All Patient Refined DRGs (APR-DRGs)
An Overview

Presented by Treo Solutions

Presentation Highlights

- History of inpatient classification systems

- APR-DRGs: what they are, how they work, and why they are clinically relevant

- How documentation and coding impact the effectiveness of APR-DRGs

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# Brief history of inpatient classification systems

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•Early patient classification systems, such as the Medicare DRGs and All Patient (AP) DRGs were developed to provide patient classification systems that relate the types of patients treated to the resources they consume.

•Thus, these systems focus exclusively on resource intensity.

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- Some drawbacks of these systems:

  - Medicare DRGs were designed for the Medicare population only.

  - Neither system is severity adjusted and therefore does not provide an incentive to care for higher need patients.

  - Higher complexity DRGs (with CC) are formed based on resource intensity and do not address severity of illness nor risk of mortality.

  - Medicare addressed these needs by developing MS-DRGs.
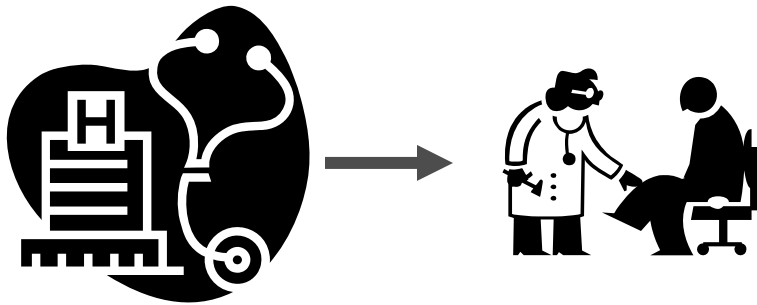
A new classification system was needed, refined to shift the focus from facility characteristics to patient characteristics.

ICD-9

ICD-9
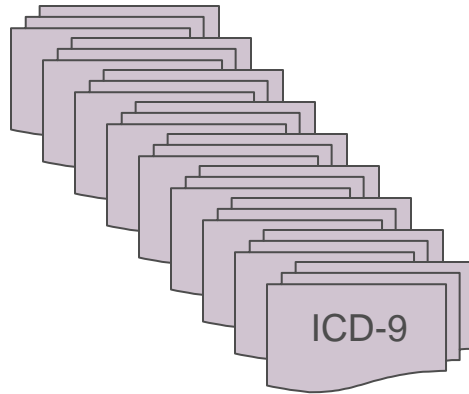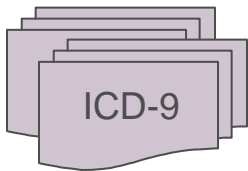
Increased granularity on patient characteristics provided a better predictive model for resource use and outcomes.

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APR-DRGs are an all-payer alternative to MS-DRGs.

"...our primary focus in maintaining the CMS DRGs is to serve the Medicare population. We do not have the data or the expertise to maintain the DRGs in clinical areas that are not relevant to the Medicare population."

- *Federal Register*, April 13, 2007

"...we do not have the expertise or data to maintain the CMS DRGs for newborns, pediatric, and maternity patients."

– *Federal Register*, April 13, 2007

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APR-DRGs vs. MS-DRGs

APR-DRG address these deficiencies

- All APR DRGs have 4 severity levels

- Patient age is used in severity leveling

- Significant pediatric and adult problems have a separate APR-DRG

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MS-DRGs: Issues

Newborn (MDC 15)

	MS-DRGs	APR DRGs
Number of DRGs	7	28
Severity Levels	None	4 levels within each DRG
Recognition of Birth weight in DRGs	No	Seven birth weight ranges
Separate Surgical DRGs	No	Yes

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Pediatrics:

APR-DRGS made modifications for significant pediatric conditions without a separate DRG

- Cleft lip & palate repair
- Cystic Fibrosis
- Scoliosis
- Bronchiolitis & RSV Pneumonia
- Major cardiothoracic repair of heart anomalies
- Ventricular shunt procedures
- Sickle cell anemia crisis

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Adults:

Significant conditions with no separate DRG

- Eating disorders

- High risk pregnancies

- Type of drug dependency (opium, cocaine, etc.)

