

3M Health Information Systems

Hospital Readmissions: How do Hawaii Hospitals Measure Up?

Date – November 10, 2009



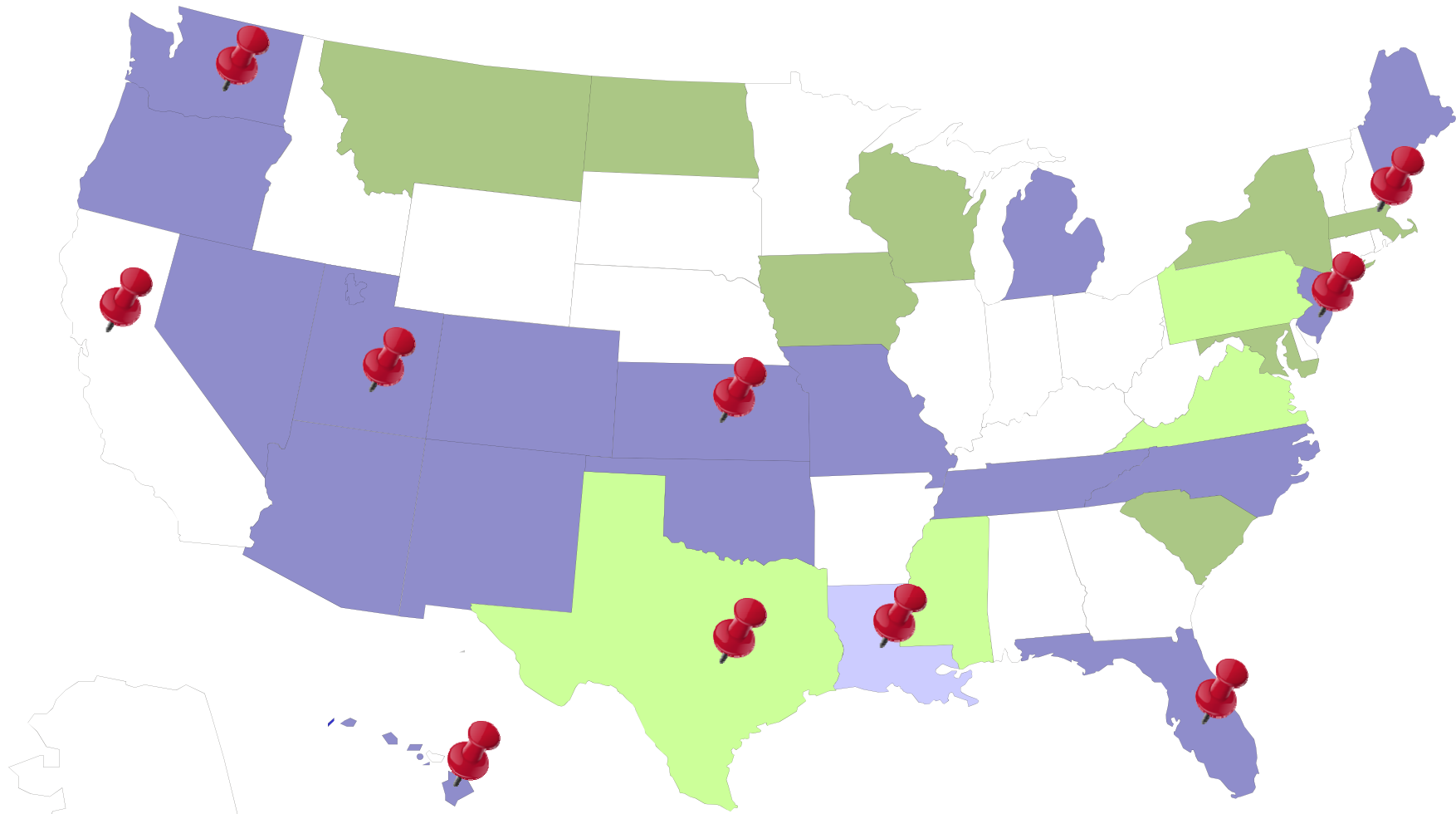
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PPR Recent Projects

- Florida public reporting of PPR on FloridaHealthFinder web site.
- MedPac 2007 and 2008 Report to congress
- On-going several states in the process of evaluating PPR for public reporting and payment.

