
Public Dissemination of Provider Performance Comparisons

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Recent health care cost control efforts in the U.S. have focused on the introduction of competition into the health care system. This has led to the development of managed care plans that compete for patients based on price, quality, and scope of services. The assumption underlying any competitive system is that patients will select providers at least in part, based on price and quality. In order for competition to be effective, sufficient information about the cost and quality of different providers must be available to patients (consumers) for them to make informed and effective choices. Thus, as managed care has expanded, the importance of information about provider performance has increased. As a result, many states have established health data agencies that are responsible for the public dissemination of information on provider performance.

Disseminating Provider Performance Comparisons

To date, the focus of the information disseminated by health data agencies has been on inpatient care. In most states hospitals are required to submit a coded discharge abstract for every inpatient to the state data agency. The comparative information produced by the health data agencies is often referred to as “provider report cards” because, in essence, the reports grade providers on their performance. The provider report cards usually include comparative information on length of stay (LOS), charges, mortality, and sometimes on complication rates. In order for the

comparisons to be meaningful, they need to be adjusted for differences in severity of illness and risk of mortality. As a result, the state data agencies have needed to select a system for measuring severity of illness and risk of mortality before provider report cards could be produced.

Measuring Severity of Illness and Risk of Mortality

The most prevalent system for measuring severity of illness and risk of mortality used by state data agencies is the All Patient Refined DRGs (APR-DRGs), which are in use in more than 20 states. APR-DRGs refine the basic concept of Diagnosis Related Groups (DRGs), which are used for payment in the U.S. Medicare systems, by adding two sets of four subgroups. One set of subgroups addresses patient differences relating to severity of illness and the second set addresses risk of mortality. In APR-DRGs, severity of illness is defined as the extent of organ system loss of function or physiologic decompensation, while risk of mortality is the likelihood of dying. Since severity of illness and risk of mortality are distinct patient attributes, separate subgroups are assigned to a patient for severity of illness and risk of mortality.

The four severity of illness subgroups and the four risk of mortality subgroups represent minor, moderate, major or extreme severity of illness or risk of mortality. The assignment of a patient to one of these four subgroups takes into consid-

eration not only the specific secondary diagnoses, but also the interaction between secondary diagnoses, age, principal diagnosis, and certain procedures.

In the APR-DRGs, the assessment of the severity of illness or risk of mortality of a patient is specific to the patient's underlying problem. In other words, the determination of the severity of illness and risk of mortality is disease specific. The most important component of determining patient severity of illness or risk of mortality is the recognition of the impact of interactions among secondary diagnoses. In APR-DRGs, high severity of illness and risk of mortality are primarily determined by the interaction of multiple diseases. Patients with multiple diseases involving multiple organ systems constitute the patients with a more extensive disease process who are difficult to treat and who have poor outcomes.

As an example of the impact of severity of illness and risk of mortality on resource use and outcomes, the average LOS, charges, and mortality for the intracranial hemorrhage APR-DRG is shown in Table 1. Across the severity of illness and risk of mortality subclasses for intracranial hemorrhage, there is a 2.53 fold difference in average LOS, a 3.74 fold difference in average charge, and a 9.03 fold difference in mortality.

Subclass	AVG LOS	AVG Charge	Percent Died
Minor	4.78	9,443	6.98
Moderate	5.76	11,864	15.61
Major	6.97	17,770	29.94
Extreme	12.10	35,289	76.63

Table 1: Intracranial hemorrhage patients by APR-DRG severity of illness and risk of mortality subclass

Provider Report Cards

An example of a provider report card is contained in Figure 1. This type of report card is annually produced by the state of Florida. The format of the provider report card is similar to the format used by consumer magazines that rate consumer products. The Florida provider report cards are produced separately for individual hospital product lines. The report card in Figure 1 is for cardiac surgery. Florida uses APR-DRGs to adjust for differences in severity of illness and risk of mortality. The squares indicate poor performance and the triangles indicate good performance. In the Florida provider report cards, good performance indicates that the difference between actual performance of a hospital and the severity adjusted or risk of mortality adjusted expected performance based on state or local norms, is positive and is statistically significant. It also indicates that the hospital's positive performance rank it in the top 15 percent of hospitals in terms of the magnitude of difference between expected and actual performance. Conversely, poor performance indicates that the difference between actual performance of a hospital and the severity adjusted or risk of mortality adjusted expected performance based on state or local norms is negative and is statistically significant. It also indicates that the hospital's negative performance

Hosp	Cases	Chg	LOS	Mort
A	310	■	■	○
B	182	○	○	--
C	212	■	■	▲
D	301	▲	▲	▲
E	290	○	○	■

Figure 1: Florida hospital report card for cardiac surgery

ranks it in the bottom 15 percent of hospitals in terms of the magnitude of difference between expected and actual performance. A circle indicates that the performance difference was statistically significant but the hospital did not rank in the top or bottom 15 percent of hospitals. A dash means that the performance difference was not statistically significant.

The provider report cards were widely distributed and highly publicized in Florida. There were many newspaper articles reviewing the results. It was not uncommon to see the results of the provider report cards published by providers in radio or newspaper advertisements or on billboards. The advertisements would typically encourage patients to seek care at the hospital because, based on the provider report cards, it had the lowest mortality rate or was the most cost effective hospital in the area.

Preparing for Provider Report Cards

Provider report cards place increased demands on the quality of medical records data and information systems within hospitals. The severity of illness and risk of mortality adjustments require a thorough reporting of a patient's diagnoses. In particular, the presence of specific combinations of secondary diagnoses is a key factor in a patient being assigned to the higher severity of illness or risk of mortality subclasses. While DRGs have been used in the U.S. for payment for more than 15 years, the DRGs used for payment are not nearly as sensitive to the completeness and accuracy of the diagnostic information as the severity of illness and risk of mortality adjustments. Thus, in states where provider report cards are published, hospitals have needed to implement processes to ensure that incomplete or undercoded

medical records data did not negatively impact the evaluation of their institution on the provider report cards.

