Risk-based CDI: A holistic approach to record review

POSITION PAPER

Summary: This paper is the first in a series on risk-based clinical documentation integrity (CDI). As the use of risk adjustment in healthcare expands, so too does the reach of CDI professionals in capturing the patient's story, including level of risk related to demographic factors, comorbidities, and health history. This series will highlight the major risk models, explore the ways in which CDI professionals can impact risk-adjusted methodologies, and describe how these methodologies are transforming the nature of the CDI profession and the day-to-day work of CDI professionals.

FEATURES

What is risk-based CDI and why is it important?

Broadly, risk adjustment is a statistical process that works to identify and adjust for variation in outcomes arising from differences in risk factors across a population. Anyone who has purchased auto insurance for a teenage son has experienced risk adjustment's impact. Young men are higher-risk drivers than young women, on average. Correspondingly, men under the age of 20 pay 14% higher premiums. This concept applies to a variety of other scenarios as well, including life insurance premiums, golf handicaps, and of course healthcare.

In healthcare, risk adjustment is a methodology that equates an individual's health status to an objective measurement of the individual's risk. This is often referred to as a "risk score." Risk scores are used to predict outcomes such as mortality, complication rates, and especially healthcare costs. In an effort to control those costs and improve quality outcomes, risk adjustment has become a focus of the Centers for Medicare and Medicaid Services (CMS), private insurance companies, and healthcare providers (i.e., healthcare organizations and individual providers). Risk adjustment accounts for differences between populations such as age, sex, and diagnoses. The use of a risk adjustment tool permits better cost and outcome comparisons of specific populations or organizations.

Risk-adjusted reimbursement is growing year-over-year, taking over a rising share of traditional fee-for-service reimbursements. More than 78% of CDI departments review for present on admission (POA)/hospital-acquired conditions, 67% review for Patient Safety Indicators, and 55% conduct retrospective mortality reviews (Association of Clinical Documentation Integrity Specialists, 2020). A January 2021 report by the Kaiser Family Foundation found that in 2020, nearly four in 10 (39%) Medicare beneficiaries—24.1 million people out of 62 million Medicare beneficiaries overall—were enrolled in Medicare Advantage plans; this rate has steadily increased since the early 2000s. Between 2019 and 2020, total Medicare Advantage enrollment grew by about 2.1 million beneficiaries, or 9%—nearly the same growth rate as the prior year (Freed et al., 2021). The Congressional Budget Office projects that the share of Medicare beneficiaries enrolled in Medicare

Advantage plans will rise to about 51% by 2030. Medicare Advantage insurance plans rely on risk adjustment when determining the costs associated with providing healthcare services.

Risk adjustment provides an estimate of how a hospital or individual provider would perform when caring for an average case mix of patients versus its own actual case mix. Different organizations can then be usefully compared to each other, extracting helpful trends from individual provider data. Within risk adjustment, a ratio of observed to expected (O/E) outcomes predicts organizational or individual provider performance.

> **Observed** events are the total sum of events occurring in an eligible population. For the purposes of risk adjustment, an event is the occurrence of a specific complication, such as a Patient Safety Indicator, death, or readmission. The observed rate is calculated by dividing the observed events by the eligible population. The eligible population is the total number of qualifying hospital discharges (or patients), which for example can include patients in a specific demographic group or MS-DRG, or patients who have a specific condition or underwent a specific procedure.

> **Expected** events identify the total sum of events expected to occur if the hospital or individual provider demonstrates average performance comparable to the reference population. The expected rate is calculated by dividing the expected events by the eligible population. The calculation incorporates the complexity of the patient population, including factors such as age, gender, MS-DRG, and comorbidities (Agency for Healthcare Research and Quality, 2016).

If an organization's observed rate is higher then the expected rate, it would have an O/E ratio greater than 1 (i.e., 1.1, 1.24, etc.). This measure indicates the organization's performance is worse than the reference population with an equivalent patient mix. A score of less than 1 (i.e., 0.92, 0.88, etc.), indicates the hospital is performing better than expected when compared to the reference population.

Many healthcare delivery goals use risk adjustment concepts as their principal metric, such as appropriation and disbursement of public and healthcare funding, reimbursement for healthcare services, and the quality of care provided. Risk adjustment can be used to evaluate and compare health plans, or to adjust capitated payment rates to health plans based on the health status of the population covered. Many organizations and individual providers participate in risk-based alternative payment models in which they receive additional payments when costs are controlled or lose revenue if costs are higher than expected. These latter models are known as two-way, or shared risk models.

