

The background features a grid of colored squares in shades of green, yellow, orange, light blue, and dark blue. A silver stethoscope is positioned in the lower-left quadrant, resting on a light-colored surface.

New York Managed Medicaid

Using the CRG Algorithm & Our Experience

May 8, 2008

Agenda

- **Introductions**
- **Understanding the Data Requirements**
- **Utilizing the CRG Algorithm**
- **Converting Raw Data Output to Actionable Interventions**
- **Summary**

CareAdvantage, Inc.

About Us



- **Healthcare management, information technology and consulting firm founded in 1994**
- **Integrated solutions incorporating:**
 - **Data Warehousing**
 - **Analytics**
 - **Risk Stratification**
 - **Predictive Modeling**
- **Former health plan executives, senior medical directors, and experts in care management, data analysis and information technology**

CareAdvantage, Inc.

Our Work with CRGs

- **Utilizing 3M Health Information Systems Clinical Risk Groups (CRGs) algorithm for 7 years**
- **Contributed to the evolution and development of CRGs**
- **Leverage CRGs to create predictive modeling and decision support tools**

The Options

Impact of 3 Solutions

■ Do Nothing

- Missed revenue opportunity
- Difficult to recover if no intervention

■ Build

- Learning curve
- Timing – Behind, miss being proactive
- Expense - Maintenance, not subject to market forces

■ Buy

- Immediate
- Expertise – Application & CRGs
- Market driven application

CRG Algorithm

About CRGs

- **Risk stratification model utilizing claims data to provide a basis for predicting future healthcare cost**
- **Utilizes:**
 - Diagnosis codes – ICD-9 Diagnosis
 - Selected procedure codes - ICD-9-Proc, HCPCS & CPT
 - Pharmacy – NDC codes
- **271 chronic diseases with severity sub-classifications**
 - Creating about 1,100 case mix and severity categories
- **These categories can be aggregated into approximately 40 distinct risk groups**

CRG Algorithm

Requirements for Running CRGs

- **Member eligibility**
- **Medical claims**
- **Pharmacy claims**
- **Sophisticated IT team**
- **CRG license**



CRG Algorithm

The Process

Cleanse Data

**Translate claim values
to CRG schema**

- **Place of service**
- **Provider type**

Prepare grouper input file

Understanding Your Data

Potential Membership Challenges

- Individuals with multiple IDs
- Erroneous or missing dates of birth
- Erroneous or missing gender
- Valid dates of enrollment/incorrect data entry

Understanding Your Data

Potential Claims Challenges

- Duplicate claims
- Invalid diagnosis/procedure codes
- Invalid dates of service
- Negative payments/adjustments
- Capitated/encounter data
- Diagnosis or procedure/gender mismatch

CRG Algorithm

CRG Output Record Types

18 Individual Record Types

A record–CRG parameters	N record–Pharmacy diagnosis and procedure codes
B record–CRG parameters	P <u>record–Grouping assignments for the prospective model</u>
C record–CRG parameters	Q <u>record–Grouping assignments for the concurrent/retrospective model</u>
D record–CRG parameter errors	R record–How the M record was used
E record–Introduce enrollee	S record–CRG medical code errors
F record–Pharmacy data	T record–Generated EDCs
G record–Grouping results	X record–Grouper counts
H <u>record–Grouping results</u>	Z record–Optional trailer
I record–CRG enrollee errors	
M record–Medical code	

CRG Algorithm

CRG Grouper Output

G020400204000240020 111449411
P020850208500285025 111449411
Q020850208500285025 111449411RX20060907
H00129 000030 111449411RX20060907
R0212980611 111449411RX20040408
S652000000000000000 111449411RX20040408
R0411120310 111449411RX20061219
R0411120310 111449411RX20061007
R0411120310 111449411RX20060907
R0212840611 111449411PF200412149522315 19335141 78900
S652000000000000000 111449411PF200412149522315 19335141 78900
R0216281611 111449411PF20041214104807938 4308834 2859
S652000000000000000 111449411PF20041214104807938 4308834 2859
R0212980611 111449411PF20041214104807940 4308834 56409
S652000000000000000 111449411PF20041214104807940 4308834 56409
R0225320001 111449411PF200412149522316 19335141 74270
S652000000000000000 111449411PF200412149522316 19335141 74270
R0216281611 111449411PF20041214104807942 4308834 2859
S652000000000000000 111449411PF20041214104807942 4308834 2859
R0216281611 111449411PF200412159522323 21528728 2859
S652000000000000000 111449411PF200412159522323 21528728 2859

