Evolution of DRGs (2010 update)

This practice brief has been updated. See the latest version here. This version is made available for historical purposes only.

Editor's note: This update replaces the July 2006 practice brief "The Evolution of DRGs."

In the early 1970s Yale University developed diagnosis related groups (DRGs) to describe all types of patient care in an acute care hospital. The Yale system encompassed the Medicare population as well as newborn, pediatric, and general adult populations.

Over time DRG technology has evolved to include changes in healthcare delivery and advances in medicine. It also serves hospital needs for data management, reimbursement and comparability, benchmarking, and other types of research. This article provides an overview of the DRG system and its evolution from a grouping system for utilization review purposes to a tool for reimbursement to a tool that also encompassed severity and risk measurement.

The DRG System

The DRG method assigns a numeric value to an acute care inpatient hospital episode of care, which serves as a relative weighting factor intended to represent the resource intensity of hospital care of the clinical group that is classified to that specific DRG. As a reimbursement system the DRG assignment determines the payment level the hospital will receive.

Four guidelines were established as guiding principles for the DRG system's formation:

- The patient characteristics used in the DRG definition should be limited to information routinely collected on the hospital billing form.
- There should be a manageable number of DRGs that encompass all patients seen on an inpatient basis.
- Each DRG should contain patients with a similar pattern of resource intensity.
- Each DRG should contain patients who are similar from a clinical perspective (i.e., each class should be clinically coherent).[1]

Grouping patients in this manner allows hospitals to evaluate and manage costs by DRG or groups of DRGs. Hospitals can also benchmark by groups for quality and resource measurement. The DRG system allows only one DRG assignment per patient stay, so payment includes all services that occur between hospital admission and discharge.

DRGs are hierarchical. Major diagnostic categories (MDCs) represent the body systems. Originally there were 23 MDCs. The version for fiscal year 2010, version 27.0, contains 25 MDCs.

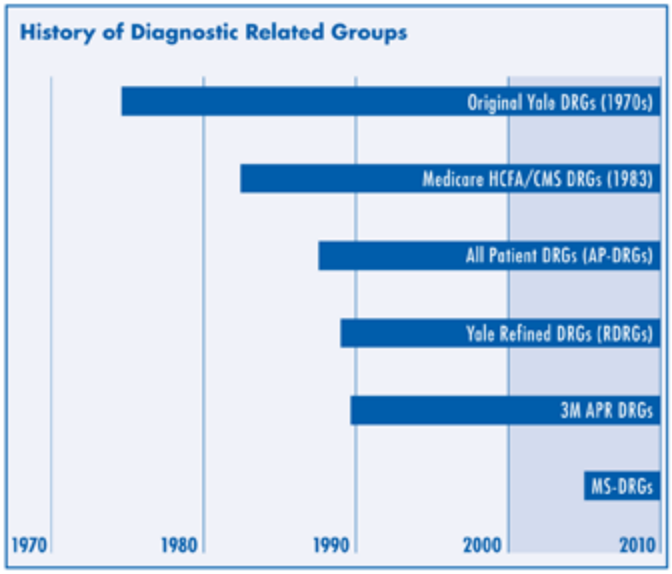
There also are now 13 DRGs in which cases are directly assigned on the basis of ICD-9-CM procedure codes. These are called Pre-MDC DRGs, and they are not assigned to MDCs.[2] The next level in the hierarchy divides each MDC into surgical and medical sections. The third level then assigns surgical patients into a DRG based on the procedure performed and medical patients into a DRG based on the principal diagnosis for which the patient was admitted.

