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Dust et al.

(54) METHOD OF OPTIMIZING HEALTHCARE SERVICES CONSUMPTION

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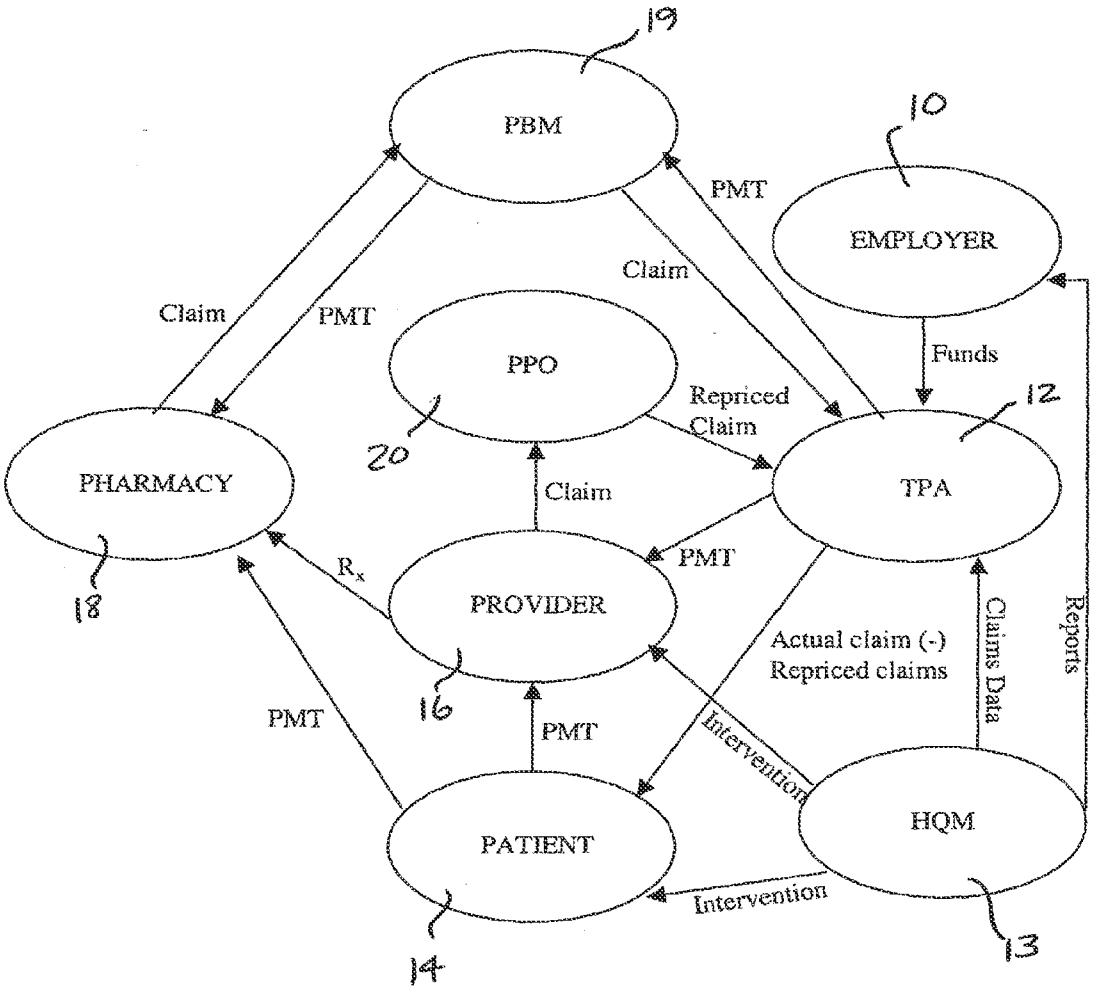
USPC **705/2**

(57) **ABSTRACT**

A method of optimizing healthcare services consumption according to the invention includes the steps of assessing the healthcare situation of an employer providing healthcare benefits to a population, identifying a first group of patients from the population likely to generate expensive healthcare claims based on data representing past claims, periodically determining whether patients in the first group have satisfied certain predetermined healthcare requirements, identifying a first group of providers who provide high quality, cost efficient healthcare services based on the practice patterns of the providers, prompting patients who have not satisfied the predetermined healthcare requirements to obtain services from providers in the first group, and responding to healthcare requests from patients by determining whether the requesting patient is seeking services from a provider in the first group, and, if not, urging the patient to obtain such services from a provider in the first group.



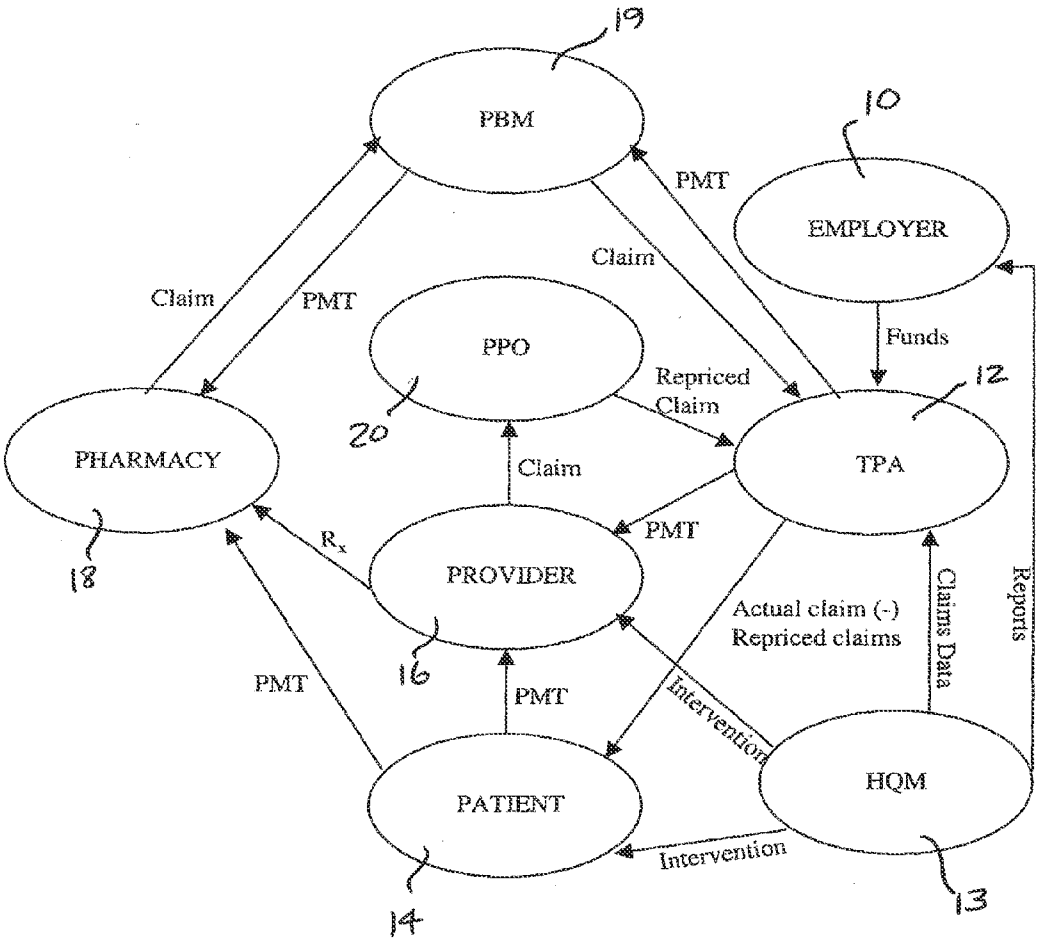

19
PBM
10
EMPLOYER
PMT
Claim
Claim
PMT
PPO
Funds
Repriced
Claim
12
20
PHARMACY
Claim
TPA
PMT
Rx
PROVIDER
Actual claim (-)
Repriced claims
Claims Data
Reports
PMT
16
PMT
Intervention
HQM
PATIENT
Intervention
18
14
13

FIG. 1

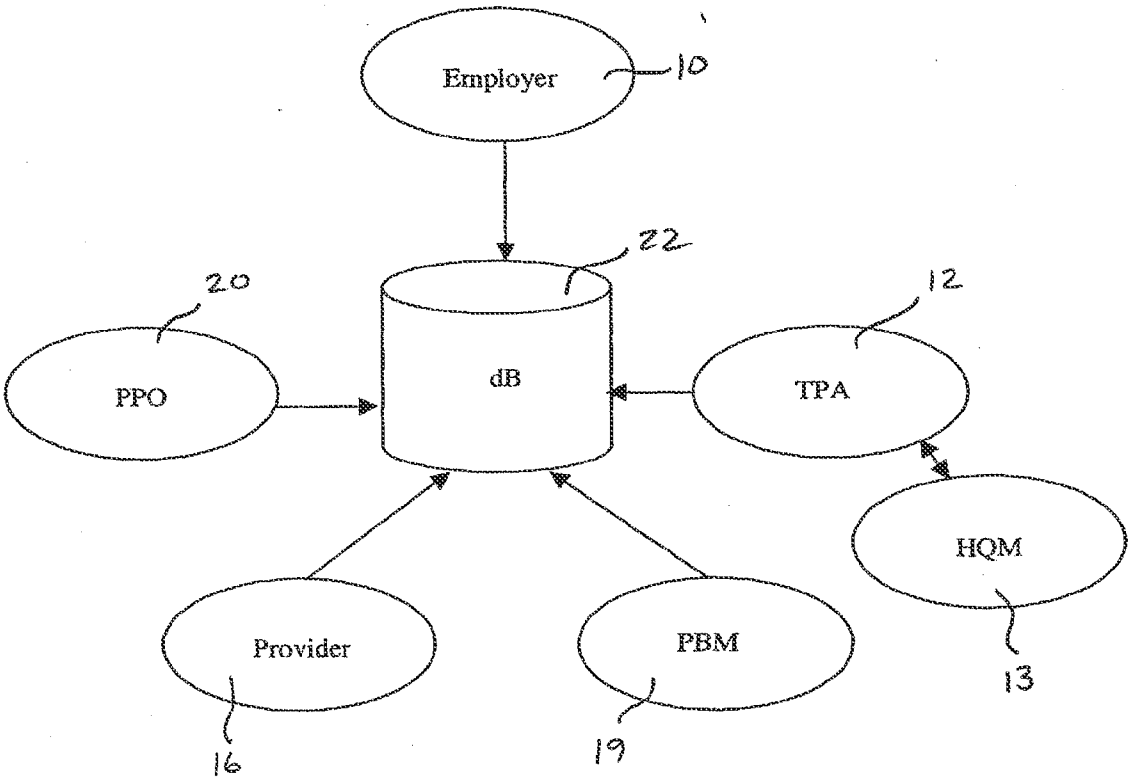


FIG. 2

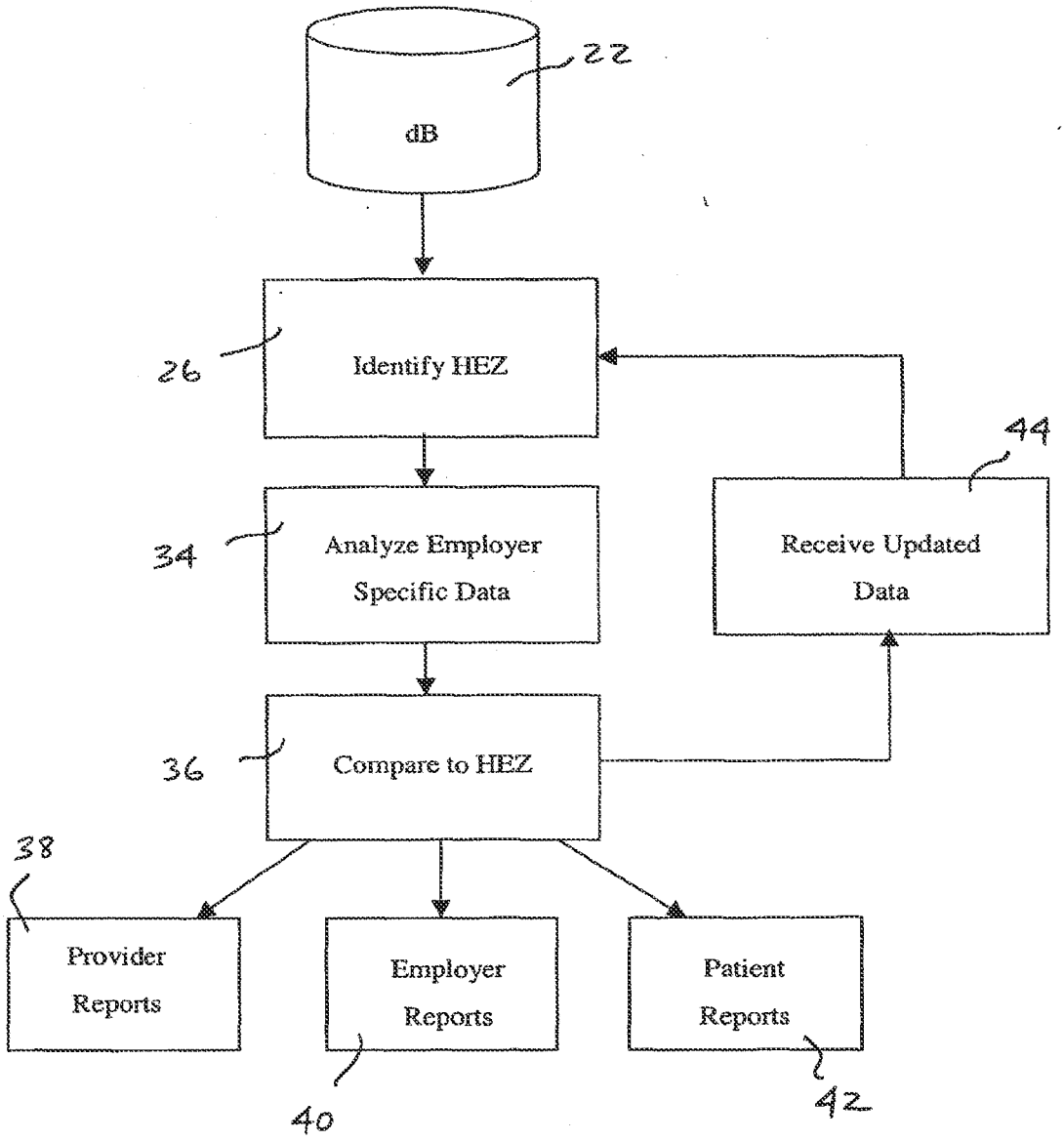

dB
22
Identify HEZ
26
Analyze Employer Specific Data
34
Compare to HEZ
36
Receive Updated Data
44
Provider Reports
38
Employer Reports
40
Patient Reports
42