Using CRG Output

Next Steps

- **Understand underlying logic and output to aggregate the data into meaningful information**
- **Output is raw data file with multiple record types that need to be aggregated by:**
 - CRG level risk group – Status & Severity
 - Gender
 - Age range
 - Disease category
- **Develop weights for projection of cost & utilization**
- **Display the output in a usable format**

Turnkey Solution

What Do You Get From CAI?

- **7 years experience using CRGs**
- **User friendly & intuitive tools**
 - RPNavigator
 - Standard Reports
 - Ad hoc querying
 - RPN³ – Advanced data mining
- **Integrated quality measures (QARR/HEDIS)**
- **Ongoing clinical & technical support**

RP Navigator

Making the Data Actionable

- **Income optimization**

- Identify under-coding
- Identify non/under-utilizers

- **Medical cost trend reduction**

- Targeted case & utilization management
- Contractual opportunities
- Vendor & internal performance evaluation

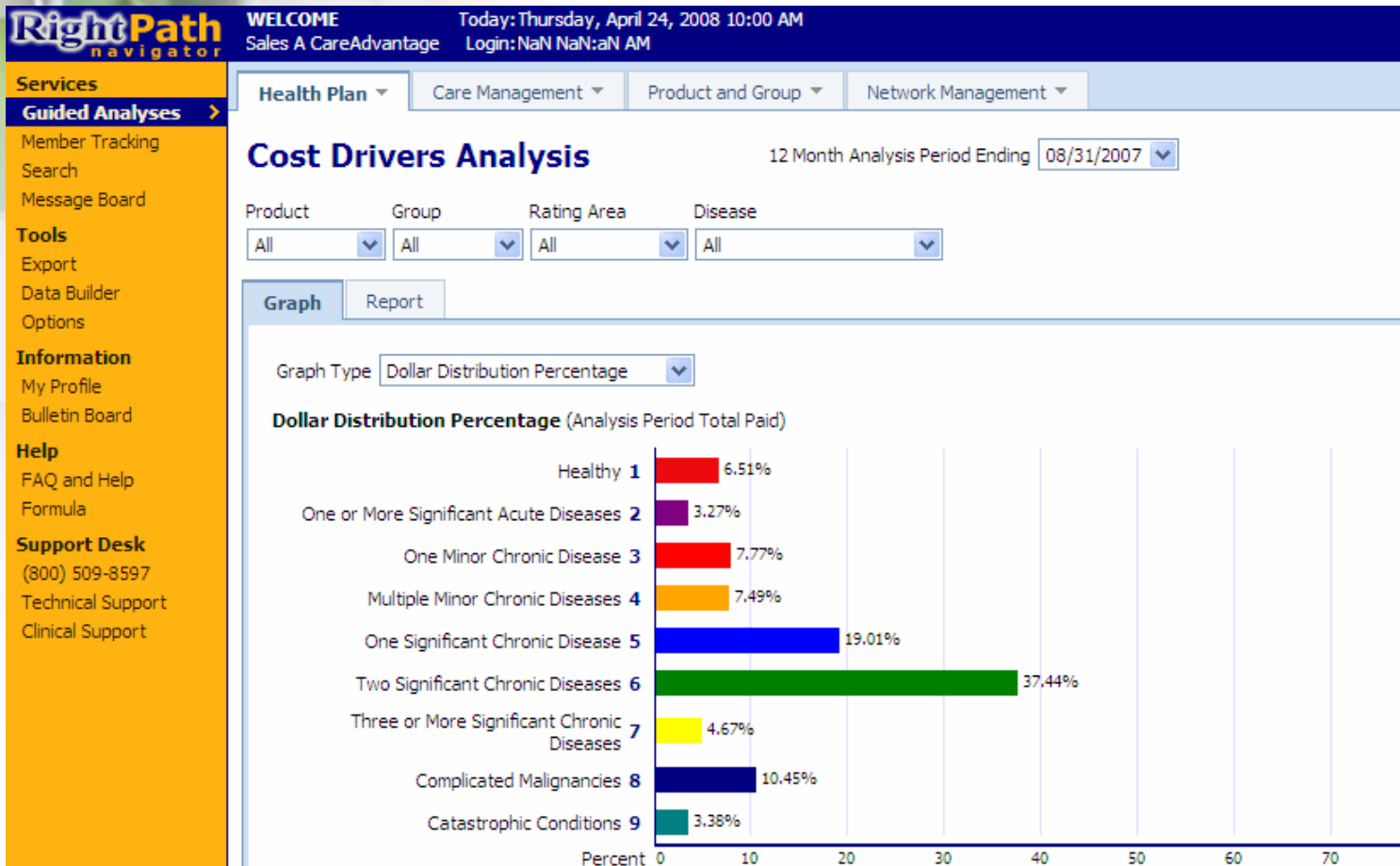
RP Navigator

Converting Raw CRG Output...

G020400204000240020 111449411
P020850208500285025 111449411
Q020850208500285025 111449411RX20060907
H00129 000030 111449411RX20060907
R0212980611 111449411RX20040408
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R0411120310 111449411RX20061219
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RP Navigator

To the CAI Solution



Income Optimization

4 Steps to Detecting Under-Coding/Non-Utilizers

1. Utilizing Status 1& 2

- Healthy Status with unconfirmed chronic diagnoses
- Pharmacy-only data for Healthy non-users

2. Changing risk scores – Statuses 3-9

3. Identifying near misses

4. Understanding nuances of the CRG algorithm

- Claims from provider types not used by CRGs
- Code sets not used by CRGs (Revenue codes & temporary HCPCS)

Income Optimization

Step 1 - "Healthy" Status 1

Code	Disease
1000	Healthy
1001	Healthy Non-User
1005	Major Gynecological Diagnosis without Other Significant Illness
1006	Diagnosis of Major Congenital or Neonatal Problems without Other Significant Illness