3M Health Information Systems
Current Use and Evaluation
of 3M™ APR DRGs PPRs and PPCs (July 2009)



				
APR Reporting	APR Eval. Reporting	APR Payment	APR Eval. Payment	PPR



Potentially Avoidable Admissions Cost Billions: AHRQ

- In 2006, hospital costs for **potentially preventable conditions** totaled nearly **\$30.8 billion**—one of every 10 dollars of total hospital expenditures
 - *4.4 million hospital stays could possibly have been prevented with better ambulatory care, improved access to effective treatment, or patient adoption of healthy behaviors.*
- **Congestive heart failure and bacterial pneumonia**- two most common reasons for potentially preventable hospitalizations
 - *Accounting for half of the total hospital costs (\$8.4 billion and \$7.2 billion, respectively) for all preventable hospitalizations.*
- **One in five (18 percent) Medicare admissions** was for a potentially preventable condition
 - *Medicare patients contributed to \$20.1 billion (67 percent) of total hospital costs for potentially preventable hospitalizations among adults.*
- Hospitalization rates for potentially preventable conditions were **highest among residents in poorer communities** but lowest among residents from wealthier communities
 - *Disparity was particularly evident for diabetes without complications, where the admission rate in the poorest communities was more than 400 percent higher than the rate in the wealthiest communities*

April 2009; **Nationwide Frequency and Costs of Potentially Preventable Hospitalizations, 2006**; H. Joanna Jiang, Ph.D., C. Allison Russo, M.P.H., and Marguerite L. Barrett, M.S.



Alignment of Incentives with Quality

Over the next 10 years, the White House expects the following incentives to result in savings for Medicare

(Savings in Millions of Dollars)

Objective	2010	2010-14	2010-19
Encourage hospitals to reduce readmission rates	0	2,450	8,430
Create hospital quality incentive payments	0	2,989	12,110
Establish competitive bidding for MA	0	47,590	177,200
Bundle payments covering hospital, post acute	0	820	16,100
Improve medicare payment accuracy	60	750	2,100

Source: White House and May 11, 2009 Modern Healthcare, p. 9

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How are 3M™ Potential Preventable Readmissions (PPRs) different from CMS 30 day Readmissions?

CMS	PPR
30 day	Readmission time interval is customizable
Data Set is Medicare FFS patients (largely 65+ yrs old)	All patients with global exception for neonates
All cause model	Preventability model Special logic for global exclusions, sub acute conditions, transfers and traumas
Readmission focused on 3 targeted areas (Heart Failure, Heart attack, Pneumonia)	Readmissions for all conditions except of a small set of excluded conditions.
Risk –Standardized Readmission Rate Consider certain Co-morbidities in hierarchical regression	Readmissions risk adjusted using APR DRG and severity of illness at discharge of the initial admissions.
Compares hospitals against a national norm	Compares hospitals to each other using indirect standardization

3M™ Potentially Preventable Readmissions (PPRs)

Potentially Preventable Readmissions are defined as return hospitalizations that may result from deficiencies in the process of care and treatment or lack of post discharge follow-up

3M™ Potentially Preventable Readmissions (PPRs) – An Outcome Measure

- Straight forward
 - *Uses abstract data*
 - *Open methodology*
 - *Categorical Mode*
- Clinically based- not all readmissions are preventable
 - *Non preventable admissions excluded*
 - *Clinical connection between Initial Admission and Readmission (Readmission chains)*
 - *Uses APR DRGs as the foundation*
- Specific
 - *Severity Adjusted for comparisons*