While healthcare makes use of many risk adjustment methodologies (see below), the common denominators are patient demographics and ICD-10-CM diagnosis codes translated from the provider's documentation of a patient's conditions.

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Risk adjustment depends on provider documentation. This uniquely qualifies and positions CDI professionals to make an impact.

Thorough and specific documentation allowing accurate capture of patient complexity translates to accurate capture of ICD-10-CM diagnosis codes. In turn, accurate coded data allows organizations to properly allocate resources, create good value-based care delivery, and work to improve public health. A complete and accurate health record is critical to apply value to healthcare delivery (Teisberg et al., 2020). CDI record review should take a comprehensive approach to documentation that accommodates the full spectrum of downstream uses of administrative data, including finance/reimbursement models, outcome measures, care protocol evaluation and development, and public health initiatives.

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Major risk models

There are many risk-adjusted models used in the healthcare industry. Explaining even one in full is beyond the scope of this paper. Instead, this paper lists several of the more widely used models, with links for further investigation. These models include many with measures risk adjusted according to various factors, such as patient acuity, inclusion/exclusion criteria, comorbid conditions, overall patient population acuity, and demographics.

CMS:

CMS manages multiple quality and patient outcome-related benchmarking programs. These are listed below.

➤ Hospital Readmissions Reduction Program (HRRP): *https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/Readmissions-Reduction-Program*

➤ Hospital-acquired conditions (HAC): *https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/HospitalAcqCond/Hospital-Acquired_Conditions*

➤ Hospital Compare (includes multiple metrics): *https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HospitalQualityInits/HospitalCompare*

➤ AHRQ Patient Safety Indicators (PSI): *https://www.qualityindicators.ahrq.gov/modules/psi_resources.aspx#techspecs*

➤ Medicaid National Quality Forum (NQF): *https://www.qualityforum.org/Medicaid_Quality_Measures.aspx*

➤ Medicare Advantage star rating system: *https://www.medicareinteractive.org/get-answers/medicare-health-coverage-options/changing-medicare-coverage/how-to-compare-plans-using-the-medicare-star-rating-system*

➤ Core measures: *https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/QualityMeasures/Core-Measures*

➤ Electronic clinical quality measures: *https://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/ClinicalQualityMeasures*

➤ Hospital Inpatient Quality Reporting Program (IQR): *https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HospitalQualityInits/HospitalRHQDAPU*

➤ Merit-based Incentive Payment System (MIPS): *https://qpp.cms.gov/mips/overview*

➤ Medicare Access and CHIP Reauthorization Act of 2015 (MACRA): *https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Value-Based-Programs/MACRA-MIPS-and-APMs/MACRA-MIPS-and-APMs*

➤ Value-based purchasing: *https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Value-Based-Programs/HVBP/Hospital-Value-Based-Purchasing* •

➤ Risk adjustment payment models:

- Medicare Advantage: *https://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/MedicareAdvantage*

- Affordable Care Act: *https://www.cms.gov/Outreach-and-Education/American-Indian-Alaska-Native/AIAN/Affordable_Care_Act*

- Medicaid Risk Adjustment for managed Medicaid plans

Data lag: Six months to 1 year

Elixhauser:

The Elixhauser Comorbidity Software Refined for ICD-10-CM assigns data elements that identify different preexisting conditions based on secondary diagnoses. It is based on ICD-10-CM codes with assigned POA indicators and is used to predict patient mortality. As part of the software's continual updates, the number of comorbidity measures increased from 29 to 38 in v2021.1 (these are listed in Table 1 here: *https://www.hcup-us.ahrq.gov/toolssoftware/comorbidityicd10/Com-ICD10CM-User-Guide-v2021-1.pdf*). Three measures (cerebrovascular disease, leukemia, other thyroid disorders) were added, five measures were modified to create 12 more specific measures, and one measure (fluid and electrolyte disorders) was discontinued. Some of the comorbidity measures use POA indicators to determine whether the condition indicated by the secondary diagnosis arose prior to or during the hospital stay. The remaining comorbidity measures do not use POA indicators because the condition can be assumed to be preexisting and not the result of hospital care (e.g., diabetes, AIDS). Elixhauser is used in publicly reported risk-adjusted hospital rankings, including U.S. News Best Hospitals' expected mortality calculations. In a January 2021 poll on The ACDIS Podcast, 18% of respondents described comorbidity capture in Elixhauser as a significant focus of their chart reviews, and 24% described it as a secondary focus.