1009	Catastrophic Diagnosis without Other Significant Illness
1010	Malignancy Diagnosis without Other Significant Illness
1011	Significant Neurological Diagnosis without Other Significant Illness
1012	Significant Cardiovascular, Pulmonary or other Vascular Diagnosis without Other Significant Illness
1013	Major Mental Illness or Substance Abuse Diagnosis without Other Significant Illness
1014	Significant Connective Tissue or Orthopedic Diagnosis without Other Significant Illness
1015	Significant Gastrointestinal, Hepatic, Renal or Hernia Diagnosis without Other Significant Illness
1016	Diabetic Diagnosis without Other Significant Illness

RP Navigator

Step 2 - Changing Risk Score

Disease Progression Index – Change in risk score over time

Potential causes:

- Under-coding
- Barriers to care
- Deterioration of health status

RP Navigator

Step 3 - Near Misses

Diabetes without complications vs. diabetes with complications

- **Comorbidities used to assign status & severity level**
 - Renal complications 250.40
- **Importance of data mining for DME and lab**
 - Certain DME influences severity level
 - Urinary catheter supplies
 - Walkers
 - Wheelchairs

RP Navigator

Step 4 - Nuances of CRG Use

- **Provider types not used by CRGs may help identify members with significant chronic conditions in ICD9**
 - Home care
 - DME
 - Radiology
 - Lab
- **Code sets not used by CRGs may provide insight into missed diagnoses**
 - Revenue codes
 - Temporary HCPCS
 - Homegrown codes

Income Optimization

Additional Steps

- **New processes to identify members likely to have significant diagnoses:**
 - SuperBill
 - Physician incentives
 - Care manager input
 - Health Risk Assessments (HRAs)

RP Navigator

Medical Cost Trend Reduction

- **Targeted utilization & case management**
- **Vendor & internal performance evaluation**
- **Contractual opportunities**

RP Navigator

Status and Severity Matrix

Case Mix and Severity Result Matrix

Population: **132,248** Sub Population: **132,248** Criteria Result Count: **5,014**

