



MS-DRG & APR-DRG

Medical Coding Training Notes

CODING DECODED

Diagnosis-Related Groups (DRGs) classify inpatient hospital stays into payment categories. This guide compares the two major systems in use — MS-DRG and APR-DRG — and walks through how severity adjustments and grouping logic drive reimbursement.

1. Difference Between MS-DRG vs APR-DRG

Aspect	MS-DRG (Medicare Severity)	APR-DRG (All Patient)
Target Population	Only Medicare (65+, disabled)	All patients (including children, OB, psych)
Severity Levels	Explicitly includes three severity levels: w/ MCC (Major Complication/Comorbidity), w/ CC, without CC/MCC	SOI (Severity of Illness) & ROM (Risk of Mortality)
Payment Use	Tied directly to Medicare inpatient payment	Often used by state Medicaid, commercial insurers, and internal hospital analytics
Pediatrics & OB	Limited or absent in MS-DRGs	Fully included in APR-DRGs
Refinement Level	Highly tuned for aged population with frequent chronic illness	Broader, more general — made to work across a wide variety of patients

2. MS-DRG

It is a classification system used by Medicare to pay hospitals for inpatient stays under the Inpatient Prospective Payment System (IPPS).

It groups hospital cases into categories based on:

- Principal diagnosis
- Procedures performed
- Complications or comorbidities (CCs/MCCs)
- Patient characteristics (age, discharge status, etc.)

Key Concepts of DRGs

- Fixed Payment:** DRGs assign a fixed payment amount for each hospital stay, regardless of the actual cost incurred, incentivizing efficiency in resource use.
- Case Mix Index (CMI):** Hospitals have a unique Case Mix Index, representing the average complexity of their patient cases. A higher CMI indicates more complex and resource-intensive cases, leading to higher reimbursements.
- Severity Adjustments:** DRGs are categorized into levels based on severity — With Major Complications or Comorbidities (MCC): high complexity; With Complications or Comorbidities (CC): moderate complexity; Without Complications or Comorbidities (Non-CC): simple cases.

DRG Example — Patient Information

- Principal Diagnosis:** J13 (Pneumonia due to Streptococcus pneumoniae)
- Secondary Diagnoses:** J44.9 (COPD), E11.9 (Type 2 Diabetes Mellitus)
- Procedures Performed:** None
- Discharge Status:** Home

DRG Assignment

- Base DRG:** DRG 193 (Simple Pneumonia and Pleurisy without CC/MCC)
- Adjusted DRG:** DRG 192 (Simple Pneumonia and Pleurisy with CC) due to COPD
- Reimbursement:** DRG 192 relative weight (1.000) × hospital base rate (\$6,000) = \$6,000

3. How MCC and CC Affect MS-DRG Scores

In the Diagnosis-Related Group (DRG) system, Major Complications or Comorbidities (MCC) and Complications or Comorbidities (CC) play a critical role in adjusting the severity level and relative weight of a DRG. These adjustments directly influence the hospital's reimbursement for inpatient care.

Understanding MCC and CC

MCC (Major Complication or Comorbidity): A secondary diagnosis that significantly increases the severity of illness, complexity, and resource use. Example: Acute respiratory failure (J96.00) or sepsis (A41.9).

CC (Complication or Comorbidity): A secondary diagnosis that increases the complexity of care or resource use but is less severe than an MCC. Example: COPD (J44.9) or hypertension with heart failure (I11.0).

DRG Severity Levels

Each DRG is divided into three severity levels based on the presence or absence of MCCs and CCs:

- With MCC:** At least one major complication or comorbidity is documented. Indicates the highest severity level, resulting in the greatest DRG weight.
- With CC:** At least one complication or comorbidity is documented. Reflects moderate severity and increases the DRG weight.
- Non-CC (Base DRG):** No complications or comorbidities are documented. Represents the lowest severity and resource use.

How MCC and CC Affect MS-DRG Weight

- DRGs are assigned a relative weight, which is a numerical value representing the resource intensity of the inpatient stay compared to an average case.
- The presence of MCCs or CCs increases the relative weight, which leads to higher reimbursement.

Example: Simple Pneumonia and Pleurisy

DRG Code	Description	Severity Level	Relative Weight	Reimbursement (Base Rate \$6,000)
191	Simple Pneumonia with MCC	With MCC	1.3567	\$8,140
192	Simple Pneumonia with CC	With CC	1.0000	\$6,000
193	Simple Pneumonia without CC/MCC	Non-CC	0.7354	\$4,412

Key Observations

- A case with no CC/MCC (DRG 193) has the lowest weight and reimbursement.
- Adding a CC (DRG 192) increases the weight to 1.0000, reflecting a more resource-intensive case.
- Adding an MCC (DRG 191) further increases the weight to 1.3567, resulting in the highest reimbursement.

How MCC and CC Impact Reimbursement

- Increased Severity Level:** MCCs and CCs increase the severity of illness (SOI) and case complexity, justifying higher payments.
- Resource Utilization:** Cases with MCCs or CCs require more diagnostic tests, treatments, and longer hospital stays, which increase costs.
- Payment Adjustments:** DRGs with higher severity levels (with MCC/CC) have higher relative weights, which are multiplied by the hospital's base rate to calculate reimbursement.

