

# ICD-9-CM and ICD-10's Impact upon Inpatient Readmissions Measurement and Management

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## Background

Even before the 2008 Medicare Payment Advisory Commission's (MedPAC) Report to Congress on Reforming the Delivery System recommendation that federal health programs measure and publish individual hospital readmission rates, the Centers for Medicare and Medicaid Services (CMS) and various state Medicaid programs had been strategically developing and honing methodologies measuring readmission rates and their financial impact.<sup>1</sup> A previous MedPAC report published in 2005 estimated that Medicare's expenditures for potentially preventable readmissions may be as high as \$12 billion per year.<sup>2</sup> Another study funded by the Institute for Healthcare Improvement and the John A. Hartford Foundation estimated that almost one fifth (19.6%) of the 11,855,702 Medicare beneficiaries who had been discharged from a hospital were rehospitalized within 30 days, and 34.0% were rehospitalized within 90 days, costing the Medicare system \$17.2 billion during 2004.<sup>3</sup>

Many readmission studies and findings are derived from an analysis of inpatient hospital claims that are risk-adjusted using patient characteristics derived from submitted International Classification of Diseases, 9<sup>th</sup> Edition, Clinical Modification (ICD-9-CM) codes. CMS and other analysts continue to use claims data to measure readmissions. Current algorithms include:

- **The CMS Hospital Admissions Reduction Program** – authorized by Section 3025 of the Affordable Care Act and section 1886(q) of the Social Security Act, CMS uses the index admission's ICD-9-CM codes and all codes for the previous year to identify measured cohorts and to estimate the likelihood that a readmission will occur.<sup>4</sup> Developed by Yale University researchers under contract with CMS, the methodology is in the public domain and available for public review.<sup>5</sup> An ICD-10 version is not publically available.
- **3M's Potentially Preventable Readmissions (PPR) algorithm** – 3M Health Information Systems (3MHIS), a subsidiary of the 3M Corporation, developed its own proprietary readmissions

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<sup>1</sup> Medicare Payment Advisory Commission. Report To Congress: Reforming the Delivery System. June, 2008. Available at [http://www.medpac.gov/documents/jun08\\_entirereport.pdf](http://www.medpac.gov/documents/jun08_entirereport.pdf), accessed June 24, 2014.

<sup>2</sup> Medicare Payment Advisory Commission. A path to bundled payment around a rehospitalization. In: Report to the Congress: reforming the delivery system. Washington, DC, June 2005:83-103

<sup>3</sup> Jencks, SF, et. al. Rehospitalizations among Patients in the Medicare Fee for Service Program. New England Journal of Medicine 2009; 360:1418-1428. Available for free at: <http://www.nejm.org/doi/full/10.1056/NEJMsa0803563>, accessed June 24, 2014

<sup>4</sup> Centers for Medicare and Medicaid Services. Reductions Readmissions Program website. Available at: <http://tinyurl.com/9kqtob2>, accessed June 24, 2014

<sup>5</sup> Centers for Medicare and Medicaid Services. Available at <http://www.qualitynet.org> or <http://www.tinyurl.com/QnetReadmissions2014>, accessed June 24, 2014.

algorithm using ICD-9-CM codes.<sup>6</sup> Texas, Maryland and Illinois are among the many states analyzing claims data with the PPR algorithm and are either publishing their findings on state-supported websites or incentivizing Medicaid reimbursements based upon provider performance.<sup>7 8 9</sup> An ICD-9-CM-based PPR definitions manual is available for purchase from 3MHIS or a representative sample may be downloaded using information available on various state-sanctioned websites.<sup>10 11</sup> An ICD-10 PPR definitions manual is available only to licensed subscribers through the 3MHIS website.