(Black) : Sub Population
Blue : Criteria Result

View All Members	Severity of Illness Level						
	0	1	2	3	4	5	6
1 Healthy	37,853 (37,853)	9,629 (9,629)	946 (946)		501 (501)	5,242 (5,242)	
2 One or More Significant Acute Diseases	5,520 (5,520)		228 (228)		88 (88)	1,712 (1,712)	
3 One Minor Chronic Disease		15,197 (15,197)	2,463 (2,463)				
4 Multiple Minor Chronic Diseases		4,726 (4,726)	1,868 (1,868)	2,458 (2,458)	714 (714)		
5 One Significant Chronic Disease		17,770 (17,770)	4,548 (4,548)	914 (914)	144 (144)	103 (103)	88 (88)
6 Two Significant Chronic Diseases		10,090 (10,090) 1,616	4,046 (4,046) 712	1,938 (1,938) 496	1,063 (1,063) 368	336 (336) 118	35 (35) 5
7 Three or More Significant Chronic Diseases		215 (215) 160	227 (227) 161	274 (274) 174	78 (78) 57	47 (47) 38	26 (26) 22
8 Complicated Malignancies		159 (159)	339 (339)	244 (244)	147 (147)	25 (25)	
9 Catastrophic Conditions		51 (51)	82 (82)	25 (25)	65 (65)	14 (14) 5	10 (10) 4

RP Navigator

Additional Logic for Identification

- **At Risk Index**
- **Care Management Index**
- **Disease Progression Index**

RP Navigator

Gaps in Care – Hemoglobin A1c

Case Mix and Severity Result Matrix							
Member List Type: Care Management							
Population: 132,248		Sub Population: 132,248		Gaps In Care Sub Population: 4,666		Criteria Result Count: 1,939	
Red : Population (Black) : Sub Population Blue : Criteria Result							
Status	Severity of Illness Level						
View All Members	0	1	2	3	4	5	6
1 Healthy	37,853 (37,853)	9,629 (9,629)	946 (946)		501 (501)	5,242 (5,242)	
2 One or More Significant Acute Diseases	5,520 (5,520)		228 (228)		88 (88)	1,712 (1,712)	
3 One Minor Chronic Disease		15,197 (15,197)	2,463 (2,463)				
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5 One Significant Chronic Disease		17,770 (17,770)	4,548 (4,548)	914 (914)	144 (144)	103 (103)	88 (88)
		314	153	40		7	
6 Two Significant Chronic Diseases		10,090 (10,090)	4,046 (4,046)	1,938 (1,938)	1,063 (1,063)	336 (336)	35 (35)
		637	271	172	120	34	1
7 Three or More Significant Chronic Diseases		215 (215)	227 (227)	274 (274)	78 (78)	47 (47)	26 (26)
		43	51	61	15	11	5
8 Complicated Malignancies		159 (159)	339 (339)	244 (244)	147 (147)	25 (25)	
9 Catastrophic Conditions		51 (51)	82 (82)	25 (25)	65 (65)	14 (14)	10 (10)
						1	3

RP Navigator

Performance Evaluations

- **Program/vendor/provider**

- Case mix adjusted utilization and cost comparisons
- Clinically matched cohorts
- Identify centers of excellence
- Incorporate quality of care into evaluations

RPNavigator

RPN³ Advanced Data Mining

- **Identify costly provider billing patterns**
- **Overuse of services**
- **Compare services with risk score**
- **Identify members utilizing unique services**

RP Navigator

Differences in Vendor Cost/Procedure

Provider Name	Medical Paid Amt	Medical Claims Members	Cost per MRI of Brain	Cost Ratio to Lowest Cost Provider
Radiology Vendor 1	\$82,094	114	\$720.12	1.04
Radiology Vendor 2	\$73,508	93	\$790.41	1.15
Radiology Vendor 3	\$89,535	102	\$877.79	1.27
Radiology Vendor 4	\$1,225,414	1,277	\$959.60	1.39
Radiology Vendor 5	\$71,089	64	\$1,110.77	1.61
Radiology Vendor 6	\$181,202	157	\$1,154.15	1.67
Radiology Vendor 7	\$205,684	166	\$1,239.06	1.80
Radiology Vendor 8	\$178,826	94	\$1,902.40	2.76

RPNavigator

In Summary

- **Making raw CRG output actionable**
- **Getting ahead of the curve - being proactive**
- **Ongoing monitoring of:**
 - Under-coding
 - Decreasing risk score
- **Efficient targeting for care management**
- **Turnkey CRG solution - RPNavigator**

For Demo or Additional Information

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