FIG. 3

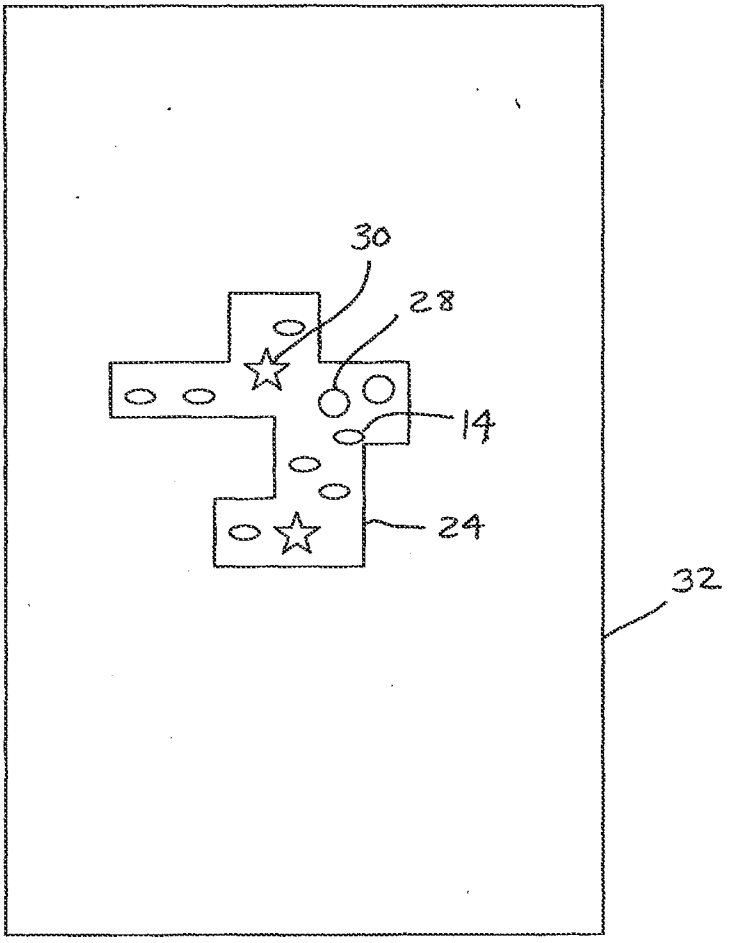


FIG. 4

48

HEZ Service Cost Analysis

Specialty, Network, or Hospital	Total Allowed Charges	Total Allowed Charges at Normative Costs	% Excess Charge	Excess Charge per Life per Year
Cardiology	$4,251,526	$4,488,559	-5.3%	-$12.08
Chemical Dependency	$170,457	$158,575	7.5%	$0.61
Dermatology	$1,202,770	$1,114,273	7.9%	$4.51
Endocrinology	$1,903,570	$1,431,646	33.0%	$24.06
Gastroenterology	$2,797,816	$2,813,871	-0.6%	-$0.82
Gynecology	$2,907,812	$2,888,889	0.7%	$0.96
Hemtaology	$856,811	$848,672	1.0%	$0.41
Hepatology	$1,813,309	$1,643,433	10.3%	$8.66
Infectious Disease	$217,356	$255,881	-15.1%	-$1.96
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
Grand Total all MPC's	$35,831,526	$35,265,070	1.6%	$28.88
PPO Network A	$20,289,527	$19,827,685	2.3%	$23.54
PPO Network B	$12,753,951	$12,894,746	-1.1%	-$7.18
Hospital A	$9,758,638	$9,756,274	0.0%	$0.12
Hospital B	$5,573,549	$5,726,413	-2.7%	-$7.79

66 64 62 60 58 50 52 54 56

46

FIG. 5

Specialty	Total Costs of Employer 10	Normalized Costs of HEZ 24	% Excess	Excess per Life per Year
Cardiology	$55,000	$72,100	-23.7%	-$43.45
Chemical Dependency	$4,500	$4,300	+4.7%	+$0.71
Dermatology	$38,400	$12,900	+29.8%	+$38.14
•	•	•	•	•
•	•	•	•	•
•	•	•	•	•
•	•	•	•	•
•	•	•	•	•
•	•	•	•	•

70 72 74 76 78

68

FIG. 6

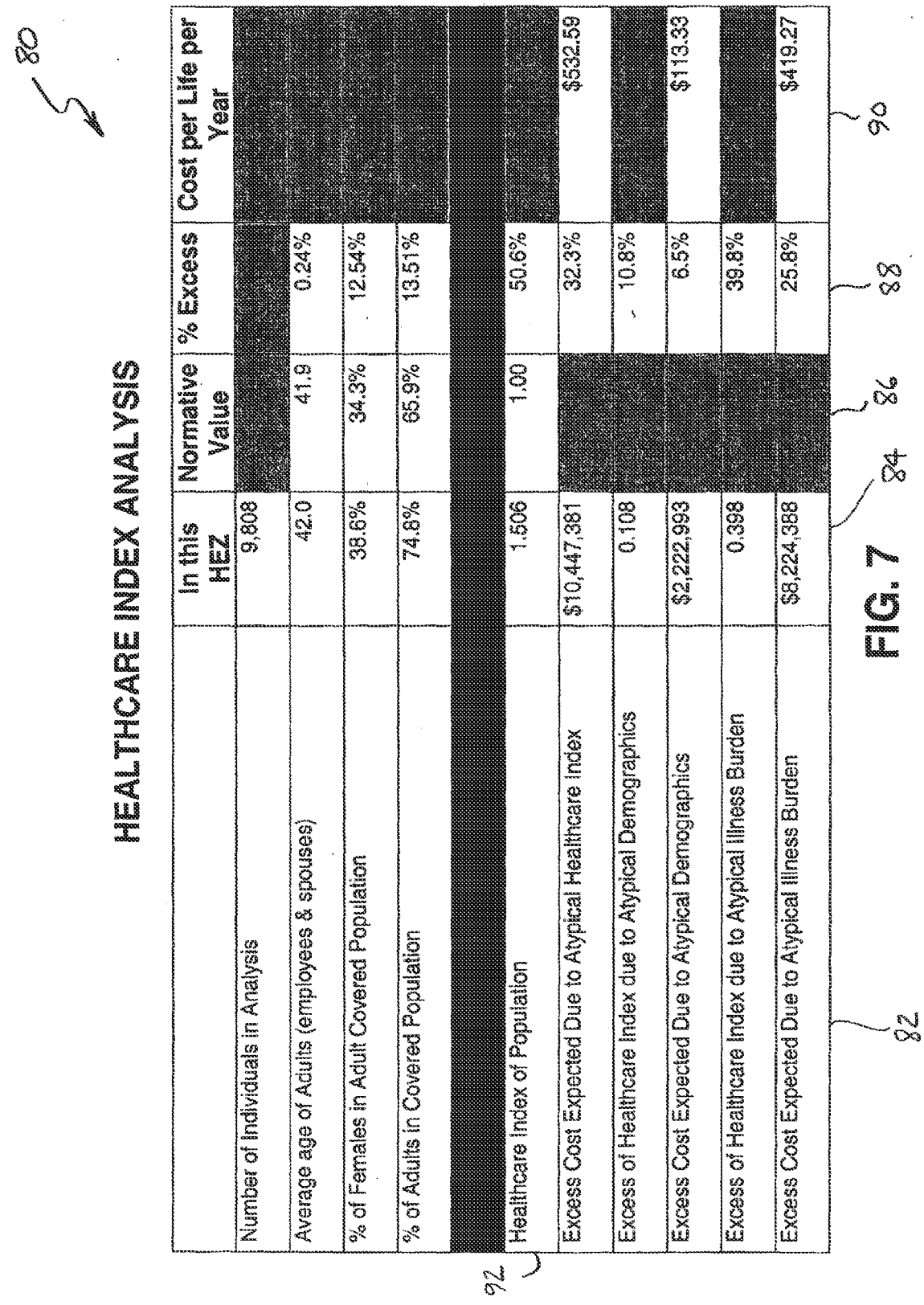

80
HEALTHCARE INDEX ANALYSIS
In this HEZ
Normative Value
% Excess
Cost per Life per Year
Number of Individuals in Analysis
9,808
Average age of Adults (employees & spouses)
42.0
41.9
0.24%
% of Females in Adult Covered Population
38.6%
34.3%
12.54%
% of Adults in Covered Population
74.8%
65.9%
13.51%
92
Healthcare Index of Population
1.506
1.00
50.6%
Excess Cost Expected Due to Atypical Healthcare Index
$10,447,381
32.3%
$532.59
Excess of Healthcare Index due to Atypical Demographics
0.108
10.8%
Excess Cost Expected Due to Atypical Demographics
$2,222,993
6.5%
$113.33
Excess of Healthcare Index due to Atypical Illness Burden
0.398
39.8%
Excess Cost Expected Due to Atypical Illness Burden
$8,224,388
25.8%
$419.27
82
84
86
88
90

FIG. 7

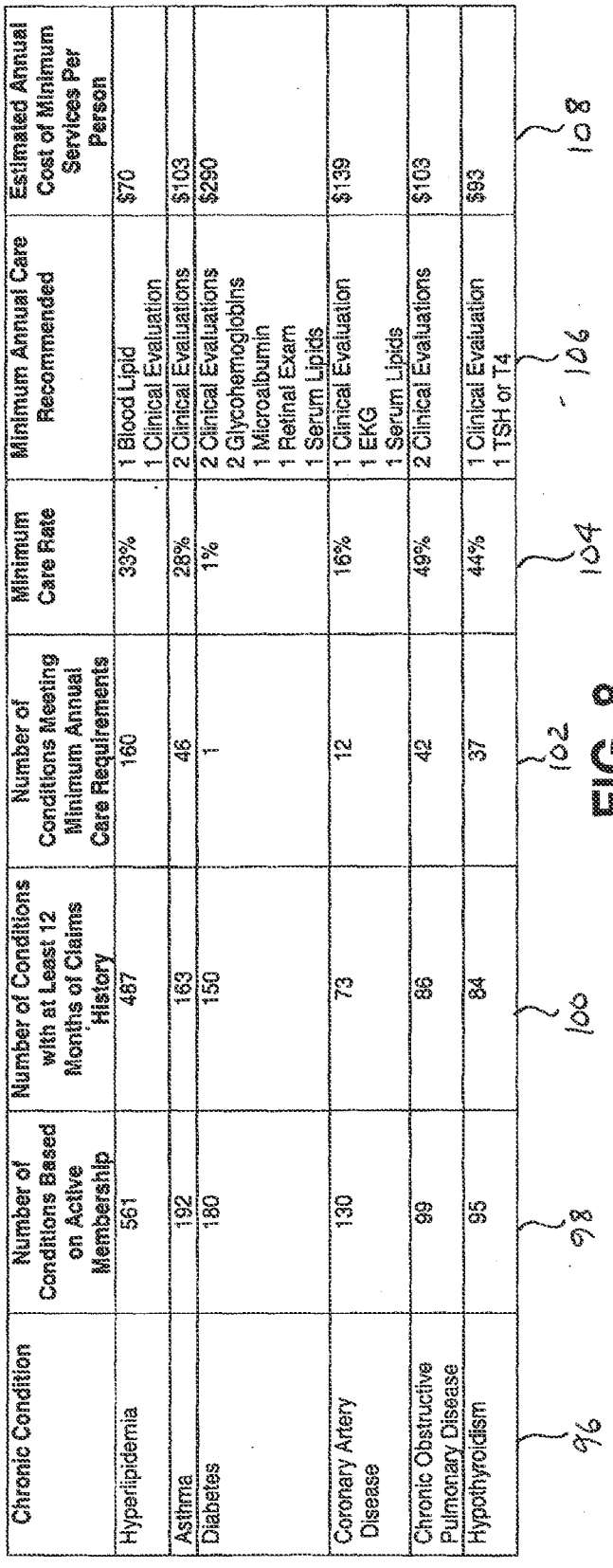

94
Chronic Condition Report
Chronic Condition
Number of Conditions Based on Active Membership
Number of Conditions with at Least 12 Months of Claims History
Number of Conditions Meeting Minimum Annual Care Requirements
Minimum Care Rate
Minimum Annual Care Recommended
Estimated Annual Cost of Minimum Services Per Person
Hyperlipidemia
561
487
160
33%
1 Blood Lipid
1 Clinical Evaluation
$70
Asthma
192
163
46
28%
2 Clinical Evaluations
$103
Diabetes
180
150
1
1%
2 Clinical Evaluations
2 Glycohemoglobins
1 Microalbumin
1 Retinal Exam
1 Serum Lipids
$290
Coronary Artery Disease
130
73
12
16%
1 Clinical Evaluation
1 EKG
1 Serum Lipids
$139
Chronic Obstructive Pulmonary Disease
99
86
42
49%
2 Clinical Evaluations
$103
Hypothyroidism
95
84
37
44%
1 Clinical Evaluation
1 TSH or T4
$93
96
98
100
102
104
106
108

