

Case Mix Index

ANALYZING CASE MIX INDEX AND THE IMPACT ON CDI PROGRAMS

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Case Mix Index (CMI) is the average relative weight for all cases reported in a Base MS-DRG. MS-DRGs at lower severity levels have lower relative weights and MS-DRGs at higher severity levels have higher relative weights. Therefore, CMI is a barometer that summarizes a patient population and is a predictor of illness severity and expected reimbursement.

$$\text{CMI} = \text{Sum of all DRG RWs divided by the number of cases/month/year}$$

The CMI value is used in determining the allocation of resources necessary to provide care for and/or treat the patients in an identified group. The CMI of a facility reflects the diversity and clinical complexity of the patients and the associated resources utilized in the care of those patients.

The Case Mix Index has historically been used to calculate adjusted average cost per patient (or day) for a given hospital relative to the adjusted average cost for other hospitals by dividing the average cost per patient (or day) by the hospital's calculated CMI. The adjusted average cost per patient would reflect the

charges reported for the types of cases treated in that year. For example, if Hospital A has an average cost per patient of \$1,000 and a CMI of 0.80 for a given year, their adjusted cost per patient is $\$1,000 / 0.80 = \$1,250$. Likewise, if Hospital B has an average cost per patient of \$1,500 and a CMI of 1.25, their adjusted cost per patient is $\$1,500 / 1.25 = \$1,200$. Therefore, if a hospital has a CMI greater than 1.00, their adjusted cost per patient or per day will be lowered and, conversely, if a hospital has a CMI less than 1.00, their adjusted cost will be higher.

“ The CMI of a facility reflects the diversity and clinical complexity of the patients and the associated resources utilized in the care of those patients.”

Fran Jurcak
senior director
Huron Healthcare

Factors Impacting CMI	
1 Accuracy and specificity of documentation	2 Accuracy of coding
3 Volumes: <ul style="list-style-type: none"> Medical versus surgical High-weighted DRG's such as tracheostomies, major surgeries 	4 Service lines: <ul style="list-style-type: none"> Transplantation of organs Cardiothoracic surgeries Neurosurgeries
5 Annual updates to the DRG relative weights	6 Coding guideline changes

Source: Huron Healthcare

These factors directly impact the ability to adopt CMI as a performance metric of a Clinical Documentation Improvement (CDI) program. While CMI has traditionally been a gut check to measure CDI program success, annual changes in relative weights over the past three years for the top medical DRGs have negatively impacted most of these DRGs, preventing accurate comparison of CMI from year to year. Fluctuations in patient admissions and surgical staff/services also impact the ability to utilize the CMI as an accurate measurement of CDI program influence on overall facility finances. A high volume of short stays can negatively impact CMI as these short stay cases are often reimbursed under the lowest relative weight.

CASE MIX INDEX

ANALYZING CMI

It is important to remove as many of the variables as possible when analyzing CMI. Thus, separating volumes of medical and surgical DRGs is necessary to create a base level of measurement. Separating the high-weighted DRGs, such as tracheostomies and ventilators, and monitoring the volumes of high-weighted surgical procedures will create a base from which to measure the impact from improved documentation.

Example of Recommended Data Points for CMI Review and Analysis

	Sept. 14	Oct. 14	Nov. 14	Dec. 14	Jan. 15	Feb. 15	Average
Total Discharges	310	327	290	329	316	288	310
Overall CMI	1.532	1.587	1.666	1.455	1.537	1.532	1.552
Medical Discharges	221	212	195	253	231	217	222
Medical CMI	1.096	1.146	1.17	1.138	1.173	1.175	1.150
Surgical Discharges	89	115	95	76	85	71	89
Surgical CMI	2.614	2.400	2.685	2.509	2.525	2.625	2.560
Trachs*	0	0	3	0	2	1	1
Vents**	3	0	3	2	4	3	2.5

* Number of tracheostomies (DRGs 3, 4, & 11 – Surgical DRGs)

Source: Huron Healthcare

**Number of ventilators (DRGs 207, 208 & 870 – Medical DRGs)

(Note: In this example, CDI staff was in training through month of September.)

Analysis by Month

This chart demonstrates how to separate the data to better track trends and issues that are measured by the CMI, including the potential impact of a CDI program on the quality of documentation.

