



University HealthSystem Consortium

Data Quality in Healthcare Comparative Databases

Steve Meurer PhD, MBA/MHS
Vice President, Clinical Data & Informatics

THE POWER OF COLLABORATION

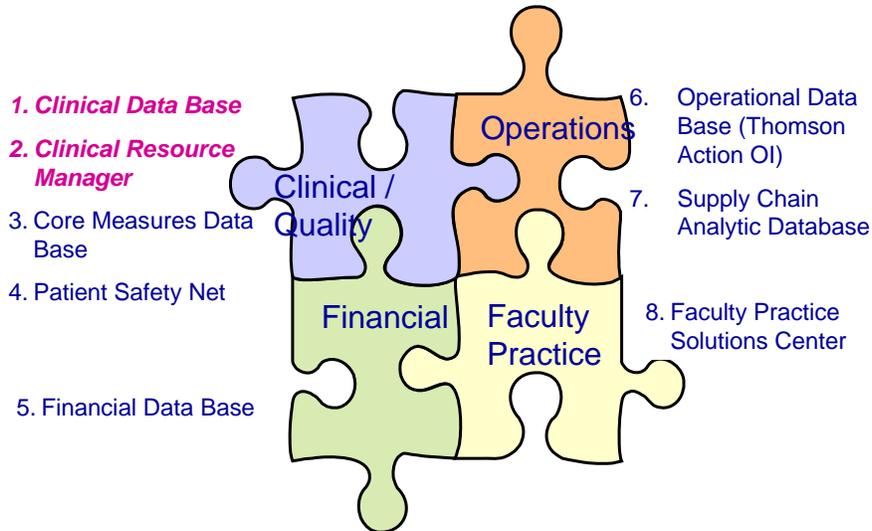
© 2007 University HealthSystem Consortium

University HealthSystem Consortium

- A member owned and governed consortium of academic medical centers
 - This relationship is what makes us unique
 - Approximately 90% of all major not for profit academic medical centers are UHC members
 - Affiliate hospitals are welcome and increasing in numbers (we currently have over 150 associate member hospitals)
 - Nearly 140 members and affiliates subscribe to the CDB
- UHC began in 1984, and has had only 2 CEOs
- UHC provides comparative databases, associated services, a Group Purchasing Organization, and networking opportunities

©2007 University HealthSystem Consortium 2

8 Comparative Databases



©2007 University HealthSystem Consortium 3

“Healthcare’s single most important issue is its inability to improve”

Don Berwick

Reasons for this are many, but a major hurdle is that very little quality data is perfect

HOWEVER, Imperfect data can be very useful in providing direction for improvement efforts ... only if you understand the imperfections

©2007 University HealthSystem Consortium 4

R2 x I3 = Change

- Relationships
- Resources
- Information
- Incentives
- Innovation

*Using data to tell as story /
motivate improvement*

1. Is the data **accurate**?
2. Do you have **appropriate** comparisons / targets?
3. Is the data **adjusted** properly?
4. Do you have the **necessary** data?
5. Is the data **analyzed** correctly?
6. Is the data **presented** correctly (both in print and word)?

©2007 University HealthSystem Consortium 5

Source/Scope of CDB Data

Scope

- Inpatient Discharges
- Outpatient (Currently in R&D) will include ED, observation, chemo/rad therapies, and selected ambulatory procedures
- Three years of rolling data available online

Source

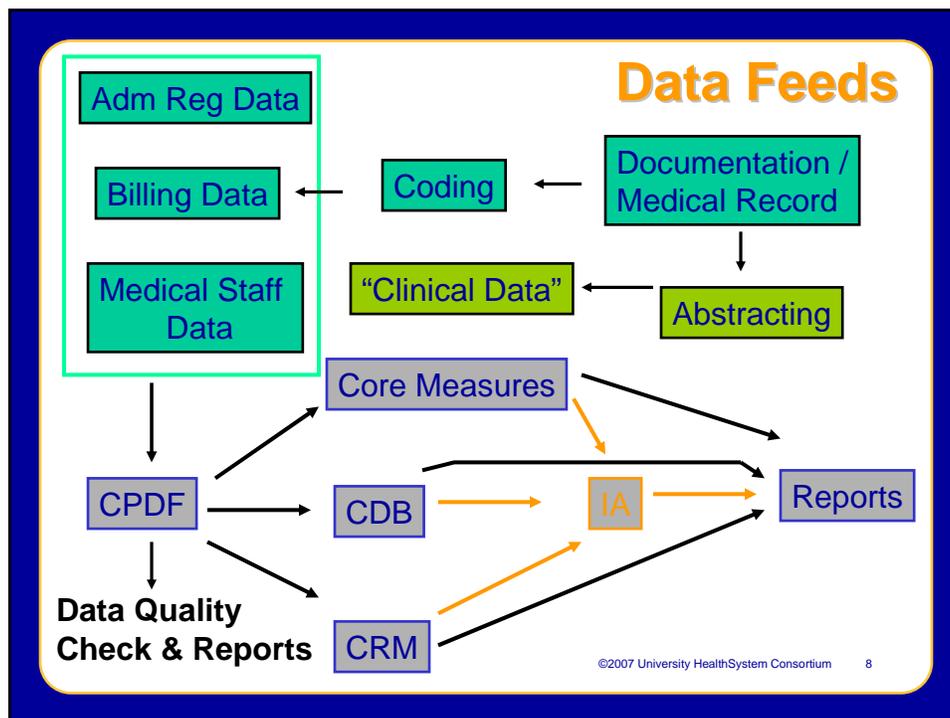
- CPDF – data feed for both CDB and CRM (line item detail)
- Monthly submission