FIG. 8

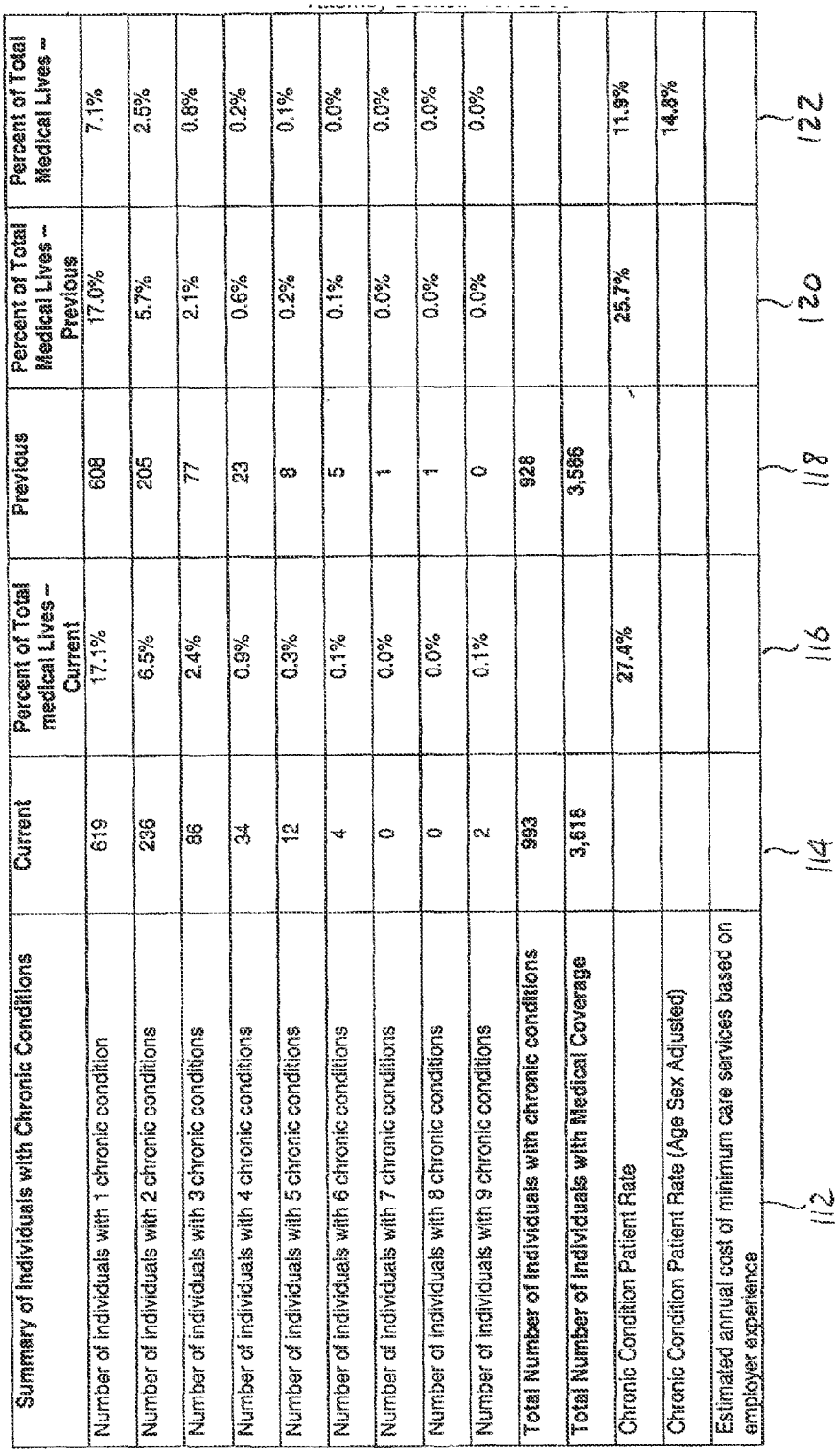

110
Co-Morbidity Report
Summary of Individuals with Chronic Conditions
Current
Percent of Total medical Lives – Current
Previous
Percent of Total Medical Lives – Previous
Percent of Total Medical Lives –
Number of individuals with 1 chronic condition
619
17.1%
608
17.0%
7.1%
Number of individuals with 2 chronic conditions
236
6.5%
205
5.7%
2.5%
Number of individuals with 3 chronic conditions
86
2.4%
77
2.1%
0.8%
Number of individuals with 4 chronic conditions
34
0.9%
23
0.6%
0.2%
Number of individuals with 5 chronic conditions
12
0.3%
8
0.2%
0.1%
Number of individuals with 6 chronic conditions
4
0.1%
5
0.1%
0.0%
Number of individuals with 7 chronic conditions
0
0.0%
1
0.0%
0.0%
Number of individuals with 8 chronic conditions
0
0.0%
1
0.0%
0.0%
Number of individuals with 9 chronic conditions
2
0.1%
0
0.0%
0.0%
Total Number of Individuals with chronic conditions
993
928
Total Number of Individuals with Medical Coverage
3,618
3,586
Chronic Condition Patient Rate
27.4%
25.7%
11.9%
Chronic Condition Patient Rate (Age Sex Adjusted)
14.8%
Estimated annual cost of minimum care services based on employer experience
112
114
116
118
120
122

FIG. 9

Individual Healthcare Indices

Family ID	Patient ID	Age	Gender	Healthcare Index	Predicted Cost
9139k0178196	s	71	M	35.100	$73,882
9139k0175223	e	52	F	28.649	$60,304
294k0132278	e	51	F	25.192	$53,028
9139k0174449	s	69	M	24.630	$51,844
9139k0176852	s	58	M	24.370	$51,296
9139k0175471	e	74	F	20.863	$43,915
9139k0171637	s	34	M	20.467	$43,082
9139k0177610	s	43	M	20.195	$42,508
9139k0177861	e	59	F	20.060	$42,224

126 128 130 132 134 136

124

Fig. 10

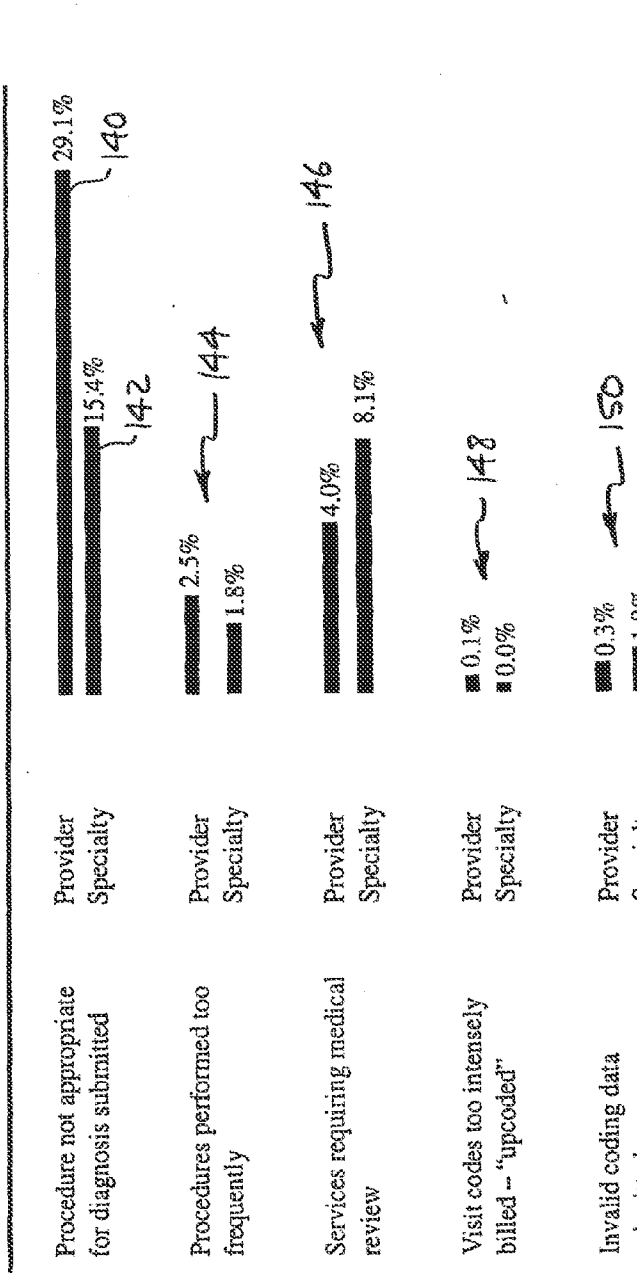

138
Patterns Results Summary
Anesthesiology
ID#: 223776
Procedure not appropriate for diagnosis submitted
Provider Specialty
29.1%
15.4%
140
142
Procedures performed too frequently
Provider Specialty
2.5%
1.8%
144
Services requiring medical review
Provider Specialty
4.0%
8.1%
146
Visit codes too intensely billed -- "upcoded"
Provider Specialty
0.1%
0.0%
148
Invalid coding data submitted
Provider Specialty
0.3%
1.0%
150
Procedures billed with non-specific diagnosis
Provider Specialty
5.3%
3.2%
152

Fig. 11

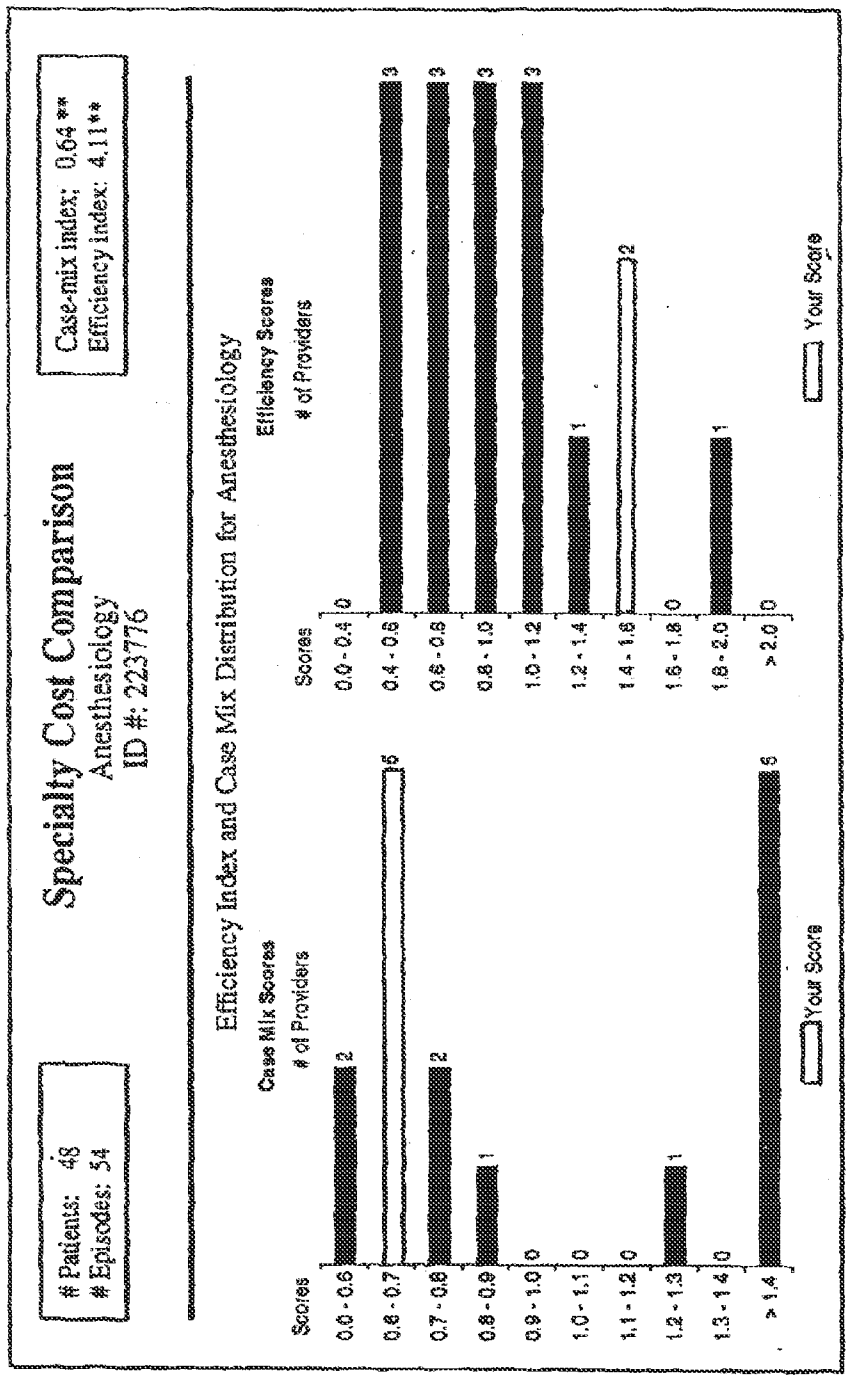

Patients: 48
Episodes: 54
Specialty Cost Comparison
Anesthesiology
ID #: 223776
Case-mix index: 0.64**
Efficiency index: 4.11**
Efficiency Index and Case Mix Distribution for Anesthesiology
Case Mix Scores
# of Providers
Scores
0.0 - 0.6
0.6 - 0.7
0.7 - 0.8
0.8 - 0.9
0.9 - 1.0
1.0 - 1.1
1.1 - 1.2
1.2 - 1.3
1.3 - 1.4
> 1.4
2
5
2
1
0
0
0
1
0
5
Your Score
Efficiency Scores
# of Providers
Scores
0.0 - 0.4
0.4 - 0.6
0.6 - 0.8
0.8 - 1.0
1.0 - 1.2
1.2 - 1.4
1.4 - 1.6
1.6 - 1.8
1.8 - 2.0
> 2.0
0
3
3
3
3
1
2
0
1
0
Your Score