- Other readmissions methodologies based on ICD-9-CM codes exist and are used by government, payers, and providers to measure and influence behaviors. These include:
  - The University Healthcare Consortium - <https://www.uhc.edu/50356.htm> - available only to UHC members
  - Comparion Analytics - <http://comparionanalytics.com/risk-adjustment-methods/>
  - Truven Analytics – Proprietary – requires a relationship with Truven – <http://www.truvenhealth.com>
  - The California Office of Statewide Health Planning and Development – <http://oshpd.ca.gov>
  - Many others

The reader is encouraged to read these references and learn what conditions are being measured and how the readmission rate is calculated as to ensure that the ICD-9-CM codes driving these methodologies are accurate as they are being submitted.

### **How Inpatient Facility Claims Data Affects the Reported Readmission Rate**

Most readmissions methodologies calculate their findings as a ratio of the observed (actual) readmission rate to the expected (predicted) readmission rate, commonly known as the “O/E ratio”. Expressed in another way, the O/E ratio is:

$$\text{Risk-adjusted readmission rate} = \frac{\text{Observed readmission rate for the defined cohort}}{\text{Expected readmission rate for the defined cohort}}$$

Given that the risk-adjusted readmission rate is a ratio, it can be reduced by either lowering the actual observed readmission rate for the defined cohort through effective case management, ascertaining that any preceding index admission is properly assigned or attributed to the defined cohort (being certain not to accidentally include excluded cases), or increasing the expected readmission rate by assuring that all variables affecting this metric are captured. Not uncommonly, a measured risk-adjusted readmission

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<sup>6</sup> 3M Health Information Systems. Presentation to the Florida Hospital Association, available at <http://tinyurl.com/FHA3MDRGpresentation>.

<sup>7</sup> Texas Health and Human Service Commission, Potentially Preventable Readmissions in the Texas Medicaid Population, State Fiscal Year 2011, available at <http://www.hhsc.state.tx.us/reports/2012/PPR-Readmissions-FY2011.pdf>, accessed June 24, 2014

<sup>8</sup> Maryland Health Services Cost Review Commission. Potentially Preventable Utilizations Measures. February 20, 2014, available at: <http://tinyurl.com/mzs8ftq>, accessed June 24, 2014.

<sup>9</sup> Illinois Department of Healthcare and Family Services. Potentially Preventable Readmissions Policy. 2012, available at: [https://www2.illinois.gov/hfs/SiteCollectionDocuments/PPR\\_Overview.pdf](https://www2.illinois.gov/hfs/SiteCollectionDocuments/PPR_Overview.pdf), accessed June 24, 2012.

<sup>10</sup> Illinois State Government, available at: <http://www2.illinois.gov/hfs/SiteCollectionDocuments/3MPotentiallyPreventableReadmissions.pdf>

<sup>11</sup> Maryland State Government – <http://www.aprdrgassign.com> – User name MDhosp – Password aprdrg401.

rate is artificially high either because the conditions defining the cohort and/or the comorbidities defining the severity of the expected readmission rate were not documented by the provider or were not coded by the facility as to be reported, or both, even though effective case management strategies discussed elsewhere in this publication have been implemented.

### Specific Elements of Hospital Data Affecting Cohort Selection and Risk-Adjustment

Data for each hospital encounter is submitted electronically using the ASC X12N 837, version 5010, methodology or on paper using the UB-04 universal claim form. Data elements are assigned by different departments based upon explicit medical record documentation or through patient interviews.

Elements affecting readmission rate calculations include:

- **Primary or secondary insurance** – If a readmission rate is being calculated by a particular payer, such as traditional Medicare, then the readmission will count only if the patient is identified to have traditional Medicare. There are circumstances whereby traditional Medicare should not be billed for an inpatient admission, such as for an uncovered cosmetic procedure.
- **Discharge Status Codes** – While many methodologies count all readmissions within a certain time-frame, such as within 30 or 60 days, some exclude planned readmissions if they are identified as such on the index admission. On October 1, 2013, the National Uniform Billing Committee added new discharge status codes that report if a readmission is planned. These are<sup>12</sup>:

Base code	New code	Title
01	81	Discharged to home or self-care with a planned acute care hospital inpatient readmission.
02	82	Discharged/transferred to a short term general hospital for inpatient care.
03	83	Discharged/transferred to a skilled nursing facility (SNF) with Medicare certification with a planned acute care hospital inpatient readmission.
04	84	Discharged/transferred to a facility that provides custodial or supportive care with a planned acute care hospital inpatient readmission.
05	85	Discharged/transferred to a designated cancer center or children's hospital with a planned acute care hospital inpatient readmission.
06	86	Discharged/transferred to home under care of organized home health service organization with planned acute care hospital inpatient readmission.
21	87	Discharged/transferred to court/law enforcement with a planned acute care hospital inpatient readmission.
43	88	Discharged/transferred to federal health care facility with a planned acute care hospital inpatient readmission.
61	89	Discharged/transferred to a hospital-based Medicare approved swing bed with a planned acute care hospital inpatient readmission.
62	90	Discharged/transferred to an inpatient rehabilitation facility (IRF) including rehabilitation distinct part units of a hospital with a planned acute care hospital inpatient readmission.
63	91	Discharged/transferred to a Medicare certified long term care hospital (LTCH) with a planned acute care hospital inpatient readmission.
64	92	Discharged/transferred to a nursing facility certified under Medicaid but not certified under Medicare with a planned acute care hospital inpatient readmission.
65	93	Discharged/transferred to a psychiatric distinct part unit of a hospital with a planned acute care hospital inpatient readmission.
66	94	Discharged/transferred to a critical access hospital (CAH) with a planned acute care hospital inpatient readmission.
70	95	Discharged/transferred to another type of health care institution not defined elsewhere in this code list with a planned acute care hospital inpatient readmission.

If it is known at the time of discharge that a readmission is planned, then this must be clearly documented in a location whereby the individual assigning the discharge status code (usually an abstractor in health information management) can clearly see it. While these may not affect all readmission methodologies currently in place, their complete and compliant capture allows

<sup>12</sup> Centers for Medicare and Medicaid Services. 2014 IPPS Final Rule, page 50539. Available at <http://www.gpo.gov/fdsys/pkg/FR-2013-08-19/pdf/2013-18956.pdf>.

policy makers to have the data needed to revise current readmission methodologies if necessary.

In a similar manner, index admissions where the discharge status code signifies that the patient left against medical advice often disqualifies the admission as an index admission for the readmissions methodology.

- **The Principal Diagnosis** – Defined by the Uniform Hospital Discharge Data Set and by ICD-9-CM as “that condition *established after study* to be *chiefly* responsible for occasioning the (inpatient) admission of the patient to the hospital for care”, the principal diagnosis is often the determinant as to whether the admission will serve as the index encounter for which a readmission after a certain period of time (e.g. 30 days) will count as a penalty. The principal diagnosis is usually assigned by the facility’s inpatient coding department based upon provider documentation and sequencing rules governed by ICD-9-CM, its official guidelines, and official advice published by the *Coding Clinic for ICD-9-CM*, a publication of the American Hospital Association. Erroneous principal diagnosis assignment often mislabels an inpatient admission as an index encounter for which a readmission can count as a penalty. Examples include:
  - **Pneumonia** – In the CMS Hospital Admissions Reduction Program methodology developed by Yale University, an index admission governing the pneumonia metric requires a principal diagnosis of various pneumonia codes.<sup>13</sup> These include:
    - 480.0 - Pneumonia due to adenovirus
    - 480.1 - Pneumonia due to respiratory syncytial virus
    - 480.2 - Pneumonia due to parainfluenza virus
    - 480.3 - Pneumonia due to SARS-associated coronavirus
    - 480.8 - Viral pneumonia: pneumonia due to other virus not elsewhere classified
    - 480.9 - Viral pneumonia unspecified
    - 481.0 - Pneumococcal pneumonia (streptococcus pneumoniae pneumonia)
    - 482.0 - Pneumonia due to klebsiella pneumoniae
    - 482.1 - Pneumonia due to pseudomonas
    - 482.2 - Pneumonia due to hemophilus influenzae (h. influenzae)
    - 482.3 - Pneumonia due to streptococcus unspecified
    - 482.31 - Pneumonia due to streptococcus group a
    - 482.32 - Pneumonia due to streptococcus group b
    - 482.39 - Pneumonia due to other streptococcus
    - 482.4 - Pneumonia due to staphylococcus unspecified
    - 482.41 - Pneumonia due to staphylococcus aureus
    - 482.42 - Methicillin resistant pneumonia due to Staphylococcus aureus
    - 482.49 - Other staphylococcus pneumonia
    - 482.81 - Pneumonia due to anaerobes
    - 482.82 - Pneumonia due to escherichia coli (e.coli)
    - 482.83 - Pneumonia due to other gram-negative bacteria
    - 482.84 - Pneumonia due to legionnaires' disease

