

Transition to MS-DRGs:

Issues in Measuring Documentation and Coding Change

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THE MORAN COMPANY

Documentation and Coding Changes

Summary

In the FY 2011 Inpatient Prospective Payment System (IPPS) Proposed Rule, the Centers for Medicare & Medicaid Services (CMS) described its methodology for measuring the documentation and coding changes the agency believed resulted from the shift to Medicare Severity Diagnosis Related Groups (MS-DRGs).

The Moran Company (TMC) was asked to examine CMS' approach and determine if it is an appropriate method to isolate documentation and coding from the other factors that could affect the "Case Mix Index (CMI)"—a measurement of average patient severity.

Based on our review of the methodology, examination of the logic, and our own analyses, our conclusion is that the CMS methodology does not adequately isolate documentation and coding from other factors when calculating changes in CMI. CMS' methodology cannot distinguish among the different causes of a change in average patient severity.

Brief discussion

The CMI is measured by calculating the average weight for cases across all Fee-For-Service (FFS) discharges in a fiscal year. With consistent Diagnosis Related Groups (DRGs), the CMI from different years can be compared to see changes in apparent severity.

CMS developed a methodology to compare two years of data to measure the impact of coding and documentation on CMI due to the implementation of MS-DRGs. CMS' methodology attributes the entire change in CMI to changes in documentation and coding, which, based on our analyses, we believe to be incorrect.

We believe that CMS' methodology does not adequately account for other factors or issues which may lead to changes in CMI from one year to the next. These other factors include historical trends reflecting changes in the beneficiaries' needs and corresponding treatment.

Our analyses included:

1. Examination of trends in CMI over a 10 year period. After converting the data to a common grouping system, we found that there were increases in CMI prior to the implementation of MS-DRGs. This raises questions as to why CMS did not test or attempt to account for this historical trend of increasing CMI for reasons other than documentation and coding in response to the introduction of MS-DRGs.
2. Examination of "Within vs. Across DRGs". DRGs can be collapsed down into what are known as "Base DRGs" which measure underlying conditions, and then can often be split by severity level. CMS' analysis, which we also replicated, found that the change in CMI is due primarily to changes in measured levels of severity within base DRGs and not underlying conditions. However, CMS assumes that this change in measured severity is

solely due to changes in documentation and coding, which we do not believe to be a reasonable assumption given the historic trends. There is no reason why there cannot be increasing severity without changes in underlying conditions. This is not accounted for by CMS in its analysis.

3. Examination of Intensive Care Usage. Over time, there has been an increasing proportion of discharges that include time in intensive care. Intensive care can be a proxy for severity; more use of intensive care implies greater severity, which should lead to greater CMI. However, CMS' methodology is reporting that there has been no increase in severity, which seems contradictory given these results. These results then also raise questions about the adequacy of CMS' methodology.

These different analyses suggest that there may be factors responsible for CMI changes other than just documentation and coding. For these reasons, we believe that CMS' methodology fails to adequately isolate documentation and coding from historical trends and other treatment shifts.

Introduction

In the FY 2011 Inpatient Prospective Payment System (IPPS) Proposed Rule, the Centers for Medicare & Medicaid Services (CMS) described its methodology for measuring documentation and coding changes that occurred with the shift to Medicare Severity Diagnosis Related Groups (MS-DRGs) from CMS Diagnosis Related Groups (CMS DRGs).

The shift from CMS DRGs (also known as DRG Version 24 grouper) to MS-DRGs (also known as DRG Version 25 grouper) provides greater granularity in measuring differences in patient severity. In the shift from Version 24 to Version 25, CMS expanded the number of categorizations of “Complications and Comorbidities” (CC) that could be used to categorize a DRG assignment. In Version 24, there was only one level of CC. However, in Version 25, CMS reworked some of the underlying concepts of what diagnoses would be considered a complication or comorbidity and created two new levels: 1) Complications and Comorbidities (CC), and 2) Major Complications and Comorbidities (MCC) replacing the single old level. The new MS-DRG grouper was intended to provide more granularity in distinguishing between different severity levels. This change meant that the number of DRGs increased by nearly 40% to address the greater sensitivity in the system.

