



# MA Center for Health Information & Analysis

## Case Mix User Workgroup

June 26, 2018

# Agenda

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- Announcements
  - Updates on FY17 Case Mix Data Release
- Summarized Data Reports
- User Questions:
  - ✓ Impacts of lifting the limits on Case Mix diagnosis and procedure codes
  - ✓ Use of Glasgow Coma Score in Case Mix data
- Q&A

# Case Mix FY17 Release Calendar



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## \*CURRENT\* RELEASE TIMEFRAMES FOR EACH FILE:

- Inpatient (HIDD)  
**JUNE**
- Emergency Department (ED)  
**AUGUST**
- Outpatient Observation (OOD)  
**SEPTEMBER**

# Case Mix FY17 Data Release

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## REPEAT APPLICANTS

- For those applicants with previously approved projects who indicated they would like to receive data annually, we began accepting **Certificates of Continued Need and Compliance** (Exhibit B of your DUA) starting on **May 1<sup>st</sup>**.
- After receiving this, we will send you an invoice for the FY17 data and release data to you once payment is received and the data is ready
- If you are making any changes to your project, you must go through the amendment process first

# Case Mix FY17 Data Release



## NEW APPLICANTS / NEW PROJECTS

- We will continue to accept new applications on a rolling basis.
- If you are requesting FY17 data, just click the box for “Subscription” on p. 3 of the application form:

1. Please indicate below whether this is a one-time request, or if the described Project will require a subscription.

One-Time Request   **OR**    Subscription

2. Specify below the dataset(s) and year(s) of data requested for this Project, and your justification for requesting *each* dataset. Data prior to 2004 is not available.

**Hospital Inpatient Discharge Data**

2004    2005    2006    2007    2008    2009    2010    2011    2012    2013    2014    2015    2016

Describe how your research objectives require Inpatient Discharge data:

# MA APCD Release 6.0

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- Release 6.0 is available NOW
- Encompasses data from January 2012 – December 2016 with six months of claim runout
- Application form has been updated

Available here: <http://www.chiamass.gov/application-documents>

# Summarized Data Reports

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- CHIA has updated our [Data Release Regulations](#) to allow for ***Summarized Data Reports***
- Will contain only aggregate data (data summaries) and De-identified Data, sourced from MA APCD and Case Mix data
  - Examples of Summarized Data Reports include: counts; totals; rates per thousand; index values; and other standardized metrics.
  - Will be subject to CHIA's cell suppression policy (no cell less than 11 will be displayed)
- Request form can be found on the MA APCD Application Documents page: <http://www.chiamass.gov/application-documents>

# Summarized Data Reports

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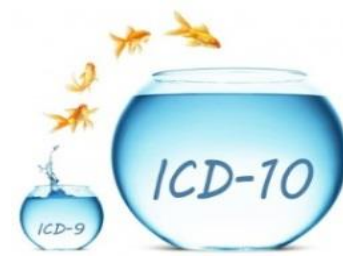
- In determining whether to compile such a report, CHIA will consider the **public interest served**, the **availability of its resources**, the **complexity** of the request, and **privacy concerns** (i.e. that there is no more than a minimal risk to individual privacy in the public release of the report)
- Submit the request via the new form – please provide as much information as you can, including mock-ups of what you expect the reports to look like
  - Data Use Agreement and Data Management Plan not required
- The Executive Director (or his/her designee) will approve or deny such requests. Such approval/denial is final and not subject to further review or appeal.
- A support/production fee of \$140/hour will be charged





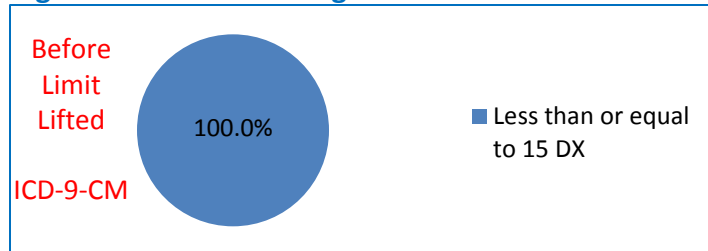
**QUESTIONS?**

**Question:** I am using the Inpatient Hospital Discharge Data. Since CHIA lifted the limit on diagnosis codes in FY2015 and switched to ICD-10-CM in FY2016, would it significantly impact my study if I continued to use 15 diagnosis codes or less in FY2015, FY2016, and FY2017?