©2007 University HealthSystem Consortium 6

Data Quality

1. Does the data smell or look *fishy*?
 1. UHC has developed an automated process that examines member data and spits out data quality reports
 1. These reports will look at all variables and ask whether they are within a target range
 2. If a variable is not within the target and does not effect overall statistics, the data still passes
 3. If a variable is not within the target and effects overall statistics, the data is returned to the member to be fixed
 2. Is the data an accurate reflection of clinical practice?

©2007 University HealthSystem Consortium 7



©2007 University HealthSystem Consortium 8

CDP Data Quality Reports - Microsoft Internet Explorer

Q1 2008 Data Quality Report for XYZ Hospital

Address: <https://cimprod.uhc.edu/ODU/reports/MainUser.aspx?enddt=080331&ver=A>

FOR PERIOD 01/01/2008 - 03/31/2008 VERSION : A

SUMMARY LISTING BY EXCEPTION TYPE

FIELD NAME	EXCEPTION MESSAGE	NUMBER OF EXCEPTIONS
ADMIT DATE	DOB = ADMIT DATE -- PDX CD NOT NB	2
ADMIT DATE	AD-DT AFTER PRC-DT -- PRC-DT=DEFAULT	7
ADMIT DATE	PRC-DT (1-4) BEFORE AD-DT, MAY BE VALID	22
ADMIT DATE	LOS > 400 DAYS, MAY BE VALID	1
ADMIT SOURCE	NB ADMIT SOURCE -- PDX CD NOT NB	2
ADMIT STATUS	DX1=NB, ADMIT STAT ASSIGNED NB CODE	28
BIRTH WEIGHT	BIRTHWEIGHT IMPUTED BY UHC	19
BIRTH WEIGHT	BIRTHWEIGHT CONFLICT BMV SENT AND IMPUTE	2
BIRTH WEIGHT	ACTUAL BIRTHWEIGHT MISSING	57
DISCHARGE DATE	LOS > 400 DAYS, MAY BE VALID	1
DISCHARGE STATUS	INVALID -- DEFAULT ASSIGNED	1
DX	BLANK FIELD	12
DX	AGE INVALID FOR DX/PROC	2
DX	AGE INVALID FOR DX/PROC	7
DX	INVALID PRINCIPAL DIAGNOSIS	12
DX	CHARGES = ZERO, MAY BE VALID	1
ICU BEGIN TIME	FIELD CONTAINS THE DEFAULT VALUE	713
ICU END TIME	DEFAULT VALUE ENCOUNTERED	970
ICUDAYS	ICU DAYS != CALCULATED DAYS	321
		2180

Local intranet

Is the data an accurate reflection of clinical practice?

Administrative vs. Clinical Data

- Debate on the usefulness of administrative data
- Clinical data requires analysis of the chart and can be very expensive
- Administrative data also comes from analysis of the chart
- The chart is a result of the clinician's (mainly physicians) documentation

Similarities & Differences

Administrative Data

- From medical record of discharged patient
- Began as a financial process
- Completed by educated coders
- Uses a standardized methodology
- Does not include values or test results

Clinical Data

- From a medical record & other IT systems
- Individualized by the nature of the project
- Usually completed by clinicians
- Individualized by the nature of the project
- Could include values or test results

The medical record is the place where clinicians take the results of tests and document the patient's condition

©2007 University HealthSystem Consortium 11

Literature Review

- 'Administrative data outperformed single-day chart review for comorbidity measure'.
 - Luthi et al. *International Journal for Quality in Health Care*. Vol 19. No. 4 Aug 2007. pges 225-231.
- 'Enhancement of claims data to improve risk adjustment of hospital mortality'.
 - Pine et al. *JAMA*. Vol. 297. No.1 Jan 3, 2007. pges 71-6.
- 'Developing data production maps: meeting patient discharge data submission requirements'.
 - Davidson, Lee and Wang. *Int. J. Healthcare Technology and Management*. Vol. 6 No. 2, 2004. pges 223-240.
- 'Comparison of administrative data and medical records to measure the quality of medical care provided to vulnerable older patients'.
 - MacLean et. al. *Medical Care*. Vol 44. No. 2, Feb 2006. pges 141-8.