The following elements comprise the components of each DRG version:

- Title
- Geometric mean length of stay
- Arithmetic mean length of stay
- Relative weight
- ICD-9-CM code ranges that drive the DRG assignment

The code range may consist of the principal diagnosis, operating room procedures, or a diagnosis-procedure combination.[3]

Computer programs called groupers or pricers assign hospital cases into DRGs. There are a series of steps in calculating the total DRG payment. Fiscal intermediaries use grouper (pricer) software to calculate the DRG assignment. Although hospitals assign DRGs to cases for internal use, the DRG used for payment is calculated as part of the claims processing provided by the fiscal intermediary or Medicare Administrative Contractor (MAC).[4]



Know Your DRGs

A variety of DRG systems have been developed in the past 25 years. These include:

- CMS DRGs
- Refined DRGs (RDRGs)
- All patient DRGs (AP-DRGs)
- Severity DRGs (SDRGs)
- All patient refined DRGs (APR DRGs)
- International-refined DRGs (IR-DRGs)
- Medicare Severity DRGs (MS-DRGs)

These DRGs have evolved to meet specific data management and payment needs.

The Evolution of DRGs

The Health Care Financing Administration (HCFA, now the Centers for Medicare and Medicaid Services) implemented DRGs in 1983 for the Inpatient Prospective Payment System (IPPS). 3M developed an all patient DRG (AP-DRG) system in 1987 as the basis for New York's hospital reimbursement program for non-Medicare discharges. This system was adopted by a number of state Medicaid agencies as well as commercial payers.

A project at Yale in 1989 resulted in the development of the refined DRG (RDRG) system, which looks at severity of illness in the Medicare population. Severity DRGs (SDRGs) came about in 1993 after HCFA re-evaluated the use of complications and comorbidities within the Medicare DRGs. HCFA published this system in 1994; however, there was never an implementation date requirement for this particular system.

3M developed all patient refined DRGs (APR DRGs) in 1990 to address both severity of illness and risk of mortality over all patient populations. In July 2005 the state of Maryland implemented new payment regulations required by its Health Service Cost Review Commission, which uses the APR DRG method for rate setting.[5]

The Need for a Measurement System

The traditional CMS DRGs focused on resource intensity only. The US healthcare industry needed a tool that would look beyond these factors and allow agencies such as state data commissions to evaluate differences in hospital mortality rates. This tool would support quality of care projects and facilitate the implementation and use of critical pathways. The need led to the development of new method and refinement to evaluate acute care in hospitals and consider the factors that affect the cost of delivering inpatient health services.
Case mix complexity refers to an interrelated but distinct set of patient attributes that includes:

- Severity of illness
- Risk of mortality

- Prognosis
- Treatment difficulty
- Need for intervention
- Resource intensity

The APR DRG system is comprised of a clinical model and four severity of illness and risk of mortality subclasses for each base APR DRG. These subclasses are broken down into four levels (1–4): minor, moderate, major, and extreme. APR DRGs are used by hospitals for internal quality improvement and by many states for public reporting.

Severity of illness describes the extent of the physiologic decompensation or organ system loss of function. The risk of mortality indicates the patient's likelihood of dying. The systems are differentiated by trajectory of development, clinical logic, severity classification structure, and level of complexity.

There are other severity adjusted systems. The all-payer severity-adjusted (APS) DRG system, developed by HSS and now owned by Ingenix, is built on the previous refined DRG systems.[6] The APS DRG version 25 has 378 base disease categories called consolidated DRGs (CDRGs). The APS DRG group number is represented by the CDRG category (XXX) plus the one-digit severity class (Y). The APS DRG system measures resource intensity in terms of lengthy stay or high charges or cost.

A new DRG system, called Medicare Severity DRGs (MS-DRGs), was adopted for use with Medicare's Inpatient Prospective Payment System. It became effective with discharges occurring on or after October 1, 2007. The MS-DRG structure was also adopted for use with the Long-Term Care Hospital Prospective Payment System (referred to as MS-LTC-DRGs).

CMS replaced 538 DRGs with 745 new MS-DRGs.[7] Every DRG number had a new meaning with the introduction of MS-DRGs. For example DRG 127 was no longer the DRG for principal diagnosis congestive heart failure. In place of DRG 127 were three new DRGs: MS-DRGs 291, 292, and 293, depending upon the secondary diagnoses reported along with the principal diagnosis of CHF.