Hospitals also need to be proactive in the evaluation of their own data. It is essential that individual hospitals not be surprised when the results of a provider report card are published. Hospitals need to anticipate their performance on the report cards using their own internal information systems. This permits the hospital to have a well-planned response to any negative results, and to develop improvement programs to correct any identified problem areas.

In general, states that publish provider report cards make the APR-DRG severity of illness and risk of mortality adjusted state norms available to individual hospitals. In addition, national and regional APR-DRG severity of illness and risk of mortality norms are commercially available. These APR-DRG norms can be integrated into a hospital's internal information system to estimate the hospital's performance on future public provider report cards.

Table 2 contains an example of the type of internal report that is essential for anticipating and responding to public provider report cards. This report examines the average LOS of patients having a percutaneous cardiovascular procedure such as a PTCA. In this report, the hospital as a whole, and each physician who treats at least 20 patients, are compared to the state norm. The total line in the report is for the hospital as a whole and shows that there were 270 percutaneous cardiovascular procedures performed with an average length of stay of 5.21 days. The expected LOS (exp LOS) is the average LOS that would be expected adjusting for severity of illness and using state APR-DRG LOS norms. Thus, the average LOS

Physician	Count	Avg LOS	Exp LOS	LOS Diff	Stat Signif
D56832	36	5.04	4.47	0.57	
E62010	30	6.41	4.13	2.28	P(<0.001)
E44334	24	4.76	3.84	0.92	
D56643	24	5.79	3.77	2.02	P(<0.05)
E57697	23	5.08	4.67	0.41	
D50147	22	3.17	5.13	-1.96	P(<0.001)
E59541	20	2.92	4.84	-1.93	P(<0.001)
Total	270	5.21	4.19	1.02	P(<0.05)

Table 2: Physician profile for average LOS with comparison to state norms

for percutaneous cardiovascular procedures is 1.02 days longer than would be expected, and this difference is statistically significant as indicated by a P-value of 0.05 (i.e., there is less than a 5 percent chance that the difference between the average and expected LOS was due to chance).

The report also shows that two of the physicians (D50147 and E59541) have an average LOS of approximately 3 days, even though their patients have a relatively high severity of illness as indicated by an expected LOS of approximately 5 days. In a similar report, the risk-adjusted mortality for these two physicians was found to be consistent with state norms. The practice pattern of these two physicians can be the basis of the development of a clinical path-

way for percutaneous cardiovascular procedures that has a target LOS of three days. A successful implementation of such a clinical pathway would result in the hospital having an average LOS on the state report card that is one day lower than expected instead of one day higher than expected.

Although the report in Table 2 is quite basic, it contains all the essential information necessary to anticipate and prepare for the results of provider report cards.

Communicating Results to Physicians

The development of an effective response to any negative results from a provider report card requires the active participation of the medical staff. A key factor in achieving the necessary participation is the presentation of data in a form that can be readily understood by the medical staff. The severity of illness adjustment and test of significance in Table 2 can provide the medical staff with confidence that the results are reliable. In addition, graphic displays of the data can be useful for illustrating the magnitude and nature of performance differences. A bub-

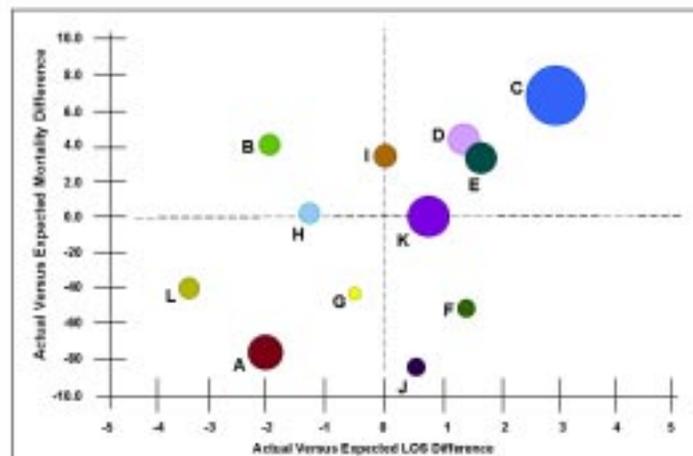


Figure 2: Bubble graph for physicians treating CVA patients

ble graph can be particularly useful for this purpose.

Figure 2 contains a bubble graph that displays the mortality and LOS results for the 12 physicians who annually admit 20 or more patients with a CVA. The size of the bubble is proportional to the number of patients treated by each physician. The horizontal axis plots the difference between the actual and expected average LOS; and the vertical axis plots the difference between actual and expected mortality. The expected LOS is severity adjusted and the expected mortality is risk of mortality adjusted using APR-DRGs. Physician C, who treats the greatest number of CVA patients, has an average LOS 3 days higher than expected, and a mortality rate 7 percentage points higher than expected. In contrast, physicians A and L have an average LOS and mortality that are both substantially lower than expected. Although Physician B has a lower than expected LOS, his/her mortality rate is higher than expected. On a single page, a bubble graph clearly illustrates the extent of the differences in resource use and outcomes.

Summary

As competition among health care providers has increased in the U.S., there has been a rapid growth in the amount of comparative information on provider performance made available to consumers. This availability requires hospitals to have information systems that have the necessary capabilities to allow them to prepare proactively for the public dissemination of comparative performance data. The information contained in provider report cards can be a valuable tool for hospitals to use for internal management and planning.