©2007 University HealthSystem Consortium 12

What Variables Can be Investigated

- ✓ Risk Adjusted Outcomes – Observed and Expected LOS, Mortality and Cost
- ✓ Other variables include: Complications, Readmissions, AHRQ PSIs, Charge, CMI

Performance based on:

- ✓ Hospitals
- ✓ Product Lines
- ✓ DRGs & MS-DRGs
- ✓ Diagnoses / Procedures
- ✓ Physicians
- ✓ Discharge Date/Month/Year
- ✓ Patient Demographics

Resource Utilization*:

- ✓ Blood Products
- ✓ Drugs
- ✓ Imaging Tests
- ✓ ICU
- ✓ Med/Surg Supplies
- ✓ Pharmacy
- * CRM

Items that may be different between administrative and clinical data

©2007 University HealthSystem Consortium 13

Uses of CDB / CRM Data

1. Ongoing consistent reports for meetings
 - Scorecards
 - Examining a DRG per meeting
 - Standard agenda items on Medical Staff Meetings, Leadership Meetings, Board Meetings
2. Improvement Initiatives
 - Drill down from scorecards
 - Answering a question
 - Improvement Priorities
3. Research
4. Improve accuracy of documentation & coding

©2007 University HealthSystem Consortium 14

2008 Data Quality Related Projects

- MS DRGs (complete)
 - Developed for resource use and are derived from a grouper
- Present on Admission
 - Must be consistently documented
- Bringing in 'clinical data' (e.g. lab results)
 - Infection Control Tool
- Shortening time frame for submission & return of data
- Download re-architecture
- Adding nursing units and physician names
- Post hospital mortality
 - Currently use phone follow up &/or master death file

©2007 University HealthSystem Consortium 15

3 Forms of Expression

- Management Reports
- Quality & Accountability Study
- CDB Online Data Tools



em Consortium 16

Quality & Accountability Study

- Three years
- Beginning to get traction as the most statistically based ranking on quality
- Measures include: mortality (aggregate and by product line), core measure (did each patient receive all measures), AHRQ patient safety indicators with the highest signal ratios, & equity (core measures by race, gender & SES)

©2007 University HealthSystem Consortium 17

Adobe Reader - [QA2007_Details_Stanford.pdf] Excellent improvement seen from 2006 to 2007

University HealthSystem Consortium

Score (Rank)	Overall	Mortality	Effectiveness	Safety	Equity	Efficiency	Pt. Center
2006	56.4 (68)	52.2% (61)	46.9% (56)	58.8% (55)	92.6% (53)	46.9% (69)	62.5% (5)
2007	64.2 (36)	58.2% (42)	65.0% (32)	65.4% (55)	100.0% (1)	43.8% (75)	No data

Mortality: O/E Ratio 3's or below in no domains! 8 on 2 **Domain Weight: 35%**

Individual Product Line

	1	2	3	4	7	8	9 / 99	10	11	12	14	15	16	17
2006	1.48 (3)		1.20 (3)	1.01 (4)	0.88 (4)		1.83 (4)	0.35 (6)		1.26 (4)	0.83 (5)	1.03 (3)	No data	0.88 (4)
2007	0.90 (5)	5.76 (LV)	0.88 (6)	1.02 (5)	1.23 (4)	0.00 (8)	0.47 (5)	0.48 (LV)	0.00 (LV)	0.79 (5)	0.96 (5)	1.11 (4)	No data	1.00 (5)
2006	0.92 (4)					0.66 (5)	1.60 (3)		0.75 (5)	0.86 (5)		1.06 (4)	0.95 (5)	
2007	0.72 (6)	0.64 (6)	0.83 (6)	1.82 (4)	0.00 (LV)	0.00 (8)	1.27 (4)	1.54 (4)	1.10 (5)	0.24 (8)	0.51 (5)	1.43 (4)	1.02 (6)	0.47 (6)

Kid/pan tx and plastic surg

Hybrid Domain Scoring

	PL Avg. Score	PL Composite	Agg. Rate (Score)	Agg. Composite	Domain Score
2006	(4.18)	52.2%			52.2%
2007	(5.30)	66.3%	0.99 (4)	50.0%	58.2%

In 2006, Mortality Domain score made up of just the PL Composite. In 2007, Mortality Domain score is the average of the PL Composite and the Agg. Composite.

Effectiveness: Rate (Score) **Domain Weight: 35%**

	AMI	HF	PN	SIP	READM	Metric Avg. Score
2006	76.2% (5)	62.5% (4)	46.7% (2)		6.1% (4)	(3.75)
2007	85.0% (7)	71.4% (6)	62.5% (5)	54.0% (4)	5.5% (4)	(5.20)

Note: N/A denotes no rate available and score was imputed.

Safety: Rate per 1000 (Score) **ht: 20%**

Individual PSI Scoring**

Note: LV denotes not scored due to low volume.

Adobe Reader - [QA2007_Details_Scanford.pdf]

3's or below in the following PSIs: Death in low mortality DRGs

Safety: Rate per 1000 (Score) Domain Weight: 20%

Individual PSI Scoring** Note: LV denotes not scored due to low volume.