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MS-DRGS with no severity levels

- Maternity (does not identify high risk pregnancies)
- Newborns
- Drug and alcohol dependence
- Mental disorders
- Burns
- Organ transplants

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Pediatric patients are not differentiated from adult and elderly patients

- Population Demographic Differences

- Children's Hospitals

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APR-DRG Development and Use

APR-DRGs stands for *All Patient Refined Diagnosis Related Groups*, and were created by 3M™ in a joint effort with NACHRI.
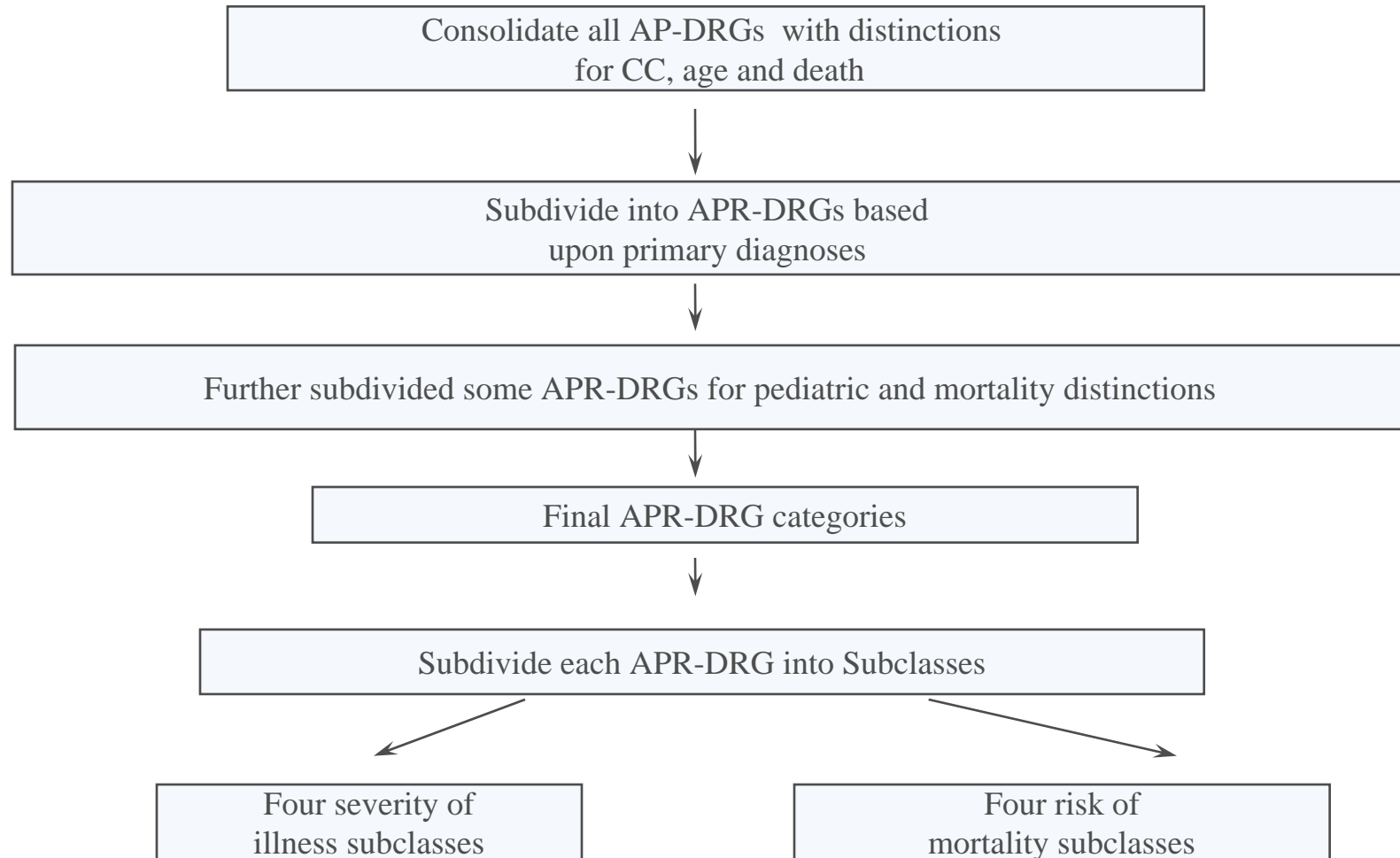
3M Health Information Systems

NACHRI
National Association of Children's Hospitals and Related Institutions
N·A·C·H
National Association of Children's Hospitals
the public policy affiliate

NACHRI developed the pediatric portion of APR-DRGs.

APR-DRGs have the most comprehensive and complete pediatric logic of any severity of illness classification system.

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AP-DRGs to APR-DRGs

Consolidate all AP-DRGs with distinctions
for CC, age and death

Subdivide into APR-DRGs based
upon primary diagnoses

Further subdivided some APR-DRGs for pediatric and mortality distinctions

Final APR-DRG categories

Subdivide each APR-DRG into Subclasses

Four severity of
illness subclasses

Four risk of
mortality subclasses

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- There are 315 base APR-DRGs (version 27.0).

- Each APR-DRG is subdivided into four severity of illness subclasses and four risk of mortality subclasses.

- In addition there are two error APR-DRGs (955,956) that are not subdivided into subclasses.