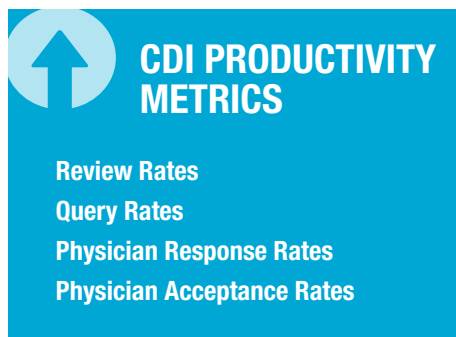
	Medical	Surgical	Analysis/Comments
Sept '14	Average number of medical discharges with lower than average medical relative weights	Average number of surgeries with slightly higher than average surgical relative weights	CDI program needs to refocus efforts on medical discharges High acuity of surgical cases
Oct '14	Increased CMI with lower than average number of discharges	Much higher than average surgical discharges with lower than average relative weights	Specificity of documentation resulted in increased capture of medical CMI Volume of surgeries, while lower-weighted, still impacted the overall CMI
Nov '14	Lower than average number of discharges with significant increase in medical CMI Higher than average number of vents	Surgical volumes slightly above average with higher relative weights Higher than average number of trachs	Trachs/vents likely impacted overall CMI Higher acuity of patient population reflected in CMI CDI program likely significant impact to overall CMI
Dec '14	Higher than average medical discharges with below average CMI	Lower than average surgical discharges with average CMI	Holiday month, review for shorter LOS (typically means lower relative weights for medical and surgical) Review CDI staffing and metrics of coverage
Jan '15	Higher than average medical discharges with higher CMI Higher than average vents could impact Medical CMI	Average surgical discharges with average relative weights	Higher acuity of medical discharges, could be impacted by increased vents
Feb '15	Lower than average medical discharges Higher than average vents Highest medical CMI	Lower than average surgical discharges Above average CMI	Higher acuity of patient population reflected through higher relative weights for medical and surgical Would review CDI program metrics for validation of CMI

Source: Huron Healthcare

This analysis demonstrates that changes in Case Mix Index are often multifactorial and require a further deep dive into key data to understand the impact of documentation improvement programs. The importance of accurate, complete, and consistent documentation is imperative to ensure an accurate CMI. Yet, it is also important to review for other influences that can positively and negatively impact the CMI regardless of the quality of documentation. CMI in itself is not an accurate measurement of CDI program success but should be utilized in conjunction with other metrics to evaluate program growth and sustainability.

OTHER METRICS TO CONSIDER

CDI productivity metrics reflect the impact of CDI staff work in supporting accurate and compliant documentation that has the potential to increase the relative weight of the final coded DRG. Metrics that should be monitored include: review rates, query rates, physician response rates, and physician acceptance rates. Achieving industry benchmarks for these metrics should be reflected in an improved CMI.



CDI PRODUCTIVITY METRICS

- Review Rates
- Query Rates
- Physician Response Rates
- Physician Acceptance Rates

Additionally, the average length of stay should also be monitored in conjunction with the CMI to demonstrate that more acutely ill patients with higher weighted DRGs are admitted for a longer period of time than those patients who are less acutely ill. Monitoring medical versus surgical length of stay should also occur to align the data with the types of patients and anticipated outcomes.

TRENDING DATA OVER TIME

Adjustment to the relative weights of each DRG occurs annually on October 1, making it difficult to accurately monitor trends over time. They are revised to accommodate changes in operating and capital expenses in acute care hospitals to better reflect the severity of illness and average costs associated with monitoring and treating medical conditions. Comparing current CMI to a previous year's CMI provides no information regarding the direct impact of the CDI program. Many of the common medical DRGs have seen significant decline of their relative weight over the past few years. This indicates that overall medical CMI will be decreased last year to this year regardless of volumes. As surgical volumes shift from the inpatient to the outpatient environment, overall surgical CMI should increase simply due to the increased relative weights of those surgical DRGs that require inpatient status to perform.

The use of overall payer CMI as the sole measurement of patient acuity or CDI program success is shortsighted and inappropriate. It is important to take a deeper dive into the data and separate medical and surgical volumes, average length of stay, and CMI.

SUMMARY

Although there are many factors that can influence a healthcare facility's Case Mix Index, a well-established clinical documentation improvement program is necessary to ensure and provide accurate, consistent and compliant documentation to reflect an accurate CMI. It is also important to review additional CDI metrics to optimize the impact of the CDI program and make good decisions regarding budgets, staffing, and program expectations and growth. Leading practice workflows that drive accurate documentation and data integrity, and dashboards that provide validated metrics support decisions that sustain successful CDI programs.

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Gerri Birg
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Gerri Birg is the National Lead for Huron's CDI solution practice. Over the last 12 years, she has led large-scale CDI implementation efforts working with a variety of clients, including children's hospitals, large academic medical centers, and multi-hospital systems. Her extensive background in healthcare operations management encompasses utilizing outcome data to coach, guide, and train staff in providing strategic direction, benchmarking opportunities, and appropriate outcome management techniques as it integrates into continuous quality improvement.

ABOUT HURON HEALTHCARE

Huron Healthcare is the premier provider of performance improvement and clinical transformation solutions for hospitals and health systems. In 2015, Huron acquired Studer Group, the market leader in driving healthcare cultural transformation. The combination of Huron and Studer Group is focused on improving healthcare providers' clinical, operational, and financial outcomes. By partnering with clients, Huron delivers solutions that improve quality, increase revenue, reduce expenses, and enhance physician, patient, and employee satisfaction across the healthcare enterprise. Clients include leading national and regional integrated healthcare systems, academic medical centers, community hospitals, and physician practices. *Modern Healthcare* ranked Huron Healthcare third on its 2014 list of the largest healthcare management consulting firms. Learn more at www.huronconsultinggroup.com/healthcare or follow us on Twitter: @Huron.

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