	2	4	5	6	7	8	9	10	11	
2006	1.87 (2)	126.80 (4)	0.14 (5)	2.77 (3)	4.28 (5)	0.35 (6)	3.56 (4)	2.23 (5)	3.97 (5)	
2007	1.10 (3)	128.55 (4)		1.44 (4)	3.24 (5)	0.25 (5)				PSI Avg. Score
	12	13	14	15	16	17	18	19	20	
2006	18.69 (4)	9.08 (5)	0.94 (5)	7.17 (4)	0.00 (6)		0.00 (LV)	0.00 (LV)	0.00 (LV)	(4.64)
2007	14.91 (5)			6.26 (5)		No data	No data	0.00 (LV)		(4.43)

Equity: Domain Weight: 10%

2006	AMI	HF	PN	2007	AMI	HF	PN	SIP
Gender	3	2	3	Gender	Not significant	Not significant	Not significant	Not significant
Race	2	3	3	Race	Not significant	Not significant	Not significant	Not significant
SES	3	3	3	SES	Not significant	Not significant	Not significant	Not significant
Score	8	8	9					

Each cell tested for significance at p<0.005 using Fisher's exact test. If significant, %'s listed as:
 Gender: Male vs. Female
 Race: White vs. All others
 SES: Low SES vs. All others

For each cell, score of 1 was given for p<0.01, 2 for p<0.05, and 3 for all others, including those with no data (i.e. score imputed).

Efficiency: Cost or O/E Ratio (Score) Domain Weight: 0%

	LOS	Total Cost	Labor Cost	Supply Cost
2006	0.97 (5)	\$12404 (3)	\$4555 (4)	\$2875 (3)
2007	1.02 (4)	\$12645 (3)	\$4644 (4)	\$2814 (3)

Note: N/A denotes no rate available and score was imputed.

Patient Centeredness Domain Weight: 0%

	Patient Centeredness
2006: Press Ganey overall	N/A (5)
2007: HCAHPS q21 (% 9 or 10)	No data

Note: N/A denotes no rate available and score was imputed. In 2007, data was not imputed; if no data was available, no score was given.

*** Mortality Product Line Codes**

1 - BMT	10 - HIV	18 - NeuroSurg	30 - SurgOnc
2 - Burns	11 - Kidney/PancreasTx	20 - OB	31 - GenSurg
3 - Cardio	12 - LiverTx	22 - Ortho	32 - Trauma
4 - CRTSurg	14 - MedOnc	33 - ENT	34 - Urology
7 - GI	15 - GenMed	24 - Peds	35 - VascSurg
8 - GYN	16 - Neonate	25 - PlasticSurg	36 - Vent
906 - Heart/LungTx	17 - Neuro	28 - Rheum	37 - SpinalSurg

**** Safety PSI Codes**

2 - Death in low mortality DRGs	10 - Postop phys/meta derange	17 - Birth trauma
4 - Failure to resusc	11 - Postop respiratory failure	18 - OB trauma (vag w/ instr)
5 - Foreign body left during proc	12 - Postop DVT/PE	19 - OB trauma (vag w/o instr)
6 - Iatrogenic pneumothorax	13 - Postop sepsis	20 - OB trauma (cesarean)
7 - Selected infections	14 - Postop wound dehiscence	
8 - Postop hip fracture	15 - Accident puncture	
9 - Postop hemorrhage	16 - Transfusion reaction	

Management Reports

Key Indicator Report (KIR)

Clinical Outcomes Report (COR)

Hospital Quality Measures Report (HQMR)

Quality & Safety Management Report (QSMR)

Efficiency Management Report (EMR)

Supply Chain Report (SCR)

- Semi-static reports you receive quarterly
- KIR can be thought of as a balanced scorecard
- Widely dispersed among the membership
- The more databases you are in, the more data you will receive