FIG. 12

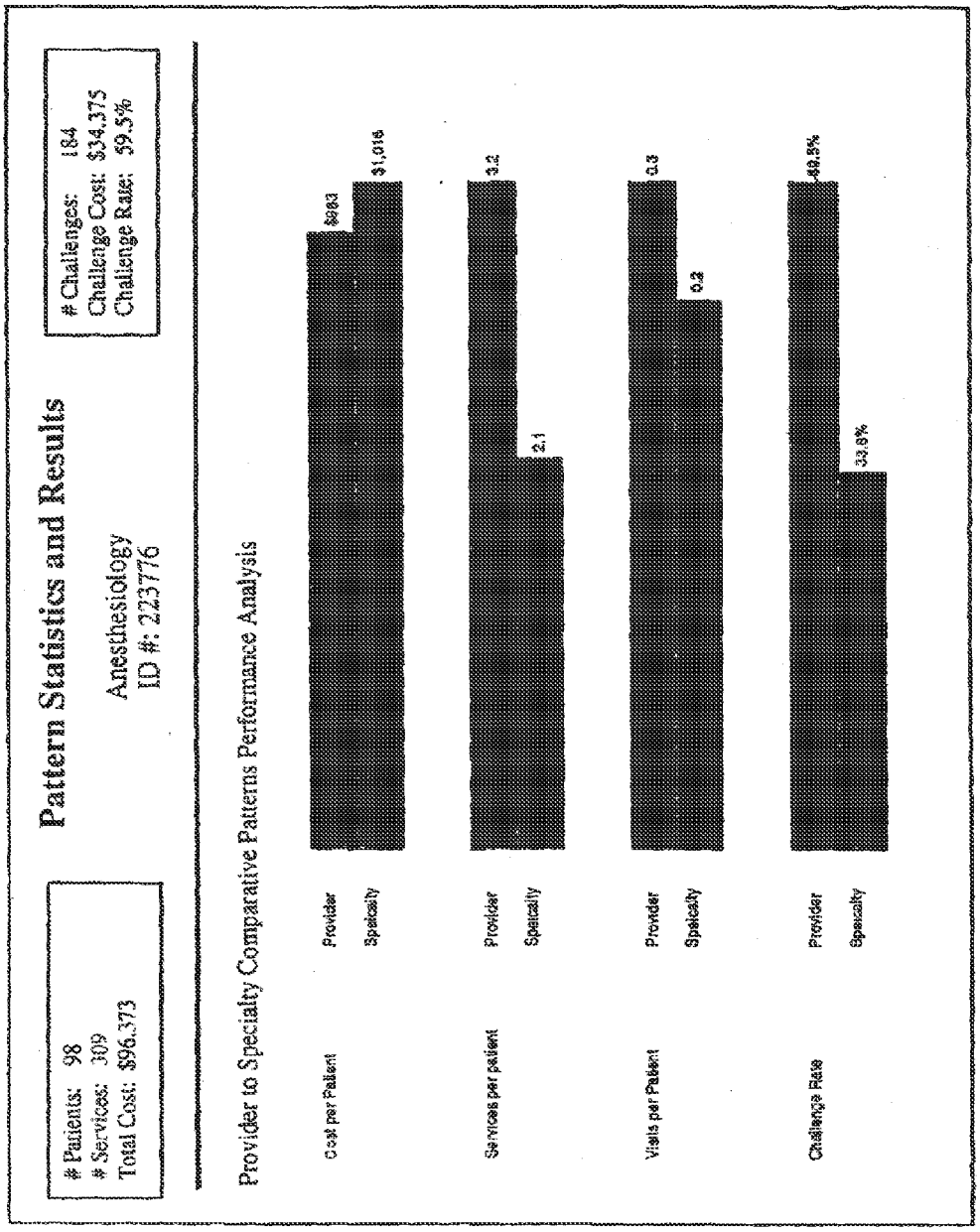

Patients: 98
Services: 309
Total Cost: $96,373
Pattern Statistics and Results
Anesthesiology
ID #: 223776
Challenges: 184
Challenge Cost: $34,375
Challenge Rate: 59.5%
Provider to Specialty Comparative Patterns Performance Analysis
Cost per Patient
Provider
Specialty
$883
$1,016
Services per patient
Provider
Specialty
3.2
2.1
Visits per Patient
Provider
Specialty
0.3
0.2
Challenge Rate
Provider
Specialty
59.5%
33.8%

FIG. 13

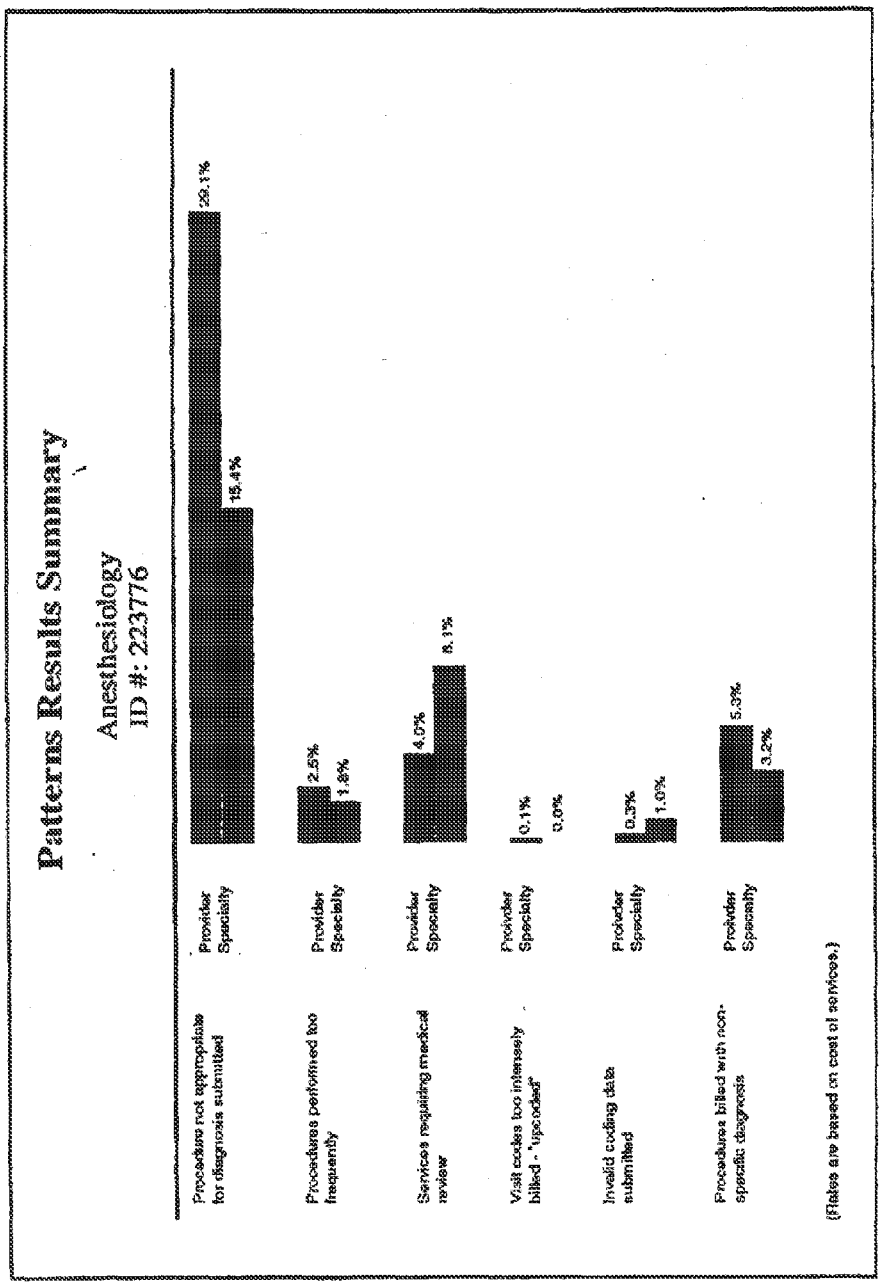

Patterns Results Summary
Anesthesiology
ID #: 223776
Procedures not appropriate for diagnosis submitted
Provider Specialty
29.1%
15.4%
Procedures performed too frequently
Provider Specialty
2.5%
1.8%
Services requiring medical review
Provider Specialty
4.0%
8.1%
Visit codes too intensely billed - "upcoded"
Provider Specialty
0.1%
0.0%
Invalid coding data submitted
Provider Specialty
0.3%
1.0%
Procedures billed with non-specific diagnosis
Provider Specialty
5.3%
3.2%
(Rates are based on cost of services.)

FIG. 14

NCQSP Listing

PROVIDER ID	Name	CITY	STATE	ZIP	# of Episodes	Cost Efficiency Index
1 224352	Confidential	JACKSON	MS	39225	157	4.18
1 108727	Confidential	HENDERSONVILLE	NC	28739	389	3.94
1 215019	Confidential	OWNESBORO	KY	42323	153	3.16
1 216053	Confidential	YORKVILLE	IL	60560	251	3.04
1 51319	Confidential	LOS ANGELES	CA	90045	186	2.98
1 256290	Confidential	MOLINE	IL	61266	357	2.70
1 240281	Confidential	GRAND RAPIDS	MI	49501	352	2.54
1 230027	Confidential	MERIDIAN	MS	39301	378	2.32
1 165611	Confidential	CINCINNATI	OH	45233	210	2.29

Fig. 15

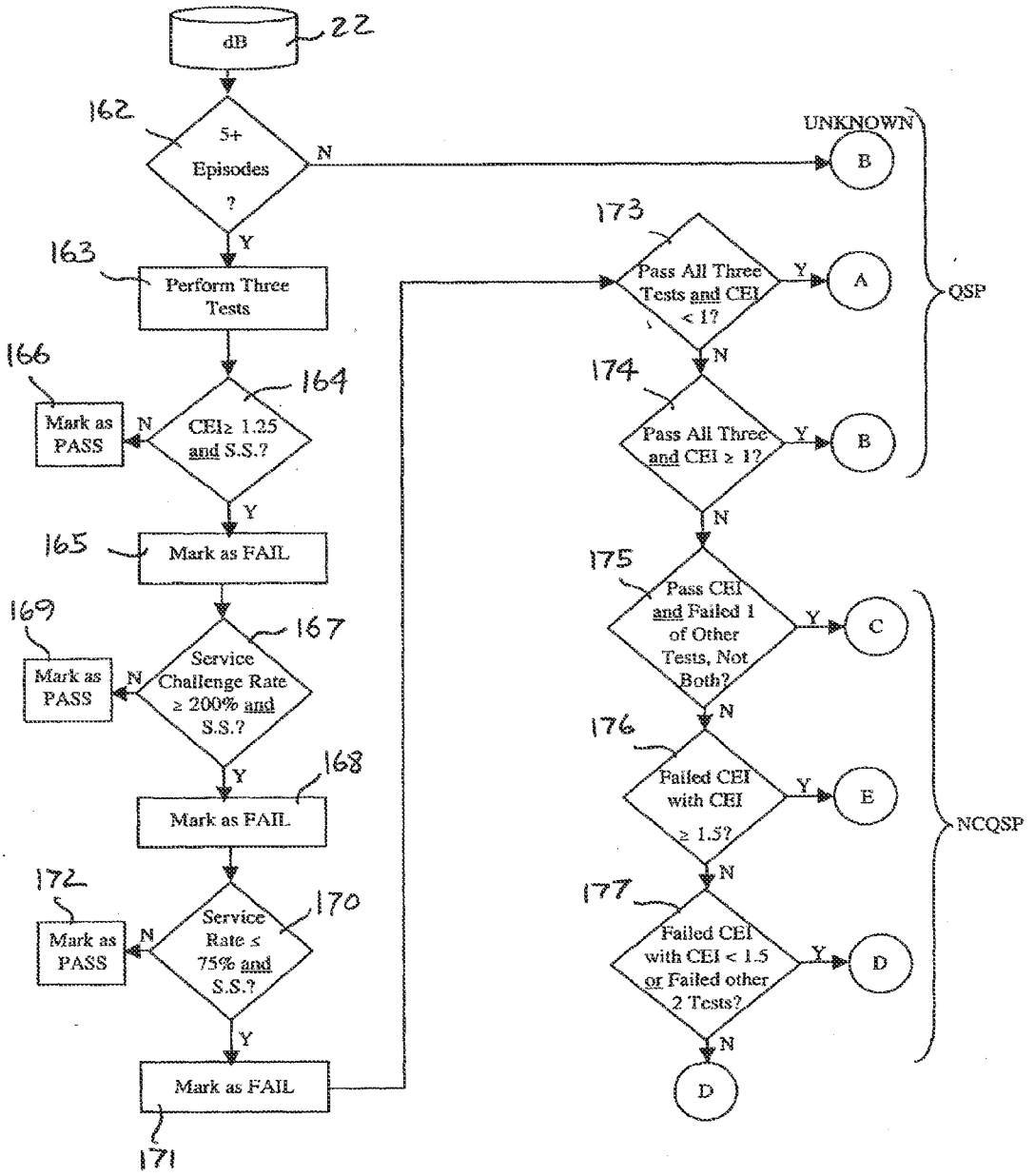

dB
22
162
5+ Episodes ?
N
Y
UNKNOWN
B
163
Perform Three Tests
166
Mark as PASS
N
164
CEI≥ 1.25 and S.S.?
Y
165
Mark as FAIL
169
Mark as PASS
N
167
Service Challenge Rate ≥ 200% and S.S.?
Y
168
Mark as FAIL
172
Mark as PASS
N
170
Service Rate ≤ 75% and S.S.?
Y
Mark as FAIL
171
173
Pass All Three Tests and CEI < 1?
Y
A
QSP
N
174
Pass All Three and CEI ≥ 1?
Y
B
N
175
Pass CEI and Failed 1 of Other Tests, Not Both?
Y
C
N
176
Failed CEI with CEI ≥ 1.5?
Y
E
NCQSP
N
177
Failed CEI with CEI < 1.5 or Failed other 2 Tests?
Y
D
N
D

