



**2015 HEALTHCARE COST AND UTILIZATION PROJECT (HCUP)  
NATIONAL INPATIENT SAMPLE: CHANGE IN STRUCTURE AND DATA  
ELEMENTS CAUSED BY TRANSITION TO ICD-10-CM/PCS**

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## INTRODUCTION

This document provides an overview of how the Healthcare Cost and Utilization Project (HCUP) 2015 National Inpatient Sample (NIS) has changed because of the introduction of ICD-10-CM/PCS.<sup>1</sup> On October 1, 2015, the United States transitioned from using ICD-9-CM to ICD-10-CM/PCS code sets for reporting clinical diagnoses and inpatient procedures. ICD-10-CM/PCS consists of two parts:

- ICD-10-CM: diagnosis coding on inpatient and outpatient data
- ICD-10-PCS: procedure coding on inpatient data.

The NIS is a database of hospital inpatient stays derived from billing data submitted by hospitals to statewide data organizations across the U.S. These inpatient data include clinical and resource use information typically available from discharge abstracts. Researchers and policy makers use the NIS to make national estimates of health care utilization, access, charges, quality, and outcomes. The NIS data files are annual, calendar-year files. The introduction of ICD-10-CM/PCS on October 1 means that the 2015 NIS includes a combination of codes:

- Nine months of the data with ICD-9-CM codes (Jan 1, 2015 to September 30, 2015)
- Three months of data with ICD-10-CM/PCS codes (October 1, 2015 to December 31, 2015).

To alert users to this change in the data, the file structure of the 2015 NIS differs from the annual files for other data years. In the 2015 NIS, the first three quarters of data (with ICD-9-CM codes) are stored separately from the fourth quarter of data (with ICD-10-CM/PCS codes). In addition, the names of diagnosis- and procedure-related data elements under ICD-10-CM/PCS have been changed to identify the coding scheme.

**Data elements based on the HCUP Tools that are derived from ICD-10-CM/PCS codes are not included in the fourth quarter data.** Users interested in applying the latest versions of the AHRQ software tools to the NIS may do so by downloading the respective tool(s) from the [Research Tools section](#) of the HCUP User Support (HCUP-US) website. Additionally, users may wish to review the [HCUP Software Tools Tutorial](#), which provides instructions on how to apply the AHRQ software tools to HCUP or other administrative databases.

This document outlines the revised file structure of the HCUP NIS in 2015, describes the changes to diagnosis- and procedure-related data elements under ICD-10-CM/PCS, and provides resources to aid HCUP data users in using these files and data elements based on ICD-9-CM and ICD-10-CM/PCS codes.

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<sup>1</sup> ICD-9-CM: International Classification of Diseases, Ninth Revision, Clinical Modification; ICD-10-CM/PCS: International Classification of Diseases, Tenth Revision, Clinical Modification/Procedure Coding System

## REVISED FILE STRUCTURE OF THE 2015 NATIONAL INPATIENT SAMPLE

Because of the transition to ICD-10-CM/PCS on October 1, 2015, the 2015 NIS file structure and the location of many of the data elements within the files has changed.

- The **Core File** continues to be a file containing commonly used data elements (e.g., age, expected primary payer, total charges). The difference in 2015 is that all diagnosis and procedure data elements, including any data elements derived from diagnoses and procedures, have been moved out of the Core File and into the Diagnosis and Procedure Groups Files. [Because discharge quarter (DQTR) is sometimes missing, the best way to identify discharges for quarter 1-3 or quarter 4 is based on the value of the diagnosis version (DXVER) data element from the Diagnosis and Procedure Groups Files. For quarters 1-3, DXVER has a value of 9; while for quarter 4, DXVER has a value of 10.]
- The **Diagnosis and Procedure Groups File** has been split into two files by discharge quarter (Q1Q3 indicating discharge quarters 1-3 with ICD-9-CM data and Q4 for discharge quarter 4 with ICD-10-CM/PCS data).
  - **Diagnosis and Procedure Groups File for Q1Q3**—Nine months of 2015 data with data elements based on ICD-9-CM codes (discharges from Jan 1, 2015 – September 30, 2015). The Q1Q3 file includes diagnosis and procedure codes in addition to data elements based on ICD-9-CM codes such as Diagnosis Related Groups (DRGs), Clinical Classification Software (CCS) categories for diagnoses and procedures, and other data elements derived from AHRQ software tools. The diagnosis version data element (DXVER) has a value of 9 for all records in the Q1Q3 file.
  - **Diagnosis and Procedure Groups File for Q4**—Three months of 2015 data with data elements based on ICD-10-CM/PCS codes (discharges from October 1, 2015 – December 31, 2015). The Q4 file includes the ICD-10-CM/PCS diagnosis and procedure codes in data elements with the prefix “I10\_”. The diagnosis version data element (DXVER) has a value of 10 for all records in the Q4 file. Data elements derived from AHRQ software tools are not available in the Q4 file. Users interested in applying the latest versions of the AHRQ software tools to the NIS may do so by downloading the respective tool(s) from the [Research Tools section](#) of the HCUP User Support (HCUP-US) website.
- The **Disease Severity Measures File** has been split into two files by discharge quarter.
  - **Disease Severity Measures File for Q1Q3**—Nine months of 2015 data with data elements associated with the 3M All Payer Refined Diagnosis Related Groups (APR-DRGs) and the Elixhauser Comorbidity Software that are based on ICD-9-CM codes (discharges from Jan 1, 2015 – September 30, 2015)
  - **Disease Severity Measures File for Q4**—Three months of 2015 data with data elements associated with the 3M APR-DRGs based on ICD-10-CM/PCS codes (discharges from October 1, 2015 – December 31, 2015). The Elixhauser

