
NHCHIS and Population Based Risk Adjustment: Looking Beyond HealthCost

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Population Based Risk Adjustment

- It's not a DRG
 - It's not an episode
 - Originally designed as a tool for adjusting capitation payments based on diagnoses and expected resources needed to treat the population
 - Response to “my patients are sicker”
 - Risk adjustment tools are not necessarily predictive modeling tools
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Chronic Illness and Disability Payment System (CDPS)

- Risk adjustment system used in HealthCost
 - A diagnostic classification system designed for Medicaid programs to make health-based capitated payments for TANF and disabled Medicaid beneficiaries.
 - Primary inputs are diagnoses, age, gender, and length of enrollment
 - Developed at the University of California, San Diego
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HealthCost and Risk Adjustment

- Risk adjustment definition provided: “**Patient Complexity** – This is an indication of how healthy or sick the patients are that are seen for this particular procedure at this health care provider. Some health care providers see sicker patients, or patients that are more complex, and thus there may be more costs associated with treating them.”
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<http://www.nhhealthcost.org/insuredWizardUserInput.aspx?procedure=33&procedureName=Vaginal+Birth+and+New+Bab>

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Health Cost

an official **NEW HAMPSHIRE** government website

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Tuesday, December 04, 2007

Detailed estimates for Vaginal Birth and New Baby (inpatient)

Procedure: [Vaginal Birth and New Baby \(inpatient\)](#)

Insurance Plan: Anthem - NH, Health Maintenance Organization (HMO)

Within: 1000 miles of 03062

Deductible and Coinsurance Amount: \$0.00 / 0%

Lead Provider Name	Estimate of What you Will Pay	Estimate of What Insurance Will Pay	Estimate of Combined Payments	Precision of the Cost Estimate	Typical Patient Complexity	Contact Info
SPEARE MEMORIAL HOSPITAL	\$0	\$6063	\$6063	LOW	LOW	SPEARE MEMORIAL HOSPITAL 603.536.1120
WEEKS MEDICAL CENTER	\$0	\$6063	\$6063	MEDIUM	VERY LOW	WEEKS MEDICAL CENTER 603.788.4911
PARKLAND	\$0	\$6170	\$6170	MEDIUM	VERY HIGH	PARKLAND MEDICAL

Development of the Risk Value

- Patients assigned risk values based on the presence of specific diagnoses
 - Different diagnoses categories have different weights
 - Patients are pooled together so that one population can be compared to another
 - A relative difference in the expected resource needs is calculated
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Example of Risk Among Patient Populations with a Vaginal Delivery

	Hospital A	Hospital B	Hospital C
HealthCost Patient Complexity Value	High	Medium	Low
Relative Risk Score	1.14	1.02	0.99
Cardiovascular Low	7.3%	7.9%	2.6%
Cardiovascular Very Low	2.9%	1.6%	2.6%
Psychiatric Low	20.9%	13.5%	7.8%
Pulmonary Low	12.1%	7.9%	9.1%
Gastrointestinal Low	13.1%	6.4%	10.4%
Renal Medium	4.4%	1.6%	0.0%
Renal Low	2.9%	7.9%	10.4%
Genital Extra Low	9.2%	15.9%	3.9%

Patient Complexity break points: VH = 1.1694, H = 1.0820, M = .9943, L = .9476

Future Risk Adjustment Efforts...

- What is happening in the insurance marketplace?
 - What insurance covers the sickest patients?
 - Which carriers have the sickest members?
 - What are the limitations with the data?
 - Are insurance regulations that deal with adverse risk helpful?
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What insurance covers the sickest patients?

Insurance Type	Risk Score	Example of Impact on Costs
PPO	0.9632	\$3,756
HMO	0.986	\$3,845
POS	1.0841	\$4,228
Indemnity	1.1837	\$4,616

Analysis based on NHCHIS claims data YE 3/31/07

Which Carriers have the Sickest Patients?

Carrier	Risk Score	Example of Impact on Costs
A	0.9254	\$3,609
B	0.9728	\$3,794
All Other Insurance	0.9768	\$3,810
D	0.9786	\$3,816
E	0.9849	\$3,841
F	0.9891	\$3,858
G	1.0104	\$3,940
H	1.0382	\$4,049
I	1.2170	\$4,746

What About Just HMO Products?

Carrier	Risk Score	Example of Impact on Costs
All Other Insurance	0.837	\$3,265
G	0.930	\$3,627
B	0.973	\$3,794
P	0.980	\$3,821
H	1.031	\$4,021

POS?

Carrier	Risk Score	Example of Impact on Costs
All Other Insurance	0.943	\$3,679
D	0.979	\$3,816
P	1.065	\$4,153
G	1.124	\$4,385
H	1.209	\$4,717

PPO

Example of Impact on Costs

Carrier	Risk Score	Costs
P	0.906	\$3,535
A	0.925	\$3,609
E	0.985	\$3,841
All Other Insurance	0.985	\$3,843
G	1.005	\$3,918
H	1.063	\$4,144

Indemnity

Carrier	Risk Score	Example of Impact on Costs
All Other Insurance	0.969	\$3,781
I	1.217	\$4,746
P	1.225	\$4,778
G	2.578	\$10,054

Do patients with really high claims experience have high risk scores?

- Portion of patients with >\$100,000 in medical claims = 0.2% of total
 - Portion of total carrier payments = 13.4%
 - Average risk score = 7.01
 - Top 25% of these patients have a risk score greater than 9.6
 - Bottom 25% of these patients have a risk score less than 2.35
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Do patients with the highest risk scores have a really high claims experience?

- Top 1% of patients with the highest risk scores
 - Portion of total payments for these patients = 14.9%
 - Average risk score = 9.48
 - Minimum risk score = 6.17
 - Top 25% of these patients have annual claims costs greater than \$54,410
 - The average claims costs = \$46,654
 - Bottom 25% have annual claims costs less than \$4,267
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Data Limitations

- Variations in data integrity between carriers and providers
 - Number of diagnosis codes
 - Truncation of diagnosis codes
 - Covered benefits and primary vs. secondary coverage
 - Pharmacy included, or not?
 - Policyholder vs. resident
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Recap

- Population based risk adjustment
 - Chronic Illness & Disability Payment System (CDPS)
 - Use in HealthCost
 - Future – differences by carrier, insurance product, and evaluation of the regulatory environment
 - High cost patients/predictive modeling
 - Data limitations
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