

Selected Analytic Findings: CAD, COPD, Diabetes, AMI, and CHF

QASC Episodes Workgroup Meeting:
July 24, 2009

General Project Updates

- Conclusion of in-person physician workgroup process
 - June meetings for Sinusitis and Colon Cancer
- Rapid testing and validation of measures
 - Focus on measures likely to be included in NQF “call for measures”
- Continuous feedback loop with physician workgroups, TAC, and QASC to refine measures

Overview of Measure Testing and Validation Process

- Size of, and attrition from episode denominator
- “Level 1” Analyses of resource use
 - Total episode spending by type of service
 - Top 20 “condition-related” E&M, procedures, imaging, tests, inpatient admissions (by ICD-9 and DRG) and drugs, by service counts and dollar volume
 - Top 20 “non-condition-related” E&M, procedures, imaging, tests, inpatient admissions, and drugs by service counts and dollar volume
- “Level 2” Analyses of resource use
 - Incorporate risk adjustment
 - Identify specific drivers of resource use variation

***Note: analytic results are preliminary and subject to change*

Document for internal discussion purposes

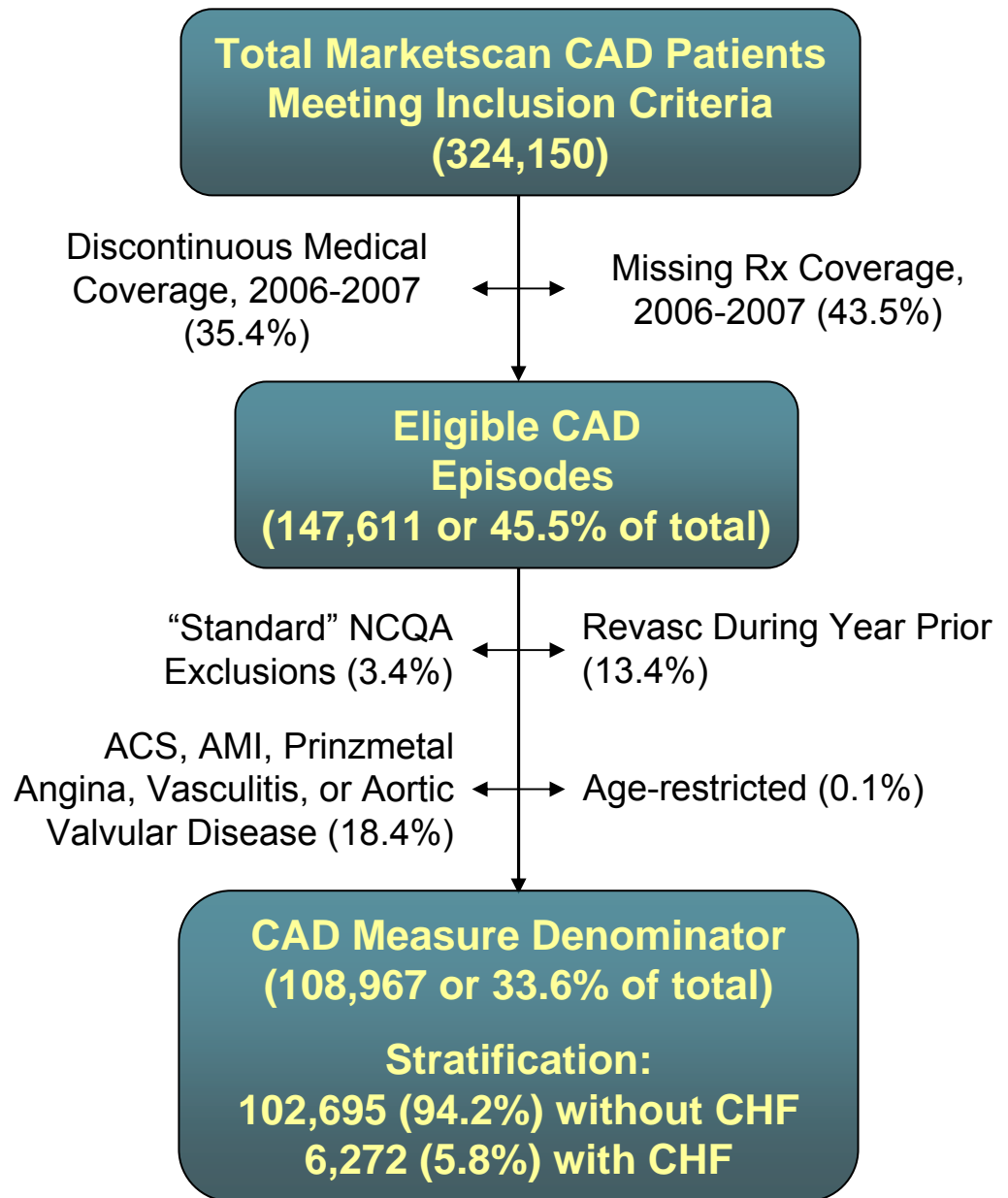
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Initial Findings from Measure Testing and Validation