With the implementation of the new DRG system, CMS expected that hospitals would adjust their coding to provide more specificity to best match MS-DRGs. Because the MS-DRG system is designed to better capture changes in patient severity, these coding changes would then lead to an apparent increase in the Case Mix Index (CMI)—a measurement of average patient severity. CMS believed this apparent increase would lead to additional payments not based on any actual change in patient severity. To address this apparent increase, CMS was required to examine hospitals’ actual performance and recoup any over payment due to documentation and coding under Section 7(b)(1)(A) of Pub. L. 110-90. This recoupment was designed only for increases due to documentation and coding, not other reasons for changes in payment.

The Moran Company (TMC) was asked to examine CMS’ approach and determine if it is an appropriate method to isolate documentation and coding from the other factors that could affect the CMI.

Based on our review of the methodology, examination of its analytic logic, and our own analyses, our conclusion is that the CMS methodology does not adequately isolate documentation and coding from other factors when calculating changes in CMI. CMS’ methodology cannot distinguish among the different causes of a change in average patient severity.

To explain these findings, our paper will describe the following:

- CMS’ method of determining case mix change – i.e., measurement of CMI change;
 - Theoretical concerns with this method
 - Other methodological questions

- CMS’ “corroboration” of their methodology – i.e., examination of within versus across base DRGs;
 - Theoretical concerns with this method
- An illustration of historical trends showing increasing severity over time that was not addressed by CMS’ methodology; and
- An alternative proxy, not related to the grouper, that uses the proportion of hospital discharges requiring intensive care to also illustrate increases in severity over time.

CMS’ method of determining case mix change

CMS methodology to measure change in case mix

CMS’ method for determining case mix change due to documentation and coding is based on comparisons of two years of data using two groupers.

The logic can be summarized as follows:

- 1) Using the FY2009 MedPAR data (containing information on Medicare Fee-For-Service Inpatient discharges):
 - a. Assign each discharge to the appropriate DRG according to the logic of FY2009 grouper (Version 26).
 - b. Apply the FY2009 weights.
 - c. Calculate the CMI for the 2009 weights. The CMI is the average weight per discharge.
 - d. Re-assign DRGs to the same data but according to the logic of the FY2007 grouper (Version 24).
 - e. Apply the FY2007 weights.
 - f. Calculate the CMI using the 2007 weights.
 - g. Divide the results from (c) by (f). CMS wrote in the FY2011 IPPS proposed rule that “Because these cases are the same FY 2009 cases grouped using Versions 24 and 26 of the GROUPER, we attribute this increase primarily to two factors: (1) the effect of changes in documentation and coding under the MS-DRG system; and (2) the measurement effect from the calibration of the grouper.”
- 2) Take the 2007 inpatient discharge data and follow the same logic as the 2009 data. Divide the 2009 result from step (g) with the equivalent using the 2007 data. This is CMS’ attempt to account for the measurement effect from the calibration of the grouper.

The remaining value is what CMS is categorizing as documentation and coding change.

We have successfully replicated CMS’ results using the methodology. However, we question whether or not the underlying methodological design and assumptions are correct. We believe there are several potential problems with CMS’ approach.

Issues with CMS Methodology

The first major problem with CMS' approach is that it fails to disaggregate "real case mix change" from documentation and coding change. It is possible that there is a change in patient severity which can be picked up by the more granular MS-DRG system that would not be able to be seen under the less granular CMS DRG system. For example, when a diagnosis is "counted" as a CC or MCC by the MS-DRG system but not by the CMS-DRG system, the appearance of more patients with that diagnosis from one year to the next will affect the CMI for MS-DRGs but not CMS-DRGs. Under the CMS approach, this change in severity would look identical to a documentation and coding change, when in reality there is an underlying change in severity. The CMS methodology fails to take this possibility into account.