4. How to Identify CC and MCC

Complications or Comorbidities (CC) and Major Complications or Comorbidities (MCC) are secondary diagnoses that impact the severity of a patient's condition and influence the assignment of Diagnosis-Related Groups (DRGs) in the Inpatient Prospective Payment System (IPPS). Identifying CCs and MCCs is critical for ensuring accurate DRG assignment and appropriate reimbursement.

A. Review Secondary Diagnoses

Examine the medical record for secondary diagnoses documented by the provider. These diagnoses must:

- Be clinically evaluated or treated during the hospital stay.
- Require additional resources or monitoring.
- Be documented in the history and physical (H&P), progress notes, discharge summary, or consultations.

B. Cross-Check Against the CC/MCC List

- Use the CMS CC/MCC List to determine whether the secondary diagnosis qualifies as a CC or MCC.
- CMS publishes an ICD-10-CM CC/MCC List annually.

5. Factors Affecting the MS-DRG Values

A. Principal Diagnosis

- **Definition:** The condition established after study to be primarily responsible for the patient's admission.
- **Impact:** The principal diagnosis determines the base DRG. Example: A principal diagnosis of pneumonia (J18.9) assigns the patient to DRG 193 (Simple Pneumonia without CC/MCC).

B. Secondary Diagnoses

- **Definition:** Additional conditions or comorbidities/complications (CCs or MCCs) that affect patient care.
- **Impact:** The presence of CCs or MCCs adjusts the severity level of the DRG and increases reimbursement.
 - **MCC DRG:** DRG 191 — Simple Pneumonia with MCC (e.g., Acute Respiratory Failure, J96.00).
 - **CC DRG:** DRG 192 — Simple Pneumonia with CC (e.g., COPD, J44.9).
 - **Non-CC DRG:** DRG 193 — Simple Pneumonia without CC/MCC.

C. Procedures Performed

- **Definition:** Surgical or significant diagnostic procedures documented during the inpatient stay.
- **Impact:** Surgical procedures typically lead to assignment to a surgical DRG, which carries a higher reimbursement.
 - Without procedure: DRG 193 (Medical — Pneumonia).
 - With procedure: DRG 166 (Surgical — Other Respiratory System OR Procedures).

D. Patient Demographics

- **Age and Gender:** Certain DRGs consider age as a factor, especially in pediatric or geriatric cases. Example: Neonatal DRGs or DRGs for elderly patients with specific conditions.
- **Discharge Status:** Reimbursement may vary based on whether the patient was discharged home, transferred to another facility, or died during the stay.

6. How MS-DRG Grouping Works — Step-by-Step Process

Step 1: Find the Major Diagnostic Category (MDC) for the Case

DRGs are categorized into 25 Major Diagnostic Categories (MDCs). MDCs are broad groups of diagnoses that are based on body systems or specific medical conditions. They help organize and classify inpatient hospital cases.

- Most MDCs are based on the organ system or body part affected (e.g., Respiratory, Nervous, Digestive).
- Some are categorized by clinical specialty or condition, like pregnancy, newborns, or mental health.
- Each MDC includes ICD-10-CM diagnosis codes within a specific range, usually based on the principal diagnosis.

Note: Some cases (like transplants or tracheostomies) go into a PRE-MDC category based on procedures, regardless of diagnosis.

Step 2: Determine if an Operating Room (O.R.) Procedure Was Performed

After identifying the Major Diagnostic Category (MDC) in Step 1, the next step is to check whether the case involves a surgical (O.R.) procedure. This will help you decide whether to look at Surgical DRGs or Medical (Non-Surgical) DRGs within that MDC.

Step 3: Select the Appropriate DRG Within the MDC

Review either the Surgical DRGs or the Medical DRGs listed under that MDC, and find the most appropriate DRG that matches the clinical scenario and procedures.

7. APR-DRG: All Patient Diagnosis-Related Groups

All Patient Refined Diagnosis-Related Groups (AP-DRG) is a hospital case classification system designed to group all types of inpatient hospital stays — not just those for Medicare patients. It was developed by 3M Health Information Systems to be applicable across all patient populations, including children, obstetrics, and psychiatric cases.

Key Features

APR-DRG is not part of IPPS. It is a separate DRG system used outside of Medicare — especially when broader patient populations (pediatrics, OB, etc.) and severity refinement are needed.

- Commonly used by State Medicaid programs, commercial insurers, children's hospitals, and hospitals for internal case mix and quality analysis.
- Based on principal diagnosis, procedures performed, comorbidities/complications, patient age, sex, and discharge status.
- Groups similar cases that are expected to use comparable hospital resources.
- Each APR-DRG includes four levels of both Severity of Illness (SOI) and Risk of Mortality (ROM). SOI and ROM assignment take into account the interaction among principal & secondary diagnoses, age, and, in some cases, procedures:
 - 1. Minor
 - 2. Moderate
 - 3. Major
 - 4. Extreme

Example of APR-DRG

Code Structure = APR-DRG Code + SOI Level + ROM Level

Patient Age: 30, Diagnosis: Simple pneumonia, no other health issues, recovered quickly.

APR-DRG Assignment

- **APR-DRG Code:** 139 — Pneumonia
- **Severity of Illness (SOI):** 1 (Minor)
- **Risk of Mortality (ROM):** 1 (Minor)

Final APR-DRG label: 139-1 → Pneumonia, SOI 1 (Minor), ROM 1 (Minor)