hospital	Perryton, TX	14.56	3.49	4.45	14.56
24	Parkview Lagrange Hospital	Lagrange, IN	14.47	5.56	7.21	7.21
25	Norton County Hospital	Norton, KS	14.18	12.14	13.19	14.18

Shaded cells indicate agreement between operating margins reported in Modern Healthcare and other definitions.

Appendix 1: Lines from Worksheet G-3, Statement of Revenue and Expenses CMS Form 2552-96

1	Total patient revenues (from Wkst. G-2, Part I, column 3, line 25)
2	Less contractual allowances and discounts on patients' accounts
3	Net patient revenues (line 1 minus line 2)
4	Less total operating expenses (from Wkst. G-2, Part II, line 40)
5	Net income from service to patients (line 3 minus line 4)
6	Contributions, donations, bequests, etc
7	Income from investments
8	Revenues from telephone and telegraph service
9	Revenue from television and radio service
10	Purchase discounts
11	Rebates and refunds of expenses
12	Parking lot receipts
13	Revenue from laundry and linen service
14	Revenue from meals sold to employees and guests
15	Revenue from rental of living quarters
16	Revenue from sale of medical and surgical supplies to other than patients
17	Revenue from sale of drugs to other than patients
18	Revenue from sale of medical records and abstracts
19	Tuition (fees, sale of textbooks, uniforms, etc.)
20	Revenue from gifts, flowers, coffee shops, and canteen
21	Rental of vending machines
22	Rental of hospital space
23	Governmental appropriations
24	Other (specify)
25	Total other income (sum of lines 6-24)
26	Total (line 5 plus line 25)
27	Other expenses (specify)
28	
29	
30	Total other expenses (sum of lines 27-29)
31	Net income (or loss) for the period (line 26 minus line 30)