PPR Matrix

Microsoft Excel - APR by APR PPR Listv2708_24.xls

File Edit View Insert Format Tools Data Window Help Adobe PDF

100% Arial

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	A	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1			M - Medical MS - Major Surgical OS - Other Surgical EM - Elective Medical ES - Elective Major Surgical EO - Elective Other Surgical XMA - Malignancy Exclusion XTB - Trauma Exclusion XNN - Neonatal Exclusion XOB - Obstetrical Exclusion XOG - Other Exclusion		Liver trans &/or intest trans	Heart &/or lung transplant	Bone marrow transplant	ECMO or trach w/MV w extn proc	Trach w/MV wo exten proc	Pancreas transplant	Craniotomy for trauma	Craniotomy exc for trauma	Ventricular shunt proc	Spinal procedures	Extracranial vascular proc	Oth nervous syst & relat proc	Spinal disorders & injuries
2		PPR		RA APR→	MS	MS	MS	MS	MS	MS	XTB	MS	MS	MS	MS	MS	M
3	Mt	Ty	IA APR Desc	IA APR↓	1	2	3	4	5	6	20	21	22	23	24	26	40
4	00	MS	Liver trans &/or intest trans	1	4	X	X	5	3	X	G	X	X	X	X	X	X
5	00	MS	Heart &/or lung transplant	2	X	4	X	5	1	X	G	X	X	X	X	X	X
6	00	MS	Bone marrow transplant	3	X	X	4	5	3	X	G	X	X	X	X	X	X
7	00	MS	ECMO or trach w MV w extr	4	X	X	X	X	X	X	G	X	X	X	X	X	X
8	00	MS	Trach w MV wo exten proc	5	X	X	X	4	4	X	G	4	4	4	4	4	3
9	00	MS	Pancreas transplant	6	X	X	X	5	3	4	G	X	X	X	X	X	X
10	01	XTB	Craniotomy for trauma	20	G	G	G	G	G	G	G	G	G	G	G	G	G
11	01	MS	Craniotomy exc for trauma	21	X	X	X	5	3	X	G	4	4	X	X	4	X
12	01	MS	Ventricular shunt proc	22	X	X	X	5	3	X	G	4	4	X	X	4	X
13	01	MS	Spinal procedures	23	X	X	X	5	3	X	G	X	X	4	X	4	1
14	01	MS	Extracranial vascular proc	24	X	X	X	5	3	X	G	4	X	X	4	4	X
15	01	MS	Oth nervous syst & relat pro	26	X	X	X	5	3	X	G	X	4	X	5	4	3
16	01	M	Spinal disorders & injuries	40	X	X	X	X	X	X	G	X	X	X	X	X	X
17	01	XMA	Nervous system malignancy	41	G	G	G	G	G	G	G	G	G	G	G	G	G



Clinical Relationship Reasons

- 1 Medical readmission for a continuation or recurrence of the reason for the initial admission, or for a closely related condition.
- 2a Ambulatory care sensitive conditions as designated by ARHQ
- 2b All other readmissions for a chronic problem that may be related to care either during or after the initial admission
- 3 Medical readmission for an acute medical condition or complication that may be related to or may have resulted from care during the initial admission or in the post-discharge period after the initial admission.
- 4 Readmission for a surgical procedure to address a continuation or a recurrence of the problem causing the initial admission.
- 5 Readmission for surgical procedure to address a complication that may be related to or may have resulted from care during the initial admission.
- 6a Readmission for mental health reasons following an initial admission for a non-mental health, non-substance abuse reason
- 6b Readmission for a substance abuse diagnosis reason following an initial admission for a non-mental health, non-substance abuse reason
- 6c Mental health or substance abuse readmission following an initial admission for a substance abuse or mental health diagnosis



HHIC PPR Study

- Data set :
 - *December 2006 – January 2009*
 - *HHIC all payer discharge database*
 - *Did not report hospitals with <30 annual admissions*
- Patient Linking
 - *Performed by a match on SSN, Age and Gender*
- Processing Assumptions
 - *Across Hospitals*
 - *Difference between back to same hospital is ~15-20% (problems stay relatively the same)*
 - *30 day Readmission Time Interval*



HHIC PPR Study - Findings

Total Patients	159,382
Total Admissions	293,194
Number of error admissions	55,773
Number of Excluded Admissions (includes expired pts.)	74,668
At-Risk Admissions	146,794
Number of PPR Chains	15,958
Overall Statewide Rate	8.51

HHIC Statewide PPR Reports

- Report 1 - Overall Hospital Rates of Potentially Preventable Readmission (PPRs)
- Report 2 - Overall Service Line Rates of Potentially Preventable Readmission (PPRs)
- Report 3 - Overall Potentially Preventable Readmission (PPRs) Admission Reasons by Service Line Rates
- Report 4 - Overall Principal Payer Rates of Potentially Preventable Readmission (PPRs)
- Report 8 - Overall APR DRG Rates of Potentially Preventable Readmission (PPRs)