Clinical Outcomes Report Face Page - Qtr 4

UHC Clinical Outcomes Report: Product Line Mortality

Print Date: Tuesday, March 18, 2008
Data Extract Date: Thursday, March 6, 2008

Green/Red dots based on rank

	Oct - Dec 2007 (Q4)					Jan 2007 - Dec 2007 (recent year)						
	Relative Performance	Denom (Cases)	Obs/Exp Ratio	UHC Percentile	Rank	Relative Performance	Denom (Cases)	Obs/Exp Ratio	UHC Percentile	Rank		
Summary												
Post-Surgical	○	2,876	0.62**	6	0.94	6/89	○	11,391	0.75**	14	0.94	13/91
Quality and Accountability Aggregate	○	5,411	0.83**	28	0.95	26/90	○	21,526	0.88**	22	0.95	30/91
Total Inpatient	○	5,825	0.83*	28	0.94	26/90	○	23,201	0.88**	32	0.95	30/91
Product Line												
Burns	○	34	0.00	0	0.00	1/62	○	132	0.56	28	0.69	15/66
Cardiology	○	511	1.21	82	0.92	75/90	○	1,965	0.92	35	0.97	33/91
Cardiothoracic Surg	○	262	0.93	52	0.92	48/90	○	997	0.97	59	0.93	55/91
Gastroenterology	○	378	1.11	70	0.95	64/90	○	1,267	0.93	44	0.98	42/91
Gynecology	○	153	0.00	0	0.00	1/90	○	578	0.00	0	0.64	1/91
Heart Transplant or Implant of Heart Assist System	○	14	0.70	30	0.71	27/53	○	57	1.21	73	0.94	49/66
HIV	○	6	0.00	0	0.79	1/90	○	34	0.00	0	0.97	1/91
Kidney/Pancreas Transplant	○	17	0.00	0	0.00	1/78	○	72	0.00	0	0.00	1/79
Liver Transplant	○	12	0.00	0	0.00	1/55	○	54	0.42	21	1.06	12/56
Lung Transplant	○	4	0.00	0	0.00	1/34	○	31	0.00	0	0.00	1/38
Med Oncology	○	311	1.12	74	0.92	68/90	○	1,167	1.02	64	0.94	59/91
Medicine General	○	1,068	0.96	45	0.99	41/90	○	4,156	1.05	57	1.00	53/91
Neonatology	○	286	0.68	16	0.94	15/90	○	1,142	0.83	31	0.93	29/91
Neurosurgery	○	238	0.67	28	0.91	26/90	○	929	0.65**	11	0.96	11/91
Ophthalmics	○	41	0.00	0	0.00	1/90	○	211	0.00	0	0.85	1/91
Orthopedics	○	565	0.64	34	0.95	31/90	○	2,339	0.79	32	1.00	30/91
Otolaryngology	○	134	0.00	0	0.00	1/90	○	385	1.64	79	0.70	73/91
Plastic Surgery	○	41	0.00	0	0.00	1/90	○	140	0.00	0	0.88	1/91
Rheumatology	○	34	0.00	0	0.00	1/90	○	135	0.00	0	0.77	1/91
Spinal Surgery	○	264	0.00	0	0.00	1/90	○	1,185	0.00	0	0.77	1/91
Surg Oncology	○	67	1.08	60	0.61	35/90	○	232	0.83	44	0.82	42/91
Surgey General	○	646	0.54*	9	0.89	9/90	○	2,453	0.79	26	1.00	24/91
Trauma	○	42	0.47	25	0.90	23/89	○	179	0.46*	17	0.94	16/91
Urology	○	168	0.00	0	0.00	1/90	○	714	0.34	20	0.83	15/91
Vascular Surgery	○	67	0.00	0	0.75	1/90	○	258	1.06	58	0.91	54/91
Ventilator Support	○	48	0.52*	6	0.93	6/90	○	212	0.82	25	0.97	23/91

Legend

- Substantially Worse than Target Range Performance > 90th percentile of peer group
- Worse than Target Range Performance > 50th percentile of peer group
- Within Target Range Performance <= 50th percentile of peer group
- Substantially Better than Target Range Performance < 10th percentile of peer group
- Quality Alert Warning Quality alert screening criteria triggered (only for current quarter)
- ! Interpret with Caution Low volume, excluded from top-10

* Significant difference from expected at .05 level of significance

1/2 red dots in Qtr and Year in Med Onc & CT Surg

Clinical Outcomes Report Drill Down on Med Onc

Print Date: Tuesday, March 18, 2008
Data Extract Date: Thursday, March 6, 2008

Definition - Med Oncology
Product lines are defined by UHC and displayed in the CDB. This product line includes inpatient discharges in MS-DRGs 54-55, 180-182, 374-376, 435-437, 542-544, 597-599, 696-698, 834-849. This list is based on the effective MS-DRGs for the reported current quarter. Bad data, nonviable neonates, organ harvest cases, and records with a null expected mortality are excluded. For prior periods, product line assignments were based on the effective DRGs at that time.

Relative Performance	Denom (Cases)	Obs/Exp Ratio	UHC Median	Rank	# Hospital w/ Same Rank
Current Quarter	311	1.12	0.92	68/90	1
Recent Year	1,167	1.02	0.94	59/91	3

	Current Quarter	Last Quarter	Recent Year
Cases (denom.)	311	267	1,167
Observed Deaths	31	18	96
Expected Deaths	27.66	21.45	82.88
Observed Mortality (%)	9.97	6.72	7.37
Expected Mortality (%)	8.89	7.47	7.19
Observed/Expected Ratio	1.12	0.83	1.02

Med Oncology

Med Oncology Legend:

- Substantially Worse than Target Range Performance > 90th percentile of peer group
- Worse than Target Range Performance > 50th percentile of peer group
- Within Target Range Performance <= 50th percentile of peer group
- Substantially Better than Target Range Performance < 10th percentile of peer group
- Quality Alert Warning Quality alert screening criteria triggered (only for current quarter)
- ! Interpret with Caution Low volume, excluded from top-10

Recent Year UHC Top-10 Mortality O/E in Med Oncology

State	Mort O/E	Cases	LOS	O/E	Readmit Rate
ARKANSAS	0.19	721	1.59	6.07	
ARIZONA	0.51	638	0.84	5.41	
CHICAGO	0.56	2,030	0.93	7.46	
CALIFORNIA-NORTHCOAST	0.56	462	0.87	10.50	
WISCONSIN	0.60	933	0.84	8.90	
TRINAHOSPITALHILL	0.60	352	0.99	6.67	
HOPKINS	0.62	2,038	0.89	9.91	
DEBENHART	0.62	352	0.96	11.72	
MARYLAND	0.63	1,043	0.78	7.99	
TOLEDO	0.63	190	0.84	12.43	