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<sup>13</sup> Centers for Medicare and Medicaid Services. Readmissions Measures. Available at: <http://tinyurl.com/mmvprzy> and clicking on the appropriate link.

- 482.89 - Pneumonia due to other specified bacteria
- 482.9 - Bacterial pneumonia unspecified
- 483.0 - Pneumonia due to mycoplasma pneumoniae
- 483.1 - Pneumonia due to chlamydia
- 483.8 - Pneumonia due to other specified organism
- 485.0 - Bronchopneumonia organism unspecified
- 486.0 - Pneumonia organism unspecified
- 487.0 - Influenza with pneumonia
- 488.11 - Influenza due to identified novel H1N1 influenza virus with pneumonia

Note that aspiration pneumonia, sepsis (if due to pneumonia, present on admission and qualifying as a principal diagnosis) nor acute respiratory failure (if due to pneumonia, present on admission, or qualifying as a principal diagnosis) are not on the list.

Therefore, if a patient is admitted with pneumonia on the index admission, meets the clinical criteria for sepsis due to pneumonia, and is documented consistently to have sepsis due to pneumonia, should the coder sequence sepsis as the principal diagnosis, it is not included as an index admission for CMS's pneumonia readmission methodology.

Documented aspiration pneumonia treated with reasonable antibiotics (e.g. clindamycin, metronidazole, Zosyn®, or higher dose levofloxacin) does not count as an index admission whereas a commonly used synonym, healthcare associated pneumonia (HCAP) does. The same can be said for any other condition coexisting with pneumonia as a reason for inpatient admission; if the alternative condition is coded and sequenced as the principal diagnosis, the admission does not count as an index admission in CMS's pneumonia readmission algorithm.

- **Congestive Heart Failure** – As in pneumonia, CMS uses various ICD-9-CM heart failure codes sequenced as the principal diagnosis to qualify the inpatient encounter as the index admission for its heart failure readmission algorithm. Documentation opportunities include:
  - If a patient is admitted with congestive heart failure but acute respiratory failure factored into the decision to admit the patient as an inpatient, sequencing the acute respiratory failure as the principal diagnosis excludes that admission as an index admission for the CMS heart failure readmissions methodology.
  - If an admitted heart failure patient has symptoms of myocardial ischemia and a new rise or fall of a serum troponin level at the 99<sup>th</sup> upper reference limit (usually around 0.1, but may vary from lab to lab), definition and documentation that the patient's heart failure exacerbation was due to an acute myocardial infarction and sequencing the myocardial infarction code as the principal diagnosis reclassifies the admission from the heart failure cohort to the acute myocardial infarction cohort
  - In a different vein, if a patient with chronic cor pulmonale due to COPD is admitted with anasarca and the provider states that the final diagnosis was decompensated isolated right heart failure, ICD-9-CM classifies this case as unspecified or biventricular heart failure which, if sequenced as the principal diagnosis, includes the case as an index admission for heart failure. Whether or not a code for cor pulmonale can be sequenced as a principal diagnosis depends

upon the view of the coding department assigning and sequencing these codes, given that ICD-9-CM (and ICD-10) has conflicting advice on how to manage these admissions.