The second major problem is that CMS' methodology establishes a comparison to a "base year". CMS' methodology assumes that Version 26 and Version 24 should give the same CMI, given the same data. But, CMI is based on both the distribution of cases, as well as the weights used. Conducting comparisons with different years may give different results due to the differences in grouper logic and relative weights. In both the FY2010 and FY2011 IPPS rules, CMS used the Version 24 grouper and its associated weights to calculate the base year for comparisons. This raises theoretical questions, including:

- 1) Why use grouper Version 24 and its associated weights and not another year's grouper and its associated weights?
- 2) Since the CMI is dependent upon what grouper, and its associated weights, are chosen, then another year could produce different documentation and coding changes. Has CMS examined other groupers and what did it find from its own analyses?

We found in our trend analysis, which is described later, that using different groupers with their associated weights as the base year can lead to different CMI results, which in turn could lead to different estimates of the documentation and coding effects. This finding raises the question of the appropriateness of choosing one base year over another.

CMS' attempt to "corroborate" their methodology – examination of within versus across base DRGs

CMS describes their attempt to "corroborate" (CMS' term) their estimates of documentation and coding by conducting additional analysis to examine within versus across base DRGs changes. A "base DRG" is the collection of DRGs with a particular underlying condition, which can be divided up based on the presence of CCs and MCCs. Like CMS, we found that the change in CMI was apparently due to changes within base DRGs, implying that the change in CMI was due to changes in severity levels as measured by CCs and MCCs, as opposed to any underlying change in conditions for which Medicare beneficiaries are being treated.

Potential issues with this analysis

While CMS assumes that this analysis shows a lack of real change to CMI, it is also theoretically possible that:

- 1) The underlying conditions that people are being treated for are unchanged; and
- 2) The Medicare beneficiaries being treated do have a real increase in CCs and MCCs relative to beneficiaries treated in previous years.

A real increase in CCs and MCCs could cause the exact same results that CMS found, as opposed to any change to hospital documentation and coding. However, CMS does not propose an approach to take the potential for real increases in CCs and MCCs into account when trying to disentangle the different components of changes in CMI. Through other analyses, we found increases in diagnosis codes that are considered CCs and MCCs under the MS-DRG system. We found this was also true during the time period prior to the implementation of MS-DRGs. If this trend is indeed a continuing one, then the result of the CMS methodology would be to overstate the impact of documentation and coding on CMI.

In order to examine CMS' methodology, we performed other analyses to examine the issue of CMI changes over time and to better understand the issues surrounding severity.

Historical trend analysis

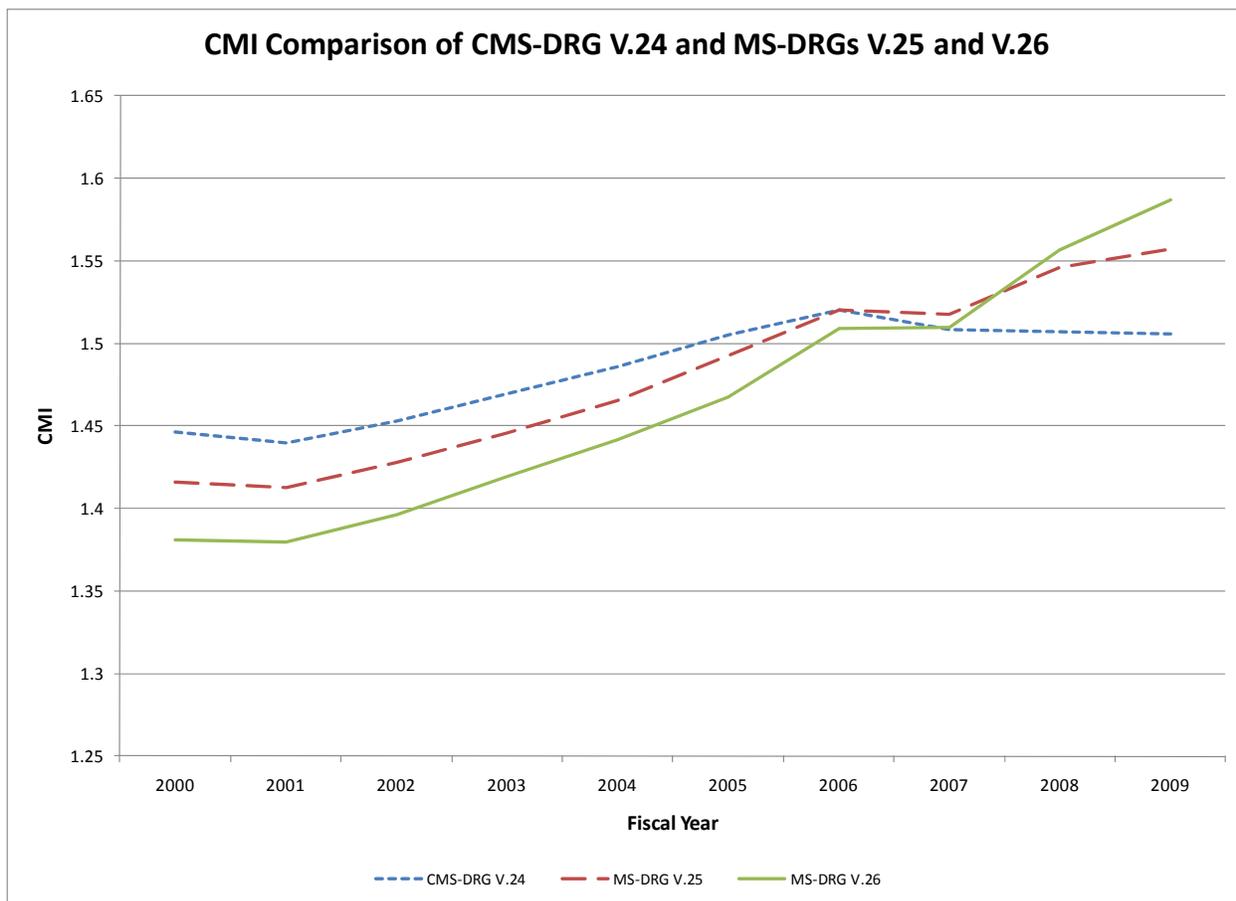
Using ten years of data on Medicare Fee-For-Service short-term acute hospital discharges, we examined trends in the CMI.