- Observed resource use generally meets 'face validity' thresholds for physician workgroups
- For several episodes (e.g., AMI, CHF, COPD), the Marketscan database contains only small samples
 - Continuous Medical and Rx coverage requirements have large impact on attrition from denominator
 - Medicare population will likely have larger samples
 - Permits only limited testing of attribution models (also impaired by missing physician/hospital IDs)
- Agreement with CMS to test measures on Medicare data (Parts A and B only)

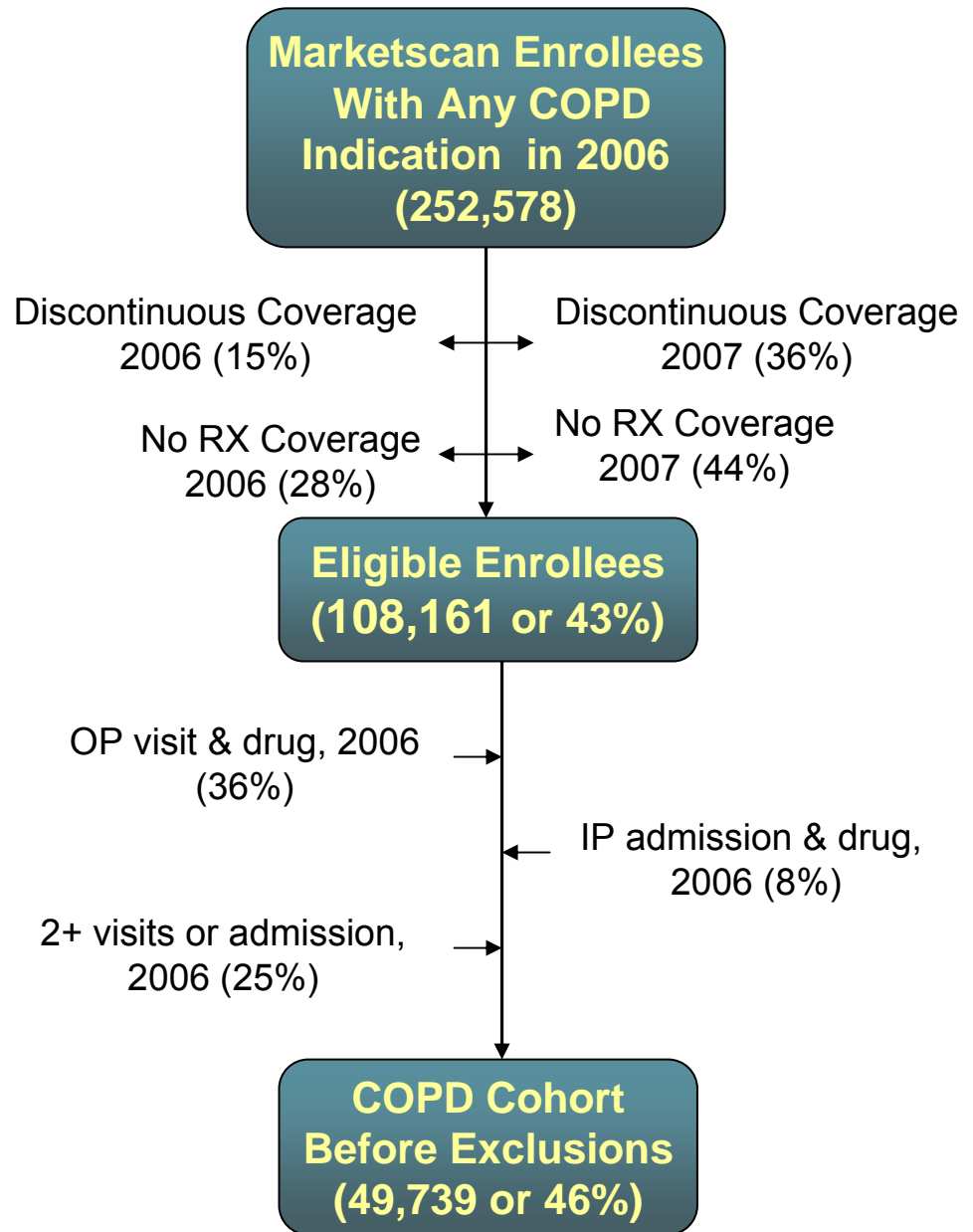
CAD Chronic Measure Denominator

- 12 months of CAD management/care for patient with 1+ CAD ambulatory care visits during previous year
- Measurement window: January 1, 2007 – December 31, 2007
- Test data: Marketscan 2006-2007
- Note: exclusions are not additive (double-counting occurs often)