Comorbidity Software indicators are not available in the Q4 file because the ICD-10-CM version of the software is still under development.

- The **Hospital Weights file** continues to include data elements related to hospital characteristics.

## **DATA ELEMENTS IN THE 2015 NIS RELATED TO ICD-9-CM AND ICD-10-CM/PCS CODES**

Almost all the diagnosis- and procedure-related data elements that are based on ICD-10-CM/PCS data have different data element names than the ICD-9-CM version. Exceptions include data elements that are based on third-party proprietary software such as Diagnosis-Related Groups (DRGs) and the 3M All Patient Refined-DRG (APR-DRG).

No data elements related to diagnosis and procedure codes are included in the 2015 NIS Core or Hospital Files. Tables 1 and 2 provide the list of data element names based on the ICD-9-CM and ICD-10-CM/PCS coding systems and their file location in the 2015 NIS:

- Table 1 includes all data elements based on *diagnosis and procedure codes* in the Diagnosis and Procedure Groups Files
- Table 2 includes all data elements based on *diagnosis and procedure codes* in the Disease Severity Measures Files.

Complete documentation of the 2015 HCUP NIS can be found on the HCUP User Support (HCUP-US) Web site at [www.hcup-us.ahrq.gov/db/nation/nis/nisdbdocumentation.jsp](http://www.hcup-us.ahrq.gov/db/nation/nis/nisdbdocumentation.jsp).

**Table 1. Names of Data Elements Based on Diagnosis and Procedure Codes in the Diagnosis and Procedure Groups Files, Q1Q3 with ICD-9-CM Codes and Q4 with ICD-10-CM Codes**

<b>HCUP Data Element Description<sup>a</sup></b>	<b>ICD-9-CM Data Element Included in the Q1Q3 Diagnosis and Procedure Groups File</b>	<b>ICD-10-CM Data Element Included in the Q4 Diagnosis and Procedure Groups File</b>
<b>Data Elements based on Diagnoses Only</b>		
Diagnoses	DX1-DX30	I10_DX1-I10_DX30
Number of diagnoses	NDX	I10_NDX
Diagnosis version	DXVER	DXVER
CCS for diagnoses	DXCCS1-DXCCS30	Not available <sup>b</sup>
MCC for principal diagnosis	DXMCCS1	Not available <sup>b</sup>
Chronic flag	CHRON1-CHRON30	Not available <sup>b</sup>
Number of chronic conditions	NCHRONIC	Not available <sup>b</sup>
Body system	BODYSYSTEM1-BODYSYSTEM30	Not available <sup>b</sup>
External cause diagnoses	ECODE1-ECODE4 (External cause of injury codes)	I10_ECAUSE1-I10_ECAUSE4 (External cause of morbidity codes)
Number of E codes	NECODE	I10_NECause
CCS for external cause	E_CCS1-E_CCS4	Not available <sup>b</sup>
MCC for first external cause	E_MCCS1	Not available <sup>b</sup>
Diagnosis indicating in-hospital birth	HOSPBRTH	Not available <sup>c</sup>
<b>Data Elements based on Procedures Only</b>		
Procedure vector	PR1-PR15	I10_PR1-I10_PR15
Procedure Version	PRVER	PRVER
Number of procedures	NPR	I10_NPR
Day of procedure	PRDAY1-PRDAY15	PRDAY1-PRDAY15
CCS for procedures	PRCCS1-PRCCS15	Not available <sup>b</sup>
MCC for first procedure	PRMCCS1	Not available <sup>b</sup>
Procedure class	PCLASS1-PCLASS15	Not available <sup>b</sup>
Flag for major operating procedure	ORPROC	Not available <sup>d</sup>
<b>Data Elements based on Both Diagnoses and Procedures</b>		
DRG version	DRGVER	DRGVER
DRG in use on discharge date	DRG	DRG
DRG in use on discharge date, calculated without POA	DRG_NoPOA	DRG_NoPOA
MDC in effect on discharge date	MDC	MDC