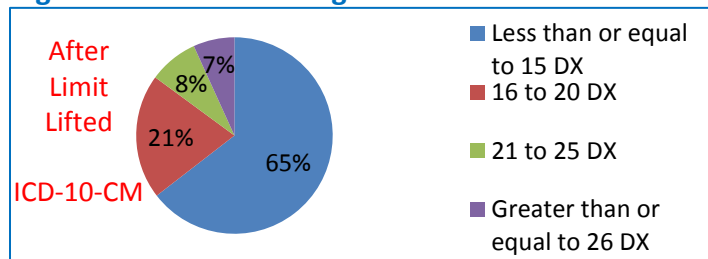


**Answer:** Yes, it would. In **Table 1**, on the right you will see that if you limited your study to patients with 15 diagnosis codes or less in FY2015, you would lose information on 31.9% of the discharges (n=254,151), in FY2016 you would lose 31.6% (n=253,350), and FY2017 you would lose 35.5% (n=286,971). Even before the transition to ICD-10-CM, in FY2015, a notable increase was seen in the number of discharges with up to 35 diagnosis codes. In the new FY2017 inpatient data, 15% of the discharges having more than 20 diagnosis codes. See **Figures 1 and 2** below.

**Fig. 1 Percent of Discharges with 15 or less DX in FY2014**



**Fig. 2 Percent of Discharges with 15 or less DX in FY2017**



**Table 1. Discharge Volume by Number of Diagnosis Codes**

Total Discharges by Number of DX Codes	Before Limit Lifted			After Limit Lifted		
	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017
0 to 1	22,473	20,312	17,398	61	33	14
2 to 4	180,734	166,874	155,941	63,149	55,183	48,507
5 to 10	316,973	296,254	281,216	286,185	296,444	279,138
11 to 14	148,469	143,968	138,881	158,804	161,495	159,673
15	161,219	178,731	192,049	34,485	34,485	34,615
16	-	-	-	32,189	31,614	33,935
17	-	-	-	57,412	64,747	70,557
18	-	-	-	20,721	19,788	22,620
19	-	-	-	18,460	17,513	20,484
20	-	-	-	16,505	15,509	18,674
21 to 25	-	-	-	55,317	52,652	65,785
26 to 30	-	-	-	38,146	35,841	32,678
31 to 35	-	-	-	8,605	9,066	13,828
Greater than 35	-	-	-	6,796	6,620	8,410
<b>TOTAL DISCHARGES</b>	<b>829,868</b>	<b>806,139</b>	<b>785,485</b>	<b>796,835</b>	<b>800,990</b>	<b>808,918</b>

Percent of Total Discharges by Number of DX Codes	Before Limit Lifted			After Limit Lifted		
	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017
0 to 1	2.708%	2.520%	2.215%	0.008%	0.004%	0.002%
2 to 4	21.779%	20.700%	19.853%	7.925%	6.889%	5.997%
5 to 10	38.196%	36.750%	35.802%	35.915%	37.010%	34.508%
11 to 14	17.891%	17.859%	17.681%	19.929%	20.162%	19.739%
15	19.427%	22.171%	24.450%	4.328%	4.305%	4.279%
16	-	-	-	4.040%	3.947%	4.195%
17	-	-	-	7.205%	8.083%	8.722%
18	-	-	-	2.600%	2.470%	2.796%
19	-	-	-	2.317%	2.186%	2.532%
20	-	-	-	2.071%	1.936%	2.309%
21 to 25	-	-	-	6.942%	6.573%	8.132%
26 to 30	-	-	-	4.787%	4.475%	4.040%
31 to 35	-	-	-	1.080%	1.132%	1.709%
Greater than 35	-	-	-	0.853%	0.826%	1.040%

**Question:** What about procedure codes? Would it significantly impact my study if I continued to use 15 procedure codes or less in FY2015, FY2016, and FY2017?



**Answer:** After the limit was lifted on the number of procedure codes, so far annually, less than 3,000 discharges have had greater than 15 procedures. See **Table 1** below. The shift to a higher number of procedure codes was seen in the code distributions for those undergoing complex transplant procedures, significant trauma and cardiac procedures, and infectious diseases patients who require operating room procedures. In both in ICD-9-CM and in ICD-10-CM, after the limit was lifted on procedure codes, this represents less than a half percent of the annual discharge volume. See **Table 2**. While the number is small, the population with greater than 15 procedures could potentially include your study population and some of these patients do in fact have over 50 procedure codes.