- The combination of APR-DRG and severity subclasses results in 1262 possible APR-DRG assignments.

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APR-DRG Versions

- Since the original December 1990 release of the APR-DRGs, there have been regular major clinical updates.

- The version number used to describe the APR-DRGs corresponds to the version of ICD-9-CM in which the APR-DRGs are written. (The version numbers of the CMS DRGs use the same convention.).

- In addition, the APR-DRGs are updated each October to incorporate all ICD-9-CM code modifications. (Major clinical updates are completed every 3-5 years.)

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What makes APR-DRG's Relevant?

- APR-DRGs make clinical sense. The clinical logic of APR-DRGs has undergone the most intensive scrutiny of any severity system on the market.

- The logic is open and available. APR-DRGs are not a "black box".

- The system was designed to be fully comprehensive and account for all payers, patients, and ages (including pediatrics).

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- APR-DRGs do a better job of aligning payment and resource use, removing artificial incentives that shift care between settings or pose a barrier to access.

Avg. Case Margin by Severity
AP-DRGs compared to APR-DRGs
Source: Treo Benchmark 2008

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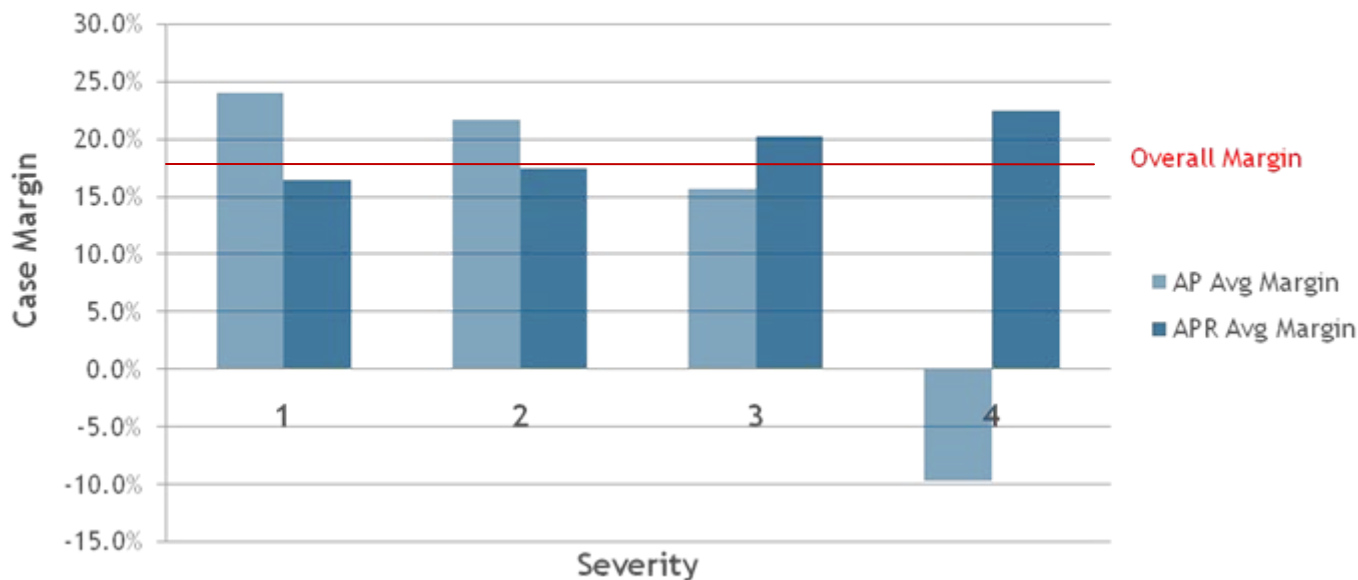
- APR-DRGs allow payment and quality to be integrated through the use of tools that monitor complications and readmissions that occur as a result of the services and planning that are an integral part of a patients hospital stay and preparation for discharge.

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APR-DRGs:
Classification Details

•APR-DRGs are a clinical, rather than statistical model.

•APR-DRGs expand upon DRGs and AP-DRGs by also assigning to each case a severity of illness (SOI) subclass and risk of mortality (ROM) subclass.

Severity of Illness: the extent of physiologic decomposition or organ system loss of function

Risk of Mortality: the likelihood of dying

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•The underlying clinical principle of the APR-DRGs is that the severity of illness and risk of mortality of a patient depends to a great extent on the patient's underlying characteristics.

•The determination of the severity of illness (SOI) and risk of mortality (ROM) is disease-specific.

•The addition of SOI and ROM provide an accurate evaluation of both resource use and outcomes.