Recent Year Five MS-DRGs with Highest O/E Ratios (>=25 cases):

MS-DRG	Case	O/E	Deaths
MS-DRG 835 ACUTE LEUKEMIA W/O MAJOR D.K. PROCEDURE W CC	23	2.71	4
MS-DRG 846 CHEMOTHERAPY W/O ACUTE LEUKEMIA AS SECONDARY DIAGNOSIS W MCC	59	1.65	7
MS-DRG 181 RESPIRATORY NEOPLASMS W CC	41	1.36	3
MS-DRG 180 RESPIRATORY NEOPLASMS W MCC	44	1.33	3

To qualify in the top-10 section, facilities must meet the product line minimum volume threshold published in the FAQ document and have a Mortality O/E ratio of 1.00 or less.

2 of the last 4 above expected
This represents 31 deaths in the 4th quarter 2007

CDB Interface Default Report *Volume, LOS, ICU, Complications, Mortality*

LOS Summary By HCO										
HCO	Cases	LOS Outlie	Mean LOS	StDev LOS	Mean LOS	LOS Index	Variance (Days)	% ICU Cases	Mean ICU	
	22,231	145	5.03 **	8.46	5.50	0.91	-10,411	25.76	5.45	
	23,203	107	5.75 **	7.92	5.54	1.04	4,880	19.84	5.35	
	30,074	366	6.11 **	10.30	5.42	1.13	20,947	16.39	5.36	
	32,618	121	5.21 **	8.08	5.69	0.91	-15,818	15.59	5.57	
	55,317	220	4.61	6.81	4.57	1.01	2,064	10.82	3.92	
	30,673	198	5.59 **	8.07	5.78	0.97	-5,823	25.15	5.64	
	21,774	174	5.71 **	8.57	5.44	1.05	5,996	21.82	5.18	
	52,817	254	5.00 **	7.21	4.81	1.04	10,442	11.15	5.21	
	44,004	269	4.89	7.52	4.87	1.00	984	14.42	7.00	
	44,586	307	5.84 **	9.42	5.23	1.12	27,368	15.65	6.16	
	59,435	286	5.08 *	8.21	5.15	0.99	-4,225	36.96	4.33	
	36,363	223	5.76	10.26	5.79	0.99	-1,067	9.86	7.20	
	23,589	142	5.61 *	8.14	5.49	1.02	2,842	18.83	3.96	

Time Frame is CY 2007

CDB Interface Default Report (cont.) *Volume, LOS, ICU, Complications, Mortality*

LOS Summary By HCO								
HCO	Cases	Risk Pool Cases	% With Comp's(2)	% Deaths (Obs)	% Deaths (Exp)	Mortality Index	% Early Deaths	
	22,231	8,008	18.32	2.07 **	2.70	0.77	0.67	
	23,203	13,116	19.27	2.74 **	3.11	0.88	0.69	
	30,074	14,816	19.5	2.10 **	2.51	0.84	0.57	
	32,618	13,715	14.33	1.65 **	1.87	0.88	0.52	
	55,317	18,062	13.24	1.34 **	2.17	0.62	0.32	
	30,673	13,146	19.41	2.63 **	3.45	0.76	1.03	
	21,774	9,421	16.98	1.97 **	2.74	0.72	0.54	
	52,817	24,244	15.53	1.82 **	1.99	0.92	0.45	
	44,004	15,757	14.53	2.25	2.15	1.05	0.75	
	44,586	18,589	19.14	1.73	1.83	0.95	0.40	
	59,435	32,159	20.06	1.62 **	1.93	0.84	0.49	
	36,363	13,039	17.97	1.38 **	1.59	0.87	0.29	
	23,589	12,586	17.4	1.94 **	2.58	0.75	0.75	