HHIC PPR Reports – Terms

- Initial Admissions
- Readmission or PPR Chains

Days between current admission & previous discharge	APR DRG	Med Surg		Type of Admit	
	304	S	DOR/LUMB FUS EXC CRV BCK	Initial admission	Chain 1
13	721	M	POST-OP INFECTION	PPR	
10	347	M	BACK PAIN	PPR	
285	304	S	DOR/LUMB FUS EXC CRV BCK (revision)	New initial admission	Chain 2
10	721	M	POST-OP INFECTION	PPR	



HHIC PPR Reports – Calculations

- Denominator – Number of Admissions that were not excluded including the PPR chains
- Numerator – Number of PPR chains found
- Norm/Benchmark – HI statewide , 30 days, across hospitals
- Risk Adjusted PPR rate – used to calculate the hospital comparisons
 - *Uses expected values based on APR DRG and SOI (severity of illness)*
 - *Adjusts for Hospital specific Case mix*
- Test of Significance ($p = < 0.05$)
 - * *higher PPR than expected*
 - *** *lower PPR than expected*

Report 1 - Overall Hospital Rates of Potentially Preventable Readmission (PPRs)

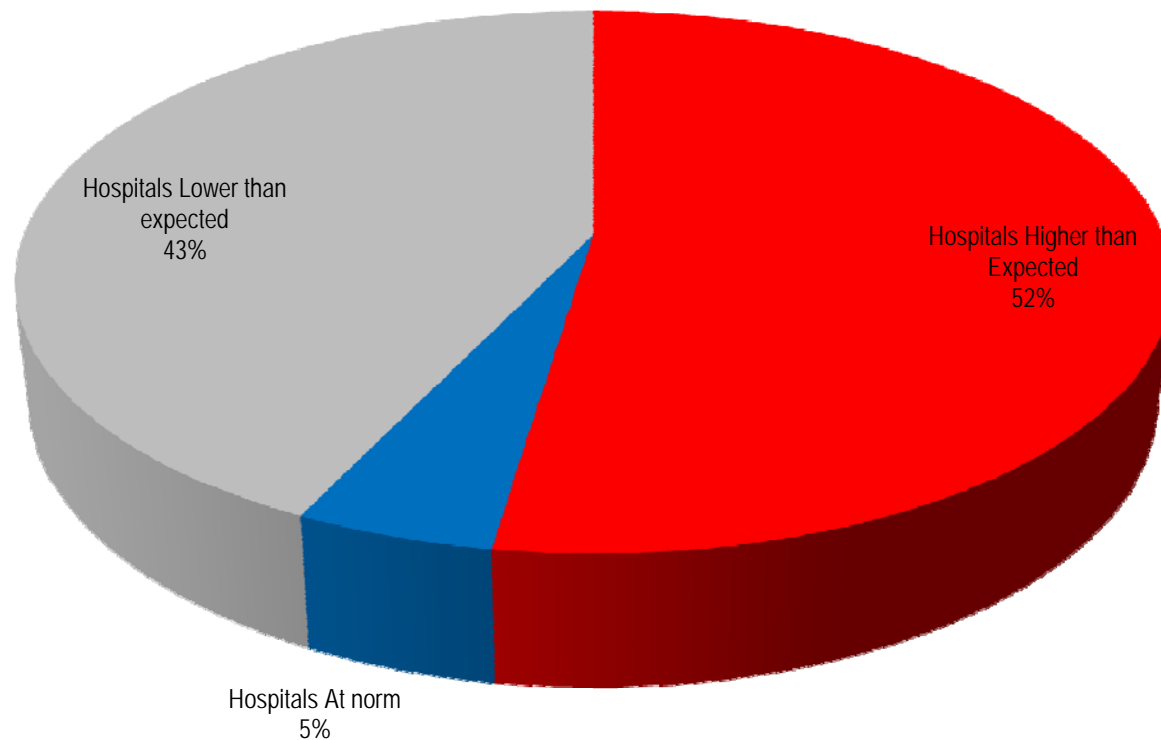
HAWAII STATE - REPORT 1
Overall Hospital Rates of Potentially Preventable Readmission (PPRs)
30 Day Readmission Window - ACROSS Hospital Readmission Rates
For Discharges Beginning December 2006 and Ending January 2009