Data lag: Updated annually, coinciding with FY updates to ICD-10-CM
https://www.hcup-us.ahrq.gov/toolssoftware/comorbidityicd10/comorbidity_icd10.jsp#info

Advisory Board:

Offers a range of services with membership, including forecasting and benchmarking tools.

Data lag: None (real time/daily data feed)
https://www.advisory.com/

Definitive:

Definitive is a subscription service (approximately $20,000/year) that allows users to view their hospital data and compare to others, including DRG, CMI, CC/MCC comparisons, and more. Baseline purchase includes only Medicare. Users are able to compare similarly sized hospitals from across the country; for example, one 100-bed acute care hospital can compare itself to another 100-bed hospital, or a community hospital can compare itself to a different community hospital in a similar geographic region (in terms of epidemiology).

Data lag: Six months
https://www.definitivehc.com/

Health Catalyst:

Per its website, Health Catalyst provides a "new data warehousing architecture that uses a just-in-time approach to data binding to resolve many of the problems [the company's founders] encountered using traditional data warehousing methodologies." The company reports working with approximately 250 hospitals and 3,000 clinics, ranging from large academic medical centers to smaller community hospitals and physician clinics.

Data lag: Unknown
https://www.healthcatalyst.com/

MIDAS DataVision:

MIDAS DataVision is designed to "track and analyze clinical utilization and provider practice patterns, evaluate high-risk populations, and meet regulatory reporting requirements with The Joint Commission and the Centers for Medicare and Medicaid Services (CMS)." Per its website, MIDAS DataVision "gives direct, desktop access to more than 8,500 predefined clinical metrics for evaluating your organization's clinical performance." This includes patient- and provider-level metrics and "access to one of the nation's largest concurrent comparative databases for clinical benchmarking and for achieving hospital pay-for-performance targets."

Data lag: Six months
https://insights.conduent.com/brochures/midas-health-analytics-solutions-midas-datavision-comprehensive-data-management-services

Premier Inc:

Offers a clinical benchmarking database that includes information on approximately 40% of U.S. community hospital inpatient discharges. Allow users to analyze clinical and financial outcomes in relation to risk-adjusted internal and external peer benchmarks.

Data Lag: None, continually updated

https://solutions.premierinc.com/cpi/quality-advisor/

Publicly reported risk-adjusted hospital rankings:

➤ CMS Hospital Compare: see above

➤ U.S. News Best Hospitals: *https://health.usnews.com/best-hospitals*

➤ Newsweek Best Hospitals: *https://www.newsweek.com/best-hospitals-2021/united-states*

➤ Fortune/IBM Watson Health 100 Top Hospitals: *https://fortune.com/2021/04/27/100-top-hospitals-2021-ibm-watson-health/amp*

➤ Becker's Hospital Review: *https://www.beckershospitalreview.com*

➤ HealthGrades: *http://www.healthgrades.com/quality/americas-best-hospitals*

➤ Leapfrog Top Hospitals: *https://www.leapfroggroup.org/ratings-reports/top-hospitals*

Vizient:

One of the most best-known commercial risk models is Vizient. Used by 97% or over 800 academic and community hospitals and over 50 health systems for clinical database benchmarking, Vizient helps hospitals compare their data to other similar hospitals regarding patient outcomes—such as mortality, length of stay, complication and readmission rates, and hospital-acquired conditions, including core measures. Vizient collaborates with Medisolv to provide a solution for collecting and submitting core measure data. Vizient's risk models are derived from data submitted from over 600 hospitals. Vizient integrates Agency for Healthcare Research and Quality (AHRQ) categories and Elixhauser condition categories into its definitions. Each risk model is defined by DRG, associated identified variables, and assigned beta coefficients.

Data lag: Unknown

https://www.vizientinc.com/our-solutions/clinical-solutions/clinical-data-base

Getting started

Given the large number of risk adjustment models and the likelihood that your hospital or organization may use more than one, where should you start?

CDI programs often attempt to query for every condition impacting risk-adjusted benchmarking or quality measures. Since many programs lack the staff to cover 100% of patient encounters and query for all possible conditions and procedures, one effective strategy is to address conditions included in a majority of the above-mentioned benchmarking and ranking programs.