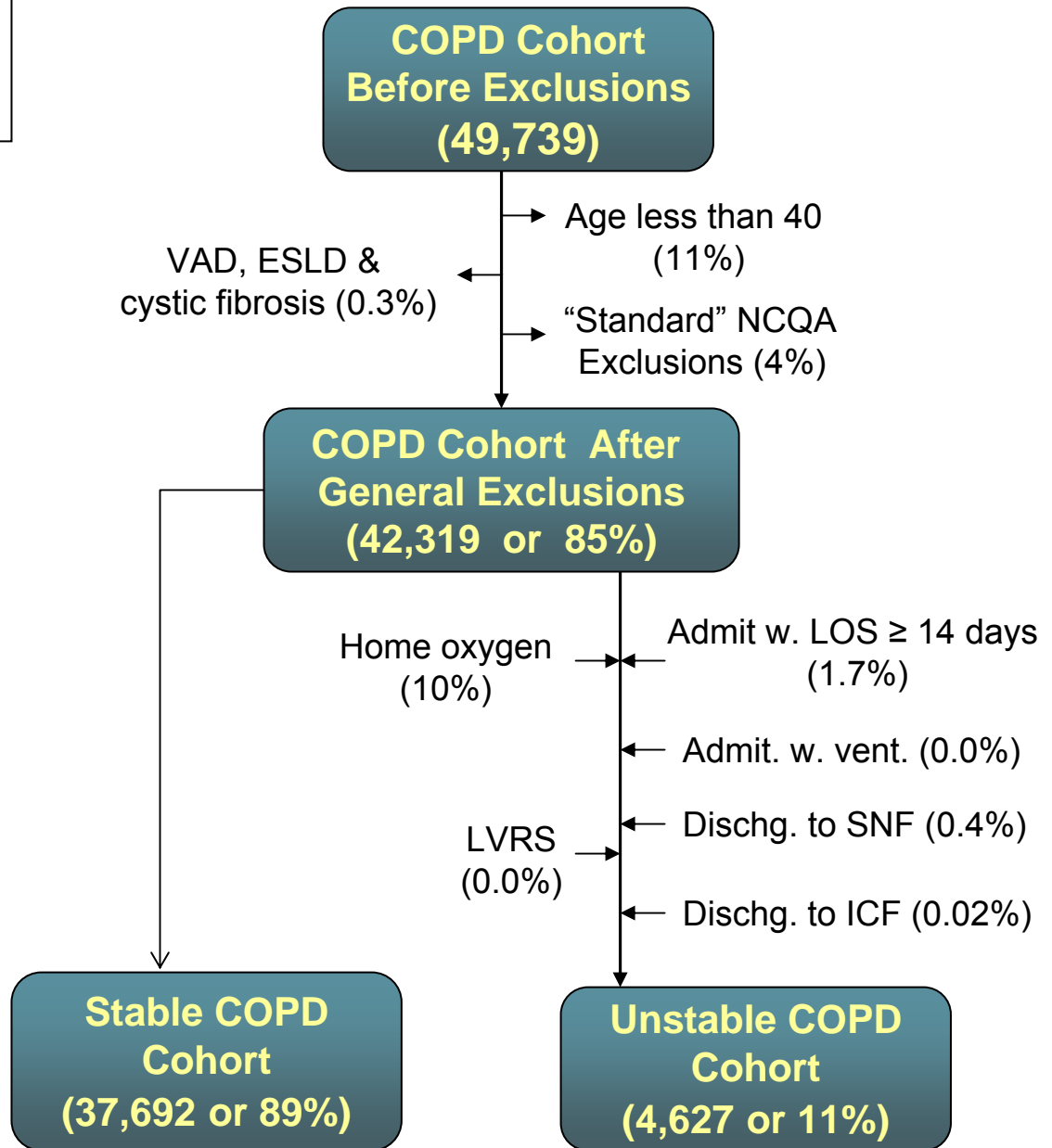
COPD Measure Denominators

- Identification: 2006
- Measurement: 2007
- Inclusion Criteria:
 - OP E&M claim & drug, or
 - IP claim & drug, or
 - 2+ claims (OP E&M and/or IP)
- Note: exclusions and inclusions are not additive (double-counting occurs often)