Facility	OVERALL						SURGICAL				MEDICAL			
	Admissions at Risk for PPRs	Number of PPR Chains	Risk Adjusted PPR Rate	Significance Level	Total Days Due to Readmissions Chains	Total Charges Due to Readmissions Chains	Admissions at Risk for PPRs	Number of PPR Chains	Risk Adjusted PPR Rate	Significance Level	Admissions at Risk for PPRs	Number of PPR Chains	Risk Adjusted PPR Rate	Significance Level
STATEWIDE	146,795	12,495	8.51		119,004	\$396,963,223	53,524	3,552	6.63		93,271	8,943	9.58	
Hospital 3	30	4	12.85		10	\$25,323	0	0	0.00		30	4	14.48	
Hospital P	5,390	657	10.70	*	6,943	\$24,886,845	921	91	9.05	*	4,469	566	11.91	*
Hospital R	13,736	1,092	10.31	*	8,513	\$3,031,278	5,970	352	8.73	*	7,766	740	11.19	*
Hospital D	149	12	9.88		69	\$219,231	0	0	0.00		149	12	11.13	
Hospital S	2,468	308	9.84	*	3,098	\$7,886,448	278	20	7.86		2,190	288	11.06	*
Hospital O	5,823	659	9.66	*	7,517	\$31,466,140	2,255	254	7.59	*	3,568	405	10.82	*
Hospital A	8,902	895	9.12	*	7,847	\$29,715,275	2,357	160	7.45		6,545	735	10.17	
Hospital M	9,236	823	9.01		8,524	\$32,879,543	3,221	179	6.15		6,015	644	10.56	*
Hospital G	1,106	60	6.82		516	\$1,793,280	357	14	0.39		751	72	10.22	
Hospital V	2,297	175	8.90		1,218	\$4,634,348	758	32	5.57		1,539	143	10.60	
Hospital T	5,314	423	8.64		2,907	\$11,420,592	1,815	108	7.21		3,499	315	9.52	
Hospital J	9,450	865	8.51		9,158	\$33,226,617	3,197	251	6.99		6,253	614	9.39	
Hospital F	3,445	190	8.25		1,597	\$8,416,206	1,692	70	6.99		1,753	120	8.88	
Hospital B	9,621	849	8.12		7,114	\$20,837,091	1,940	115	6.44		7,681	734	9.12	
Hospital Q	10,005	814	8.00		7,414	\$33,116,944	5,255	380	6.45		4,750	434	8.76	
Hospital E	13,636	1,151	7.97	***	9,930	\$24,991,332	5,603	401	6.41		8,033	750	8.83	***
Hospital N	28,370	2,244	7.85	***	25,294	\$93,456,931	13,464	888	6.31		14,906	1,356	8.68	***
Hospital K	13,329	953	7.63	***	9,086	\$28,502,796	3,641	205	6.50		9,688	748	8.41	***
Hospital I	3,994	259	6.53	***	1,924	\$5,889,024	800	32	4.91		3,194	227	7.40	***
Hospital L	131	9	6.70		67	\$154,276	0	0	0.00		131	0	6.63	
Hospital Y	314	26	5.13	***	244	\$371,143	0	0	0.00		314	26	5.78	***
Hospital W	17	1	4.80		4	\$28,174	0	0	0.00		17	1	5.41	
Hospital H	15	1	4.52		8	\$14,377	0	0	0.00		15	1	5.09	
Hospital C	2	0	0.00		0	\$0	0	0	0.00		2	0	0.00	
Hospital 2	10	0	0.00		0	\$0	0	0	0.00		10	0	0.00	



Report 1 - Overall Hospital Rates of Potentially Preventable Readmission (PPRs)