FIG. 16

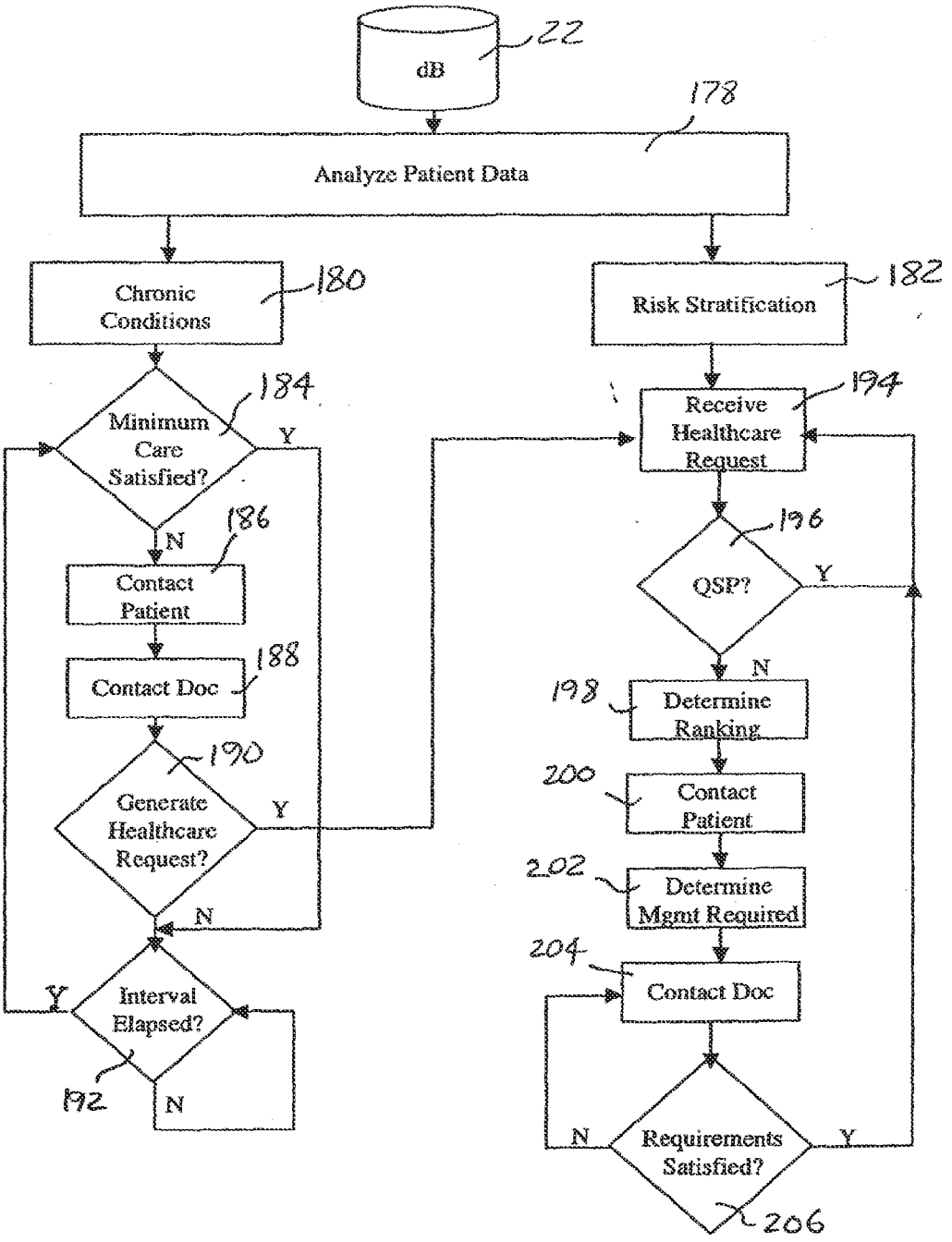

dB
22
178
Analyze Patient Data
Chronic Conditions
180
Risk Stratification
182
Minimum Care Satisfied?
184
Y
N
Contact Patient
186
Contact Doc
188
Generate Healthcare Request?
190
Y
N
Interval Elapsed?
Y
N
192
Receive Healthcare Request
194
QSP?
196
Y
N
Determine Ranking
198
Contact Patient
200
Determine Mgmt Required
202
Contact Doc
204
Requirements Satisfied?
N
Y
206

FIG. 17

METHOD OF OPTIMIZING HEALTHCARE SERVICES CONSUMPTION

RELATED APPLICATION

[0001] This application is a continuation of and claims priority to U.S. patent application Ser. No. 13/178,174, filed Jul. 7, 2011 entitled "Method of Optimizing Healthcare Services Consumption," which is a continuation of U.S. patent application Ser. No. 12/773,334, filed May 4, 2010, now U.S. Pat. No. 8,036,916 entitled "Method of Optimizing Healthcare Services Consumption," which is a continuation of U.S. patent application Ser. No. 10/313,370, filed Dec. 6, 2002, now U.S. Pat. No. 7,711,577 entitled "Method of Optimizing Healthcare Services Consumption," the entire disclosures of which are expressly incorporated herein by reference.

FIELD OF THE INVENTION

[0002] The present invention generally relates to a method of optimizing healthcare services consumed by patients including employees and their family members by improving the overall quality of care and reducing the overall cost incurred by the employer, and more particularly to a method for application by a healthcare quality management firm (HQM) of characterizing the healthcare situation of an employer who pays for healthcare, comparing that healthcare situation to that of a geographic area in which the employer resides, identifying factors affecting the quality and cost of the healthcare, and recommending action for addressing the factors by applying resources at levels corresponding to the relative affect of the factors on the quality and cost of the healthcare.

BACKGROUND OF THE INVENTION

[0003] Employer sponsored healthcare benefits are of tremendous value to employees and their families. Such benefits, on the other hand, typically constitute a significant portion of an employer's total operating costs. Unfortunately, as medical costs continue to increase, the cost of providing employer sponsored healthcare benefits will continue to increase.

[0004] Currently, many employers attempt to offset the rising costs of providing healthcare benefits by shifting the cost to employees. Of course, only so much of the expense can be shifted to employees. At some point, the cost incurred by the employees will become prohibitive, and employer sponsored healthcare will no longer be seen as a benefit. Some employers attempt to monitor the price of certain healthcare services, but without information relating to the quality of the services, cost information is of limited value. Other employers have attempted to reduce their healthcare expenses by sponsoring health fairs or wellness screenings. This approach, while somewhat effective in prompting preventative healthcare, is not a focused expenditure of resources. For the majority of employees who are healthy, the money spent on wellness screenings is essentially wasted. Finally, employers sometimes attempt to negotiate the fixed costs associated with administering healthcare benefits. Again, since these costs typically make up only a small portion of the total cost, even successful negotiation attempts will have a limited impact on the employer's bottom line.

[0005] In short, employers have been largely unsuccessful in their attempts to control healthcare costs while ensuring a high level of care. Employers simply lack the information necessary to identify the most significant factors affecting their healthcare costs, to quantify and compare the performance of healthcare providers, and to apply their resources in a way that most effectively reduces both the overall consumption of healthcare and the costs of the services consumed while maintaining or improving the quality of the healthcare benefits they provide.

SUMMARY OF THE INVENTION

[0006] The present invention provides a method of optimizing healthcare services consumption through analysis of the demographic and wellness characteristics of an employee population (including employees and employee family members, hereinafter, "patients"), analysis of the quality and cost efficiency of the practices of providers used by the patients, and intervention with patients and providers to improve the overall health of the patients, the practices of the providers, and the cost efficiency of the employer provided healthcare plan. The method, in one embodiment thereof, includes the steps of assessing the healthcare situation of the employer as it relates to normative characteristics of a health economic zone including the patients, identifying patients from the covered population likely to generate expensive healthcare claims relative to the other patients based on data representing past healthcare claims generated by the patients, periodically determining whether these patients have obtained healthcare services that satisfy predetermined requirements, identifying qualified providers in the health economic zone who provide high quality, cost efficient healthcare services relative to other providers in the health economic zone based on data representing past practice patterns of the providers, prompting patients who have not obtained healthcare services that satisfy the predetermined requirements to obtain additional healthcare services from the qualified providers, and responding to healthcare requests from patients by determining whether the requesting patient is seeking to obtain healthcare services from a qualified provider, and, if not, urging the patient to obtain services from a qualified provider.

[0007] The features and advantages of the present invention described above, as well as additional features and advantages, will be readily apparent to those skilled in the art upon reference to the following description and the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] FIG. **1** is a conceptual diagram of participants in a healthcare consumption situation that may be optimized using a method according to the present invention.

[0009] FIG. **2** is a conceptual diagram of an interrelationship between a central database and the participants shown in FIG. **1**.

[0010] FIG. **3** is a flow diagram depicting steps included in one embodiment of the present invention.

[0011] FIG. **4** is a conceptual diagram of a health economic zone.

[0012] FIGS. **5-15** are illustrations of reports generated according to an embodiment of the present invention.

[0013] FIG. **16** is a flow diagram of a process for evaluating the practice characteristics of healthcare providers.

[0014] FIG. **17** is a flow diagram depicting steps included in one embodiment of the present invention.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

[0015] The embodiments described below are merely exemplary and are not intended to limit the invention to the precise forms disclosed. Instead, the embodiments were selected for description to enable one of ordinary skill in the art to practice the invention.

[0016] FIG. **1** depicts a relationship among participants in a typical employer provided healthcare situation. In this example, the employer **10** is self-insured and provides funds, based on predicted healthcare costs, to a third party administrator (TPA **12**) of healthcare benefits for paying employee healthcare claims. Of course, also involved in this relationship are the healthcare consumer, patient **14**, the healthcare provider **16** (e.g., a physician or a facility such as a hospital, laboratory, etc.), a pharmacy **18**, a pharmacy benefit manager (PBM **19**), a PPO **20**, and a healthcare quality management firm (HQM **13**). As should become apparent from the following description, HQM **13** could perform the functions of TPA **12**. Thus, except where expressly indicated otherwise or mandated by the context of this description, references to HQM **13** may include HQM **13** and TPA **12**.

[0017] In a typical transaction associated with a healthcare claim, patient **14** visits provider **16** to obtain healthcare services and/or products such as drugs. For simplicity, this description collectively refers to services and products as healthcare services. Provider **16** submits a claim to PPO **20** (or alternatively directly to TPA **12**) in an amount corresponding to the cost of the services. Provider **16** may also write a prescription that is received by a pharmacy **18**. In that event, pharmacy **18** submits a claim to PBM **19**, which in turn submits a claim to TPA **12**. As is well known in the art, PPO **20** (or alternatively TPA **12**) typically discounts or reprices the claimed charges based on an agreement between provider **16**, pharmacy **18**, and PPO **20**. The repriced claim is submitted to TPA **12** for payment. TPA **12** accesses funds in the healthcare account of employer **10** to pay provider **16** and PBM **19** the repriced claim amounts. PBM **19** then forwards a payment to pharmacy **18**. TPA **12** then also informs patient **14** of the patient's payment responsibility that arises as a part of the application of the terms of the underlying benefit plan when it does not pay 100% of eligible charges. Patient **14** then sends a payment to provider **16**. The above-described example assumes that TPA **12** is separate from HQM **13**. If HQM **13** functions as a combination of HQM **13** and TPA **12**, then HQM **13** interacts directly with employer **10**, patient **14**, provider **16**, PBM **19**, and PPO **20** in the manner described with reference to TPA **12** above.

[0018] As should be apparent from the foregoing, throughout each such transaction, TPA **12** has access to all of the material claim information. TPA **12** shares this information with HQM **13**, which may contact employer **10**, patient **14**, and/or provider **16**. Accordingly, as will be described in detail below, HQM **13** is in a position to facilitate change in and/or directly influence the healthcare situation to control the cost incurred by employer **10** and to encourage consumption of healthcare from high quality providers **16**. Thus, HQM **13** is described below as practicing the present invention as a service for the benefit of its clients, employers **10**, and patients **14** including the clients' employees and their family members.

[0019] According to one embodiment of the present invention, TPA **12** maintains a database **22** including a variety of different types of information from employer **10**, provider **16**, PBM **19**, and PPO **20** as depicted in FIG. **2**. As is further described below, TPA **12** also updates information included in database **22** as a result of its interaction with HQM **13**. Database **22** may be maintained on any of a variety of suitable computer-readable media such as a hard drive of a computer. While FIG. **2** suggests contributions of information to database **22** by each of employer **10**, TPA **12**, provider **16**, PBM **19**, and PPO **20**, it should be understood that such information may not be provided directly to database **22**. Instead, TPA **12** may receive information from the other participants and enter and/or otherwise process the information for storage in database **22**. For example, information may be transferred electronically from employer **10**, provider **16**, PBM **19**, PPO **20**, and HQM **13** to TPA **12** via a network or multiple networks. Moreover, TPA **12** may physically reside at multiple locations, each of which receives information from the other participants. Such multiple locations may be connected together via a network configured to permit simultaneous access to database **22** through a server. Any suitable method of transferring information and storing such information in either a centralized or distributed database **22** is within the scope of the invention. For simplicity, the transfer of information is described herein as occurring electronically over a network, and database **22** is described as a centralized database accessible by a single TPA **12** location.

[0020] As is further described below, the information stored in database **22** permits HQM **13** to evaluate the healthcare situation of employer **10**, including the cost information, the healthcare characteristics of patients **14**, and the performance of providers **16** used by patients **14** covered under the healthcare plan provided by employer **10**. Accordingly, the information in database **22** includes employer information, patient information, provider information, pharmacy information, and claims information that may relate to some or all of the other types of information. The employer information includes information identifying employer **10**, patients **14** covered under the employer provided healthcare plan, PPO **20** associated with employer **10**, as well as historical data that characterizes changes in the healthcare situation of employer **10** over time. The patient information includes the name, address, social security number, age, and sex of each patient **14** covered under the healthcare plan provided by employer **10**. The provider information includes the name, tax identification number, address, and specialty of a plurality of healthcare providers across a large geographic region, such as the entire United States. As is further described below, portions of the provider **10** information are associated with employer **10**. These portions correspond to the providers **16** that provide services to patients **14**. The pharmacy data includes information identifying the type, quantity, and dosage of drugs associated with a particular prescription for a particular patient **14** as well as the social security number of the patient **14**. This information permits association of prescription drug claims with patients **14**. These claims can be further associated with the provider **16** that wrote the prescription by accessing the claims data (described below) associated with the patient **14** who filled the prescription to determine which provider **16** patient **14** saw prior to obtaining the prescription. Alternatively, an identifier may be included in the pharmacy data with each prescription entry that identifies provider **16**.

[0021] The claims data stored in database **22** include portions of the above-described data, but may be organized or associated with a particular claim. More specifically, a claim may include information identifying and/or describing

employer **10**, patient **14**, provider **16**, pharmacy **18**, PBM **19**, and PPO **20**. The claim may further include information describing the condition or symptoms of patient **14** that generated the claim, the diagnosis of provider **16**, the procedures ordered by provider **16** to treat the diagnosed condition as identified by commonly used procedure codes, and the costs (both original charges and repriced amounts) of the healthcare services associated with the claim.

[0022] As indicated above, the information stored in database **22** comes from a variety of sources. For example, when an employer **10** becomes a new client of HQM **13**, PPO **20** servicing employer **10** may provide HQM **13** with enrollment data including employer information, employee information, and associated past claims information. HQM **13** may then process that information for addition to database **22**. Periodically, PPOs **20** of employers **10** transfer claims information to TPA **12** (i.e., as the claims information is processed by PPOs **20**). As indicated above, in addition to information relating to associated healthcare services, this claims information may include employee information, provider information, and pharmacy information. Additionally, PBMs **19** (or data transfer services working with PBMs **19**) periodically transfer pharmacy information to TPA **12**. As further described below, each time new information is provided to TPA **12**, TPA **12** and/or HQM **13** may process the information such that it is associated with a particular employer **10**, a particular patient **14**, or a particular provider **16**.