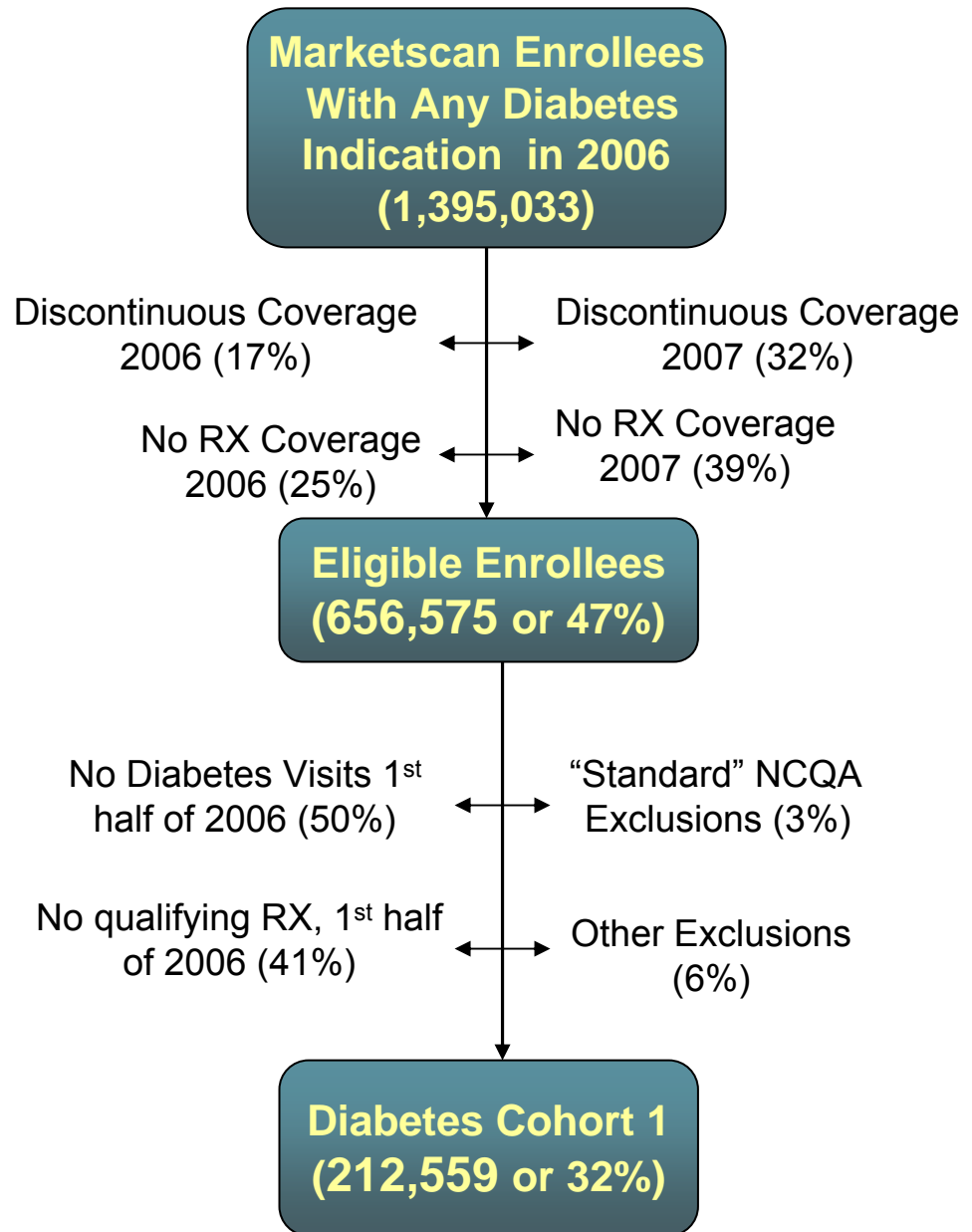
COPD Measure Denominators

- Standard NCQA exclusions
- Age, ventricular assist device, ESKD, cystic fibrosis
- Inclusion criteria for unstable COPD:
 - 2+ mo. Home Oxygen, or
 - Severe COPD hospitalization, or
 - Lung volume reduction surgery
- Note: exclusions are not additive (double-counting occurs often)