HCUP Data Element Description <sup>a</sup>	ICD-9-CM Data Element Included in the Q1Q3 Diagnosis and Procedure Groups File	ICD-10-CM Data Element Included in the Q4 Diagnosis and Procedure Groups File
MDC in use on discharge date, calculated without POA	MDC_NoPOA	MDC_NoPOA
Flag for neonatal, maternal, or mixed record	NEOMAT	Not available <sup>e</sup>
Hospital service line	SERVICELINE	Not available <sup>f</sup>

Abbreviations: CCS, Clinical Classifications Software; DRG, Diagnosis-Related Group; HCUP, Healthcare Cost and Utilization Project; ICD, International Classification of Diseases; ICD-9-CM, International Classification of Diseases, Ninth Revision, Clinical Modification; ICD-10-CM, International Classification of Diseases, Tenth Revision, Clinical Modification; MCC, multiple chronic conditions; MDC, Major Diagnostic Category.

<sup>a</sup> Detailed descriptions of the HCUP data elements are available on the HCUP User Support Web site under [NIS database documentation](#).

<sup>b</sup> Data elements derived from HCUP software tools are not available on the Q4 file because the ICD-10-CM/PCS versions are under development. If an ICD-10-CM/PCS version of AHRQ software tools are needed, please refer to the [HCUP Tools and Software](#) section of the HCUP-US Web site.

<sup>c</sup> A definition of HOSPBIRTH has not been developed using ICD-10-CM diagnosis codes.

<sup>d</sup> ORPROC is derived from the procedure class which is not available on the Q4 file; therefore, ORPROC also is not available.

<sup>e</sup> A definition of NEOMAT has not been developed using ICD-10-CM/PCS codes.

<sup>f</sup> SERVICELINE is derived from the principal diagnosis CCS and DRGs. Because the diagnosis CCS is not available on the Q4 file, SERVICELINE also is not available.

**Table 2. Names of Data Elements Based on Diagnoses and Procedure Codes in the Disease Severity Measures Files, Q1Q3 with ICD-9-CM Codes and Q4 with ICD-10-CM/PCS Codes**

HCUP Data Element Description <sup>a</sup>	ICD-9-CM Data Element Included in the Q1Q3 Disease Severity Measures File	ICD-10-CM/PCS Data Element Included in the Q4 Disease Severity Measures File
Elixhauser Comorbidity Software data elements	CM_<name of comorbidity> There are 29 different comorbidity data elements.	Not available <sup>b</sup>
All patient refined-DRG	APRDRG	APRDRG
All patient refined-DRG: risk of mortality subclass	APRDRG_Risk_Mortality	APRDRG_Risk_Mortality
All patient refined-DRG: severity of illness subclass	APRDRG_Severity	APRDRG_Severity

Abbreviations: DRG, Diagnosis-Related Group; HCUP, Healthcare Cost and Utilization Project; ICD-9-CM, International Classification of Diseases, Ninth Revision, Clinical Modification; ICD-10-CM/PCS, International Classification of Diseases, Tenth Revision, Clinical Modification and Procedure Coding System.

<sup>a</sup> Detailed descriptions of the HCUP data elements are available on the HCUP User Support Web site under [NIS database documentation](#).

<sup>b</sup> Data elements derived from HCUP software tools are not available on the Q4 file because the ICD-10-CM/PCS versions are under development. If an ICD-10-CM/PCS version of AHRQ software tools are needed, please refer to the [HCUP Tools and Software](#) section of the HCUP-US Web site.



## RESOURCES FOR USING ADMINISTRATIVE DATA WITH ICD-10-CM/PCS DIAGNOSIS AND PROCEDURE CODES

The HCUP-US Web site has a section on [ICD-10-CM/PCS Resources](#) that summarizes key issues for researchers using HCUP and other administrative databases that include ICD-9-CM and ICD-10-CM/PCS coding.

If you are unfamiliar with ICD-10-CM/PCS coding, please refer to the following two documents available on the Web page:

- [A brief introduction to the ICD-10-CM/PCS coding system](#)
- HCUP Methods Series Report on the [Impact of ICD-10-CM/PCS on Research Using Administrative Databases](#).

If you are considering using the NIS to examine clinical conditions that will be defined using both ICD-9-CM and ICD-10-CM/PCS coding, please refer to the following important resource:

- [HCUP recommendations for reporting trends using ICD-9-CM and ICD-10-CM/PCS data](#).

These recommendations apply to calendar year 2015 data (which includes both ICD-9-CM and ICD-10-CM/PCS codes), as well as reporting trends that span the October 1, 2015 transition date (before and after the introduction of ICD10-CM/PCS).

The HCUP [ICD-10-CM/PCS Resources](#) Web page also includes the following short reports with new documents added periodically:

- Examination of trends between ICD-9-CM and ICD-10-CM/PCS for key data elements such as number of diagnoses/procedures and Clinical Classification Software categories
- Examination of coding for opioid use under ICD-9-CM and ICD-10-CM/PCS
- Other Federal and State Web resources with information on ICD-10-CM/PCS.