[0023] Referring now to FIGS. **3** and **4**, one embodiment of the method according to the present invention may be generally described as involving three basic steps: analyzing the healthcare situation of employer **10**, improving the healthcare consumption characteristizcs of patients **14**, and improving the overall performance characteristics of providers **16** used by patients **14**. One process for analyzing a healthcare situation of an employer **10** is depicted in FIG. **3**. In general, after all of the relevant information regarding employer **10**, patients **14** associated with employer **10**, and providers **16** used by patients **14** resides in database **22**, HQM **13** executes software (as further described below) to access database **22** and identify a Healthcare Economic Zone (HEZ **24**, FIG. **4**) corresponding to employer **10** (step **26**). As shown in FIG. **4**, HEZ **24** corresponds to a geographic area that includes all patients **14** associated with all employers **10** and providers **16** used by patients **14** (including physicians **28** and facilities **30**, such as hospitals). HEZ **24** may be defined to correspond to Hospital Service Areas set forth by the Dartmouth Atlas project, a funded research effort of the faculty of the Center for the Evaluative Clinical Sciences at Dartmouth Medical School. Essentially, HEZs are based on the zip codes of the residential addresses of patients **14** stored in database **22** and the locations of providers **16** servicing those zip codes. In other words, an HEZ **24** includes a geographic region in which patients **14** tend to obtain their primary healthcare. For example, assuming patients **14** associated with employer **10** all reside in three adjacent zip codes that are serviced by one facility **30** (also within one of the three zip codes), then those three zip codes are included in HEZ **24**. However, if facility **30** also refers patients **14** to, for example, specialist providers **16** in a fourth zip code, then the fourth zip code is also included in HEZ **24**. FIG. **4** shows HEZ **24** fully contained within a larger geographic area such as a state **32**. It should be understood, however, that HEZs **24** (or the equivalent of HEZs **24**) may extend across state lines.

[0024] Referring again to FIG. **3**, step **34** indicates that information in database **22** corresponding to employer **10** (i.e., employer information, patient information, claims information corresponding to patients **14** associated with employer **10**, and provider information) is analyzed to evaluate the healthcare situation of employer **10**. In step **36**, the employer specific data is compared to generalized data relating to HEZ **24** as is further described below. As indicated in FIG. **3**, the results of the analyses performed in steps **26**, **34**, and **36** may be processed in the form of provider reports **38**, employer reports **40**, and patient reports **42**, some or all of which may be provided to employer **10** as shown in FIG. **1** as part of the process of analyzing the healthcare situation of employer **10**. Step **44** depicts the process of updating database **22** as HQM **13** and/or TPA **12** receive claims information and/or changes in the population of patients **14** associated with employer **10** as a result of employees being hired by or departing from employer **10**, or changes in the family situation of the employees. As should be apparent from the figure, the process of analyzing the healthcare situation of employer **10** is therefore continuously updated and may result in generation of periodic reports for employer **10** and HQM **13** to track changes in the healthcare situation over time.

[0025] FIG. **5** depicts an example of an employer report **40**. Although chart **46** of FIG. **5** does not compare employer **10** information to HEZ **24** information, it is an employer report **40** because it provides employer **10** information regarding the costs of healthcare services in the HEZ **24** in which employer **10** (more accurately, patients **14** associated with employer **10**) resides. Chart **46** includes a specialty column **48**, a total allowed charges column **50**, a total allowed charges at normative costs column **52**, a percent of excess charges column **54**, and an excess charge per life per year column **56**. Chart **46** provides employer **10** information regarding the relative costs of healthcare services (by specialty) in the employer's HEZ **24** as compared to the costs in a larger geographic area that includes HEZ **24** (e.g., state **32**, the Midwest, the southeast, etc.). In this example, providers **16** in HEZ **24** charged $4,251,526 (column **50**) for cardiology services over the course of a predetermined time period, such as two years. Column **52** shows that the normative costs for such services is $4,488,559 for the same number of healthcare consumers (i.e., patients **14**) over the same predetermined time period. More specifically, the dollar amounts in column **52** are derived by first adding all of the charges for cardiology services in the larger geographic area for the predetermined time period and dividing the total by the number of healthcare consumers in the larger geographic area. Then, this "average cardiology charge per healthcare consumer" is multiplied by the number of healthcare consumers in HEZ **24**. As shown in column **54**, HEZ **24** experienced cardiology costs that were 5.3 percent below the normative cardiology charges. Finally, column **56** simply converts the percentage deviation from the normative charge into a dollar value divided by the number of healthcare consumers in HEZ **24** and the number of years in the predetermined time period.

[0026] Line **58** shows the totals for all specialties or Major Practice Categories (MPCs). Lines **60** and **62** illustrate a situation wherein HEZ **24** is serviced by more than one PPO **20**. Since all of the claims information in database **22** is associated with a particular PPO **20**, the charges associated with all claims of healthcare consumers in HEZ **24** corresponding to PPO network A and PPO network B may be separated based on the PPO that handled the claim. Thus,

lines **60** and **62** depict the relative usage of the PPOs by healthcare consumers in HEZ **24** (column **50**), the normative usage values for each PPO in a larger geographic area (eg., state **32**) (column **52**), the cost performance of the PPOs for HEZ **24** relative to the cost performance of the PPOs across state **32** (column **54**), and the meaning of that relative performance on a dollars per patient **14** per year basis (column **56**). Lines **64** and **66** provide similar information for two hospitals used by healthcare consumers in HEZ **24**.

[0027] As should be apparent from the foregoing, employer **10** may readily scan down total allowed charges column **50** to determine the specialties most likely to contribute significantly to the employer's overall healthcare costs. Columns **54** and **56** permit employer **10** to readily identify those practice categories having charges that deviate most from the average or normative charges. In this manner, employer **10** (and HOM **13**) can isolate the practice categories that have the most potential for providing the most significant reduction in the overall healthcare costs of employer **10**.

[0028] Another employer report **40** (chart **68** of FIG. **6**) follows the same format as chart **46**, but compares the actual healthcare costs of employer **10** to the typical costs in HEZ **24**. Chart **68** includes a specialty column **70**, a total costs column **72**, a normalized costs in HEZ **24** column **74**, a percent excess column **76**, and an excess cost per life per year column **78**. Column **72** represents the total costs employer **10** incurred for the various specialties listed in column **70** during a predetermined time period. The normalized amounts in column **74** represent the expected cost in HEZ **24** for an employer having the same number of patients **14** as are associated with employer **10**. For example, assuming a total cost for cardiology in HEZ **24** of $17,122,789 for 35,623 healthcare consumers in HEZ **24**, the average cardiology cost per healthcare consumer is $480.67. Assuming that employer **10** has 150 patients **14**, then the expected total cost for cardiology services (i.e., the normalized costs in HEZ **24**, column **74**) is $72,100. Accordingly, employer **10** has incurred costs for cardiology services that are 23.7% below the anticipated amount for an employer the size of employer **10** located in HEZ **24** as shown by column **76**. Column **78** reflects this percentage in a per patient **14** per year dollar value.

[0029] As should be apparent from the foregoing, chart **68** could readily be revised to reflect similar information for actual consumers of the particular specialties as opposed to patients **14** and healthcare consumers generally. In other words, if only nine patients **14** used cardiology services over the predetermined time period (resulting in a total cost of $55,000), column **74** could be modified to reflect the expected amount for nine of the average consumers of cardiology services in HEZ **24** over the predetermined time period. Of course, columns **76** and **78** would then reflect the difference between these values on a percentage and per life per year basis, respectively.

[0030] FIG. **7** is another employer report **40** that summarizes the illness burden and demographics of HEZ **24** associated with employer **10**. Chart **80** includes a description column **82**, an HEZ **24** data column **84**, a normative value a larger geographic area including column **86** for HEZ **24**, a percent excess column **88**, and an excess per life per year column **90**. It is well known that healthcare consumption is greater for adults verses children (other than newborn children), for females verses males, and for older adults verses younger adults. Obviously, healthcare consumption is also greater for individuals having certain types of pre-existing illnesses as compared to healthy individuals. The method of the present invention uses these factors to compute a healthcare index (line **92** in FIG. **7**) for HEZ **24** in which patients **14** associated with employer **10** reside. The method of the present invention calculates the healthcare index for an HEZ **24** using Episode Risk Group (ERG) scores inherent in the health risk assessment process provided by Symmetry Health Data Systems, Inc. and described in "A New Approach to Health Risk Assessment," a white paper available from Symmetry Health Data Systems, Inc., the disclosure of which is hereby incorporated herein by reference. A healthcare index for each patient **14** in HEZ **24** is computed using a retrospective analysis, and the index for HEZ **24** is derived by calculating an average index for all patients **14** in HEZ **24**. As shown in column **84** of FIG. **7**, HEZ **24** has 9,808 patients **14** having an average age of 42, and comprising 74.8% adults, 38.6% of whom are female. These factors result in a healthcare index for HEZ **24** of 1.506. As shown in column **88**, this healthcare index is 50.6% above the normative healthcare index of 1.0 for the larger geographic area. This high healthcare index results from a higher than typical percentage of females and adults in HEZ **24** and a higher than typical percentage of individuals with health risk factors. More specifically, as shown in column **88** of FIG. **7**, 10.8% of the overage is due to atypical demographics (i.e., an older and more heavily female population). 39.8% of the overage is due to the atypical illness burden of the population (i.e., a population with health conditions corresponding to higher than typical health risk factors). Accordingly, an employer **10** in HEZ **24** should expect to have healthcare costs that are greater than the typical costs of the larger geographic region. It should be understood that a similar report could readily be generated comparing the illness burden and demographic information of a particular employer **10** to information describing the HEZ **24** in which patients **14** associated with employer **10** reside.

[0031] Referring now to FIG. **8**, a patient report **42** is shown summarizing the chronic illnesses of patients **14** associated with employer **10**. It is well known that typically 80% of an employer's healthcare costs are generated by approximately 20% of the covered population of patients **14**. That 20% of the population generally has a high incidence of chronic illness. Accordingly, chart **94** of FIG. **8** is generated to provide employer **10** a summary of its chronically ill patients **14**.

[0032] As shown, column **96** lists various chronic illnesses. While the method of the present invention may track any number of chronic illnesses, only six are shown in FIG. **8**. Column **98** shows the number of patients **14** having each of the listed illnesses. Column **100** shows the number of those patients **14** listed in column **98** that have at least one year of claims history (i.e., have submitted claims that were added to database **22**). Column **102** shows the number of patients **14** that have satisfied the minimum annual care requirements (MACRs) recommended for treating the chronic illness or illnesses from which they suffer. Column **104** simply expresses the number in column **102** in the form of a percentage of the total patients **14** suffering from the listed illness. The MACRs for each chronic illness of chart **94** are listed in column **106** and obtained using software available from McKesson Corp., a supplier of information and managed care products and services for the health care industry. In particular, McKesson's CareEnhance Resource Management Software (CRMS) provides such information. As the method of optimizing healthcare services consumption described below is practiced, periodic reports such as chart **94** of FIG. **8** will

show improvements in the number of patients **14** that satisfy the MACRs associated with their particular illness(es).

[0033] Chart **110** of FIG. **9** shows the chronic illness status of patients **14** associated with employer **10** in terms of co-morbidities. Chart **110** includes a description column **112**, a current patient column **114**, a percent of current covered patients column **116**, a previous patient column **118**, a percent of previous covered patients column **120**, and a percent of database driven norms column **122**. As shown in column **114**, of the 993 total patients **14** covered under a healthcare plan provided by employer **10**, a total of 619 have a single chronic illness, 236 have two chronic illnesses, 86 have three chronic illnesses, etc. Column **116** expresses the number of patients **14** listed in column **114** in terms of the percentage of the total patient **14** population. Columns **118** and **120** include similar information representing the status of the chronically ill at a previous date. Employer **10** can monitor changes in the chronic illness status of its patients **14** by comparing these two sets of columns. Finally, column **122** shows the typical percentage of individuals (based on all individuals reflected in the database) with the particular number of chronic illnesses.

[0034] In addition to summarizing patients **14** having chronic illnesses, the method of the present invention also includes the step of performing a risk stratification of all patients **14** covered by employer **10**. The results of this risk stratification step are provided to employer **10** as an patient report **40**. Chart **124** of FIG. **10** is an example of such an patient report **42**. As shown, chart **124** includes a family identification number column **126**, a patient identification column **128**, an age column **130**, a gender column **132**, a healthcare index column **134**, and a predicted cost column **136**. The primary purpose of chart **124** is to display patients **14** in order of their associated healthcare index listed in column **134**. The healthcare index is derived using the McKesson CRMS software as described above, which takes into account the age, gender, chronic illnesses, and co-morbidities of each patient **14**. Also, by analyzing claims data describing prescriptions, the CRMS software imputes illnesses of patients **14** based on the number and types of medications prescribed for patients **14**. Thus, the healthcare index is used to rank patients **14** in terms of their likelihood of generating large medical expenses in the near future. It should be noted that not only the chronically ill are identified by the healthcare index. Other patients **14** having conditions that are not considered chronic may have high healthcare indices. Column **136** provides a predicted cost associated with each patient **14** based on their healthcare index. More specifically, column **136** is derived by calculating the total expense associated with the normative population, and dividing that amount by the total number of ERG risk points of the normative population to get dollars per risk point (prospectively). Then, using the method of the present invention (and not the CRMS software), the healthcare index of column **134** is multiplied by the dollars per risk point value.

[0035] The above-described employer reports **40** and patient reports **42** are illustrative of the way in which the method of the present invention determines which patients **14** covered by employer **10** should receive intervention or proactive coaching (as further described below and depicted in FIG. **1**), and at what level of intensity. In other words, since chronically ill patients **14** generally generate large healthcare costs, chronically ill patients **14** should be monitored and coached most actively and at levels corresponding to the number of chronic illnesses from which they suffer. Likewise, patients **14** having high healthcare indices because of their age, gender, illnesses, etc. should be monitored and coached most actively and at levels corresponding to their healthcare index. Using the above-described approach, patients **14** that require proactive coaching typically constitute approximately 25% of the total patient **14** population. It has been shown that this 25% portion of the patient **14** population typically generates 90% of the total healthcare costs incurred by employers **10**.