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Many models risk-adjust based on similar high-acuity conditions. The Venn diagram below in Figure A demonstrates how many risk-adjusted benchmarking programs include overlapping focus areas.
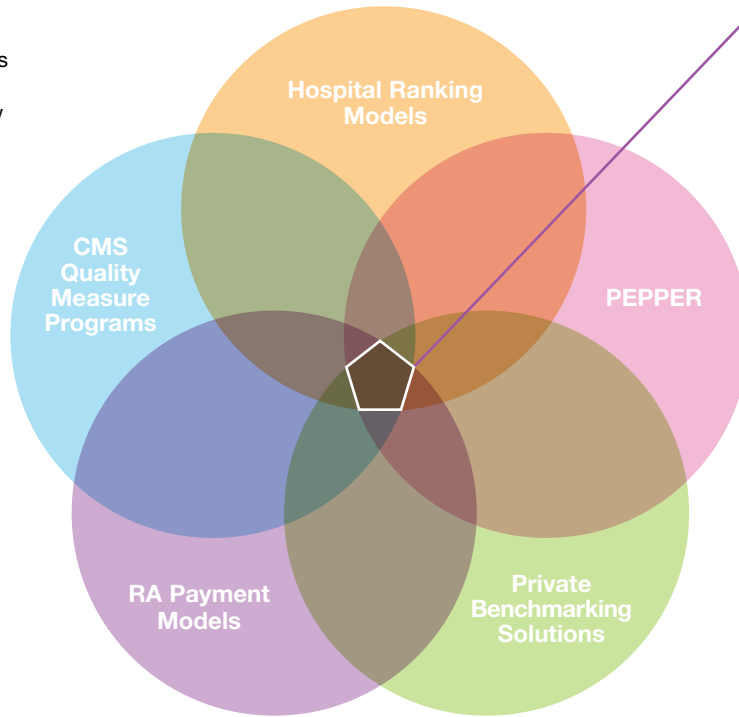
FIGURE A

Hospital Ranking Models

- CMS Hospital Compare
- US News Best Hospitals
- Newsweek Best Hospitals
- Fortune/IBM Watson
- Becker's Hospital Review
- Healthgrades
- Leapfrog

CMS Quality Measure Programs

- HACs
- HRRP
- IQR
- NQF
- MIPS/MACRA
- SCIP
- Core Measures
- AHRQ PSIs
- ECQMs

RA Payment Models

- Medicare Advantage
- Affordable Care Act
- Medicade
- Various Commercial Plans

Overlapping Focus Areas:

- Mortality Rates
- Readmission Rates
- Hospital-Acquired Condition Rates
- Stroke
- Sepsis
- Pneumonia/Respiratory Infections
- Respiratory Failure and Pulmonary Edema
- Myocardial Infarction
- Protein Calorie Malnutrition
- Pressure Ulcers
- Heart Failure and Shock
- Renal Failure
- Arrhythmias
- COPD
- GI Disorders and Hemorrhage
- Social Determinants of Health (will be incorporated in future RA models)

Private Benchmarking Solutions

- Vizient
- Midas
- Advisory Board
- Health Catalyst
- Leapfrog

Common overlapping diagnoses and focus areas for widely used risk adjustment benchmarking programs include the following:

➤ Mortality rates

➤ Readmission rates

➤ Hospital-acquired condition rates

➤ Stroke

➤ Sepsis

➤ Pneumonia/respiratory infections

➤ Respiratory failure and pulmonary edema

➤ Myocardial infarction

➤ Protein calorie malnutrition

➤ Pressure ulcers

➤ Heart failure and shock

➤ Renal failure

➤ Arrhythmias

➤ COPD

➤ GI disorders and hemorrhage

➤ Social determinants of health (will be incorporated in future models)

Working in Vizient, for example, a CDI program can focus its efforts on performance in service lines with high volumes. Final coded diagnoses listed as present on admission drive the models. A CDI team should know its performance in the top 10 most frequent variables and strive to capture those at the 75th percentile. A CDI reviewer working with Elixhauser in mind should be alert for potential signs of hypothyroidism and rheumatoid arthritis, as well as obesity, coagulopathy, and weight loss; all of these conditions add weight in that model.

The next paper in this series will discuss implementing a risk-adjusted approach to CDI, including the use of dashboards, physician engagement and alignment, and auditing and benchmarking.

References

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Acknowledgements

What is an ACDIS Position Paper?

An ACDIS Position Paper sets a recommended standard for the CDI industry to follow. It advocates on behalf of a certain position or offers concrete solutions for a particular problem. All current members of the ACDIS Advisory Board must review/approve a Position Paper and are encouraged to materially contribute to its creation.