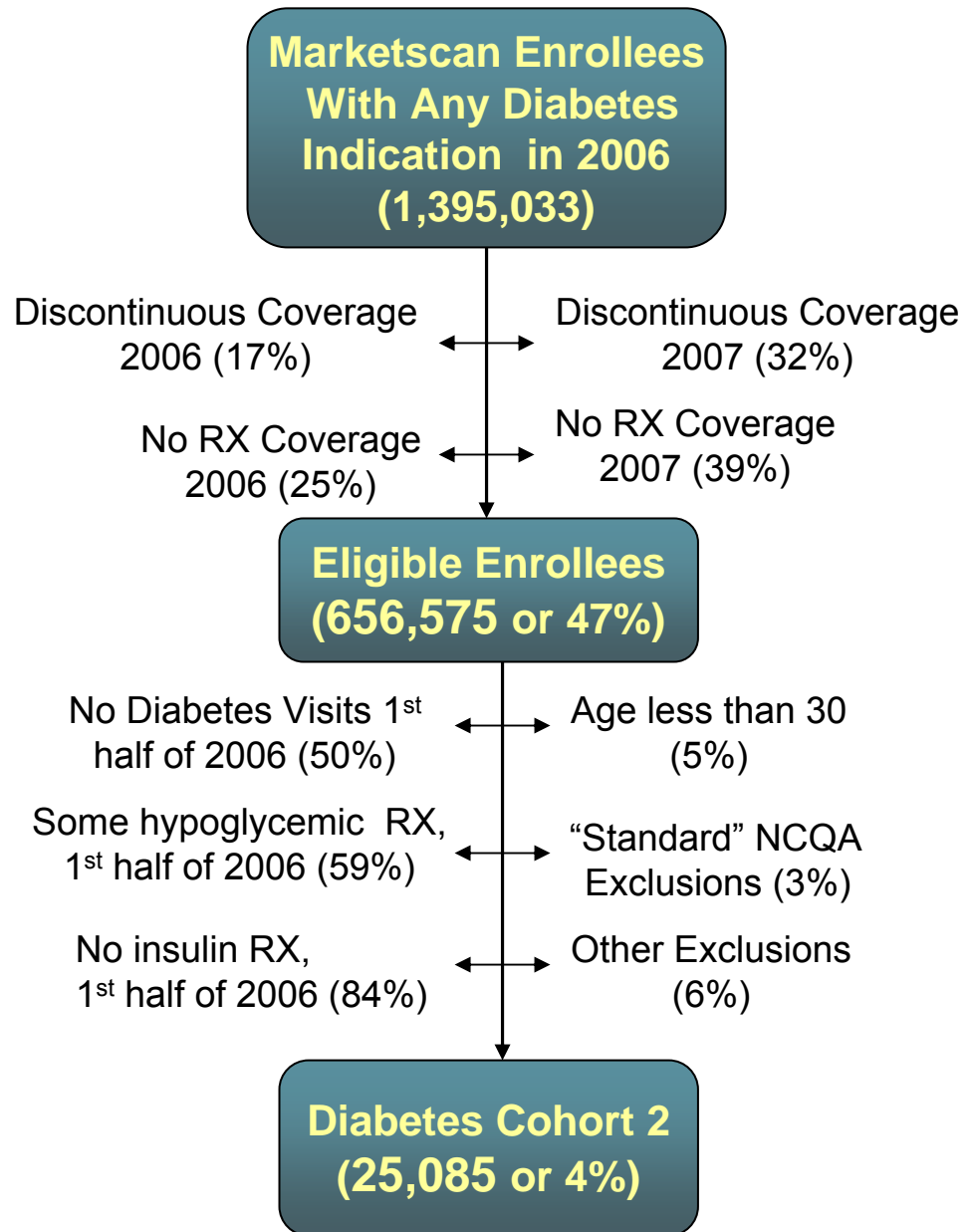
Diabetes One Year Measure Denominator 1

- At least one outpatient visits w. dx-250.x in 2006 (one in 1st half).
- At lease one oral hypoglycemic med. In 1st half 2006.
- Measurement window: Jan. 1, 2007 – Dec. 31, 2007
- Note: exclusions are not additive (double-counting occurs often)



Diabetes One Year Measure Denominator 2

- At least one outpatient visits w. dx-250.x in 2006 (one in 1st half).
- No oral hypoglycemic med. In 1st half 2006.
- At least one insulin claim in 1st half 2006.
- Age 30 years or more
- Measurement window: Jan. 1, 2007 – Dec. 31, 2007
- Note: exclusions are not additive (double-counting occurs often)



Acute Myocardial Infarction

- AMI Acute Episode
 - Overall resource use by type of service
 - Top 20 non-AMI-related E&M services by ICD-9
- AMI Post-acute Episode
 - Overall resource use by type of service

Key changes based on initial analyses: Include services with Chest Pain NOS, Chest Pain NEC, and Precordial Pain ICD-9 codes

Resource Use by Type of Service: Acute AMI

Description	Mean	% of Total	5th %	25th %	50th %	75th %	95th %
Inpatient Facility Charge	\$11,551	71%	\$4,646	\$6,130	\$7,662	\$11,100	\$34,770
E&M	\$761	5%	\$62	\$406	\$668	\$960	\$1,747
Procedures	\$2,647	16%	\$0	\$821	\$1,693	\$2,658	\$9,153
Imaging	\$362	2%	\$0	\$231	\$268	\$444	\$998
Tests	\$129	1%	\$0	\$16	\$53	\$148	\$499