**Table 1. Discharge Volume by Number of Procedure Codes**

Total Discharges by Number of Proc Codes	Before Limit Lifted			After Limit Lifted		
	2012	2013	2014	2015	2016	2017
0	311,251	297,358	284,438	296,972	311,322	316,833
1	216,565	210,964	208,012	205,488	184,437	186,778
2	134,777	132,368	130,426	128,394	124,785	124,137
3	69,907	68,971	67,685	68,429	74,186	72,362
4	35,837	35,513	34,659	34,539	40,685	41,620
5	19,922	20,171	19,884	20,747	23,069	23,193
6	12,480	12,580	12,639	12,124	12,539	13,898
7	9,221	8,809	8,914	9,603	8,494	8,597
8	5,826	5,641	5,662	5,113	5,003	5,554
9	3,687	3,541	3,446	3,646	3,991	3,850
10	2,548	2,491	2,342	2,250	2,556	2,864
11	1,744	1,748	1,673	1,942	2,165	2,017
12	1,341	1,264	1,254	1,150	1,266	1,530
13	951	945	855	1,343	1,302	1,075
14	2,175	2,232	2,029	1,610	1,789	1,952
15	1,636	1,543	1,567	557	564	510
16 to 20	-	-	-	1,374	1,431	1,327
Greater than 20	-	-	-	1,554	1,406	821
<b>TOTAL DISCHARGES</b>	<b>829,868</b>	<b>806,139</b>	<b>785,485</b>	<b>796,835</b>	<b>800,990</b>	<b>808,918</b>

**Table 2. Discharge Volume by Percent of Procedure Codes**

Total Discharges by Number of Proc Codes	Before Limit Lifted			After Limit Lifted		
	2012	2013	2014	2015	2016	2017
0	37.51%	36.89%	36.21%	37.27%	38.87%	39.17%
1	26.10%	26.17%	26.48%	25.79%	23.03%	23.09%
2	16.24%	16.42%	16.60%	16.11%	15.58%	15.35%
3	8.42%	8.56%	8.62%	8.59%	9.26%	8.95%
4	4.32%	4.41%	4.41%	4.33%	5.08%	5.15%
5	2.40%	2.50%	2.53%	2.60%	2.88%	2.87%
6	1.50%	1.56%	1.61%	1.52%	1.57%	1.72%
7	1.11%	1.09%	1.13%	1.21%	1.06%	1.06%
8	0.70%	0.70%	0.72%	0.64%	0.62%	0.69%
9	0.44%	0.44%	0.44%	0.46%	0.50%	0.48%
10	0.31%	0.31%	0.30%	0.28%	0.32%	0.35%
11	0.21%	0.22%	0.21%	0.24%	0.27%	0.25%
12	0.16%	0.16%	0.16%	0.14%	0.16%	0.19%
13	0.11%	0.12%	0.11%	0.17%	0.16%	0.13%
14	0.26%	0.28%	0.26%	0.20%	0.22%	0.24%
15	0.20%	0.19%	0.20%	0.07%	0.07%	0.06%
16 to 20	-	-	-	0.17%	0.18%	0.16%
Greater than 20	-	-	-	0.20%	0.18%	0.10%
<b>TOTAL DISCHARGES</b>	<b>829,868</b>	<b>806,139</b>	<b>785,485</b>	<b>796,835</b>	<b>800,990</b>	<b>808,918</b>

**Question:** ICD-10-CM now has a coding option for hospitals to record a patient's Glasgow Coma Scale (GCS). To what extent is GCS recorded in the Inpatient Hospital Discharge Data and Outpatient Emergency Department Data?



**Answer:** The GCS is used to quantify levels of consciousness and the neurological status of patient's who have possibly sustained a brain injury (See **Table 1** below). ICD-10-CM has sixteen coding options for GCS (see **Table 2** below). In the newest FY2017 Inpatient Discharge Data, GCS was recorded on 4,145 patients who fell into 211 different DRGs. The Top 3 DRGs were patients with severe head trauma with coma > 1 hour, those with multiple significant trauma, and those with cerebral infarctions. The FY2016 Outpatient ED data includes GCS on 1,386 patients, some of the leading diagnoses included concussions, alcohol intoxication, and heroin overdose. Please note that the FY2017 inpatient data now includes data on the admitted patient's ED date and time of arrival. Eighty-five percent of inpatient admissions with GCS arrived through the ED. The absolute beauty of the data is that you will find on some patients the EMT field GCS, the ED arrival GCS and the hospital admission GCS which allows you to track across care settings levels of physiological deterioration or improvement.