- **Chronic Obstructive Pulmonary Disease** – In this methodology, various COPD-related codes sequenced as the principal diagnosis as well as acute respiratory failure when a COPD-related code is coded as a secondary diagnosis. Asthma without chronic obstructive lung disease as a principal diagnosis does not qualify the case as an index admission, yet some providers are not as precise with their language, such as labeling an asthma case as “chronic obstructive asthma” when it does not meet the clinical criteria for such.

3M’s Potentially Preventable Readmissions methodology has similar inclusion and exclusion criteria based upon the principal diagnosis assignment. A rigorous clinical documentation and coding integrity process is essential to ascertain that the principal diagnosis properly describes the patient’s reason for inpatient admission, is supported by the clinical circumstances, and is compliantly assigned by the coding department.

- **Secondary diagnoses** – The 5010 electronic transaction set allows for up to 24 additional diagnosis codes to be assigned for an inpatient admission. In all risk-adjustment methodologies, the quantity and quality of these codes influence the expected readmission rate, given that certain codes are higher weighted in predicting the readmission than others. For example, in the CMS Yale University model, a documented and coded diagnosis of sleep apnea, respiratory failure, heart failure, and shock, among others, increases the expected readmission rate. Other conditions that are commonly not documented (though known to the physician) include malnutrition (not underweight), “functional quadriplegia” (not bed confinement status), hemiparesis (not right or left sided weakness), various anemias, and the like. A diagnosis and code of morbid obesity affects the total joint replacement expected readmission rate; a code for simple obesity or a body mass index of over 40 does not. A list of ICD-9-CM codes qualifying for the expected readmission risk-adjustment variables is available on the QualityNet website.<sup>14</sup>

The 3M PPR model uses more diagnoses which are grouped into their All-Payer-Refined Diagnosis-Related Group (APR-DRG) Severity-of-Illness (SOI) models, which is described in the definitions manuals previously referenced. Hospitals must license an APR-DRG grouper in order to calculate the APR-DRG SOI prior to the patient’s code submission.

Again, as with principal diagnosis assignment, clinical documentation and coding integrity is crucial to proper readmission risk-adjustment.

### **Outpatient Claims Data**

Unlike most readmissions methodology, CMS uses outpatient claims submitted within 12 months of the index admission to capture diagnoses used in calculating the expected readmission rate. While the physician electronic billing standard only allows for 12 diagnoses to be submitted for each encounter, given that patients usually have multiple encounters with different providers within a year of an index

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<sup>14</sup> QualityNet website – <http://www.qualitynet.org>

admission affords an opportunity to optimize the expected readmission risk through assuring the completeness and integrity of outpatient diagnosis code submission. Consequently, many facilities, particularly skilled nursing facilities who are soon to be judged by their own readmissions metrics, are emphasizing clinical documentation and coding integrity for outpatient claims by their employed or referring physicians, given that these are used by CMS to predict a potential readmission.<sup>15 16</sup>

## Summary

If one is playing a game, if one is to have any chance of winning, one must know the rules of the game and how one keeps score. While effective case management strategies described elsewhere in this book are crucial to success in reducing readmissions, unless the documentation and coding of conditions defining the readmissions cohort (the observed metric) and determining the expected readmissions rate is properly vetted and maintained, the O/E ratio by which readmission rates are calculated can be compromised. Partnerships with physician leaders, coders, case management, and compliance in promoting clinical documentation and coding integrity is an integral part of managing inpatient readmissions and improving patient outcomes.

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<sup>15</sup> American Healthcare Association. Reducing Hospital Readmissions. Available at: <http://www.ahcancal.org/advocacy/solutions/Pages/HospitalReadmissions.aspx>, accessed June 25, 2014.

<sup>16</sup> American Healthcare Association. Skilled Nursing Facility Value-Based Purchasing Brief. Available at: <http://www.ahcancal.org/advocacy/solutions/Documents/Value%20Based%20Purchasing%20-%20IB.PDF>, accessed June 25, 2014.