DME	\$7	0%	\$0	\$0	\$0	\$0	\$0
Drugs	\$213	1%	\$0	\$116	\$218	\$289	\$456
Other Drugs and Services	\$580	4%	\$0	\$0	\$0	\$0	\$1,619
Unclassified	\$10	0%	\$0	\$0	\$0	\$0	\$0
Total	\$16,259	100%	\$6,435	\$9,019	\$11,267	\$17,398	\$45,551

Top 20, non-AMI-related E&M, Acute Episode

ICD-9 Diagnosis	Related	Non-related	Related Costs	Non-related Costs
78650-Chest Pain NOS	973	7,057	\$152,806	\$1,140,748
51881-Acute Respiratry Failure	223	2,239	\$35,369	\$327,386
78659-Chest Pain NEC	203	1,066	\$31,553	\$174,563
78651-Precordial Pain	161	1,044	\$22,500	\$170,741
25000-Dm II wo Cmp Nt St Uncntr	119	1,625	\$11,206	\$142,974
4280 -Chf NOS	231	1,193	\$26,368	\$137,781
25002-Dm II wo Cmp Uncntrld	108	1,093	\$11,030	\$114,186
4019 -Hypertension NOS	68	755	\$7,388	\$76,709
5849 -Acute Renal Failure NOS	50	691	\$4,390	\$70,665
4011 -Benign Hypertension	53	692	\$5,172	\$66,527
78605-Shortness of Breath	90	490	\$11,817	\$63,081
78609-Respiratory Abnorm NEC	40	351	\$5,357	\$54,263
486 -Pneumonia, Organism NOS	30	430	\$3,669	\$51,149
7806 -Fever	40	447	\$5,832	\$47,451
496 -Chr Airway Obstruct NEC	40	392	\$3,685	\$44,004
7802 -Syncope & Collapse	48	280	\$6,550	\$42,814
2724 -Hyperlipidemia NEC/NOS	37	381	\$2,963	\$37,188
412 -Old Myocardial Infarct	29	378	\$3,712	\$34,722
4254 -Prim Cardiomyopathy NEC	49	300	\$4,605	\$29,792
79902-Hypoxemia	27	236	\$3,036	\$28,622
Grand Total	63,874	36,807	\$8,050,841	\$4,595,178