For all of these data, we processed the discharge information through three different versions of the 3M Grouper to assign each discharge to a DRG. We processed each of the ten years of data using each of the three grouper versions, so that in each analysis, all years of data were assigned to DRGs using the same DRG system and logic. We then applied the weights that CMS had published for the year that each grouper system applied.

With this information, we can examine trends in average CMI when using both a single grouper and a single set of weights but 10 different years of data – 2000 through 2009. We conducted this analysis using the following three groupers:

- 1) Version 24, the last year of CMS-DRGs (applicable in FY2007);
- 2) Version 25, the first year of MS-DRGs (FY2008); and
- 3) Version 26, the second year of MS-DRGs (FY2009).

The following graph shows our results:



There are two important observations from the results displayed on the above graph.

Point 1: Gradual upward trend in CMI over time

We found a gradual upward trend in CMI exists over time. This implies that cases over time were getting more severe, and this happened well before the implementation of MS-DRGs. In particular, this upward trend in CMI appears for cases that occurred even before MS-DRGs had been developed.

In the early years of data in our analyses, providers had no knowledge of what the MS-DRG system would be in the future, and so could not optimize the coding for that system. Yet, we see increasing CMIs when the MS-DRG grouping logic is applied to the earlier years of data. This implies that there was an underlying trend of increased severity even before MS-DRGs were implemented that is evident when the more granular MS-DRG grouper is used on multiple years of data.

We see no reason to believe that such a trend would not continue after the implementation of MS-DRGs. However, CMS' methodology implicitly assumes that all of the CMI change in 2008 and 2009 is due to documentation and coding, without accounting for the prior trend in CMI.

Point 2: Amount of change depends on grouper

All of the lines presented in the graph above are based on the same data, just grouped with different groupers and the accompanying weights for that grouper. As can be seen on the graph, the results are not the same from one grouper to another, which implies that CMI is dependent upon the sensitivity of the grouper system and the associated weights. This then also implies that under CMS' existing methodology, a different documentation and coding adjustment could be calculated had there been a different grouper used, or a different base year used (as discussed earlier). As a result, we question CMS' decision to fix its analysis to a particular year.