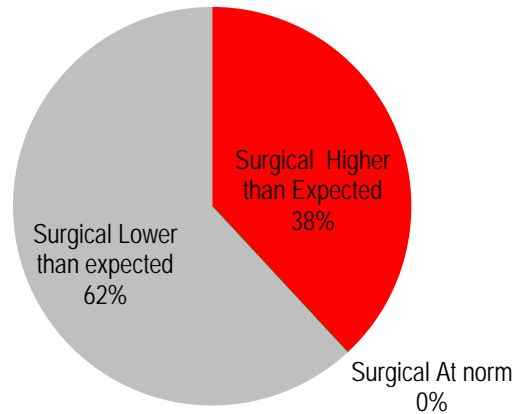
PPR Rate Distribution



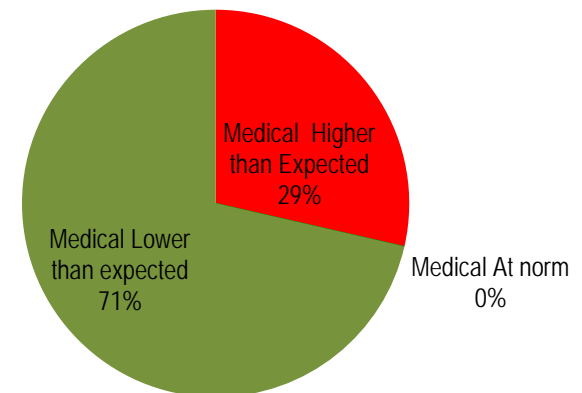
- 23% of hospitals were statistically significantly higher than expected (5 hospitals)
- 23% of hospitals were statistically significantly lower than expected (5 hospitals)

Statewide PPR Rates by Surgical and Medical

Statewide Surgical PPR Rates



Statewide Medical PPR Rates



- Surgical - 3 hospitals had statistically significant higher rates
- Medical – 5 hospitals had statistically significant higher rates



Report 2 - Overall Service Line Rates of Potentially Preventable Readmission (PPRs)

HAWAII STATE - REPORT 2

Overall Service Line Rates of Potentially Preventable Readmission (PPRs)
30 Days Readmission Window - ACROSS Hospital Readmission Rates
For Discharges Beginning December 2006 and Ending January 2009

Service Line	Total Admissions	Admissions at Risk for PPRs	Number of PPR Chains	Actual PPR Rate	Totals Days Due to Readmissions Chains	Total Charges Due to Readmissions Chains
-STATEWIDE	237,421	146,795	12,495	8.51	119,004	\$398,963,223
040-Invasive Cardiology	5,561	5,322	473	8.88	3,397	\$17,086,350
045-Myocardial Infarction	3,420	2,128	299	14.05	2,161	\$8,386,313
050-Cardiology	20,910	15,826	1,573	9.93	13,199	\$47,461,864
055-Cardiovascular Surg	1,987	1,703	247	14.50	3,121	\$12,383,225
065-Dental	226	207	4	1.93	52	\$171,344
070-Dermatology	1,338	1,123	91	8.10	994	\$2,733,213
085-ENT Surgery	1,476	1,358	62	4.56	246	\$435,919
090-Endocrinology	3,994	2,942	297	10.09	3,002	\$9,151,353
095-Diabetes	1,836	1,476	167	11.31	1,202	\$4,431,419
125-Gastroenterology	17,663	13,768	1,193	8.66	9,537	\$32,336,582
129-General Medicine	4,123	2,552	127	4.97	793	\$2,090,122
132-General Surgery	22,120	17,847	1,195	6.69	12,193	\$43,943,035
133-Thoracic Surgery	1,154	510	35	6.86	443	\$2,101,632
135-Gynecological Surg	5,569	4,733	116	2.45	552	\$1,652,676
137-Gynecology	563	515	18	3.49	150	\$353,656
145-Hematology	2,078	1,228	124	10.09	958	\$4,020,173
165-Infectious Disease	11,324	8,510	740	8.69	8,005	\$26,579,643
170-HIV	300	189	30	15.87	542	\$2,076,081
245-Neonatology	2,212	0	0	0.00	0	\$0
250-Nephrology	6,385	4,898	505	10.31	4,444	\$14,721,929
252-Neurological Surgery	1,980	1,275	99	7.76	1,126	\$3,489,480
255-Neurology	11,996	9,569	799	8.34	7,031	\$21,229,917
262-Obstetrics/Delivery	38,964	0	0	0.00	0	\$0
267-Oncology	6,952	0	0	0.00	0	\$0
269-Cardiac Surgery	3,163	2,995	366	12.22	2,995	\$13,320,760

Service Line Analysis – Top 10 by PPR rate, and Volume

Top 10 Service lines by PPR rate

Service Line	Actual PPR rate
-STATEWIDE	8.51
170-HIV	15.87
055-Cardiovascular Surg	14.5
045-Myocardial Infarction	14.05
293-Psychiatry	13.28
269-Cardiac Surgery	12.22
095-Diabetes	11.31
296-Pulmonary	10.91
294-Substance Abuse	10.5
250-Nephrology	10.31
330-Rheumatology	10.23