Resource use by TOS: Post Acute AMI

Description	Mean	% of Total	5th %	25th %	50th %	75th %	95th %
Inpatient Facility Charge	\$316	9%	\$0	\$0	\$0	\$0	\$0
E&M	\$320	9%	\$0	\$94	\$188	\$377	\$1,052
Procedures	\$452	12%	\$0	\$0	\$0	\$0	\$2,264
Imaging	\$423	12%	\$0	\$0	\$0	\$807	\$1,619
Tests	\$143	4%	\$0	\$0	\$71	\$184	\$513
DME	\$12	0%	\$0	\$0	\$0	\$0	\$0
Drugs	\$1,930	53%	\$54	\$1,203	\$1,989	\$2,616	\$3,624
Other Drugs and Services	\$22	1%	\$0	\$0	\$0	\$0	\$40
Unclassified	\$6	0%	\$0	\$0	\$0	\$0	\$0
Total	\$3,624	100%	\$380	\$1,843	\$2,850	\$4,127	\$8,554

Congestive Heart Failure

- CHF Chronic Management
 - Overall resource use by type of service
 - Common CHF-related inpatient admissions by ICD-9 and DRG
 - Common non-CHF-related inpatient admissions by ICD-9 and DRG
- CHF Management Post-Hospitalization
 - Overall resource use by type of service

Key changes based on initial analyses: Include services with Primary Cardiomyopathy ICD-9 codes

Resource Use by Type of Service: Chronic CHF

Description	Mean	% of Total	5th %	25th %	50th %	75th %	95th %
Inpatient Facility Charge	\$593	17%	\$0	\$0	\$0	\$0	\$3,495
DME	\$188	6%	\$0	\$0	\$0	\$0	\$1,262
Imaging	\$449	13%	\$0	\$0	\$151	\$581	\$1,711
E&M	\$343	10%	\$0	\$0	\$126	\$344	\$1,333
Procedures	\$173	5%	\$0	\$0	\$0	\$0	\$1,014
Tests	\$211	6%	\$0	\$20	\$93	\$274	\$774
Drugs	\$1,386	41%	\$0	\$377	\$1,174	\$2,086	\$3,622
Other Drugs & Services	\$59	2%	\$0	\$0	\$0	\$0	\$55
Unclassified	\$15	0%	\$0	\$0	\$0	\$0	\$0
Sum of charges	\$3,417	100%	\$63	\$1,102	\$2,337	\$4,019	\$9,734

CHF-related Inpatient Admissions: Chronic CHF

ICD-9 Diagnosis	N	Amount
4280 -Chf NOS	201	\$2,160,888
42731-Atrial Fibrillation	30	\$218,830
42823-Ac on Chr Syst Hrt Fail	20	\$211,471
40291-Hyp Ht Dis NOS w Ht Fail	18	\$192,680
4271 -Parox Ventric Tachycard	15	\$126,426
39891-Rheumatic Heart Failure	9	\$239,179
42821-Ac Systolic Hrt Failure	9	\$80,958
42822-Chr Systolic Hrt Failure	8	\$48,731
42843-Ac/Chr Syst/Dia Hrt Fail	8	\$68,844
42833-Ac on Chr Diast Hrt Fail	7	\$63,838
40491-Hyp Hrt/Kid NOS w Hf	6	\$106,862
42830-Diastolic Hrt Failure NOS	6	\$63,553
42732-Atrial Flutter	5	\$67,770
42820-Systolic Hrt Failure NOS	3	\$36,468
42831-Ac Diastolic Hrt Failure	3	\$47,178
Top 10	325	\$3,411,845
Grand Total	376	\$3,947,913

DRG	DRGlabel	N	Amount
292	Heart failure & shock w CC	88	\$924,421
293	Heart failure & shock w/o CC/MCC	79	\$606,176
227	Cardiac defibrillator implant w/o cardiac cath	49	\$289,424
291	Heart failure & shock w MCC	42	\$700,409
287	Circulatory disorders except AMI, w card cath	18	\$165,843
310	Cardiac arrhythmia & conduction disorders w	16	\$91,032
309	Cardiac arrhythmia & conduction disorders w	12	\$77,569
223	Cardiac defib implant w cardiac cath w AMI/H	11	\$115,814
308	Cardiac arrhythmia & conduction disorders w	7	\$56,290
226	Cardiac defibrillator implant w/o cardiac cath	6	\$101,753
238	Major cardiovascular procedures w/o MCC	5	\$35,220
216	Cardiac valve & oth maj cardiothoracic proc w	4	\$216,094
251	Perc cardiovasc proc w/o coronary artery ste	4	\$26,187
204	Respiratory signs & symptoms	3	\$14,130
224	Cardiac defib implant w cardiac cath w/o AMI	3	\$45,444
Top 10		328	\$3,128,731
Grand Total		376	\$3,947,913