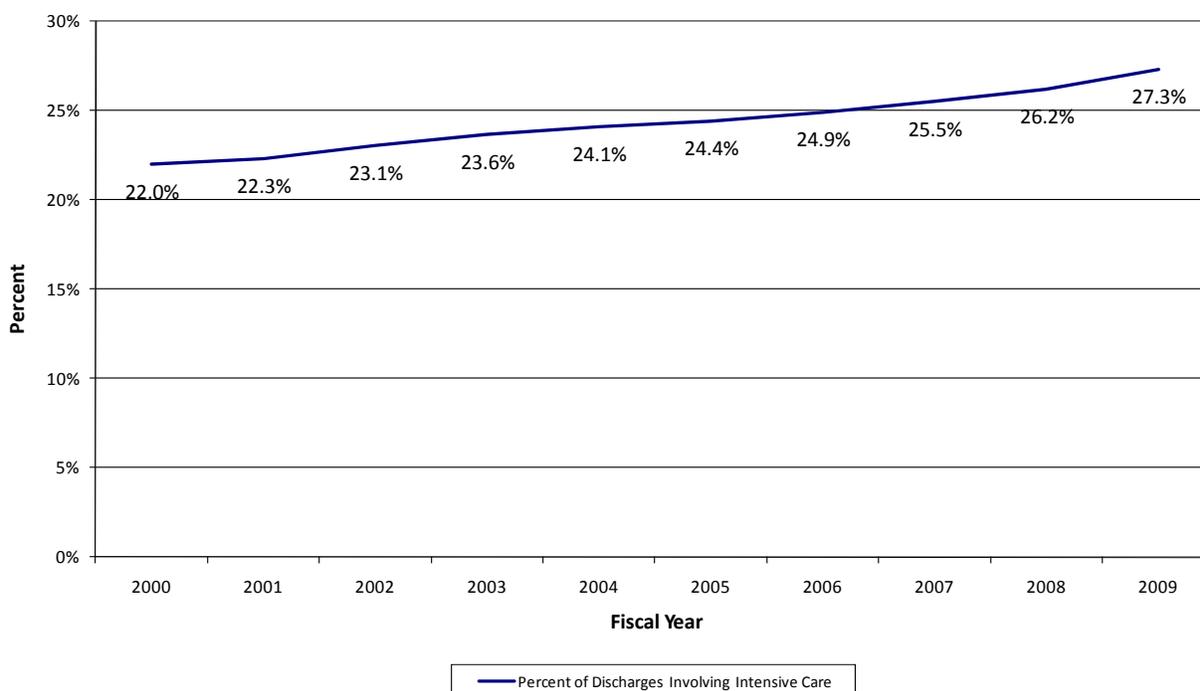
Intensive care analysis: Corroborating Evidence of Increasing Patient Severity

In our previous analysis, we showed that there was a trend of increasing severity over time. In that analysis, increasing severity is being measured indirectly through the presence of CCs and MCCs. However, another possible way to examine severity levels is through the services used during the hospital stay and reported on the claim.

One proxy for increasing severity is the proportion of hospital discharges requiring intensive care. Intensive care use is a useful indicator because it does not affect either DRG assignment or hospital payment.

As shown in the graph that follows, looking at ten years of data, we found increasing rates of intensive care usage. This is consistent with our other findings that patient severity is increasing.

Percent of Discharges Involving Intensive Care, Fiscal Years 2000-2009



The result presented in the above graph is in direct contradiction with CMS' apparent belief that there were no real increases in severity following the implementation of MS-DRGs. The increase in the use of intensive care is another piece of evidence that there may have been some real changes in resource utilization over time, presenting another possible suggestion of severity increases.

Therefore, we continue to be concerned that CMS' methodology does not adequately distinguish between coding and documentation changes and many of the other potential causes of increased severity in the system.

Conclusion

In examining documentation and coding changes, CMS was trying to isolate a single element of a very complex system, with many different factors and elements. Our research suggests that CMS' analyses may be incomplete and therefore may be erroneous.

The main flaws of the CMS methodology, as illustrated by some of our research, are that it fails to appropriately account for:

- Historical trends in increasing severity, which may be continuing; and
- Actual changes in severity that cannot be distinguished from documentation and coding changes when using the agency's methodology.