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- APR-DRG Assignment, Two Distinct Clinical-Based Steps

1. A patient is first assigned to a base APR-DRG (e.g.: APR 139, Other Pneumonia)

2. The patient is then separately assigned two distinct subclasses: severity of illness and risk of mortality. Each subclass has four possible assignment levels:

1 = Minor	3 = Major
2 = Moderate	4 = Extreme

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APR-DRG Severity of Illness Subclass Assignment


```
┌──────────────┐   ┌──────────────┐   ┌──────────────┐
│  Secondary   │   │  Secondary   │   │  Secondary   │
│  Diagnosis   │   │  Diagnosis   │   │  Diagnosis   │
└──────────────┘   └──────────────┘   └──────────────┘
        │                  │                  │
        ▼                  ▼                  ▼
┌────────────────────────────────────────────────────────┐
│       Standard Severity of Illness Level Assignments    │
└────────────────────────────────────────────────────────┘
```

Modify Standard Severity of Illness Level of Individual Secondary Diagnosis by:			
Age	APR-DRG	Principal Diagnosis	Non Operating Room Procedures

Set base Severity of Illness Subclass Equal to the Highest Severity of Illness Level of any of the Secondary Diagnoses

Reduce Subclass of Major or Extreme by One Level if Multiple High Severity of Illness Secondary Diagnoses are not Present

Increase Base Severity of Illness Subclass Based on Interaction among Secondary Diagnoses and the Interaction between the Base APR-DRG and Principal Diagnosis, Age, and non-OR Procedures

Final Severity of Illness Subclasses

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APR-DRG 106 Coronary bypass with cardiac catheterization Severity of Illness Subclass Assignment

Secondary Diagnosis

| 997.1 | 997.3 | 511.9 | 414.0 | 401.9 |

Standard Severity of Illness Level Assignments

| 2 | 2 | 2 | 1 | 1 |

Modify Standard Severity of Illness Level of Individual Secondary Diagnosis by:

Age	APR-DRG	Principal Diagnosis	Non Operating
56	**106**	**410.41**	**Room Procedures: 99.04**

Severity Level: 2   2   2   1   1

Set base Severity of Illness Subclass Equal to the Highest Severity of Illness Level of any of the Secondary Diagnoses:
Severity Level 2

Reduce Subclass of Major or Extreme by One Level if Multiple High Severity of Illness Secondary Diagnoses are not Present:
Severity Level 2

Increase Base Severity of Illness Subclass Based on Interaction among Secondary Diagnoses and the Interaction between the Base APR-DRG and Principal Diagnosis, Age, and non-OR Procedures:
Severity Level 3

Final Severity of Illness Subclasses: **Severity Level 3**

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- The example helps to illustrate that:

- The presence of multiple co-morbid conditions in combination increases the severity of illness for a patient and,

- The increase in severity accurately reflects the increased difficulty and costs involved in treating the patient.

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Severity Adjustment: An Example

	PRINCIPLE DIAGNOSIS: Congestive Heart Failure	
	CASE 1	CASE 2
Secondary Diagnoses	Chronic Obstructive Pulmonary Disease Atrial Fibrillation	Chronic Obstructive Pulmonary Disease Atrial Fibrillation Respiratory Failure Acidosis Decubitus Ulcer Malnutrition Cardiogenic Shock
Medicare DRG	127: Heart Failure and Shock	127: Heart Failure and Shock
APR-DRG	194: Heart Failure	194: Heart Failure
APR-DRG Severity of Illness	2: Moderate	4: Extreme
2007 NY Average Length of Stay	4.66	13.71
2007 NY Average Codes per case	9.76	13.56
2007 NY Average Cost	$ 7,087	$24,616
Medicare Relative Weight	1.0635	1.0635

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APR-DRGs:
Preparing for Implementation

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The move to APR-DRGs for inpatient facility payment requires a fundamental change for both payers and providers:

- Payers: focus on new methods for developing relative weights that incorporate severity

- Providers: focus on improving the information needed to determine payment

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The Quality of the Medical Coding is Important

- The success of APR-DRGs ultimately depends on:

  - Complete and accurate coding
  - Clinical specificity = coding specificity

- Documentation and coding must be done for all diagnoses and procedures, not just to the point of full reimbursement.

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- Data going into the system should be comprehensive and specific.

- Full and accurate coding not only equals full payment, it is also a strong foundation for quality measurement.

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The following discharge data elements are used for APR-DRG subclass assignment:

- Principal diagnosis coded in ICD-9-CM
- Principal procedure coded in ICD-9-CM
- Secondary diagnoses coded in ICD-9-CM
- Secondary procedures coded in ICD-9-CM
- Age
- Sex
- Birth weight (value or ICD-9-CM code)
- Discharge Date
- Status of discharge
- Days on mechanical ventilator (value or ICD-9-CM code)

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