[0036] As indicated above, the method of the present invention also generates physician reports **38** such as chart **138** shown in FIG. **11**. Chart **138** is an example of a comparison of various characteristics of the practice of a particular provider **16** to the practices of other providers **16** in the same specialty. In order to make such comparisons, the claims information in database **22** may be analyzed on the basis of "episodes" of healthcare. This analysis is performed using software applications available from McKesson Corp., which analyze the services and costs associated with claims originated by a particular provider **16**. An episode is defined as a healthcare consumption sequence including all healthcare services consumed by a patient **14** for a particular healthcare problem. Episodes may include healthcare services ordered by a physician as a result of an initial office visit (e.g., tests, X-rays, etc.), healthcare services associated with a subsequent hospital visit (e.g., for surgery), and healthcare services associated with aftercare or follow-up visits to the physician.

[0037] The analysis of claims information grouped by specialty episodes permits identification of providers **16** having practice patterns that result in low total costs for the types of healthcare problems they treat as compared to other providers **16** in the specialty. Additionally, providers **16** who deliver high levels of post-primary preventative care services for chronically ill patients **14** can be identified. Finally, specific undesirable characteristics of a provider's **16** practice patterns can be identified such as up-coding, ordering inappropriate services, vague or invalid diagnostic codes, and services that are performed too frequently. All of this information is available from the 10 claims information stored in database **22**.

[0038] Referring back to FIG. **11**, Bar **140** of chart **138** represents the percentage of procedures ordered by a particular provider **16** (physician ID #223776) that were determined to be inappropriate for the diagnosis reflected in the claims information associated with the evaluated episodes. Bar **142** represents similar data for the entire specialty. Comparing bar **140** to bar **142** shows that this particular anesthesiologist ordered inappropriate procedures at nearly double the rate of others in the specialty. The remaining bar groups **144**, **146**, **148**, **150**, and **152** permit similar comparisons for the practice pattern characteristics indicated on chart **138**.

[0039] As further described below, one of the steps of a method according to the present invention involves determining whether providers **16** used by employees **14** of employer **10** provide healthcare in a manner that satisfies certain criteria. If so, these providers **16** are identified as Quality Service Providers or QSPs. To achieve a QSP designation or rating, providers **16** must, based on claims information stored in database **22**, pass three screens or quantitative tests of the providers' **16** performance or practice characteristics. Any provider **16** who fails one or more of these tests is identified for purposes of practicing the present invention as a non-certified QSP ("NCQSP").

[0040] The first test ("the CEI test") is primarily economic. Using claims information in database **22**, the software of the present invention generates a Cost Efficiency Index (CEI) for each provider **16**. The CEI represents the actual total cost of care provided and/or ordered by provider **16** for completed episodes, divided by the total average cost of such care for similar episodes treated by other providers **16** in the specialty. In other words, the cost to employer **10** for the healthcare delivered and/or ordered by provider **16** for all completed episodes for all patients **14** is first extracted from the claims information in database **22**. Then, the total cost for all similar episodes handled by all providers **16** tracked in database **22** is determined, and divided by the total number of episodes to arrive at an average cost per episode in the specialty. Finally, the average cost per episode for provider **16** is divided by the average cost per episode in the specialty to arrive at the CEI for provider **16**. If provider **16** has a CEI that exceeds a predetermined threshold (e.g.,) 125% or more above that of others in the specialty of provider **16**) and is statistically higher that the average for the specialty (i.e., sufficient claims information is contained in database **22** to calculate the CEI of provider **16** with a statistically acceptable confidence level such as at the p 0.1 level), then provider **16** failed the CEI test and will be designated a NCQSP. A sample report of the data used to complete a CEI analysis is shown in FIG. **12**.

[0041] The second test in the QSP rating process ("the service rate test") evaluates the preventative care practices of providers **16**. As is well known in the field of medical care, preventative care services may significantly affect the overall cost of healthcare, particularly those services provided to treat chronic illnesses to prevent those illnesses from progressing or resulting in other health complications. The McKesson software permits extraction of data representing the number and types of preventative care services ordered by providers **16** for treatment of chronic conditions. In one embodiment of the invention, nineteen chronic conditions are tracked. To evaluate a particular provider **16**, the data representing the preventative care services for provider **16** is extracted and compared (according to the method of the present invention) to a minimum number and particular types of services considered acceptable in treatment of the particular chronic conditions treated by provider **16**. This analysis results in a service rate for provider **16**. More specifically, the total number of services ordered for chronically ill patients treated by provider **16** is determined, and then divided by the number of services required for such patients to achieve compliance with the associated MACRs. This service rate, or fraction of recommended MACRs, is then compared to the typical service rate in the appropriate specialty. If provider **16** has a service rate that is both less than a certain percentage of the typical service rate (e.g., has ordered 75% or less of the services required to achieve compliance with the associated MACRs) and statistically significantly lower than the average for the specialty (i.e., a statistically significant sample size is available in database **22** to obtain confidence at the p 0.1 level), then provider **16** failed the service rate test and is designated a NCQSP. A sample report representing the results of a service rate analysis is shown in FIG. **13**.

[0042] The third test (the "practice patterns test") involves an evaluation of the overall practice patterns of providers **16**. More specifically, the McKesson clinical software is used to extract the number of occurrences of up-coding, ordering inappropriate services, vague or invalid diagnostic codes, and services that are performed too frequently, both for the particular provider **16** being evaluated, and for the specialty as a whole. Each practice pattern category is evaluated according to the method of the present invention to determine whether provider **16** practices in a manner that results in a practice patterns challenge rate that exceeds a predetermined multiple of the typical practice pattern percentages (e.g., 200% or more than the typical practice patterns) and is statistically significantly higher than the average percentages (e.g., at the p 0.01 level). If so, provider **16** failed the practice patterns test and is designated a NCQSP. A sample report representing the results of a practice patterns analysis is shown in FIG. **14**.

[0043] According to the present invention, providers **16** that pass each of the three tests are assigned a QSP designation, indicating that providers **16** practice high quality medicine in a cost effective manner. As will be further described below, these QSP providers **16** are targeted by the present method for providing a maximum percentage of the overall healthcare consumed by patients **14** of employer **10**. In addition to the basic QSP/NCQSP distinction resulting from the above-described process, providers **16** may be further ranked based on the results of the above-described tests. For example, the QSP category of providers **16** may be divided into "A" level QSP providers **16** and "B" level QSP providers **16**. "A" level QSP providers **16** may be defined as providers **16** who have historical claims data in database **22** representing at least five episodes of the relevant type ("sufficient episodic data"), pass the CEI test with a CEI of less than 100% of the typical CEI in the specialty, and pass both the service rate test and the practice patterns test. "B" level QSP providers **16** may include providers **16** who (1) do not have sufficient episodic data, or (2) have sufficient episodic data and pass all three tests, but with a CEI of greater than or equal to 100% of the typical CEI in the specialty.

[0044] Similarly, providers **16** falling into the NCQSP category may be further ranked relative to one another to provide an ordered listing of NCQSPs. For example, "C" level NCQSP providers **16** may be defined as providers **16** who have sufficient episodic data, pass the CEI test, but fail one of the service rate or practice patterns tests (not both). "D" level NCQSP providers **16** may be defined as providers **16** who have sufficient episodic data and (1) fail the CEI test with a CEI of less than 150% of the typical CEI in the specialty or (2) fail both the service rate and practice patterns tests. Finally, an "E" level NCQSP provider **16** may be defined as a provider **16** with sufficient episodic data who fails the CEI test with a CEI that is at least 150% greater than the typical CEI in the specialty. Thus, providers **16** may be categorized in levels "A" through "E." This ranking permits targeting not only QSPs, but "A" level and "B" level QSPs, or NCQSPs that at least have the best relative rankings on the list of NCQSPs.

[0045] Another example provider report **38** is shown in FIG. **15**. Chart **154** of FIG. **15** is a listing of NCQSPs in descending order. The group of columns collectively assigned reference designation **156** identifies the providers **16** by ID, name, and location. Column **158** lists the number of episodes in database **22** associated with each provider **16**. Column **160** lists the above-described CEI for each listed provider **16**. The greater the CEI listed in column **160**, the more significant the provider's deviation from the practice patterns of other providers **16** in the specialty. Consequently, those providers **16** listed near the top of chart **154** will provide healthcare resulting in a greater cost to employer **10**. In one embodiment of the invention, listings of NCQSPs such as

chart **154** are divided into thirds for purposes of practicing the invention as further described below.

[0046] Referring now to FIG. **16**, a flow diagram of the above-described process for assigning QSP or NCQSP designations to providers **16** is shown. At step **162**, claims information corresponding to a particular provider **16** is extracted from database **22** to determine whether provider **16** has sufficient episodic data (e.g., at least five episodes of the relevant type). If not, then provider **16** is designated an unknown, "B" level QSP. If provider **16** has sufficient episodic data stored in database **22**, then each of the three above-described tests are performed as indicated at step **163**. At step **164**, the results of the CEI test are analyzed. If the CEI is 125% or more greater than the typical CEI in the specialty and satisfies the above-described statistical significance criteria, then provider **16** is marked as failing the CEI test (step **165**). Otherwise, provider **16** is marked as passing the CEI test (step **166**). Similarly, the results of the practice patterns test are analyzed at step **167**. If provider **16** has a service challenge rate of 200% or more than the typical rate in the specialty and satisfies the above-described statistical significance criteria, then provider **16** is marked as failing the practice patterns test (step **168**). Otherwise, provider **16** is marked as passing the practice patterns test (step **169**). Finally, the results of the service rate test are analyzed in a similar manner at step **170**, and provider **16** is marked as failing (step **171**) or passing (step **172**) the service rate test as a result of the analysis.

[0047] As shown at step **173**, "A" level QSPs are identified as providers **16** who are marked as passing all three tests and achieved a CEI of less than 1. If a provider **16** is marked as passing all three tests, but has a CEI that is greater than or equal to 1, then provider **16** is designated a "B" level QSP as indicated by step **174**. The remaining providers **16** are NCQSP providers **16**. At step **175**, the method of the present invention identifies "C" level NCQSPs at step **176** as providers **16** who are marked as passing the CEI test, but failing one of the other two tests (but not both). At step **177**, the lowest level providers **16** ("E" level NCQSPs) are identified as providers **16** who are marked as failing the CEI test with a CEI of at least 1.5. Any remaining providers **16** are designated "D" level NCQSPs as indicated at step **161**. "D" level NCQSPs include providers **16** who are marked as failing the CEI test, but with a CEI of less than 1.5, and providers **16** who are marked as failing both the service rate and practice patterns tests. This process of evaluating providers **16** for purposes of determining QSP/NCQSP status and levels within each category is repeated periodically to maintain an updated listing in database **22**. It should be further understood that the particular numeric threshold values used in each of the three tests may readily be changed to affect the number of providers **16** falling into each of the five levels without departing from the principles of the invention. The designations for providers **16** resulting from the above-described process are used to improve the quality and cost-efficiency of the healthcare services consumed by employees **14** of employer **10** in the manner described below.

[0048] Referring now to FIG. **17**, a flow diagram representing a portion of a method for optimizing healthcare services consumption is provided. At step **178**, the claims information corresponding to patients **14** is extracted from database **22**. Step **178** results in the data necessary to identify patients **14** having chronic illnesses (step **180**) and to rank patients **14** according to the above-described risk stratification process (step **182**). As indicated above and shown in FIG. **1**, the method of the present invention, in one form thereof, involves intervention with patients **14** by registered nurses and other staff of HQM **13**. This intervention or proactive coaching follows one or both of the two paths depicted in FIG. **17**. First, for patients **14** identified as having one or more chronic illness, the method of the invention determines at step **184**, based on claims information associated with such patients **14**, whether the MACRs associated with the illness(es) have been satisfied. If the MACRs for a particular patient **14** have not been satisfied, then a representative of HQM **13** (e.g., a registered nurse or other staff member) contacts patient **14** to remind patient **14** of the need to schedule the healthcare necessary to satisfy the MACRs. This contact may be accomplished by any mode of communication including by phone, email, fax, mail, or any combination thereof. Preferably, the representative of HQM **13** has a live conversation with patient **14** to impress upon patient **14** the importance of satisfying the MACRs associated with the patient's chronic illness.

[0049] At step **188**, the representative of HQM **13** may also contact provider **16** of healthcare services associated with the chronic illness(es) of patient **14**. As a result of this contact, the representative enlists the cooperation of provider **16** in the effort to persuade patient **14** to satisfy the MACRs. As should be apparent from the foregoing, a goal of this intervention is to improve the health of patient **14** and minimize the cost to employer **10** by avoiding the increased healthcare expenses typically accompanying untreated chronic illnesses.

[0050] Steps **186** and **188** may result in the generation of a healthcare request. Specifically, patient **14** may respond to contact by the representative of HQM **13** by scheduling an evaluation by provider **16** or other action toward satisfying the MACRs associated with the chronic illness(es) of employee **14**. Step **190** represents the possibility that a healthcare request is generated. If so, the healthcare request is processed as described below with reference to the second path depicted in FIG. **17**. Otherwise, a predetermined time period is allowed to pass before repeating the process of checking the compliance of patient **14** with the MACRs associated with the chronic illness(es) of patient **14** and contacting patient **14** and provider **16**. Step **192** indicates this delay period.

[0051] When healthcare requests are generated, either as a result of the first path of FIG. **17** described above, or simply during the ordinary course of employee healthcare consumption, HQM **13** receives the healthcare request at step **194**. The healthcare request is associated with a particular patient **14** based on the risk stratification process represented by step **182**. By determining the risk ranking of the requesting patient **14**, HQM **13** can perform intervention actions (as described herein) in the order of ranking of patients **14**. In other words, since it is not possible to contact every patient **14** submitting a healthcare request, the ranking of patients **14** permits HQM **13** to focus first on patients **14** having a highest risk ranking, and then (time and resources permitting) patients **14** have a smaller likelihood of generating high cost healthcare claims. The method of the present invention next accesses database **22** to determine whether provider **16** associated with the healthcare request is currently designated a QSP according to the process described above. If patient **14** is requesting to obtain healthcare services from a QSP, then the healthcare request may be processed according to conventional procedures without intervention by representatives of HQM **13** as indicated by step **196**. Alternatively, the QSPs resulting from the above-described evaluation process may be ranked rela-

tive to one another and categorized into, for example, the "A" and "B" level QSP classifications described above. In such an alternative embodiment, an additional step (not shown) between step **196** and step **194** of contacting an patient **14** requesting healthcare from a "B" level QSP may be provided. At that step, a representative of HQM **13** may attempt to influence patient **14** to obtain such services from a "A" level QSP.