UHC CDP Online - Microsoft Internet Explorer

Case 1 of 2

Patient ID	Encounter Number	Admit Date	Admit Day	Admit Source	Admit Status				
				Emergency room	Emergency				
Discharge Date	Discharge Day	Discharge Status		Age	Horm IB	Sex	Race		
12/26/2007	Wednesday	Expired (all in-hospital deaths except for Medicare or CHAMPUS hospice patients)		78	No	Male	White		
ICU Days	Early Death	MS-DRG	DRG	APR-DRG	Product Line	Severity of Illness	Risk of Mortality		
7	No	163	075	120	Cardiothoracic Surg	Extreme	Extreme		
Princ Proc MD	Attesting MD	MD Speciality		Primary Payer	Secondary Payer				
		Cardiothoracic Surg		Medicare Traditional/Indemnity	Medicare Traditional/Indemnity				
LOS Observed	LOS Expected (MS-DRG)	LOS Expected (DRG)	LOS Outlier	Mortality Observed (MS-DRG)	Mortality Expected (DRG)	Cost Observed	Cost Expected (MS-DRG)	Cost Expected (DRG)	Charges Observed
20	19.82	24.78	No	0.35724	0.24149	86,691	47,035	52,560	403,794
Diagnoses				Procedures			Complications		
(1) 1972 - secondary pleura ca (2) 5108 - empyema w/o fistula (3) 40391 - renal htn nos w rt (4) 5856 - esrd (5) 2639 - protein-cal malnut nos (6) 5121 - iatrogenic pneumothorax (7) 99859 - postop infection nec (8) 0309 - septicemia nos (9) 88550 - care dt int w org dyst (10) 78552 - septic shock (11) 5185 - posttr pulmon insuff (12) 5180 - pulmonary collapse (13) 2762 - acidosis (14) 42731 - atrial fibrillation (15) 2724 - hyperlipidemia nec & nos (16) 2930 - delirium dt cce (17) v1005 - hx large intestine ca (18) v1052 - hx kidney ca (19) v451 - renal dialysis status (20) v4591 - aortocoronary bypass (21) v4365 - knee replacement status				(1) 3409 - pleural incision nec (2) 3451 - decortication of lung (3) 4311 - peg (4) 7791 - tot chest cage osteotomy (5) 3404 - insert intercostal cath (6) 3995 - hemodialysis			wound infection		
Pediatric Indicators			Quality Indicators			Patient Safety Indicators			
none indicated			none indicated			none indicated			
CRM Category	Resource	Total Cost	CRM Category	Resource	Total Cost	CRM Category	Resource	Total Cost	
Accommodations	accom icu (other)		Imaging & Diagnostics	x-ray chest		Imaging & Diagnostics	ct head w/wo contrast		
Imaging & Diagnostics	x-ray (other)		Imaging & Diagnostics	ct body w/wo contrast		Imaging & Diagnostics	mri head w/wo contrast		
Imaging & Diagnostics	mri body w/wo contrast		Imaging & Diagnostics	echo		Imaging & Diagnostics	ekg/ecg routine		
Imaging & Diagnostics	echo 2d only		Imaging & Diagnostics	echo doppler spectral					

**MSDRG 163 – Chest Px w/ MCC exp of 36%
DRG exp of 24%
20 day LOS exp of 20 days
SOI and ROM of extreme**

https://cimprod.uhc.edu/pv/include/document/MS-DRG%20Model%20Results%20FY2007_Mortality.pdf - Microsoft Internet Explorer

Model Group: # 57 - Major chest procedures w MCC (MSDRG 163), Major chest procedures w CC (MSDRG 164), Major chest procedures w/o MCC (MSDRG 165)

Model Diagnostics: Calculation: Chi-sq = 4.701 Validation: Chi-sq = 19.800, F = 4.212, p = 0.0217
Final: Max VIF = 1.380, Hosmer-Lemeshow = 8.114, p = 0.5227, df = 9, C = 0.924
Mean Observed = 0.0218, Mean Expected = 0.0218

Cases = 19,471
Model Method = Logistic Regression

Model Results (Significant Predictors)

Coeff	Explanatory Variable	Coeff	Explanatory Variable
-6.634	Intercept	0.557	Vent on Admission Day
4.848	ROM = 4 (Extreme)	0.555	Admit Status = Emergency
3.475	ROM = 3 (Major)	0.364	CC Coagulopathy
2.451	Palliative Care	0.281	CC Fluid & Electr Disorders
1.727	ROM = 2 (Moderate)	0.103	Male, 51 <= Age < 65
0.690	CC Pulm Circulation Disease	-0.317	CC Hypertension
0.681	Principal Diagnosis Metastatic	-0.407	CC Deficiency Anemias
0.609	CC Congestive Heart Failure	-0.441	CC Drug Abuse

High c-value of .924, close to 20,000 cases in the model

Although administrative data has no results, it will include all conditions that are diagnosed from notes and results