Non-CHF-related Inpatient Admissions: Chronic CHF

ICD-9 Diagnosis	N	Amount
41401-Crnry AthrscI Natve Vssl	141	\$1,246,209
486 -Pneumonia, Organism NOS	88	\$881,941
78659-Chest Pain NEC	70	\$338,968
42731-Atrial Fibrillation	50	\$358,945
49121-Obs Chr Bronc W(Ac) Exac	48	\$482,932
5849 -Acute Renal Failure NOS	47	\$342,730
41071-Subendo Infarct, Initial	44	\$407,728
6826 -Cellulitis of Leg	43	\$448,436
71536-Loc Osteoarth NOS-L/Leg	42	\$459,573
V5789-Rehabilitation Proc NEC	41	\$825,722
51881-Acute Respiratry Failure	37	\$623,667
27801-Morbid Obesity	33	\$107,951
4254 -Prim Cardiomyopathy NEC	33	\$198,420
43491-Crbl Art Ocl NOS w Infrc	33	\$264,658
99604-Mch Cmp Autm Mplnt Dfbrl	31	\$240,358
4169 -Chr Pulmon Heart Dis NOS	1	\$11,487
Top 10	614	\$5,793,184
Grand Total	2,507	\$26,269,005

DRG	DRGlabel	N	Amount
313	Chest pain	81	\$353,834
470	Major joint replacement or reattachment of lo	68	\$729,837
249	Perc cardiovasc proc w non-drug-eluting ster	63	\$365,673
392	Esophagitis, gastroent & misc digest disorder	63	\$564,994
194	Simple pneumonia & pleurisy w CC	61	\$566,848
287	Circulatory disorders except AMI, w card cath	55	\$330,147
227	Cardiac defibrillator implant w/o cardiac cath	54	\$378,202
603	Cellulitis w/o MCC	48	\$471,598
238	Major cardiovascular procedures w/o MCC	45	\$303,829
641	Nutritional & misc metabolic disorders w/o M	43	\$199,694
189	Pulmonary edema & respiratory failure	42	\$646,141
310	Cardiac arrhythmia & conduction disorders w	42	\$244,251
192	Chronic obstructive pulmonary disease w/o C	41	\$337,769
247	Perc cardiovasc proc w drug-eluting stent w/c	40	\$165,992
191	Chronic obstructive pulmonary disease w CC	32	\$423,403
989	Non-extensive O.R. proc unrelated to princip	1	\$7,616
Top 10		581	\$4,264,656
Grand Total		2,507	\$26,269,005

Resource use by TOS: Post-hospitalization CHF

Description	Mean	% of Total	5th %	25th %	50th %	75th %	95th %
Inpatient Facility Charge	\$1,639	46%	\$0	\$0	\$0	\$0	\$11,697
DME	\$159	5%	\$0	\$0	\$0	\$0	\$893
Imaging	\$298	8%	\$0	\$0	\$39	\$493	\$1,324
E&M	\$387	11%	\$0	\$0	\$157	\$407	\$1,578
Other Drugs & Services	\$82	2%	\$0	\$0	\$0	\$0	\$519
Procedures	\$264	7%	\$0	\$0	\$0	\$0	\$1,580
Tests	\$164	5%	\$0	\$0	\$71	\$203	\$659
Unclassified	\$32	1%	\$0	\$0	\$0	\$0	\$0
Drugs	\$516	15%	\$0	\$177	\$446	\$747	\$1,286
Sum of charges	\$3,541	100%	\$26	\$588	\$1,268	\$2,663	\$15,716

Next Steps

- Refine measure specifications informed by expert/public comment and data analysis
- Test/implement risk adjustment model
- Identify “cost driver” services among high-cost episodes
- Limited test of attribution model
- Test on Medicare data