[0052] If, on the other hand, the healthcare request seeks services from a NCQSP, then the ranking of the NCQSP (derived as explained above with reference to FIG. **16**) is determined at step **198**. At step **200**, a representative of HQM **13** contacts patient **14** who generated the healthcare request to urge patient **14** to obtain the requested services from a QSP. The representative may explain to patient **14** that various other providers **16** within geographic proximity to patient **14** (determined in the manner described below) have achieved the QSP designation for high quality, cost efficient healthcare, while provider **16** selected by patient **14** has not achieved that designation. The representative may further explain the implications of obtaining healthcare services from NCQSPs, and attempt to assist patient **14** in rescheduling the requested healthcare services with a QSP. Additionally, if patient **14** refuses to switch to a QSP, the representative may attempt to persuade patient **14** to at least switch to a NCQSP that is ranked at a higher level than the currently selected NCQSP.

[0053] As described above, at step **200** of FIG. **14**, the representative of HQM **13** may list for patient **14** the variety of other providers **16** (specifically, QSPs) within a specific geographic proximity to patient **14**. Such a list is generated by accessing database **22** using a software interface configured to permit the HQM **13** representative to input a desired radius extending from the location of patient **14**, thereby defining an area of geographic proximity surrounding patient **14**. The software accesses database **22**, identifies the QSPs located within the selected geographic area, and provides a listing to the HQM **13** representative. Using this software and method, the representative may access listings of QSPs within, for example, a five mile, ten mile, and/or fifteen mile radius of patient **14**.

[0054] In the event patient **14** refuses to obtain healthcare services from a provider **16** other than the currently selected NCQSP, the method of the present invention determines (at step **202**) the level of intervention required to minimize the costs of such services while maintaining high quality healthcare and the specific actions associated with that intervention level. A plurality of actions may be taken by the representative of TPA **12**, depending upon the level of intervention required. As described above, the NCQSP listings generated by the present invention may, for example, be divided into thirds ("C," "D," and "E" level NCQSPs). "E" level NCQSPs require the greatest level of intervention because the healthcare provided by such NCQSPs, as evaluated by the three QSP tests described herein, most significantly deviates from characteristics associated with desirable healthcare services. "D" level NCQSPs require less intervention. Finally, providers **16** designated "C" level NCQSPs require the least intervention. This "stepped-down" approach to intervention permits efficient usage of the resources available to HQM **13** in managing the healthcare expenses of employer **10**.

[0055] As indicated above, providers **16** at the top third of a NCQSP listing ("E" level NCQSPs) receive the highest level of monitoring and individual contact by representatives of HQM **13**. If an "E" level NCQSP is identified at step **198** of FIG. **17**, then step **202** obtains a listing of intervention actions associated with "E" level NCQSPs. These actions may include the following:

[0056] (1) Obtain criteria for any admission associated with the healthcare request, including medical history, tests, and lab work;

[0057] (2) Delay any admission for employee **14** until all days of admission are approved by an appropriate representative of HQM **13**;

[0058] (3) Complete a telephone evaluation with the NCQSP provider **16**, conducted by an appropriate HQM **13** representative, to evaluate and discuss the need for any admission;

[0059] (4) Review the need to continue an admission after each day of the admission;

[0060] (5) Delay any additional days of admission beyond the initial length of stay until such additional days are approved by an appropriate representative of HQM **13**;

[0061] (6) Assign a representative of HQM **13** to provide assistance to provider **16** in determining appropriate services to address the healthcare problem and to report treatments proposed by provider **16** to an appropriate representative of HQM **13**; and

[0062] (7) Contact provider **16** directly to discuss any questionable proposed treatments as determined by an appropriate representative of HQM **13**.

[0063] If a "D" level NCQSP is identified at step **198** of FIG. **17**, then step **202** obtains a listing of intervention actions associated with "D" level intervention. These actions may include the following:

[0064] (1) Obtain criteria for any admission associated with the healthcare request, including medical history, tests, and lab work;

[0065] (2) Assign a one-day length of stay and perform daily concurrent review of additional days, requiring approval by an appropriate representative of HQM **13** as needed;

[0066] (3) Require provider **16** to send notifications of admissions to an appropriate representative of HQM **13**;

[0067] (4) Complete a telephone consultation with provider **16**, conducted by an appropriate representative of HQM **13**, if deemed necessary by the representative of HQM **13**; and

[0068] (5) Assign a representative of HQM **13** to provide assistance to provider **16** in determining appropriate services to address the healthcare problem and to report treatments proposed by provider **16** to an appropriate representative of HQM **13**.

[0069] Finally, if a "C" level NCQSP is identified at step **198** of FIG. **17**, then step **202** obtains a listing of intervention actions associated with a "C" level intervention. These actions may include the following:

[0070] (1) Obtain criteria for any admission associated with the healthcare request, including medical history, tests, and lab work;

[0071] (2) Assign a maximum two-day length of stay or less based on conventional length of stay guidelines, and perform daily concurrent review of additional days, requiring approval by an appropriate representative of HQM **13** as needed; and

[0072] (3) Assign a representative of HQM **13** to provide assistance to provider **16** in determining appropriate

services to address the healthcare problem and to report treatments proposed by provider **16** to an appropriate representative of HQM **13**.

[0073] All of the various intervention actions listed above are represented by steps **204** and **206** of FIG. **17**. After all of the appropriate intervention actions have been completed, the healthcare request is fully processed. Additional healthcare requests may be received at step **194** and simultaneously processed.

[0074] By applying the resources of HQM **13** to intervene with those patients **14** presenting the greatest risk of generating high healthcare costs and providers **16** most likely to provide the least desirable healthcare, the method of the present invention may result in improvements to the healthcare consumption habits of patients **14** and to the practice patterns of providers **16**, thereby resulting in an overall improvement of healthcare services consumed by patients **14** and cost efficiency realized by employer **10**.

[0075] The foregoing description of the invention is illustrative only, and is not intended to limit the scope of the invention to the precise terms set forth. Although the invention has been described in detail with reference to certain illustrative embodiments, variations and modifications exist within the scope and spirit of the invention as described and defined in the following claims.

What is claimed is:

1. A method of optimizing healthcare services consumption, including the steps of:

assessing a healthcare situation of a population of patients that reside and consume healthcare services in a geographic zone, the geographic zone consisting of a plurality of geographic regions, each of which includes at least one of a residential address of a patient in the population and a location of a provider who services patients in the population;

using a computing device to transform information generated by the population into data representing a first group of patients from the population likely to have a higher consumption of healthcare services than other patients in the population;

periodically determining whether patients in the first group have obtained healthcare services that satisfy predetermined requirements;

using a computing device to transform information about providers in the geographic zone into identification of a first group of providers in the geographic zone who provide high quality, cost efficient healthcare services relative to other providers in the geographic zone;

prompting patients who have not obtained healthcare services that satisfy the predetermined requirements to obtain additional healthcare services to satisfy the predetermined requirements from providers in the first group of providers; and

communicating with patients to urge the patients to obtain the healthcare services from a provider in the first group of providers.

2. The method of claim **1**, wherein the assessing step includes the step of comparing costs associated with healthcare services in the geographic zone with costs of similar healthcare services in a geographic area that is larger than the geographic region.

3. The method of claim **1**, wherein the assessing step includes accessing information describing healthcare data of healthcare consumers in the geographic zone and healthcare consumers outside the geographic zone.

4. The method of claim **1**, wherein the step of using a computing device to transform healthcare information includes the step of identifying patients suffering from at least one illness.

5. The method of claim **1**, wherein the step of using a computing device to transform healthcare information includes the step of assigning a healthcare index to each patient based upon factors including age and gender of the patient.

6. The method of claim **1**, wherein the step of using a computing device to transform information about providers includes the steps of identifying episodes of healthcare for each of the providers in the geographic zone and comparing characteristics of the episodes of healthcare with characteristics of similar episodes of healthcare associated with providers in a geographic area that is larger than the geographic region.

7. The method of claim **1**, wherein the step of using a computing device to transform information about providers includes the steps of performing an individual calculation for each provider in the geographic zone to determine the provider's cost efficiency index, and assigning a non-certified designation to each provider having cost efficiency index that fails to satisfy a first predetermined condition.

8. The method of claim **7**, wherein the step of using a computing device to transform information about providers includes the steps of performing an individual analysis for each provider to determine the provider's service rating, and assigning a non-certified designation to each provider having a service rating that fails to satisfy a second predetermined condition.

9. The method of claim **8**, wherein the step of determining a service rating for each provider includes the step of evaluating the number and types of services ordered by each provider for the treatment of a illness.

10. The method of claim **8**, wherein the step of using a computing device to transform information about providers includes the steps of evaluating the practice patterns of each provider, and assigning a non-certified designation to each provider having practice patterns that fail to satisfy a third predetermined condition.

11. The method of claim **10**, wherein the step of using a computing device to transform information about providers includes the steps of assigning a qualified designation to each provider having a cost efficiency index, a service rating, and practice patterns that satisfy the first, second, and third predetermined conditions, respectively.

12. The method of claim **1**, wherein the prompting patients step includes the step of urging the patients who have not obtained healthcare services that satisfy the predetermined requirements to obtain additional healthcare services from providers in the first group of providers.

13. The method of claim **1**, wherein the prompting patients step includes the step of attempting to contact the providers of the patients who have not obtained healthcare services that satisfy the predetermined requirements in an effort to persuade the patients to obtain additional services.

14. The method of claim **1**, further including the steps of ranking the other providers in the geographic zone based on an analysis of the quality and cost efficiency of practice patterns associated with the other providers, dividing the ranking of providers into a second group of other providers having a

common characteristic and a third group of other providers having a common characteristic.

15. The method of claim **14**, wherein the step of ranking the other providers includes the step of assigning a cost efficiency index to each of the other providers.

16. The method of claim **14**, wherein the step of ranking the other providers includes the step of evaluating a practice pattern characteristic of each of the other providers.

17. The method of claim **14**, wherein the step of communicating with patients includes the step of urging patients who have obtained services from a third group provider to obtain future services from a second group provider.

18. The method of claim **17**, wherein the step of communicating with patients includes the step of conducting a first set of intervention actions if the patient uses a second group provider, the first set of intervention actions corresponding to a first degree of involvement of a healthcare quality management representative in the provision of services by the second group provider.

19. The method of claim **18**, wherein the step of communicating with patients includes the step of conducting a second set of intervention actions if the patient uses a third group provider, the second set of intervention actions corresponding to a second degree of involvement of the healthcare quality management representative in the provision of services by the third group provider, the second degree of involvement being greater than the first degree of involvement.

20. A method of optimizing healthcare services consumption, including the steps of:

assessing a healthcare situation of a population that resides and consumes healthcare services in a geographic region;

using a computing device to transform past healthcare data generated by the population into data representing a first group of patients likely to have a higher consumption of healthcare services than other patients in the population;

periodically determining whether patients in the first group have obtained healthcare services that satisfy predetermined requirements;

using a computing device to transform data representing past practice patterns of providers of healthcare services to the patients into data representing a first group of providers in the geographic region who provide high quality, cost efficient healthcare services relative to other providers in the geographic region;

prompting patients who have not obtained healthcare services that satisfy the predetermined requirements to obtain additional healthcare services to satisfy the predetermined requirements from providers in the first group of providers;

determining whether a patient has obtained healthcare services from a provider not in the first group of providers; and

contacting the patient to urge the patient to obtain healthcare services from a provider in the first group of providers.

22. A method of optimizing healthcare services consumption of a patient population, including the steps of:

transforming using a computing device past data generated by the patients into data representing a first group of patients likely to have a higher consumption of healthcare services than other patients in the population;

transforming using a computing device past practice patterns data of providers who provide services to the patients into data representing a first group of providers who provide high quality, cost efficient healthcare services relative to other providers of the patients;

periodically determining whether patients in the first group suffer from one or more conditions;

determining whether the patients suffering from one or more conditions have obtained healthcare services that satisfy a predetermined set of minimum annual care requirements (MACR) associated with the one or more conditions; and

initiating a communication with a patient who has not obtained healthcare services that satisfy the predetermined set of MACR to instruct the patient to obtain additional healthcare services to satisfy the predetermined set of MACR from a provider in the first group of providers.

23. A system for optimizing healthcare services consumption of a patient population, including:

a first computing device;

a database coupled to the first computing device; and

at least one additional computing device coupled via a network to at least one of the first computing device and the database that provides past data generated by the patients and past practice patterns data of providers who provide services to the patients for storage in the database;

wherein the first computing device includes software having instructions which, when executed by the first computing device, causes the first computing device to

transform the past data generated by the patients into data representing a first group of patients likely to have a higher consumption of healthcare services than other patients in the population,

transform the past practice patterns data into data representing a first group of providers who provide high quality, cost efficient healthcare services relative to other providers of the patients,

periodically determine whether patients in the first group suffer from one or more conditions,

determine whether the patients suffering from one or more conditions have obtained healthcare services that satisfy a predetermined set of minimum annual care requirements (MACRs) associated with the one or more conditions, and

generate a report identifying a patient who has not obtained healthcare services that satisfy the predetermined set of MACRs to prompt communication with the patient to instruct the patient to obtain additional healthcare services to satisfy the predetermined set of MACRs from a provider in the first group of providers.

24. A system for optimizing healthcare services consumption of a population of patients who receive services from providers, including:

a first computing device;

a database coupled to the first computing device;

a second computing device coupled to the first computing device via at least one network; and

a third computing device coupled to the first computing device via the at least one network;

wherein the first computing device receives patient information about the past health of the patients over the at least one network, stores the patient information in the database, and executes software which analyzes the

patient information to identify a group of patients having a high likelihood of requiring healthcare services;

wherein the first computing device receives provider information about the practices of the providers, stores the provider information in the database, and executes software which analyzes the provider information to identify a group of preferred providers; and

wherein the first computing device generates at least one report identifying the group of patients and the preferred providers to facilitate attempts to contact a patient in the group to urge the patient to obtain future services from a preferred provider.

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