**Table 1. GCS Components**

Glasgow Coma Scale		
BEHAVIOR	RESPONSE	SCORE
Eye opening response	Spontaneously	4
	To speech	3
	To pain	2
	No response	1
Best verbal response	Oriented to time, place, and person	5
	Confused	4
	Inappropriate words	3
	Incomprehensible sounds	2
	No response	1
Best motor response	Obeys commands	6
	Moves to localized pain	5
	Flexion withdrawal from pain	4
	Abnormal flexion (decorticate)	3
	Abnormal extension (decerebrate)	2
	No response	1
Total score:	<i>Best response</i>	15
	<i>Comatose client</i>	8 or less
	<i>Totally unresponsive</i>	3

**Table 2. ICD-10-CM Glasgow Coma Scale Coding Options**

Diagnosis Code	Full Description
R4024	Glasgow coma scale, total score
R40241	Glasgow coma scale score 13-15
R40242	Glasgow coma scale score 9-12
R40243	Glasgow coma scale score 3-8
R402410	Glasgow coma scale score 13-15, unspecified time
R402411	Glasgow coma scale score 13-15, in the field [EMT or ambulance]
R402412	Glasgow coma scale score 13-15, at arrival to emergency department
R402413	Glasgow coma scale score 13-15, at hospital admission
R402420	Glasgow coma scale score 9-12, unspecified time
R402421	Glasgow coma scale score 9-12, in the field [EMT or ambulance]
R402422	Glasgow coma scale score 9-12, at arrival to emergency department
R402423	Glasgow coma scale score 9-12, at hospital admission
R402430	Glasgow coma scale score 3-8, unspecified time
R402431	Glasgow coma scale score 3-8, in the field [EMT or ambulance]
R402432	Glasgow coma scale score 3-8, at arrival to emergency department
R402433	Glasgow coma scale score 3-8, at hospital admission

# Where can I find old User Workgroup presentations?



<http://www.chiamass.gov/ma-apcd-and-case-mix-user-workgroup-information/>

[CHIA Data » MA APCD » MA APCD and Case Mix User Workgroup Information](#)

## MA APCD and Case Mix User Workgroup Information

These webinar workgroups bring together users of CHIA's APCD and Case Mix data with CHIA's in-house experts to discuss analytical techniques, issues with the data, and quality of the data. CHIA also uses these webinars to make announcements regarding new data releases, enhancements, and features. Each meeting features a segment where CHIA staff answer common questions from data users and field live questions from webinar participants.

Please register for one or both of these separate registration links. All meetings take place on Tuesday afternoons at 3:00 p.m.

Case Mix Workgroup Meeting Dates
<b>NEXT MEETING</b> Tuesday, March 28, 2017 3:00 PM - 4:00 p.m.
<a href="#">Case Mix Workgroup Registration</a>

MA APCD Workgroup Meeting Dates
<b>NEXT MEETING</b> Tuesday, April 25, 2017 3:00 PM - 4:00 p.m.
<a href="#">MA APCD Workgroup Registration</a>

### Previous MA APCD / Case Mix Meeting Materials

MA APCD Tuesday, February 28, 2017

- [Presentation \(PDF\) | PPT](#)

Case Mix Tuesday, January 24, 2017

- [Presentation \(PDF\) | PPT](#)

# Questions?

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- Questions related to APCD :  
([apcd.data@state.ma.us](mailto:apcd.data@state.ma.us))
- Questions related to Case Mix:  
([casemix.data@state.ma.us](mailto:casemix.data@state.ma.us))

REMINDER: Please include your **IRBNet ID#**, if you currently have a project using CHIA data

# Call for Topics and Presenters

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If there is a **TOPIC** that you would like to see discussed at an MA APCD or Case Mix workgroup, contact Adam Tapply [[adam.tapply@state.ma.us](mailto:adam.tapply@state.ma.us)]

If you are interested in **PRESENTING** at an MA APCD or Case Mix workgroup, contact Adam Tapply [[adam.tapply@state.ma.us](mailto:adam.tapply@state.ma.us)]

You can present remotely from your own office, or in-person at CHIA.