UHC CDP Online - Microsoft Internet Explorer

Case 2 of 4

Patient ID	Encounter Number	Admit Date	Admit Day	Admit Source	Admit Status				
0707760	12151569	3/6/2007	Tuesday	Non-Facility Point of Origin	Urgent				
Discharge Date	Discharge Day	Discharge Status	Age	Horm IIB	Sex	Race			
3/20/2007	Tuesday	Expired (all in-hospital deaths except for Medicare or CHAMPUS hospice patients)	65	No	Male	White			
ICU Days	Early Death	Base MS-DRG	MS-DRG	DRG	APR-DRG	Product Line (MS-DRG)	Product Line (DRG)	Severity of Illness	Risk of Mortality
1	No	147	457	546	304	Spinal Surgery	Spinal Surgery	Major	Moderate
Princ Proc MD	Attesting MD	MD Specialty	Primary Payer	Secondary Payer					
120055	120055	Orthopedic Surg	Medicare Traditional/Indemnity	Commercial/Private Preferred Provider Organization (PPO)					
LOS Observed	LOS Expected (MS-DRG)	LOS Expected (DRG)	LOS Outlier	Mortality Expected (MS-DRG)	Mortality Expected (DRG)	Cost Observed	Cost Expected (MS-DRG)	Cost Expected (DRG)	Charges Observed
14	6.83	6.77	No	0.00076	0.00642	30,737	46,042	44,218	116,315
Diagnoses	Procedures	Complications							
(1) 1985 - secondary bone ca (2) 4019 - hypertension nos (3) 1890 - kidney ca nec (4) 73313 - path fx vertebrae (5) 99709 - nerv syst surg comp nec (6) 72402 - spinal stenosis-lumbar (7) e8786 - skin rxn-surgical px nec	(1) 8108 - posterior lumbar fusion (2) 9604 - insert endotracheal tube (3) 8162 - fusion/refusion 2-3 vert	other complications of procedures							
Pediatric Indicators	Quality Indicators	Patient Safety Indicators							
none indicated	none indicated	none indicated							
CRM Category	Resource	Total Cost							
Imaging & Diagnostics	x-ray chest								
Lab	mri body w/wvo contrast								
Lab	comp metabolic panel								
Lab	abo rh								
Lab	complete blood count								
Lab	ptlitqit								
Lab	arterial blood gas								
Med/Surg Supplies	mech comp devices								
Pharmacy	cefazolin								
Pharmacy	diazepam								
Pharmacy	famotidine								
Pharmacy	glycyssylolate								
Pharmacy	hydromorphone								
Pharmacy	ketamine								
Pharmacy	megestrol acetate								
Pharmacy	midazolam								
Pharmacy	neostigmine								
CRM Category	Resource	Total Cost							
Imaging & Diagnostics	x-ray (other)								
Lab	basic metabolic panel								
Lab	calcium								
Lab	antibody screen								
Lab	ptlfr								
Lab	hemalocrit								
Med/Surg Supplies	ortho components (screws)								
Pharmacy	amlodipine								
Pharmacy	dexamethasone (systemic)								
Pharmacy	diphenhydramine								
Pharmacy	fentanyl								
Pharmacy	heparin sodium								
Pharmacy	isoflurane								
Pharmacy	lidocaine (inj. anest)								
Pharmacy	metoclopramide								
Pharmacy	morphine								
Pharmacy	phytonadione								

14 day LOS, very few diagnoses

resources

Data Quality Study

- Goal is to evaluate whether the data in the CDB is an accurate reflection of clinical practice
- Used the 5 Chicago area academic medical centers
- Studied the data quality reports as well as global reports from the CDB
- 5 variables for each organization were chosen and contact with the member determined if the variance was real, an artifact of coding or documentation or something other

Study Summary

- UHC found the data discrepancies were mostly an effect of documentation and coding practices. In particular, they resulted from:
 - institutional emphasis on particular product lines,
 - documentation/coding of secondary diagnoses based on impact on reimbursement,
 - patient population, and
 - institutional patient safety/quality programs.

©2007 University HealthSystem Consortium 29

4. MS-DRG	a	b	c	d	e	Total
781 Other antepartum diagnoses w medical complications	90.0 4%	85.4 0%	92.0 4%	90.52 %	79.3 8%	86.4 8%
782 Other antepartum diagnoses w/o medical complications	9.96 %	14.6 0%	7.96 %	9.48 %	20.6 2%	13.5 2%

2. Fluid and Electro Disorders	a	b	c	d	e	Total
	N =	N =	N =	N =	N =	N =
Comorbidity	22,374	26,969	15,008	22,056	32,380	118,787
Fluid and electr disorders (n)	4,070	4,718	2,038	4,985	6,094	21,905
Percent of All Cases	18.2%	17.5%	13.6%	22.6%	18.8%	18.4%

7 University HealthSystem Consortium 30

2. Characteristics of Tobacco Use

ICD-9 Code	a	b	c	d	e
	N =	N =	N =	N =	N =
All Cases	22,374	26,969	15,008	22,056	32,380
v1582 - hx tobacco use (n)	3611	2612	152	4998	82
v1582 - hx tobacco use (%)	16.14%	18.53%	0.55%	11.84%	0.47%
3051 - tobacco use disorder (n)	2478	2367	1037	3405	230
3051 - tobacco use disorder (%)	11.08%	12.63%	1.53%	10.73%	3.20%

Clinical Data would not pick this up as it is an effect of documentation

©2007 University HealthSystem Consortium 31

The average number of diagnoses coded per case

Diagnoses Profile	HCO	Cases	Mean #	Max #
	140088	22,374	10.072	59
	140119	26,969	9.253	55
	140150	15,008	6.380	25
	140276	22,056	9.929	77
	140281	32,380	8.230	30

This hospital does not seem to be giving itself 'credit' for the severity of their patients

This will also negatively effect reimbursement

©2007 University HealthSystem Consortium 32

Summary

- For use in performance improvement, administrative data (if proper checks are in place) can be an effective portrayal of clinical practice
- In addition, the CDB can assist a hospital in improving the accuracy of administrative data quality and accuracy