Top 10 Service lines by Volume

Service Line	Number of PPR Chains
-STATEWIDE	12,495
050-Cardiology	1,573
296-Pulmonary	1,450
132-General Surgery	1,195
125-Gastroenterology	1,193
293-Psychiatry	960
255-Neurology	799
274-Orthopedic Surgery	764
165-Infectious Disease	740
250-Nephrology	505
040-Invasive Cardiology	473

Service Line Analysis – Top 10 by Charges due to Readmission Chains

Service Line	Actual PPR rate	Total Charges due to Readmission Chains
-STATEWIDE	8.51	\$396,963,223
296-Pulmonary	10.91	\$56,921,547
050-Cardiology	9.93	\$47,461,864
132-General Surgery	6.69	\$43,943,035
125-Gastroenterology	8.66	\$32,336,582
274-Orthopedic Surgery	4.92	\$29,500,998
165-Infectious Disease	8.69	\$26,579,643
255-Neurology	8.34	\$21,229,917
293-Psychiatry	13.28	\$20,627,115
040-Invasive Cardiology	8.88	\$17,066,350
250-Nephrology	10.31	\$14,721,929
269-Cardiac Surgery	12.22	\$13,320,760
055-Cardiovascular Surg	14.5	\$12,383,225

Report 4 - Overall Principal Payer Rates of Potentially Preventable Readmission (PPRs)

HAWAII STATE - REPORT 4

**Overall Principal Payer Rates of Potentially Preventable Readmission (PPRs)
30 Day Readmission Window - ACROSS Hospital Readmission Rates
For Discharges Beginning December 2006 and Ending January 2009**

Principal Payer	Total Admissions	OVERALL						SURGICAL				MEDICAL			
		Admissions at Risk for PPRs	Number of PPR Chains	Risk Adjusted PPR Rate	Significance Level	Total Days Due to Readmissions Chains	Total Charges Due to Readmissions Chains	Admissions at Risk for PPRs	Number of PPR Chains	Risk Adjusted PPR Rate	Significance Level	Admissions at Risk for PPRs	Number of PPR Chains	Risk Adjusted PPR Rate	Significance Level
STATEWIDE	237,421	146,795	12,495	8.51		119,004	\$396,963,223	53,524	3,552	6.63		93,271	8,943	9.58	
Dept of Defense	27,499	15,763	1,305	10.25	*	10,578	\$7,397,950	6,594	401	8.58	*	9,169	904	11.21	*
Medicare	86,607	63,510	6,875	9.19	*	69,766	\$251,026,298	19,371	1,796	7.36	*	44,139	5,079	10.26	*
Medicaid	38,288	17,975	1,710	8.91		18,372	\$62,940,356	4,762	358	7.31		13,213	1,352	9.91	
Private Insurance	77,391	43,824	2,316	6.54	***	17,855	\$67,563,995	20,949	936	5.51	***	22,875	1,380	7.02	***
Self Pay	5,372	3,936	232	6.16	***	1,748	\$6,120,228	915	33	4.15	***	3,021	199	7.13	***
Miscellaneous	2,264	1,787	57	5.53	***	685	\$1,914,396	933	28	4.37		854	29	6.16	***

Summary- Readmissions in HI have room for potential improvement.

- Overall PPR Rate = 8.51%
 - *Medical = 9.58%*
 - *Surgical = 6.63%*
 - *Florida overall 30 day readmission rate = 11.03%*
 - *DOD had highest PPR rate*
- **Costs**
 - *Overall charges due to Readmission Chains = \$396,963,223*
 - *Following Service Lines comprise 80% of charges*
 - *Medicare had highest charges*
 - *Medicaid and Commercial similar in charges*
 - Top 5 APR DRG's
 - Heart failure, Other pneumonia , Chronic obstructive pulm dis, Septicemia & dissem infect , Major respiratory infections

296-Pulmonary
050-Cardiology
132-General Surgery
125-Gastroenterology
274-Orthopedic Surgery
165-Infectious Disease
255-Neurology
293-Psychiatry
040-Invasive Cardiology
250-Nephrology
269-Cardiac Surgery



Next steps

- HHIC will be bringing together working group to discuss data and types of reports
- Establishing Master Patient Index: HHIC working with 3M in a pilot project to assign MPID to HHIC data to allow measuring readmissions across hospitals.
- Further analysis on findings.
- Add Mental Health and Age factor in the expected rate calculation (similar to Florida)