Instead of a two-tiered structure (with CC and without CC), MS-DRGs introduced a three-tiered structure: major complication/comorbidity (MCC), complication/comorbidity (CC), and no complication/comorbidity (non-CC). MCCs reflect secondary diagnoses of the highest level of severity. CCs reflect secondary diagnoses of the next lower level of severity. Secondary diagnoses which are not MCCs or CCs (the non-CCs) are diagnoses that do not significantly affect severity of illness or resource use. The MS-DRGs provides better recognition of severity of illness than the traditional CMS DRG system.

Notes

1. "Medicare Program; Changes to the Hospital Inpatient Prospective Payment Systems for Acute Care Hospitals and Fiscal Year 2010 Rates; and Changes to the Long Term Care Hospital Prospective Payment System and Rate Years 2010 and 2009 Rates; Final Rule." *Federal Register* 74, no. 165 (2009): 43754–44236. Available online at www.cms.gov/AcuteInpatientPPS.
2. Casto, Anne, and Elizabeth Layman. *Principles of Healthcare Reimbursement,* Chicago, IL: AHIMA, 2006, p. 91.
3. Ibid, p. 93.
4. Data files and additional information about CMS DRGs and MS-DRGs are available at www.cms.hhs.gov/AcuteInpatientPPS. Data files are available for download with CMS DRG and MS-DRG details at www.cms.hhs.gov/AcuteInpatientPPS/FFD/list.asp and www.cms.hhs.gov/AcuteInpatientPPS/10FR/list.asp.
5. Health Services Cost Review Commission. "The Transition to APR-DRGs and Related Methodological Changes." June 1, 2005. Available online at www.hscrc.state.md.us.
6. Ingenix. "Definitions Manual for All-Payer Severity-Adjusted DRG (APS-DRGS®) Assignment for Public Use Version 25." June 26, 2009. Available online at http://www.hcup-us.ahrq.gov/db/nation/nis/APS-DRGsDe%20ManualV25Public.pdf.
7. "Medicare Program; Changes to the Hospital Inpatient Prospective Payment Systems and Fiscal Year 2008 Rates; Final Rule." *Federal Register* 72, no. 162 (2007): 47129–48175. Available at www.cms.hhs.gov/AcuteInpatientPPS/IPPS.

Resources:

Rollins, Genna. "Clinical Documentation Improvement: Gauging the Need, Starting off Right." *Journal of AHIMA* 80, no. 9 (Sept. 2009): 24–29.

Brownfield, Cathy, and Donna M. Didier. "Making the Most of External Coding Audits: From Preparation to Recommendations." *Journal of AHIMA* 80, no. 7 (July 2009): 34–38.

Wilson, Donna D. "Five RAC Coding Targets: Demonstration Program Identified Key Areas of Improper Payment" *Journal of AHIMA* 80, no. 5 (May 2009): 64–66.

Perez, Mario, and Melinda Tully. "MS-DRGs: One Year and Counting." 2008 AHIMA Convention Proceedings, October 2008.

Blackford, Gwendolyn. "Discover How to Survive Medicare Severity DRGs with a Successful Clinical Documentation Improvement Program and Present on Admission Indicators." 2008 AHIMA Convention Proceedings, October 2008.

Martin, Ginny. "MS-DRG Journey: How One Hospital Joined together to Successfully Implement MS-DRGs." *Journal of AHIMA* 79, no. 4 (April 2008): 70–72.

Reeves, Mary G.; Freda Scott; Kathy Hallock; and Stephanie A. Hays. "Four-Year Experience with Severity-Based DRGs." AHIMA's 79th National Convention and Exhibit Proceedings, October 2007.

Prepared by

Judy A. Bielby, MBA, RHIA, CPHQ, CCS

Prepared by (original)

Anne Boucher, MBA
Sue Bowman, RHIA, CCS
Caroline Piselli, MBA, RN, CHE
Rita Scichilone, MHSA, RHIA, CCS, CCS-P, CHC

Article citation:
AHIMA Practice Brief. "Evolution of DRGs (2010 update)" (Updated March 2010)